ARCADIS

Project: PG&E Topock - RMP
Project No.: RC000753.0801

ASSET Laboratories Work Order:
N020228

ANALYTICAL and QC RESULTS
SAMPLE RECEIVING ITEMS

PRIVILEGED AND CONFIDENTIAL

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July 21, 2016

Dan Bush
ARCADIS U.S., Inc. - California
1410 Rocky Ridge Dr #330
Roseville, CA 95661

TEL: (916) 786-3302
FAX:

CA-ELAP No.: 2676
NV Cert. No.: NV-00922

Workorder No.: N020228

RE: PG&E Topock - RMP, RC000753.0801

Attention: Dan Bush

Enclosed are the results for sample(s) received on July 06, 2016 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 Ribucas for

Puri Romualdo
Laboratory Director

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CLIENT: ARCADIS U.S., Inc. - California
Project: PG&E Topock - RMP, RC000753.0801
Lab Order: N020228

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.

ASSET Laboratories

Date: *21-Jul-16*

CLIENT: ARCADIS U.S., Inc. - California
Project: PG&E Topock - RMP, RC000753.0801
Lab Order: N020228
Contract No:

Work Order Sample Summary

Lab Sample ID	Client Sample ID	Matrix	Collection Date	Date Received	Date Reported
N020228-001A	RMP-AB1-Q316	Groundwater	7/6/2016 10:25:00 AM	7/6/2016	7/21/2016
N020228-002A	C-R22A-D-Q316	Groundwater	7/6/2016 11:00:00 AM	7/6/2016	7/21/2016
N020228-002B	C-R22A-D-Q316	Groundwater	7/6/2016 11:00:00 AM	7/6/2016	7/21/2016
N020228-002C	C-R22A-D-Q316	Groundwater	7/6/2016 11:00:00 AM	7/6/2016	7/21/2016
N020228-002D	C-R22A-D-Q316	Groundwater	7/6/2016 11:00:00 AM	7/6/2016	7/21/2016
N020228-002E	C-R22A-D-Q316	Groundwater	7/6/2016 11:00:00 AM	7/6/2016	7/21/2016
N020228-003A	C-R22A-S-Q316	Groundwater	7/6/2016 11:15:00 AM	7/6/2016	7/21/2016
N020228-003B	C-R22A-S-Q316	Groundwater	7/6/2016 11:15:00 AM	7/6/2016	7/21/2016
N020228-003C	C-R22A-S-Q316	Groundwater	7/6/2016 11:15:00 AM	7/6/2016	7/21/2016
N020228-003D	C-R22A-S-Q316	Groundwater	7/6/2016 11:15:00 AM	7/6/2016	7/21/2016
N020228-003E	C-R22A-S-Q316	Groundwater	7/6/2016 11:15:00 AM	7/6/2016	7/21/2016
N020228-004A	C-TAZ-D-Q316	Groundwater	7/6/2016 8:30:00 AM	7/6/2016	7/21/2016
N020228-004B	C-TAZ-D-Q316	Groundwater	7/6/2016 8:30:00 AM	7/6/2016	7/21/2016
N020228-004C	C-TAZ-D-Q316	Groundwater	7/6/2016 8:30:00 AM	7/6/2016	7/21/2016
N020228-004D	C-TAZ-D-Q316	Groundwater	7/6/2016 8:30:00 AM	7/6/2016	7/21/2016
N020228-004E	C-TAZ-D-Q316	Groundwater	7/6/2016 8:30:00 AM	7/6/2016	7/21/2016
N020228-005A	C-TAZ-S-Q316	Groundwater	7/6/2016 8:45:00 AM	7/6/2016	7/21/2016
N020228-005B	C-TAZ-S-Q316	Groundwater	7/6/2016 8:45:00 AM	7/6/2016	7/21/2016
N020228-005C	C-TAZ-S-Q316	Groundwater	7/6/2016 8:45:00 AM	7/6/2016	7/21/2016
N020228-005D	C-TAZ-S-Q316	Groundwater	7/6/2016 8:45:00 AM	7/6/2016	7/21/2016
N020228-005E	C-TAZ-S-Q316	Groundwater	7/6/2016 8:45:00 AM	7/6/2016	7/21/2016
N020228-006A	R63-Q316	Groundwater	7/6/2016 10:15:00 AM	7/6/2016	7/21/2016
N020228-006B	R63-Q316	Groundwater	7/6/2016 10:15:00 AM	7/6/2016	7/21/2016
N020228-006C	R63-Q316	Groundwater	7/6/2016 10:15:00 AM	7/6/2016	7/21/2016
N020228-006D	R63-Q316	Groundwater	7/6/2016 10:15:00 AM	7/6/2016	7/21/2016
N020228-006E	R63-Q316	Groundwater	7/6/2016 10:15:00 AM	7/6/2016	7/21/2016
N020228-007A	C-BNS-Q316	Groundwater	7/6/2016 11:45:00 AM	7/6/2016	7/21/2016
N020228-007B	C-BNS-Q316	Groundwater	7/6/2016 11:45:00 AM	7/6/2016	7/21/2016
N020228-007C	C-BNS-Q316	Groundwater	7/6/2016 11:45:00 AM	7/6/2016	7/21/2016

CLIENT: ARCADIS U.S., Inc. - California
Project: PG&E Topock - RMP, RC000753.0801
Lab Order: N020228
Contract No:

Work Order Sample Summary

Lab Sample ID	Client Sample ID	Matrix	Collection Date	Date Received	Date Reported
N020228-007D	C-BNS-Q316	Groundwater	7/6/2016 11:45:00 AM	7/6/2016	7/21/2016
N020228-007E	C-BNS-Q316	Groundwater	7/6/2016 11:45:00 AM	7/6/2016	7/21/2016
N020228-008A	C-I-3-D-Q316	Groundwater	7/6/2016 9:50:00 AM	7/6/2016	7/21/2016
N020228-008B	C-I-3-D-Q316	Groundwater	7/6/2016 9:50:00 AM	7/6/2016	7/21/2016
N020228-008C	C-I-3-D-Q316	Groundwater	7/6/2016 9:50:00 AM	7/6/2016	7/21/2016
N020228-008D	C-I-3-D-Q316	Groundwater	7/6/2016 9:50:00 AM	7/6/2016	7/21/2016
N020228-008E	C-I-3-D-Q316	Groundwater	7/6/2016 9:50:00 AM	7/6/2016	7/21/2016
N020228-009A	C-I-3-S-Q316	Groundwater	7/6/2016 9:35:00 AM	7/6/2016	7/21/2016
N020228-009B	C-I-3-S-Q316	Groundwater	7/6/2016 9:35:00 AM	7/6/2016	7/21/2016
N020228-009C	C-I-3-S-Q316	Groundwater	7/6/2016 9:35:00 AM	7/6/2016	7/21/2016
N020228-009D	C-I-3-S-Q316	Groundwater	7/6/2016 9:35:00 AM	7/6/2016	7/21/2016
N020228-009E	C-I-3-S-Q316	Groundwater	7/6/2016 9:35:00 AM	7/6/2016	7/21/2016
N020228-010A	C-MAR-D-Q316	Groundwater	7/6/2016 1:05:00 PM	7/6/2016	7/21/2016
N020228-010B	C-MAR-D-Q316	Groundwater	7/6/2016 1:05:00 PM	7/6/2016	7/21/2016
N020228-010C	C-MAR-D-Q316	Groundwater	7/6/2016 1:05:00 PM	7/6/2016	7/21/2016
N020228-010D	C-MAR-D-Q316	Groundwater	7/6/2016 1:05:00 PM	7/6/2016	7/21/2016
N020228-010E	C-MAR-D-Q316	Groundwater	7/6/2016 1:05:00 PM	7/6/2016	7/21/2016
N020228-011A	C-MAR-S-Q316	Groundwater	7/6/2016 1:35:00 PM	7/6/2016	7/21/2016
N020228-011B	C-MAR-S-Q316	Groundwater	7/6/2016 1:35:00 PM	7/6/2016	7/21/2016
N020228-011C	C-MAR-S-Q316	Groundwater	7/6/2016 1:35:00 PM	7/6/2016	7/21/2016
N020228-011D	C-MAR-S-Q316	Groundwater	7/6/2016 1:35:00 PM	7/6/2016	7/21/2016
N020228-011E	C-MAR-S-Q316	Groundwater	7/6/2016 1:35:00 PM	7/6/2016	7/21/2016
N020228-012A	C-R27-D-Q316	Groundwater	7/6/2016 12:25:00 PM	7/6/2016	7/21/2016
N020228-012B	C-R27-D-Q316	Groundwater	7/6/2016 12:25:00 PM	7/6/2016	7/21/2016
N020228-012C	C-R27-D-Q316	Groundwater	7/6/2016 12:25:00 PM	7/6/2016	7/21/2016
N020228-012D	C-R27-D-Q316	Groundwater	7/6/2016 12:25:00 PM	7/6/2016	7/21/2016
N020228-012E	C-R27-D-Q316	Groundwater	7/6/2016 12:25:00 PM	7/6/2016	7/21/2016
N020228-013A	C-R27-S-Q316	Groundwater	7/6/2016 12:40:00 PM	7/6/2016	7/21/2016
N020228-013B	C-R27-S-Q316	Groundwater	7/6/2016 12:40:00 PM	7/6/2016	7/21/2016
N020228-013C	C-R27-S-Q316	Groundwater	7/6/2016 12:40:00 PM	7/6/2016	7/21/2016

CLIENT: ARCADIS U.S., Inc. - California
Project: PG&E Topock - RMP, RC000753.0801
Lab Order: N020228
Contract No:

Work Order Sample Summary

Lab Sample ID	Client Sample ID	Matrix	Collection Date	Date Received	Date Reported
N020228-013D	C-R27-S-Q316	Groundwater	7/6/2016 12:40:00 PM	7/6/2016	7/21/2016
N020228-013E	C-R27-S-Q316	Groundwater	7/6/2016 12:40:00 PM	7/6/2016	7/21/2016

CLIENT:	ARCADIS U.S., Inc. - California	**Client Sample ID:**	C-R22A-D-Q316
Lab Order:	N020228	**Collection Date:**	7/6/2016 11:00:00 AM
Project:	PG&E Topock - RMP, RC000753.0801	**Matrix:**	GROUNDWATER
Lab ID:	N020228-002		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
SPECIFIC CONDUCTANCE							
			EPA 120.1				
RunID: **WETCHEM_160707A**	QC Batch: **R109287**			PrepDate:			Analyst: **LR**
Specific Conductance	960	0.10	0.10		umhos/cm	1	7/7/2016 09:30 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		

CLIENT:	ARCADIS U.S., Inc. - California	**Client Sample ID:**	C-R22A-S-Q316
Lab Order:	N020228	**Collection Date:**	7/6/2016 11:15:00 AM
Project:	PG&E Topock - RMP, RC000753.0801	**Matrix:**	GROUNDWATER
Lab ID:	N020228-003		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
SPECIFIC CONDUCTANCE							
			EPA 120.1				
RunID: **WETCHEM_160707A**	QC Batch: **R109287**			PrepDate:			Analyst: **LR**
Specific Conductance	970	0.10	0.10		umhos/cm	1	7/7/2016 09:30 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		

CLIENT:	ARCADIS U.S., Inc. - California	**Client Sample ID:**	C-TAZ-D-Q316
Lab Order:	N020228	**Collection Date:**	7/6/2016 8:30:00 AM
Project:	PG&E Topock - RMP, RC000753.0801	**Matrix:**	GROUNDWATER
Lab ID:	N020228-004		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
SPECIFIC CONDUCTANCE							
			EPA 120.1				
RunID: **WETCHEM_160707A**	QC Batch: **R109287**			PrepDate:			Analyst: **LR**
Specific Conductance	970	0.10	0.10		umhos/cm	1	7/7/2016 09:30 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		

CLIENT:	ARCADIS U.S., Inc. - California	**Client Sample ID:**	C-TAZ-S-Q316
Lab Order:	N020228	**Collection Date:**	7/6/2016 8:45:00 AM
Project:	PG&E Topock - RMP, RC000753.0801	**Matrix:**	GROUNDWATER
Lab ID:	N020228-005		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
SPECIFIC CONDUCTANCE							
			EPA 120.1				
RunID: **WETCHEM_160707A**	QC Batch: **R109287**			PrepDate:			Analyst: **LR**
Specific Conductance	960	0.10	0.10		umhos/cm	1	7/7/2016 09:30 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		

CLIENT:	ARCADIS U.S., Inc. - California	**Client Sample ID:**	R63-Q316
Lab Order:	N020228	**Collection Date:**	7/6/2016 10:15:00 AM
Project:	PG&E Topock - RMP, RC000753.0801	**Matrix:**	GROUNDWATER
Lab ID:	N020228-006		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
SPECIFIC CONDUCTANCE							
			EPA 120.1				
RunID: **WETCHEM_160707A**	QC Batch: **R109287**			PrepDate:			Analyst: **LR**
Specific Conductance	970	0.10	0.10		umhos/cm	1	7/7/2016 09:30 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		

CLIENT:	ARCADIS U.S., Inc. - California	**Client Sample ID:**	C-BNS-Q316
Lab Order:	N020228	**Collection Date:**	7/6/2016 11:45:00 AM
Project:	PG&E Topock - RMP, RC000753.0801	**Matrix:**	GROUNDWATER
Lab ID:	N020228-007		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
SPECIFIC CONDUCTANCE							
			EPA 120.1				
RunID: **WETCHEM_160707A**	QC Batch: **R109287**			PrepDate:			Analyst: **LR**
Specific Conductance	980	0.10	0.10		umhos/cm	1	7/7/2016 09:30 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		

CLIENT:	ARCADIS U.S., Inc. - California	**Client Sample ID:**	C-I-3-D-Q316
Lab Order:	N020228	**Collection Date:**	7/6/2016 9:50:00 AM
Project:	PG&E Topock - RMP, RC000753.0801	**Matrix:**	GROUNDWATER
Lab ID:	N020228-008		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
SPECIFIC CONDUCTANCE							
			EPA 120.1				
RunID: **WETCHEM_160707A**	QC Batch: **R109287**			PrepDate:			Analyst: **LR**
Specific Conductance	980	0.10	0.10		umhos/cm	1	7/7/2016 09:30 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		

CLIENT:	ARCADIS U.S., Inc. - California	**Client Sample ID:**	C-I-3-S-Q316
Lab Order:	N020228	**Collection Date:**	7/6/2016 9:35:00 AM
Project:	PG&E Topock - RMP, RC000753.0801	**Matrix:**	GROUNDWATER
Lab ID:	N020228-009		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
SPECIFIC CONDUCTANCE							
			EPA 120.1				
RunID: **WETCHEM_160707A**	QC Batch: **R109287**			PrepDate:			Analyst: **LR**
Specific Conductance	980	0.10	0.10		umhos/cm	1	7/7/2016 09:30 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		

CLIENT: ARCADIS U.S., Inc. - California
Lab Order: N020228
Project: PG&E Topock - RMP, RC000753.0801
Lab ID: N020228-010

Client Sample ID: C-MAR-D-Q316
Collection Date: 7/6/2016 1:05:00 PM
Matrix: GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
SPECIFIC CONDUCTANCE							
			EPA 120.1				
RunID: **WETCHEM_160707A**	QC Batch: **R109287**			PrepDate:			Analyst: **LR**
Specific Conductance	1100	0.10	0.10		umhos/cm	1	7/7/2016 09:30 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		

ASSET Laboratories

ANALYTICAL RESULTS

Print Date: *21-Jul-16*

CLIENT:	ARCADIS U.S., Inc. - California	**Client Sample ID:**	C-MAR-S-Q316
Lab Order:	N020228	**Collection Date:**	7/6/2016 1:35:00 PM
Project:	PG&E Topock - RMP, RC000753.0801	**Matrix:**	GROUNDWATER
Lab ID:	N020228-011		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
SPECIFIC CONDUCTANCE							
			EPA 120.1				
RunID: **WETCHEM_160707A**	QC Batch: **R109287**			PrepDate:			Analyst: **LR**
Specific Conductance	1100	0.10	0.10		umhos/cm	1	7/7/2016 09:30 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		

ASSET LABORATORIES

CALIFORNIA
11110 Artesia Blvd., Ste B, Cerritos, CA 90703
P: 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	**Client Sample ID:**	C-R27-D-Q316
Lab Order:	N020228	**Collection Date:**	7/6/2016 12:25:00 PM
Project:	PG&E Topock - RMP, RC000753.0801	**Matrix:**	GROUNDWATER
Lab ID:	N020228-012		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
SPECIFIC CONDUCTANCE							
			EPA 120.1				
RunID: **WETCHEM_160707A**	QC Batch: **R109287**			PrepDate:			Analyst: **LR**
Specific Conductance	980	0.10	0.10		umhos/cm	1	7/7/2016 09:30 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		

ASSET Laboratories

ANALYTICAL RESULTS

Print Date: *21-Jul-16*

CLIENT:	ARCADIS U.S., Inc. - California	**Client Sample ID:**	C-R27-S-Q316
Lab Order:	N020228	**Collection Date:**	7/6/2016 12:40:00 PM
Project:	PG&E Topock - RMP, RC000753.0801	**Matrix:**	GROUNDWATER
Lab ID:	N020228-013		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
SPECIFIC CONDUCTANCE							
			EPA 120.1				
RunID: **WETCHEM_160707A**	QC Batch: **R109287**			PrepDate:			Analyst: **LR**
Specific Conductance	980	0.10	0.10		umhos/cm	1	7/7/2016 09:30 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		

ASSET LABORATORIES

CALIFORNIA
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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: N020228
Project: PG&E Topock - RMP, RC000753.0801

ANALYTICAL QC SUMMARY REPORT

TestCode: 120.1_WPGE

Sample ID: **N020228-002DDUP**	SampType: **DUP**	TestCode: **120.1_WPGE**	Units: **umhos/cm**	Prep Date:	RunNo: **109287**
Client ID: **ZZZZZZ**	Batch ID: **R109287**	TestNo: **EPA 120.1**		Analysis Date: **7/7/2016**	SeqNo: **2364836**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Specific Conductance	961.000	0.10						965.0	0.415	10	

Sample ID: **N020229-001CDUP**	SampType: **DUP**	TestCode: **120.1_WPGE**	Units: **umhos/cm**	Prep Date:	RunNo: **109287**
Client ID: **ZZZZZZ**	Batch ID: **R109287**	TestNo: **EPA 120.1**		Analysis Date: **7/7/2016**	SeqNo: **2364850**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Specific Conductance	4040.000	0.10						4070	0.740	10	

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
Lab Order: N020228
Project: PG&E Topock - RMP, RC000753.0801
Lab ID: N020228-002

Client Sample ID: C-R22A-D-Q316
Collection Date: 7/6/2016 11:00:00 AM
Matrix: GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
PH							
			SM4500-H+B				
RunID: **WETCHEM_160707B**	QC Batch: **R109288**			PrepDate:			Analyst: **LR**
pH	8.2	0.10	0.10	H	pH Units	1	7/7/2016 10:50 AM
Temp. at time of pH Analysis	22	0.10	0.10	H	°C	1	7/7/2016 10:50 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		

PRELIMINARY

CLIENT: ARCADIS U.S., Inc. - California
Lab Order: N020228
Project: PG&E Topock - RMP, RC000753.0801
Lab ID: N020228-003

Client Sample ID: C-R22A-S-Q316
Collection Date: 7/6/2016 11:15:00 AM
Matrix: GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
PH							
			SM4500-H+B				
RunID: **WETCHEM_160707B**	QC Batch: **R109288**			PrepDate:			Analyst: **LR**
pH	8.3	0.10	0.10	H	pH Units	1	7/7/2016 10:50 AM
Temp. at time of pH Analysis	21	0.10	0.10	H	°C	1	7/7/2016 10:50 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		

PRELIMINARY

CLIENT: ARCADIS U.S., Inc. - California
Lab Order: N020228
Project: PG&E Topock - RMP, RC000753.0801
Lab ID: N020228-004

Client Sample ID: C-TAZ-D-Q316
Collection Date: 7/6/2016 8:30:00 AM
Matrix: GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
PH							
			SM4500-H+B				
RunID: **WETCHEM_160707B**	QC Batch: **R109288**			PrepDate:			Analyst: **LR**
pH	8.3	0.10	0.10	H	pH Units	1	7/7/2016 10:50 AM
Temp. at time of pH Analysis	21	0.10	0.10	H	°C	1	7/7/2016 10:50 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		

PRELIMINARY

CLIENT: ARCADIS U.S., Inc. - California
Lab Order: N020228
Project: PG&E Topock - RMP, RC000753.0801
Lab ID: N020228-005

Client Sample ID: C-TAZ-S-Q316
Collection Date: 7/6/2016 8:45:00 AM
Matrix: GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
PH							
			SM4500-H+B				
RunID: **WETCHEM_160707B**	QC Batch: **R109288**			PrepDate:			Analyst: **LR**
pH	8.3	0.10	0.10	H	pH Units	1	7/7/2016 10:50 AM
Temp. at time of pH Analysis	21	0.10	0.10	H	°C	1	7/7/2016 10:50 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		

PRELIMINARY

CLIENT: ARCADIS U.S., Inc. - California
Lab Order: N020228
Project: PG&E Topock - RMP, RC000753.0801
Lab ID: N020228-006

Client Sample ID: R63-Q316
Collection Date: 7/6/2016 10:15:00 AM
Matrix: GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
PH							
			SM4500-H+B				
RunID: **WETCHEM_160707B**	QC Batch: **R109288**			PrepDate:			Analyst: **LR**
pH	8.3	0.10	0.10	H	pH Units	1	7/7/2016 10:50 AM
Temp. at time of pH Analysis	21	0.10	0.10	H	°C	1	7/7/2016 10:50 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		

PRELIMINARY

CLIENT:	ARCADIS U.S., Inc. - California	**Client Sample ID:**	C-BNS-Q316
Lab Order:	N020228	**Collection Date:**	7/6/2016 11:45:00 AM
Project:	PG&E Topock - RMP, RC000753.0801	**Matrix:**	GROUNDWATER
Lab ID:	N020228-007		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
PH							
			SM4500-H+B				
RunID: **WETCHEM_160707B**	QC Batch: **R109288**			PrepDate:			Analyst: **LR**
pH	8.3	0.10	0.10	H	pH Units	1	7/7/2016 10:50 AM
Temp. at time of pH Analysis	21	0.10	0.10	H	°C	1	7/7/2016 10:50 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		

PRELIMINARY

CLIENT: ARCADIS U.S., Inc. - California
Lab Order: N020228
Project: PG&E Topock - RMP, RC000753.0801
Lab ID: N020228-008

Client Sample ID: C-I-3-D-Q316
Collection Date: 7/6/2016 9:50:00 AM
Matrix: GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
PH							
			SM4500-H+B				
RunID: **WETCHEM_160707B**	QC Batch: **R109288**			PrepDate:			Analyst: **LR**
pH	8.3	0.10	0.10	H	pH Units	1	7/7/2016 10:50 AM
Temp. at time of pH Analysis	21	0.10	0.10	H	°C	1	7/7/2016 10:50 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		

PRELIMINARY

CLIENT: ARCADIS U.S., Inc. - California
Lab Order: N020228
Project: PG&E Topock - RMP, RC000753.0801
Lab ID: N020228-009

Client Sample ID: C-I-3-S-Q316
Collection Date: 7/6/2016 9:35:00 AM
Matrix: GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
PH							
			SM4500-H+B				
RunID: **WETCHEM_160707B**	QC Batch: **R109288**			PrepDate:			Analyst: **LR**
pH	8.3	0.10	0.10	H	pH Units	1	7/7/2016 10:50 AM
Temp. at time of pH Analysis	21	0.10	0.10	H	°C	1	7/7/2016 10:50 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		

PRELIMINARY

CLIENT: ARCADIS U.S., Inc. - California
Lab Order: N020228
Project: PG&E Topock - RMP, RC000753.0801
Lab ID: N020228-010

Client Sample ID: C-MAR-D-Q316
Collection Date: 7/6/2016 1:05:00 PM
Matrix: GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
PH							
			SM4500-H+B				
RunID: **WETCHEM_160707B**	QC Batch: **R109288**			PrepDate:			Analyst: **LR**
pH	7.9	0.10	0.10	H	pH Units	1	7/7/2016 10:50 AM
Temp. at time of pH Analysis	21	0.10	0.10	H	°C	1	7/7/2016 10:50 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		

PRELIMINARY

CLIENT: ARCADIS U.S., Inc. - California
Lab Order: N020228
Project: PG&E Topock - RMP, RC000753.0801
Lab ID: N020228-011

Client Sample ID: C-MAR-S-Q316
Collection Date: 7/6/2016 1:35:00 PM
Matrix: GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
PH							
			SM4500-H+B				
RunID: **WETCHEM_160707B**	QC Batch: **R109288**			PrepDate:			Analyst: **LR**
pH	8.1	0.10	0.10	H	pH Units	1	7/7/2016 10:50 AM
Temp. at time of pH Analysis	21	0.10	0.10	H	°C	1	7/7/2016 10:50 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		

PRELIMINARY

CLIENT: ARCADIS U.S., Inc. - California
Lab Order: N020228
Project: PG&E Topock - RMP, RC000753.0801
Lab ID: N020228-012

Client Sample ID: C-R27-D-Q316
Collection Date: 7/6/2016 12:25:00 PM
Matrix: GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
PH							
			SM4500-H+B				
RunID: **WETCHEM_160707B**	QC Batch: **R109288**			PrepDate:			Analyst: **LR**
pH	8.2	0.10	0.10	H	pH Units	1	7/7/2016 10:50 AM
Temp. at time of pH Analysis	22	0.10	0.10	H	°C	1	7/7/2016 10:50 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		

PRELIMINARY

CLIENT: ARCADIS U.S., Inc. - California
Lab Order: N020228
Project: PG&E Topock - RMP, RC000753.0801
Lab ID: N020228-013

Client Sample ID: C-R27-S-Q316
Collection Date: 7/6/2016 12:40:00 PM
Matrix: GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
PH							
			SM4500-H+B				
RunID: **WETCHEM_160707B**	QC Batch: **R109288**			PrepDate:			Analyst: **LR**
pH	8.3	0.10	0.10	H	pH Units	1	7/7/2016 10:50 AM
Temp. at time of pH Analysis	22	0.10	0.10	H	°C	1	7/7/2016 10:50 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		

PRELIMINARY

CLIENT: ARCADIS U.S., Inc. - California
Work Order: N020228
Project: PG&E Topock - RMP, RC000753.0801

ANALYTICAL QC SUMMARY REPORT

TestCode: 150.1_4500H+B_W

Sample ID: **N020228-010DDUP** SampType: **DUP** TestCode: **150.1_4500H+** Units: **pH Units** Prep Date: RunNo: **109288**
Client ID: **ZZZZZZ** Batch ID: **R109288** TestNo: **SM4500-H+B** Analysis Date: **7/7/2016** SeqNo: **2364862**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
pH	7.810	0.10						7.860	0.638	10	H
Temp. at time of pH Analysis	20.400	0.10						20.70	1.46	10	H

Sample ID: **N020228-012DDUP** SampType: **DUP** TestCode: **150.1_4500H+** Units: **pH Units** Prep Date: RunNo: **109288**
Client ID: **ZZZZZZ** Batch ID: **R109288** TestNo: **SM4500-H+B** Analysis Date: **7/7/2016** SeqNo: **2364865**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
pH	8.200	0.10						8.240	0.487	10	H
Temp. at time of pH Analysis	21.200	0.10						21.60	1.87	10	H

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
Lab Order: N020228
Project: PG&E Topock - RMP, RC000753.0801
Lab ID: N020228-002

Client Sample ID: C-R22A-D-Q316
Collection Date: 7/6/2016 11:00:00 AM
Matrix: GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
TOTAL NON-FILTERABLE RESIDUE					**SM2540D**		
RunID: **WETCHEM_160708F** QC Batch: **58950**					PrepDate: **7/8/2016**		Analyst: **LR**
Suspended Solids (Residue, Non-Filterable)	ND	10	10		mg/L	1	7/8/2016 12:07 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		

CLIENT: ARCADIS U.S., Inc. - California
Lab Order: N020228
Project: PG&E Topock - RMP, RC000753.0801
Lab ID: N020228-003

Client Sample ID: C-R22A-S-Q316
Collection Date: 7/6/2016 11:15:00 AM
Matrix: GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
TOTAL NON-FILTERABLE RESIDUE							
			SM2540D				
RunID: **WETCHEM_160708F** QC Batch: **58950**					PrepDate:	**7/8/2016**	Analyst: **LR**
Suspended Solids (Residue, Non-Filterable)	ND	10	10		mg/L	1	7/8/2016 12:07 PM

CLIENT:	ARCADIS U.S., Inc. - California	**Client Sample ID:**	C-TAZ-D-Q316
Lab Order:	N020228	**Collection Date:**	7/6/2016 8:30:00 AM
Project:	PG&E Topock - RMP, RC000753.0801	**Matrix:**	GROUNDWATER
Lab ID:	N020228-004		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
TOTAL NON-FILTERABLE RESIDUE					**SM2540D**		
RunID: **WETCHEM_160708F** QC Batch: **58950**					PrepDate: **7/8/2016**		Analyst: **LR**
Suspended Solids (Residue, Non-Filterable)	ND	10	10		mg/L	1	7/8/2016 12:07 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		

CLIENT: ARCADIS U.S., Inc. - California
Lab Order: N020228
Project: PG&E Topock - RMP, RC000753.0801
Lab ID: N020228-005

Client Sample ID: C-TAZ-S-Q316
Collection Date: 7/6/2016 8:45:00 AM
Matrix: GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
TOTAL NON-FILTERABLE RESIDUE							
			SM2540D				
RunID: **WETCHEM_160708F**	QC Batch: **58950**				PrepDate:	**7/8/2016**	Analyst: **LR**
Suspended Solids (Residue, Non-Filterable)	ND	10	10		mg/L	1	7/8/2016 12:07 PM

CLIENT: ARCADIS U.S., Inc. - California
Lab Order: N020228
Project: PG&E Topock - RMP, RC000753.0801
Lab ID: N020228-006

Client Sample ID: R63-Q316
Collection Date: 7/6/2016 10:15:00 AM
Matrix: GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
TOTAL NON-FILTERABLE RESIDUE							
			SM2540D				
RunID: **WETCHEM_160708F**	QC Batch: **58950**				PrepDate:	**7/8/2016**	Analyst: **LR**
Suspended Solids (Residue, Non-Filterable)	ND	10	10		mg/L	1	7/8/2016 12:07 PM

CLIENT: ARCADIS U.S., Inc. - California
Lab Order: N020228
Project: PG&E Topock - RMP, RC000753.0801
Lab ID: N020228-007

Client Sample ID: C-BNS-Q316
Collection Date: 7/6/2016 11:45:00 AM
Matrix: GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
TOTAL NON-FILTERABLE RESIDUE							
			SM2540D				
RunID: **WETCHEM_160708F**	QC Batch: **58950**				PrepDate:	**7/8/2016**	Analyst: **LR**
Suspended Solids (Residue, Non-Filterable)	ND	10	10		mg/L	1	7/8/2016 12:07 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

CLIENT:	ARCADIS U.S., Inc. - California	**Client Sample ID:**	C-I-3-D-Q316
Lab Order:	N020228	**Collection Date:**	7/6/2016 9:50:00 AM
Project:	PG&E Topock - RMP, RC000753.0801	**Matrix:**	GROUNDWATER
Lab ID:	N020228-008		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
TOTAL NON-FILTERABLE RESIDUE					**SM2540D**		
RunID: **WETCHEM_160708F** QC Batch: **58950**					PrepDate: **7/8/2016**		Analyst: **LR**
Suspended Solids (Residue, Non-Filterable)	ND	10	10		mg/L	1	7/8/2016 12:07 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		

CLIENT:	ARCADIS U.S., Inc. - California	**Client Sample ID:**	C-I-3-S-Q316
Lab Order:	N020228	**Collection Date:**	7/6/2016 9:35:00 AM
Project:	PG&E Topock - RMP, RC000753.0801	**Matrix:**	GROUNDWATER
Lab ID:	N020228-009		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
TOTAL NON-FILTERABLE RESIDUE					**SM2540D**		
RunID: **WETCHEM_160708F**	QC Batch: **58950**				PrepDate:	**7/8/2016**	Analyst: **LR**
Suspended Solids (Residue, Non-Filterable)	ND	10	10		mg/L	1	7/8/2016 12:07 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		

CLIENT:	ARCADIS U.S., Inc. - California	**Client Sample ID:**	C-MAR-D-Q316
Lab Order:	N020228	**Collection Date:**	7/6/2016 1:05:00 PM
Project:	PG&E Topock - RMP, RC000753.0801	**Matrix:**	GROUNDWATER
Lab ID:	N020228-010		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
TOTAL NON-FILTERABLE RESIDUE					**SM2540D**		
RunID: **WETCHEM_160708F**	QC Batch: **58950**				PrepDate:	**7/8/2016**	Analyst: **LR**
Suspended Solids (Residue, Non-Filterable)	160	10	10		mg/L	1	7/8/2016 12:07 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		

CLIENT:	ARCADIS U.S., Inc. - California	**Client Sample ID:**	C-MAR-S-Q316
Lab Order:	N020228	**Collection Date:**	7/6/2016 1:35:00 PM
Project:	PG&E Topock - RMP, RC000753.0801	**Matrix:**	GROUNDWATER
Lab ID:	N020228-011		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
TOTAL NON-FILTERABLE RESIDUE					**SM2540D**		
RunID: **WETCHEM_160708G**	QC Batch: **58951**				PrepDate:	**7/8/2016**	Analyst: **LR**
Suspended Solids (Residue, Non-Filterable)	150	10	10		mg/L	1	7/8/2016 12:07 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		

CLIENT: ARCADIS U.S., Inc. - California
Lab Order: N020228
Project: PG&E Topock - RMP, RC000753.0801
Lab ID: N020228-012

Client Sample ID: C-R27-D-Q316
Collection Date: 7/6/2016 12:25:00 PM
Matrix: GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
TOTAL NON-FILTERABLE RESIDUE							
			SM2540D				
RunID: **WETCHEM_160708G** QC Batch: **58951**					PrepDate:	**7/8/2016**	Analyst: **LR**
Suspended Solids (Residue, Non-Filterable)	ND	10	10		mg/L	1	7/8/2016 12:07 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

CLIENT: ARCADIS U.S., Inc. - California
Lab Order: N020228
Project: PG&E Topock - RMP, RC000753.0801
Lab ID: N020228-013

Client Sample ID: C-R27-S-Q316
Collection Date: 7/6/2016 12:40:00 PM
Matrix: GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
TOTAL NON-FILTERABLE RESIDUE							
			SM2540D				
RunID: **WETCHEM_160708G**	QC Batch: **58951**				PrepDate:	**7/8/2016**	Analyst: **LR**
Suspended Solids (Residue, Non-Filterable)	ND	10	10		mg/L	1	7/8/2016 12:07 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

CLIENT: ARCADIS U.S., Inc. - California
Work Order: N020228
Project: PG&E Topock - RMP, RC000753.0801

ANALYTICAL QC SUMMARY REPORT

TestCode: 160.2_2540D_W

Sample ID: **LCS-58950**	SampType: **LCS**	TestCode: **160.2_2540D_**	Units: **mg/L**	Prep Date: **7/8/2016**	RunNo: **109335**
Client ID: **LCSW**	Batch ID: **58950**	TestNo: **SM2540D**		Analysis Date: **7/8/2016**	SeqNo: **2367489**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Suspended Solids (Residue, Non-Filter	939.000	10	1000	0	93.9	80	120				

Sample ID: **MBLK-58950**	SampType: **MBLK**	TestCode: **160.2_2540D_**	Units: **mg/L**	Prep Date: **7/8/2016**	RunNo: **109335**
Client ID: **PBW**	Batch ID: **58950**	TestNo: **SM2540D**		Analysis Date: **7/8/2016**	SeqNo: **2367490**

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: **N020216-001BDUP**	SampType: **DUP**	TestCode: **160.2_2540D_**	Units: **mg/L**	Prep Date: **7/8/2016**	RunNo: **109335**
Client ID: **ZZZZZZ**	Batch ID: **58950**	TestNo: **SM2540D**		Analysis Date: **7/8/2016**	SeqNo: **2367492**

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
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: ARCADIS U.S., Inc. - California
Work Order: N020228
Project: PG&E Topock - RMP, RC000753.0801

ANALYTICAL QC SUMMARY REPORT

TestCode: 160.2_2540D_W

Sample ID: **LCS-58951**	SampType: **LCS**	TestCode: **160.2_2540D_**	Units: **mg/L**	Prep Date: **7/8/2016**	RunNo: **109336**
Client ID: **LCSW**	Batch ID: **58951**	TestNo: **SM2540D**		Analysis Date: **7/8/2016**	SeqNo: **2367502**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Suspended Solids (Residue, Non-Filter	942.000	10	1000	0	94.2	80	120				

Sample ID: **MBLK-58951**	SampType: **MBLK**	TestCode: **160.2_2540D_**	Units: **mg/L**	Prep Date: **7/8/2016**	RunNo: **109336**
Client ID: **PBW**	Batch ID: **58951**	TestNo: **SM2540D**		Analysis Date: **7/8/2016**	SeqNo: **2367503**

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: **N020244-001DDUP**	SampType: **DUP**	TestCode: **160.2_2540D_**	Units: **mg/L**	Prep Date: **7/8/2016**	RunNo: **109336**
Client ID: **ZZZZZZ**	Batch ID: **58951**	TestNo: **SM2540D**		Analysis Date: **7/8/2016**	SeqNo: **2367508**

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
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
Lab Order: N020228
Project: PG&E Topock - RMP, RC000753.0801
Lab ID: N020228-001

Client Sample ID: RMP-AB1-Q316
Collection Date: 7/6/2016 10:25:00 AM
Matrix: GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
HEXAVALENT CHROMIUM BY IC							
			EPA 218.6				
RunID: **IC7_160707A**	QC Batch: **R109313**			PrepDate:			Analyst: **QBM**
Hexavalent Chromium	ND	0.066	0.20		µg/L	1	7/7/2016 12:18 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		

CLIENT:	ARCADIS U.S., Inc. - California	**Client Sample ID:**	C-R22A-D-Q316
Lab Order:	N020228	**Collection Date:**	7/6/2016 11:00:00 AM
Project:	PG&E Topock - RMP, RC000753.0801	**Matrix:**	GROUNDWATER
Lab ID:	N020228-002		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
HEXAVALENT CHROMIUM BY IC							
			EPA 218.6				
RunID: **IC7_160707A**	QC Batch: **R109313**			PrepDate:			Analyst: **QBM**
Hexavalent Chromium	ND	0.066	0.20		µg/L	1	7/7/2016 12:47 PM
DISSOLVED METALS BY ICP-MS							
	EPA 3010A		**EPA 6020**				
RunID: **ICP7_160707F**	QC Batch: **58934**			PrepDate:	**7/7/2016**		Analyst: **CEI**
Chromium	ND	0.019	1.0		µg/L	1	7/8/2016 02:53 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		

CLIENT:	ARCADIS U.S., Inc. - California	**Client Sample ID:**	C-R22A-S-Q316
Lab Order:	N020228	**Collection Date:**	7/6/2016 11:15:00 AM
Project:	PG&E Topock - RMP, RC000753.0801	**Matrix:**	GROUNDWATER
Lab ID:	N020228-003		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
HEXAVALENT CHROMIUM BY IC							
			EPA 218.6				
RunID: **IC7_160707A**	QC Batch: **R109313**			PrepDate:			Analyst: **QBM**
Hexavalent Chromium	ND	0.066	0.20		µg/L	1	7/7/2016 01:15 PM
DISSOLVED METALS BY ICP-MS							
	EPA 3010A		**EPA 6020**				
RunID: **ICP7_160707F**	QC Batch: **58934**			PrepDate:	**7/7/2016**		Analyst: **CEI**
Chromium	ND	0.019	1.0		µg/L	1	7/8/2016 02:59 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		

ASSET Laboratories

ANALYTICAL RESULTS

Print Date: *21-Jul-16*

CLIENT: ARCADIS U.S., Inc. - California
Lab Order: N020228
Project: PG&E Topock - RMP, RC000753.0801
Lab ID: N020228-004

Client Sample ID: C-TAZ-D-Q316
Collection Date: 7/6/2016 8:30:00 AM
Matrix: GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
HEXAVALENT CHROMIUM BY IC							
			EPA 218.6				
RunID: **IC7_160707A**	QC Batch: **R109313**			PrepDate:			Analyst: **QBM**
Hexavalent Chromium	ND	0.066	0.20		µg/L	1	7/7/2016 01:53 PM
DISSOLVED METALS BY ICP-MS							
	EPA 3010A		**EPA 6020**				
RunID: **ICP7_160707F**	QC Batch: **58934**			PrepDate:	**7/7/2016**		Analyst: **CEI**
Chromium	ND	0.019	1.0		µg/L	1	7/8/2016 03:04 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		

CLIENT:	ARCADIS U.S., Inc. - California	**Client Sample ID:**	C-TAZ-S-Q316
Lab Order:	N020228	**Collection Date:**	7/6/2016 8:45:00 AM
Project:	PG&E Topock - RMP, RC000753.0801	**Matrix:**	GROUNDWATER
Lab ID:	N020228-005		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
HEXAVALENT CHROMIUM BY IC							
			EPA 218.6				
RunID: **IC7_160707A**	QC Batch: **R109313**			PrepDate:			Analyst: **QBM**
Hexavalent Chromium	ND	0.066	0.20		µg/L	1	7/7/2016 02:12 PM
DISSOLVED METALS BY ICP-MS							
	EPA 3010A		**EPA 6020**				
RunID: **ICP7_160707F**	QC Batch: **58934**			PrepDate:	**7/7/2016**		Analyst: **CEI**
Chromium	ND	0.019	1.0		µg/L	1	7/8/2016 03:10 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		

ASSET Laboratories

ANALYTICAL RESULTS

Print Date: *21-Jul-16*

CLIENT: ARCADIS U.S., Inc. - California
Lab Order: N020228
Project: PG&E Topock - RMP, RC000753.0801
Lab ID: N020228-006

Client Sample ID: R63-Q316
Collection Date: 7/6/2016 10:15:00 AM
Matrix: GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
HEXAVALENT CHROMIUM BY IC							
			EPA 218.6				
RunID: **IC7_160707A**	QC Batch: **R109313**			PrepDate:			Analyst: **QBM**
Hexavalent Chromium	ND	0.066	0.20		µg/L	1	7/7/2016 02:31 PM
DISSOLVED METALS BY ICP-MS							
	EPA 3010A		**EPA 6020**				
RunID: **ICP7_160707F**	QC Batch: **58934**			PrepDate:	**7/7/2016**		Analyst: **CEI**
Chromium	ND	0.019	1.0		µg/L	1	7/8/2016 03:15 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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P: 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	**Client Sample ID:**	C-BNS-Q316
Lab Order:	N020228	**Collection Date:**	7/6/2016 11:45:00 AM
Project:	PG&E Topock - RMP, RC000753.0801	**Matrix:**	GROUNDWATER
Lab ID:	N020228-007		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
HEXAVALENT CHROMIUM BY IC							
			EPA 218.6				
RunID: **IC7_160707A**	QC Batch: **R109313**			PrepDate:			Analyst: **QBM**
Hexavalent Chromium	ND	0.066	0.20		µg/L	1	7/7/2016 02:50 PM
DISSOLVED METALS BY ICP-MS							
	EPA 3010A		**EPA 6020**				
RunID: **ICP7_160707F**	QC Batch: **58934**			PrepDate:	**7/7/2016**		Analyst: **CEI**
Chromium	ND	0.019	1.0		µg/L	1	7/8/2016 03:32 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		

ASSET Laboratories

ANALYTICAL RESULTS

Print Date: *21-Jul-16*

CLIENT:	ARCADIS U.S., Inc. - California	**Client Sample ID:**	C-I-3-D-Q316
Lab Order:	N020228	**Collection Date:**	7/6/2016 9:50:00 AM
Project:	PG&E Topock - RMP, RC000753.0801	**Matrix:**	GROUNDWATER
Lab ID:	N020228-008		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
HEXAVALENT CHROMIUM BY IC							
EPA 218.6							
RunID: **IC7_160707A** QC Batch: **R109313** PrepDate: Analyst: **QBM**							
Hexavalent Chromium	ND	0.066	0.20		µg/L	1	7/7/2016 03:09 PM
DISSOLVED METALS BY ICP-MS							
EPA 3010A **EPA 6020**							
RunID: **ICP7_160707F** QC Batch: **58934** PrepDate: **7/7/2016** Analyst: **CEI**							
Chromium	ND	0.019	1.0		µg/L	1	7/8/2016 03:38 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		

CLIENT:	ARCADIS U.S., Inc. - California	**Client Sample ID:**	C-I-3-S-Q316
Lab Order:	N020228	**Collection Date:**	7/6/2016 9:35:00 AM
Project:	PG&E Topock - RMP, RC000753.0801	**Matrix:**	GROUNDWATER
Lab ID:	N020228-009		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
HEXAVALENT CHROMIUM BY IC							
			EPA 218.6				
RunID: **IC7_160707A**	QC Batch: **R109313**			PrepDate:			Analyst: **QBM**
Hexavalent Chromium	ND	0.066	0.20		µg/L	1	7/7/2016 03:56 PM
DISSOLVED METALS BY ICP-MS							
	EPA 3010A		**EPA 6020**				
RunID: **ICP7_160707F**	QC Batch: **58934**			PrepDate:	**7/7/2016**		Analyst: **CEI**
Chromium	ND	0.019	1.0		µg/L	1	7/8/2016 03:43 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		

CLIENT:	ARCADIS U.S., Inc. - California	**Client Sample ID:**	C-MAR-D-Q316
Lab Order:	N020228	**Collection Date:**	7/6/2016 1:05:00 PM
Project:	PG&E Topock - RMP, RC000753.0801	**Matrix:**	GROUNDWATER
Lab ID:	N020228-010		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
HEXAVALENT CHROMIUM BY IC							
			EPA 218.6				
RunID: **IC7_160707A**	QC Batch: **R109313**			PrepDate:			Analyst: **QBM**
Hexavalent Chromium	ND	0.066	0.20		µg/L	1	7/7/2016 04:15 PM
DISSOLVED METALS BY ICP-MS							
	EPA 3010A		**EPA 6020**				
RunID: **ICP7_160707F**	QC Batch: **58934**			PrepDate:	**7/7/2016**		Analyst: **CEI**
Chromium	ND	0.019	1.0		µg/L	1	7/8/2016 03:49 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		

CLIENT:	ARCADIS U.S., Inc. - California	**Client Sample ID:**	C-MAR-S-Q316
Lab Order:	N020228	**Collection Date:**	7/6/2016 1:35:00 PM
Project:	PG&E Topock - RMP, RC000753.0801	**Matrix:**	GROUNDWATER
Lab ID:	N020228-011		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
HEXAVALENT CHROMIUM BY IC							
			EPA 218.6				
RunID: **IC7_160707A**	QC Batch: **R109313**			PrepDate:			Analyst: **QBM**
Hexavalent Chromium	ND	0.066	0.20		µg/L	1	7/7/2016 04:34 PM
DISSOLVED METALS BY ICP-MS							
	EPA 3010A		**EPA 6020**				
RunID: **ICP7_160707F**	QC Batch: **58934**			PrepDate:	**7/7/2016**		Analyst: **CEI**
Chromium	ND	0.019	1.0		µg/L	1	7/8/2016 03:54 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		

CLIENT: ARCADIS U.S., Inc. - California
Lab Order: N020228
Project: PG&E Topock - RMP, RC000753.0801
Lab ID: N020228-012

Client Sample ID: C-R27-D-Q316
Collection Date: 7/6/2016 12:25:00 PM
Matrix: GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
HEXAVALENT CHROMIUM BY IC							
			EPA 218.6				
RunID: **IC7_160707A**	QC Batch: **R109313**			PrepDate:			Analyst: **QBM**
Hexavalent Chromium	ND	0.066	0.20		µg/L	1	7/7/2016 04:53 PM
DISSOLVED METALS BY ICP-MS							
	EPA 3010A		**EPA 6020**				
RunID: **ICP7_160707F**	QC Batch: **58934**			PrepDate:	**7/7/2016**		Analyst: **CEI**
Chromium	ND	0.019	1.0		µg/L	1	7/8/2016 04:00 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		

CLIENT: ARCADIS U.S., Inc. - California
Lab Order: N020228
Project: PG&E Topock - RMP, RC000753.0801
Lab ID: N020228-013

Client Sample ID: C-R27-S-Q316
Collection Date: 7/6/2016 12:40:00 PM
Matrix: GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
HEXAVALENT CHROMIUM BY IC							
			EPA 218.6				
RunID: **IC7_160707A**	QC Batch: **R109313**			PrepDate:			Analyst: **QBM**
Hexavalent Chromium	ND	0.066	0.20		µg/L	1	7/7/2016 05:12 PM
DISSOLVED METALS BY ICP-MS							
	EPA 3010A		**EPA 6020**				
RunID: **ICP7_160707F**	QC Batch: **58934**			PrepDate:	**7/7/2016**		Analyst: **CEI**
Chromium	ND	0.019	1.0		µg/L	1	7/8/2016 04:05 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		

CLIENT: ARCADIS U.S., Inc. - California
Work Order: N020228
Project: PG&E Topock - RMP, RC000753.0801

ANALYTICAL QC SUMMARY REPORT

TestCode: 218.6_WPGE

Sample ID: **MB-R109313**	SampType: **MBLK**	TestCode: **218.6_WPGE**	Units: **µg/L**	Prep Date:	RunNo: **109313**
Client ID: **PBW**	Batch ID: **R109313**	TestNo: **EPA 218.6**		Analysis Date: **7/7/2016**	SeqNo: **2366529**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	ND	0.20									

Sample ID: **LCS-R109313**	SampType: **LCS**	TestCode: **218.6_WPGE**	Units: **µg/L**	Prep Date:	RunNo: **109313**
Client ID: **LCSW**	Batch ID: **R109313**	TestNo: **EPA 218.6**		Analysis Date: **7/7/2016**	SeqNo: **2366530**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	5.029	0.20	5.000	0	101	90	110				

Sample ID: **N020228-001ADUP**	SampType: **DUP**	TestCode: **218.6_WPGE**	Units: **µg/L**	Prep Date:	RunNo: **109313**
Client ID: **ZZZZZZ**	Batch ID: **R109313**	TestNo: **EPA 218.6**		Analysis Date: **7/7/2016**	SeqNo: **2366532**

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: **N020228-001AMS**	SampType: **MS**	TestCode: **218.6_WPGE**	Units: **µg/L**	Prep Date:	RunNo: **109313**
Client ID: **ZZZZZZ**	Batch ID: **R109313**	TestNo: **EPA 218.6**		Analysis Date: **7/7/2016**	SeqNo: **2366533**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	1.044	0.20	1.000	0	104	90	110				

Sample ID: **N020228-002AMS**	SampType: **MS**	TestCode: **218.6_WPGE**	Units: **µg/L**	Prep Date:	RunNo: **109313**
Client ID: **ZZZZZZ**	Batch ID: **R109313**	TestNo: **EPA 218.6**		Analysis Date: **7/7/2016**	SeqNo: **2366535**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	1.061	0.20	1.000	0.09110	97.0	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: N020228
Project: PG&E Topock - RMP, RC000753.0801

ANALYTICAL QC SUMMARY REPORT

TestCode: 218.6_WPGE

Sample ID: **N020228-002AMSD**	SampType: **MSD**	TestCode: **218.6_WPGE**	Units: **µg/L**	Prep Date:	RunNo: **109313**
Client ID: **ZZZZZZ**	Batch ID: **R109313**	TestNo: **EPA 218.6**		Analysis Date: **7/7/2016**	SeqNo: **2366536**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	1.082	0.20	1.000	0.09110	99.1	90	110	1.061	2.02	20	

Sample ID: **N020228-003AMS**	SampType: **MS**	TestCode: **218.6_WPGE**	Units: **µg/L**	Prep Date:	RunNo: **109313**
Client ID: **ZZZZZZ**	Batch ID: **R109313**	TestNo: **EPA 218.6**		Analysis Date: **7/7/2016**	SeqNo: **2366538**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	1.089	0.20	1.000	0.09800	99.1	90	110				

Sample ID: **N020228-004AMS**	SampType: **MS**	TestCode: **218.6_WPGE**	Units: **µg/L**	Prep Date:	RunNo: **109313**
Client ID: **ZZZZZZ**	Batch ID: **R109313**	TestNo: **EPA 218.6**		Analysis Date: **7/7/2016**	SeqNo: **2366542**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	1.075	0.20	1.000	0.09210	98.3	90	110				

Sample ID: **N020228-006AMS**	SampType: **MS**	TestCode: **218.6_WPGE**	Units: **µg/L**	Prep Date:	RunNo: **109313**
Client ID: **ZZZZZZ**	Batch ID: **R109313**	TestNo: **EPA 218.6**		Analysis Date: **7/7/2016**	SeqNo: **2366545**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	1.073	0.20	1.000	0.09440	97.8	90	110				

Sample ID: **N020228-007AMS**	SampType: **MS**	TestCode: **218.6_WPGE**	Units: **µg/L**	Prep Date:	RunNo: **109313**
Client ID: **ZZZZZZ**	Batch ID: **R109313**	TestNo: **EPA 218.6**		Analysis Date: **7/7/2016**	SeqNo: **2366547**

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	0.09500	101	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: N020228
Project: PG&E Topock - RMP, RC000753.0801

ANALYTICAL QC SUMMARY REPORT

TestCode: 218.6_WPGE

Sample ID: **N020228-008AMS** SampType: **MS** TestCode: **218.6_WPGE** Units: **µg/L** Prep Date: RunNo: **109313**
Client ID: **ZZZZZZ** Batch ID: **R109313** TestNo: **EPA 218.6** Analysis Date: **7/7/2016** SeqNo: **2366549**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	1.061	0.20	1.000	0.08060	98.0	90	110				

Sample ID: **N020228-005AMS** SampType: **MS** TestCode: **218.6_WPGE** Units: **µg/L** Prep Date: RunNo: **109313**
Client ID: **ZZZZZZ** Batch ID: **R109313** TestNo: **EPA 218.6** Analysis Date: **7/7/2016** SeqNo: **2366552**

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	0.09390	99.2	90	110				

Sample ID: **N020228-009AMS** SampType: **MS** TestCode: **218.6_WPGE** Units: **µg/L** Prep Date: RunNo: **109313**
Client ID: **ZZZZZZ** Batch ID: **R109313** TestNo: **EPA 218.6** Analysis Date: **7/7/2016** SeqNo: **2366554**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	1.081	0.20	1.000	0.08080	100	90	110				

Sample ID: **N020228-010AMS** SampType: **MS** TestCode: **218.6_WPGE** Units: **µg/L** Prep Date: RunNo: **109313**
Client ID: **ZZZZZZ** Batch ID: **R109313** TestNo: **EPA 218.6** Analysis Date: **7/7/2016** SeqNo: **2366556**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	1.113	0.20	1.000	0.1008	101	90	110				

Sample ID: **N020228-011AMS** SampType: **MS** TestCode: **218.6_WPGE** Units: **µg/L** Prep Date: RunNo: **109313**
Client ID: **ZZZZZZ** Batch ID: **R109313** TestNo: **EPA 218.6** Analysis Date: **7/7/2016** SeqNo: **2366558**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	1.098	0.20	1.000	0.1110	98.7	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: N020228
Project: PG&E Topock - RMP, RC000753.0801

ANALYTICAL QC SUMMARY REPORT

TestCode: 218.6_WPGE

Sample ID: **N020228-012AMS** SampType: **MS** TestCode: **218.6_WPGE** Units: **µg/L** Prep Date: RunNo: **109313**
Client ID: **ZZZZZZ** Batch ID: **R109313** TestNo: **EPA 218.6** Analysis Date: **7/7/2016** SeqNo: **2366560**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	1.073	0.20	1.000	0.1025	97.1	90	110				

Sample ID: **N020228-013AMS** SampType: **MS** TestCode: **218.6_WPGE** Units: **µg/L** Prep Date: RunNo: **109313**
Client ID: **ZZZZZZ** Batch ID: **R109313** TestNo: **EPA 218.6** Analysis Date: **7/7/2016** SeqNo: **2366564**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	1.108	0.20	1.000	0.09220	102	90	110				

Sample ID: **N020229-001AMS** SampType: **MS** TestCode: **218.6_WPGE** Units: **µg/L** Prep Date: RunNo: **109313**
Client ID: **ZZZZZZ** Batch ID: **R109313** TestNo: **EPA 218.6** Analysis Date: **7/7/2016** SeqNo: **2366574**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	1.238	0.20	1.000	0.1928	105	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: N020228
Project: PG&E Topock - RMP, RC000753.0801

ANALYTICAL QC SUMMARY REPORT

TestCode: 6020DIS_CrPGE

Sample ID: **MB-58934**	SampType: **MBLK**	TestCode: **6020DIS_CrP**	Units: **µg/L**	Prep Date: **7/7/2016**	RunNo: **109332**
Client ID: **PBW**	Batch ID: **58934**	TestNo: **EPA 6020**	**EPA 3010A**	Analysis Date: **7/8/2016**	SeqNo: **2367213**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium	ND	1.0									

Sample ID: **LCS-58934**	SampType: **LCS**	TestCode: **6020DIS_CrP**	Units: **µg/L**	Prep Date: **7/7/2016**	RunNo: **109332**
Client ID: **LCSW**	Batch ID: **58934**	TestNo: **EPA 6020**	**EPA 3010A**	Analysis Date: **7/8/2016**	SeqNo: **2367214**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium	10.225	1.0	10.00	0	102	85	115				

Sample ID: **N020230-011B-MS**	SampType: **MS**	TestCode: **6020DIS_CrP**	Units: **µg/L**	Prep Date: **7/7/2016**	RunNo: **109332**
Client ID: **ZZZZZZ**	Batch ID: **58934**	TestNo: **EPA 6020**	**EPA 3010A**	Analysis Date: **7/8/2016**	SeqNo: **2367223**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium	14.380	1.0	10.00	5.030	93.5	75	125				

Sample ID: **N020230-011B-MSD**	SampType: **MSD**	TestCode: **6020DIS_CrP**	Units: **µg/L**	Prep Date: **7/7/2016**	RunNo: **109332**
Client ID: **ZZZZZZ**	Batch ID: **58934**	TestNo: **EPA 6020**	**EPA 3010A**	Analysis Date: **7/8/2016**	SeqNo: **2367224**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium	14.391	1.0	10.00	5.030	93.6	75	125	14.38	0.0817	20	

Sample ID: **N020229-001B-MS**	SampType: **MS**	TestCode: **6020DIS_CrP**	Units: **µg/L**	Prep Date: **7/7/2016**	RunNo: **109332**
Client ID: **ZZZZZZ**	Batch ID: **58934**	TestNo: **EPA 6020**	**EPA 3010A**	Analysis Date: **7/8/2016**	SeqNo: **2367720**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium	9.653	1.0	10.00	0.2712	93.8	75	125				

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
Lab Order: N020228
Project: PG&E Topock - RMP, RC000753.0801
Lab ID: N020228-002

Client Sample ID: C-R22A-D-Q316
Collection Date: 7/6/2016 11:00:00 AM
Matrix: GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
NITRATE/NITRITE-N BY CADMIUM REDUCTION							
			SM4500-NO3F				
RunID: **WETCHEM_160711F**	QC Batch: **R109368**			PrepDate:			Analyst: **RB**
Nitrate/Nitrite as N	0.37	0.022	0.050		mg/L	1	7/11/2016

Qualifiers:

B	Analyte detected in 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-Jul-16*

CLIENT:	ARCADIS U.S., Inc. - California	**Client Sample ID:**	C-R22A-S-Q316
Lab Order:	N020228	**Collection Date:**	7/6/2016 11:15:00 AM
Project:	PG&E Topock - RMP, RC000753.0801	**Matrix:**	GROUNDWATER
Lab ID:	N020228-003		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
NITRATE/NITRITE-N BY CADMIUM REDUCTION							
			SM4500-NO3F				
RunID: **WETCHEM_160711F**	QC Batch: **R109368**			PrepDate:			Analyst: **RB**
Nitrate/Nitrite as N	0.40	0.022	0.050		mg/L	1	7/11/2016

Qualifiers:

B	Analyte detected in 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-Jul-16*

CLIENT:	ARCADIS U.S., Inc. - California	**Client Sample ID:**	C-TAZ-D-Q316
Lab Order:	N020228	**Collection Date:**	7/6/2016 8:30:00 AM
Project:	PG&E Topock - RMP, RC000753.0801	**Matrix:**	GROUNDWATER
Lab ID:	N020228-004		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
NITRATE/NITRITE-N BY CADMIUM REDUCTION							
			SM4500-NO3F				
RunID: **WETCHEM_160711F**	QC Batch: **R109368**			PrepDate:			Analyst: **RB**
Nitrate/Nitrite as N	0.41	0.022	0.050		mg/L	1	7/11/2016

Qualifiers:

B	Analyte detected in 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
Lab Order: N020228
Project: PG&E Topock - RMP, RC000753.0801
Lab ID: N020228-005

Client Sample ID: C-TAZ-S-Q316
Collection Date: 7/6/2016 8:45:00 AM
Matrix: GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
NITRATE/NITRITE-N BY CADMIUM REDUCTION							
			SM4500-NO3F				
RunID: **WETCHEM_160711F**	QC Batch: **R109368**			PrepDate:			Analyst: **RB**
Nitrate/Nitrite as N	0.42	0.022	0.050		mg/L	1	7/11/2016

Qualifiers:

B	Analyte detected in 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		

CLIENT:	ARCADIS U.S., Inc. - California	**Client Sample ID:**	R63-Q316
Lab Order:	N020228	**Collection Date:**	7/6/2016 10:15:00 AM
Project:	PG&E Topock - RMP, RC000753.0801	**Matrix:**	GROUNDWATER
Lab ID:	N020228-006		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
NITRATE/NITRITE-N BY CADMIUM REDUCTION							
			SM4500-NO3F				
RunID: **WETCHEM_160711F**	QC Batch: **R109368**		PrepDate:				Analyst: **RB**
Nitrate/Nitrite as N	0.40	0.022	0.050		mg/L	1	7/11/2016

Qualifiers:

B	Analyte detected in 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-Jul-16*

CLIENT:	ARCADIS U.S., Inc. - California	**Client Sample ID:**	C-BNS-Q316
Lab Order:	N020228	**Collection Date:**	7/6/2016 11:45:00 AM
Project:	PG&E Topock - RMP, RC000753.0801	**Matrix:**	GROUNDWATER
Lab ID:	N020228-007		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
NITRATE/NITRITE-N BY CADMIUM REDUCTION							
			SM4500-NO3F				
RunID: **WETCHEM_160711F**	QC Batch: **R109368**			PrepDate:			Analyst: **RB**
Nitrate/Nitrite as N	0.39	0.022	0.050		mg/L	1	7/11/2016

Qualifiers:

B	Analyte detected in 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	**Client Sample ID:**	C-I-3-D-Q316
Lab Order:	N020228	**Collection Date:**	7/6/2016 9:50:00 AM
Project:	PG&E Topock - RMP, RC000753.0801	**Matrix:**	GROUNDWATER
Lab ID:	N020228-008		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
NITRATE/NITRITE-N BY CADMIUM REDUCTION							
			SM4500-NO3F				
RunID: **WETCHEM_160711F**	QC Batch: **R109368**			PrepDate:			Analyst: **RB**
Nitrate/Nitrite as N	0.42	0.022	0.050		mg/L	1	7/11/2016

Qualifiers:

B	Analyte detected in 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-Jul-16*

CLIENT:	ARCADIS U.S., Inc. - California	**Client Sample ID:**	C-I-3-S-Q316
Lab Order:	N020228	**Collection Date:**	7/6/2016 9:35:00 AM
Project:	PG&E Topock - RMP, RC000753.0801	**Matrix:**	GROUNDWATER
Lab ID:	N020228-009		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
NITRATE/NITRITE-N BY CADMIUM REDUCTION							
			SM4500-NO3F				
RunID: **WETCHEM_160711F**	QC Batch: **R109368**			PrepDate:			Analyst: **RB**
Nitrate/Nitrite as N	0.42	0.022	0.050		mg/L	1	7/11/2016

Qualifiers:

B	Analyte detected in 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-Jul-16*

CLIENT:	ARCADIS U.S., Inc. - California	**Client Sample ID:**	C-MAR-D-Q316
Lab Order:	N020228	**Collection Date:**	7/6/2016 1:05:00 PM
Project:	PG&E Topock - RMP, RC000753.0801	**Matrix:**	GROUNDWATER
Lab ID:	N020228-010		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
NITRATE/NITRITE-N BY CADMIUM REDUCTION							
			SM4500-NO3F				
RunID: **WETCHEM_160711F**	QC Batch: **R109368**		PrepDate:				Analyst: **RB**
Nitrate/Nitrite as N	0.29	0.022	0.050		mg/L	1	7/11/2016

Qualifiers:

B	Analyte detected in 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	**Client Sample ID:**	C-MAR-S-Q316
Lab Order:	N020228	**Collection Date:**	7/6/2016 1:35:00 PM
Project:	PG&E Topock - RMP, RC000753.0801	**Matrix:**	GROUNDWATER
Lab ID:	N020228-011		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
NITRATE/NITRITE-N BY CADMIUM REDUCTION							
			SM4500-NO3F				
RunID: **WETCHEM_160711F**	QC Batch: **R109368**		PrepDate:				Analyst: **RB**
Nitrate/Nitrite as N	0.30	0.022	0.050		mg/L	1	7/11/2016

Qualifiers:

B	Analyte detected in 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-Jul-16*

CLIENT:	ARCADIS U.S., Inc. - California	**Client Sample ID:**	C-R27-D-Q316
Lab Order:	N020228	**Collection Date:**	7/6/2016 12:25:00 PM
Project:	PG&E Topock - RMP, RC000753.0801	**Matrix:**	GROUNDWATER
Lab ID:	N020228-012		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
NITRATE/NITRITE-N BY CADMIUM REDUCTION							
			SM4500-NO3F				
RunID: **WETCHEM_160711F**	QC Batch: **R109368**		PrepDate:				Analyst: **RB**
Nitrate/Nitrite as N	0.39	0.022	0.050		mg/L	1	7/11/2016

Qualifiers:

B	Analyte detected in 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
Lab Order: N020228
Project: PG&E Topock - RMP, RC000753.0801
Lab ID: N020228-013

Client Sample ID: C-R27-S-Q316
Collection Date: 7/6/2016 12:40:00 PM
Matrix: GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
NITRATE/NITRITE-N BY CADMIUM REDUCTION							
			SM4500-NO3F				
RunID: **WETCHEM_160711F**	QC Batch: **R109368**			PrepDate:			Analyst: **RB**
Nitrate/Nitrite as N	0.38	0.022	0.050		mg/L	1	7/11/2016

Qualifiers:

B	Analyte detected in 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		

CLIENT: ARCADIS U.S., Inc. - California
Work Order: N020228
Project: PG&E Topock - RMP, RC000753.0801

ANALYTICAL QC SUMMARY REPORT

TestCode: 4500N03F_W

Sample ID: **MB-R109368**	SampType: **MBLK**	TestCode: **4500N03F_W**	Units: **mg/L**	Prep Date:	RunNo: **109368**
Client ID: **PBW**	Batch ID: **R109368**	TestNo: **SM4500-NO3**		Analysis Date: **7/11/2016**	SeqNo: **2369507**

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-R109368**	SampType: **LCS**	TestCode: **4500N03F_W**	Units: **mg/L**	Prep Date:	RunNo: **109368**
Client ID: **LCSW**	Batch ID: **R109368**	TestNo: **SM4500-NO3**		Analysis Date: **7/11/2016**	SeqNo: **2369508**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrate/Nitrite as N	0.493	0.050	0.5000	0	98.6	85	115				

Sample ID: **N020223-001DDUP**	SampType: **DUP**	TestCode: **4500N03F_W**	Units: **mg/L**	Prep Date:	RunNo: **109368**
Client ID: **ZZZZZZ**	Batch ID: **R109368**	TestNo: **SM4500-NO3**		Analysis Date: **7/11/2016**	SeqNo: **2369510**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrate/Nitrite as N	3.010	0.25						2.858	5.16	20	

Sample ID: **N020223-001DMS**	SampType: **MS**	TestCode: **4500N03F_W**	Units: **mg/L**	Prep Date:	RunNo: **109368**
Client ID: **ZZZZZZ**	Batch ID: **R109368**	TestNo: **SM4500-NO3**		Analysis Date: **7/11/2016**	SeqNo: **2369511**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrate/Nitrite as N	5.712	0.25	2.500	2.858	114	75	125				

Sample ID: **N020223-001DMSD**	SampType: **MSD**	TestCode: **4500N03F_W**	Units: **mg/L**	Prep Date:	RunNo: **109368**
Client ID: **ZZZZZZ**	Batch ID: **R109368**	TestNo: **SM4500-NO3**		Analysis Date: **7/11/2016**	SeqNo: **2369512**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrate/Nitrite as N	5.677	0.25	2.500	2.858	113	75	125	5.712	0.623	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

ASSET Laboratories

ANALYTICAL RESULTS

Print Date: *21-Jul-16*

CLIENT: ARCADIS U.S., Inc. - California
Lab Order: N020228
Project: PG&E Topock - RMP, RC000753.0801
Lab ID: N020228-002

Client Sample ID: C-R22A-D-Q316
Collection Date: 7/6/2016 11:00:00 AM
Matrix: GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
DISSOLVED METALS BY ICP							
	EPA 3010A			**EPA 6010B**			
RunID: **ICP2_160707D**	QC Batch: **58931**			PrepDate:		**7/7/2016**	Analyst: **CEI**
Iron	ND	1.8	20		ug/L	1	7/7/2016 11:17 PM
TOTAL METALS BY ICP							
	EPA 3010A			**EPA 6010B**			
RunID: **ICP2_160707D**	QC Batch: **58932**			PrepDate:		**7/7/2016**	Analyst: **CEI**
Iron	85	1.8	20		ug/L	1	7/7/2016 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

ASSET LABORATORIES
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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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ANALYTICAL RESULTS

Print Date: *21-Jul-16*

CLIENT: ARCADIS U.S., Inc. - California
Lab Order: N020228
Project: PG&E Topock - RMP, RC000753.0801
Lab ID: N020228-003

Client Sample ID: C-R22A-S-Q316
Collection Date: 7/6/2016 11:15:00 AM
Matrix: GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
DISSOLVED METALS BY ICP							
	EPA 3010A			**EPA 6010B**			
RunID: **ICP2_160707D**	QC Batch: **58931**			PrepDate:		**7/7/2016**	Analyst: **CEI**
Iron	ND	1.8	20		ug/L	1	7/7/2016 11:22 PM
TOTAL METALS BY ICP							
	EPA 3010A			**EPA 6010B**			
RunID: **ICP2_160707D**	QC Batch: **58932**			PrepDate:		**7/7/2016**	Analyst: **CEI**
Iron	68	1.8	20		ug/L	1	7/7/2016 09:15 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-Jul-16*

CLIENT: ARCADIS U.S., Inc. - California
Lab Order: N020228
Project: PG&E Topock - RMP, RC000753.0801
Lab ID: N020228-004

Client Sample ID: C-TAZ-D-Q316
Collection Date: 7/6/2016 8:30:00 AM
Matrix: GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
DISSOLVED METALS BY ICP							
	EPA 3010A			**EPA 6010B**			
RunID: **ICP2_160707D**	QC Batch: **58931**			PrepDate:		**7/7/2016**	Analyst: **CEI**
Iron	ND	1.8	20		ug/L	1	7/7/2016 11:27 PM
TOTAL METALS BY ICP							
	EPA 3010A			**EPA 6010B**			
RunID: **ICP2_160707D**	QC Batch: **58932**			PrepDate:		**7/7/2016**	Analyst: **CEI**
Iron	25	1.8	20		ug/L	1	7/7/2016 09:20 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-Jul-16*

CLIENT: ARCADIS U.S., Inc. - California
Lab Order: N020228
Project: PG&E Topock - RMP, RC000753.0801
Lab ID: N020228-005

Client Sample ID: C-TAZ-S-Q316
Collection Date: 7/6/2016 8:45:00 AM
Matrix: GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
DISSOLVED METALS BY ICP							
	EPA 3010A			**EPA 6010B**			
RunID: **ICP2_160707D**	QC Batch: **58931**			PrepDate:		**7/7/2016**	Analyst: **CEI**
Iron	ND	1.8	20		ug/L	1	7/7/2016 11:32 PM
TOTAL METALS BY ICP							
	EPA 3010A			**EPA 6010B**			
RunID: **ICP2_160707D**	QC Batch: **58932**			PrepDate:		**7/7/2016**	Analyst: **CEI**
Iron	26	1.8	20		ug/L	1	7/7/2016 09:24 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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CLIENT: ARCADIS U.S., Inc. - California
Lab Order: N020228
Project: PG&E Topock - RMP, RC000753.0801
Lab ID: N020228-006

Client Sample ID: R63-Q316
Collection Date: 7/6/2016 10:15:00 AM
Matrix: GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
DISSOLVED METALS BY ICP							
	EPA 3010A			**EPA 6010B**			
RunID: **ICP2_160707D**	QC Batch: **58931**			PrepDate:		**7/7/2016**	Analyst: **CEI**
Iron	ND	1.8	20		ug/L	1	7/7/2016 11:48 PM
TOTAL METALS BY ICP							
	EPA 3010A			**EPA 6010B**			
RunID: **ICP2_160707D**	QC Batch: **58932**			PrepDate:		**7/7/2016**	Analyst: **CEI**
Iron	190	1.8	20		ug/L	1	7/7/2016 09:41 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		

CLIENT: ARCADIS U.S., Inc. - California
Lab Order: N020228
Project: PG&E Topock - RMP, RC000753.0801
Lab ID: N020228-007

Client Sample ID: C-BNS-Q316
Collection Date: 7/6/2016 11:45:00 AM
Matrix: GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
DISSOLVED METALS BY ICP							
	EPA 3010A			**EPA 6010B**			
RunID: **ICP2_160707D**	QC Batch: **58931**			PrepDate:		**7/7/2016**	Analyst: **CEI**
Iron	ND	1.8	20		ug/L	1	7/7/2016 11:53 PM
TOTAL METALS BY ICP							
	EPA 3010A			**EPA 6010B**			
RunID: **ICP2_160707D**	QC Batch: **58932**			PrepDate:		**7/7/2016**	Analyst: **CEI**
Iron	70	1.8	20		ug/L	1	7/7/2016 09:45 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

CLIENT: ARCADIS U.S., Inc. - California
Lab Order: N020228
Project: PG&E Topock - RMP, RC000753.0801
Lab ID: N020228-008

Client Sample ID: C-I-3-D-Q316
Collection Date: 7/6/2016 9:50:00 AM
Matrix: GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
DISSOLVED METALS BY ICP							
	EPA 3010A			**EPA 6010B**			
RunID: **ICP2_160707D**	QC Batch: **58931**			PrepDate:		**7/7/2016**	Analyst: **CEI**
Iron	ND	1.8	20		ug/L	1	7/8/2016 11:57 PM
TOTAL METALS BY ICP							
	EPA 3010A			**EPA 6010B**			
RunID: **ICP2_160707D**	QC Batch: **58932**			PrepDate:		**7/7/2016**	Analyst: **CEI**
Iron	43	1.8	20		ug/L	1	7/7/2016 09:50 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		

CLIENT: ARCADIS U.S., Inc. - California
Lab Order: N020228
Project: PG&E Topock - RMP, RC000753.0801
Lab ID: N020228-009

Client Sample ID: C-I-3-S-Q316
Collection Date: 7/6/2016 9:35:00 AM
Matrix: GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
DISSOLVED METALS BY ICP							
	EPA 3010A			**EPA 6010B**			
RunID: **ICP2_160707D**	QC Batch: **58931**			PrepDate:		**7/7/2016**	Analyst: **CEI**
Iron	ND	1.8	20		ug/L	1	7/8/2016 12:02 AM
TOTAL METALS BY ICP							
	EPA 3010A			**EPA 6010B**			
RunID: **ICP2_160707D**	QC Batch: **58932**			PrepDate:		**7/7/2016**	Analyst: **CEI**
Iron	31	1.8	20		ug/L	1	7/7/2016 09:56 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

CLIENT: ARCADIS U.S., Inc. - California
Lab Order: N020228
Project: PG&E Topock - RMP, RC000753.0801
Lab ID: N020228-010

Client Sample ID: C-MAR-D-Q316
Collection Date: 7/6/2016 1:05:00 PM
Matrix: GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
DISSOLVED METALS BY ICP							
	EPA 3010A			**EPA 6010B**			
RunID: **ICP2_160707D**	QC Batch: **58931**			PrepDate:		**7/7/2016**	Analyst: **CEI**
Iron	ND	1.8	20		ug/L	1	7/8/2016 12:07 AM
TOTAL METALS BY ICP							
	EPA 3010A			**EPA 6010B**			
RunID: **ICP2_160707D**	QC Batch: **58932**			PrepDate:		**7/7/2016**	Analyst: **CEI**
Iron	580	1.8	20		ug/L	1	7/7/2016 10:01 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		

CLIENT: ARCADIS U.S., Inc. - California
Lab Order: N020228
Project: PG&E Topock - RMP, RC000753.0801
Lab ID: N020228-011

Client Sample ID: C-MAR-S-Q316
Collection Date: 7/6/2016 1:35:00 PM
Matrix: GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
DISSOLVED METALS BY ICP							
	EPA 3010A			**EPA 6010B**			
RunID: **ICP2_160707D**	QC Batch: **58931**				PrepDate:	**7/7/2016**	Analyst: **CEI**
Iron	23	1.8	20		ug/L	1	7/8/2016 12:12 AM
TOTAL METALS BY ICP							
	EPA 3010A			**EPA 6010B**			
RunID: **ICP2_160707D**	QC Batch: **58932**				PrepDate:	**7/7/2016**	Analyst: **CEI**
Iron	600	1.8	20		ug/L	1	7/7/2016 10:05 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		

CLIENT: ARCADIS U.S., Inc. - California
Lab Order: N020228
Project: PG&E Topock - RMP, RC000753.0801
Lab ID: N020228-012

Client Sample ID: C-R27-D-Q316
Collection Date: 7/6/2016 12:25:00 PM
Matrix: GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
DISSOLVED METALS BY ICP							
	EPA 3010A			**EPA 6010B**			
RunID: **ICP2_160707D**	QC Batch: **58931**			PrepDate:		**7/7/2016**	Analyst: **CEI**
Iron	ND	1.8	20		ug/L	1	7/8/2016 12:23 AM
TOTAL METALS BY ICP							
	EPA 3010A			**EPA 6010B**			
RunID: **ICP2_160707D**	QC Batch: **58932**			PrepDate:		**7/7/2016**	Analyst: **CEI**
Iron	31	1.8	20		ug/L	1	7/7/2016 10:10 PM

Qualifiers:

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

CLIENT: ARCADIS U.S., Inc. - California
Lab Order: N020228
Project: PG&E Topock - RMP, RC000753.0801
Lab ID: N020228-013

Client Sample ID: C-R27-S-Q316
Collection Date: 7/6/2016 12:40:00 PM
Matrix: GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
DISSOLVED METALS BY ICP							
	EPA 3010A			**EPA 6010B**			
RunID: **ICP2_160707D**	QC Batch: **58931**			PrepDate:		**7/7/2016**	Analyst: **CEI**
Iron	ND	1.8	20		ug/L	1	7/8/2016 12:28 AM
TOTAL METALS BY ICP							
	EPA 3010A			**EPA 6010B**			
RunID: **ICP2_160707D**	QC Batch: **58932**			PrepDate:		**7/7/2016**	Analyst: **CEI**
Iron	34	1.8	20		ug/L	1	7/7/2016 10:21 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		

CLIENT: ARCADIS U.S., Inc. - California
Work Order: N020228
Project: PG&E Topock - RMP, RC000753.0801

ANALYTICAL QC SUMMARY REPORT

TestCode: 6010_WDPGEPPB

Sample ID: **MB-58931**	SampType: **MBLK**	TestCode: **6010_WDPGE**	Units: **ug/L**	Prep Date: **7/7/2016**	RunNo: **109304**
Client ID: **PBW**	Batch ID: **58931**	TestNo: **EPA 6010B**	**EPA 3010A**	Analysis Date: **7/7/2016**	SeqNo: **2366413**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Iron	ND	20									

Sample ID: **LCS1-58931**	SampType: **LCS**	TestCode: **6010_WDPGE**	Units: **ug/L**	Prep Date: **7/7/2016**	RunNo: **109304**
Client ID: **LCSW**	Batch ID: **58931**	TestNo: **EPA 6010B**	**EPA 3010A**	Analysis Date: **7/7/2016**	SeqNo: **2366416**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Iron	92.140	20	100.0	0	92.1	85	115				

Sample ID: **N020221-004B-MS1**	SampType: **MS**	TestCode: **6010_WDPGE**	Units: **ug/L**	Prep Date: **7/7/2016**	RunNo: **109304**
Client ID: **ZZZZZZ**	Batch ID: **58931**	TestNo: **EPA 6010B**	**EPA 3010A**	Analysis Date: **7/7/2016**	SeqNo: **2366420**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Iron	94.044	20	100.0	4.278	89.8	75	125				

Sample ID: **N020221-004B-MSD**	SampType: **MSD**	TestCode: **6010_WDPGE**	Units: **ug/L**	Prep Date: **7/7/2016**	RunNo: **109304**
Client ID: **ZZZZZZ**	Batch ID: **58931**	TestNo: **EPA 6010B**	**EPA 3010A**	Analysis Date: **7/7/2016**	SeqNo: **2366421**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Iron	94.079	20	100.0	4.278	89.8	75	125	94.04	0.0380	20	

Sample ID: **N020228-011B-MS1**	SampType: **MS**	TestCode: **6010_WDPGE**	Units: **ug/L**	Prep Date: **7/7/2016**	RunNo: **109304**
Client ID: **ZZZZZZ**	Batch ID: **58931**	TestNo: **EPA 6010B**	**EPA 3010A**	Analysis Date: **7/8/2016**	SeqNo: **2366433**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Iron	120.441	20	100.0	22.61	97.8	75	125				

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: N020228
Project: PG&E Topock - RMP, RC000753.0801

ANALYTICAL QC SUMMARY REPORT

TestCode: 6010_WPGEPPB

Sample ID: **MB-58932**	SampType: **MBLK**	TestCode: **6010_WPGEP**	Units: **ug/L**	Prep Date: **7/7/2016**	RunNo: **109304**
Client ID: **PBW**	Batch ID: **58932**	TestNo: **EPA 6010B**	**EPA 3010A**	Analysis Date: **7/7/2016**	SeqNo: **2366316**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Iron	7.295	20									

Sample ID: **LCS-58932**	SampType: **LCS**	TestCode: **6010_WPGEP**	Units: **ug/L**	Prep Date: **7/7/2016**	RunNo: **109304**
Client ID: **LCSW**	Batch ID: **58932**	TestNo: **EPA 6010B**	**EPA 3010A**	Analysis Date: **7/7/2016**	SeqNo: **2366317**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Iron	100.194	20	100.0	0	100	85	115				

Sample ID: **N020228-002C-MS**	SampType: **MS**	TestCode: **6010_WPGEP**	Units: **ug/L**	Prep Date: **7/7/2016**	RunNo: **109304**
Client ID: **ZZZZZZ**	Batch ID: **58932**	TestNo: **EPA 6010B**	**EPA 3010A**	Analysis Date: **7/7/2016**	SeqNo: **2366321**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Iron	180.566	20	100.0	84.83	95.7	75	125				

Sample ID: **N020228-002C-MSD**	SampType: **MSD**	TestCode: **6010_WPGEP**	Units: **ug/L**	Prep Date: **7/7/2016**	RunNo: **109304**
Client ID: **ZZZZZZ**	Batch ID: **58932**	TestNo: **EPA 6010B**	**EPA 3010A**	Analysis Date: **7/7/2016**	SeqNo: **2366322**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Iron	171.297	20	100.0	84.83	86.5	75	125	180.6	5.27	20	

Sample ID: **N020228-012C-MS**	SampType: **MS**	TestCode: **6010_WPGEP**	Units: **ug/L**	Prep Date: **7/7/2016**	RunNo: **109304**
Client ID: **ZZZZZZ**	Batch ID: **58932**	TestNo: **EPA 6010B**	**EPA 3010A**	Analysis Date: **7/7/2016**	SeqNo: **2366335**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Iron	124.302	20	100.0	30.76	93.5	75	125				

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
Lab Order: N020228
Project: PG&E Topock - RMP, RC000753.0801
Lab ID: N020228-002

Client Sample ID: C-R22A-D-Q316
Collection Date: 7/6/2016 11:00:00 AM
Matrix: GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
DISSOLVED METALS BY ICP-MS							
	EPA 3010A			**EPA 6020**			
RunID: **ICP7_160707G**	QC Batch: **58934**			PrepDate:		**7/7/2016**	Analyst: **CEI**
Arsenic	2.3	0.025	0.10		µg/L	1	7/8/2016 02:53 AM
Barium	130	0.070	1.0		µg/L	1	7/8/2016 02:53 AM
Manganese	1.8	0.056	0.50		µg/L	1	7/8/2016 02:53 AM
Molybdenum	5.4	0.039	0.50		µg/L	1	7/8/2016 02:53 AM
Selenium	1.5	0.028	0.50		µg/L	1	7/8/2016 02:53 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		

ASSET Laboratories

ANALYTICAL RESULTS

Print Date: *21-Jul-16*

CLIENT: ARCADIS U.S., Inc. - California
Lab Order: N020228
Project: PG&E Topock - RMP, RC000753.0801
Lab ID: N020228-003

Client Sample ID: C-R22A-S-Q316
Collection Date: 7/6/2016 11:15:00 AM
Matrix: GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
DISSOLVED METALS BY ICP-MS							
	EPA 3010A			**EPA 6020**			
RunID: **ICP7_160707G**	QC Batch: **58934**			PrepDate:		**7/7/2016**	Analyst: **CEI**
Arsenic	2.5	0.025	0.10		µg/L	1	7/8/2016 02:59 AM
Barium	140	0.070	1.0		µg/L	1	7/8/2016 02:59 AM
Manganese	2.3	0.056	0.50		µg/L	1	7/8/2016 02:59 AM
Molybdenum	5.7	0.039	0.50		µg/L	1	7/8/2016 02:59 AM
Selenium	1.7	0.028	0.50		µg/L	1	7/8/2016 02:59 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		

ASSET Laboratories

ANALYTICAL RESULTS

Print Date: *21-Jul-16*

CLIENT: ARCADIS U.S., Inc. - California
Lab Order: N020228
Project: PG&E Topock - RMP, RC000753.0801
Lab ID: N020228-004

Client Sample ID: C-TAZ-D-Q316
Collection Date: 7/6/2016 8:30:00 AM
Matrix: GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
DISSOLVED METALS BY ICP-MS							
	EPA 3010A			**EPA 6020**			
RunID: **ICP7_160707G**	QC Batch: **58934**			PrepDate:		**7/7/2016**	Analyst: **CEI**
Arsenic	2.3	0.025	0.10		µg/L	1	7/8/2016 03:04 AM
Barium	130	0.070	1.0		µg/L	1	7/8/2016 03:04 AM
Manganese	ND	0.056	0.50		µg/L	1	7/8/2016 03:04 AM
Molybdenum	5.4	0.039	0.50		µg/L	1	7/8/2016 03:04 AM
Selenium	1.7	0.028	0.50		µg/L	1	7/8/2016 03:04 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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NEVADA
3151 W. Post Rd., Las Vegas, NV 89118
P: 702.307.2659 F: 702.307.2691

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ANALYTICAL RESULTS

Print Date: *21-Jul-16*

CLIENT: ARCADIS U.S., Inc. - California
Lab Order: N020228
Project: PG&E Topock - RMP, RC000753.0801
Lab ID: N020228-005

Client Sample ID: C-TAZ-S-Q316
Collection Date: 7/6/2016 8:45:00 AM
Matrix: GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
DISSOLVED METALS BY ICP-MS							
	EPA 3010A			**EPA 6020**			
RunID: **ICP7_160707G**	QC Batch: **58934**			PrepDate:		**7/7/2016**	Analyst: **CEI**
Arsenic	2.3	0.025	0.10		µg/L	1	7/8/2016 03:10 AM
Barium	130	0.070	1.0		µg/L	1	7/8/2016 03:10 AM
Manganese	0.60	0.056	0.50		µg/L	1	7/8/2016 03:10 AM
Molybdenum	5.3	0.039	0.50		µg/L	1	7/8/2016 03:10 AM
Selenium	1.6	0.028	0.50		µg/L	1	7/8/2016 03:10 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-Jul-16*

CLIENT: ARCADIS U.S., Inc. - California
Lab Order: N020228
Project: PG&E Topock - RMP, RC000753.0801
Lab ID: N020228-006

Client Sample ID: R63-Q316
Collection Date: 7/6/2016 10:15:00 AM
Matrix: GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
DISSOLVED METALS BY ICP-MS							
	EPA 3010A			**EPA 6020**			
RunID: **ICP7_160707G**	QC Batch: **58934**			PrepDate:		**7/7/2016**	Analyst: **CEI**
Arsenic	2.4	0.025	0.10		µg/L	1	7/8/2016 03:15 AM
Barium	130	0.070	1.0		µg/L	1	7/8/2016 03:15 AM
Manganese	9.1	0.056	0.50		µg/L	1	7/8/2016 03:15 AM
Molybdenum	5.4	0.039	0.50		µg/L	1	7/8/2016 03:15 AM
Selenium	1.5	0.028	0.50		µg/L	1	7/8/2016 03:15 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
Lab Order: N020228
Project: PG&E Topock - RMP, RC000753.0801
Lab ID: N020228-007

Client Sample ID: C-BNS-Q316
Collection Date: 7/6/2016 11:45:00 AM
Matrix: GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
DISSOLVED METALS BY ICP-MS							
	EPA 3010A			**EPA 6020**			
RunID: **ICP7_160707G**	QC Batch: **58934**			PrepDate:		**7/7/2016**	Analyst: **CEI**
Arsenic	2.2	0.025	0.10		µg/L	1	7/8/2016 03:32 AM
Barium	130	0.070	1.0		µg/L	1	7/8/2016 03:32 AM
Manganese	0.58	0.056	0.50		µg/L	1	7/8/2016 03:32 AM
Molybdenum	5.1	0.039	0.50		µg/L	1	7/8/2016 03:32 AM
Selenium	1.6	0.028	0.50		µg/L	1	7/8/2016 03:32 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		

CLIENT: ARCADIS U.S., Inc. - California
Lab Order: N020228
Project: PG&E Topock - RMP, RC000753.0801
Lab ID: N020228-008

Client Sample ID: C-I-3-D-Q316
Collection Date: 7/6/2016 9:50:00 AM
Matrix: GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
DISSOLVED METALS BY ICP-MS							
	EPA 3010A			**EPA 6020**			
RunID: **ICP7_160707G**	QC Batch: **58934**			PrepDate:		**7/7/2016**	Analyst: **CEI**
Arsenic	2.3	0.025	0.10		µg/L	1	7/8/2016 03:38 AM
Barium	130	0.070	1.0		µg/L	1	7/8/2016 03:38 AM
Manganese	ND	0.056	0.50		µg/L	1	7/8/2016 03:38 AM
Molybdenum	5.3	0.039	0.50		µg/L	1	7/8/2016 03:38 AM
Selenium	1.5	0.028	0.50		µg/L	1	7/8/2016 03:38 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		

CLIENT: ARCADIS U.S., Inc. - California
Lab Order: N020228
Project: PG&E Topock - RMP, RC000753.0801
Lab ID: N020228-009

Client Sample ID: C-I-3-S-Q316
Collection Date: 7/6/2016 9:35:00 AM
Matrix: GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
DISSOLVED METALS BY ICP-MS							
	EPA 3010A			**EPA 6020**			
RunID: **ICP7_160707G**	QC Batch: **58934**			PrepDate:		**7/7/2016**	Analyst: **CEI**
Arsenic	2.4	0.025	0.10		µg/L	1	7/8/2016 03:43 AM
Barium	130	0.070	1.0		µg/L	1	7/8/2016 03:43 AM
Manganese	ND	0.056	0.50		µg/L	1	7/8/2016 03:43 AM
Molybdenum	5.5	0.039	0.50		µg/L	1	7/8/2016 03:43 AM
Selenium	1.5	0.028	0.50		µg/L	1	7/8/2016 03:43 AM

Qualifiers:

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

CLIENT: ARCADIS U.S., Inc. - California
Lab Order: N020228
Project: PG&E Topock - RMP, RC000753.0801
Lab ID: N020228-010

Client Sample ID: C-MAR-D-Q316
Collection Date: 7/6/2016 1:05:00 PM
Matrix: GROUNDWATER

DISSOLVED METALS BY ICP-MS

EPA 3010A **EPA 6020**

RunID: **ICP7_160707G** QC Batch: **58934** PrepDate: **7/7/2016** Analyst: **CEI**

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
Arsenic	3.1	0.025	0.10		µg/L	1	7/8/2016 03:49 AM
Barium	140	0.070	1.0		µg/L	1	7/8/2016 03:49 AM
Manganese	120	0.056	0.50		µg/L	1	7/8/2016 03:49 AM
Molybdenum	5.5	0.039	0.50		µg/L	1	7/8/2016 03:49 AM
Selenium	1.4	0.028	0.50		µg/L	1	7/8/2016 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

CLIENT: ARCADIS U.S., Inc. - California
Lab Order: N020228
Project: PG&E Topock - RMP, RC000753.0801
Lab ID: N020228-011

Client Sample ID: C-MAR-S-Q316
Collection Date: 7/6/2016 1:35:00 PM
Matrix: GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
DISSOLVED METALS BY ICP-MS							
	EPA 3010A			**EPA 6020**			
RunID: **ICP7_160707G**	QC Batch: **58934**			PrepDate:		**7/7/2016**	Analyst: **CEI**
Arsenic	3.2	0.025	0.10		µg/L	1	7/8/2016 03:54 AM
Barium	140	0.070	1.0		µg/L	1	7/8/2016 03:54 AM
Manganese	130	0.056	0.50		µg/L	1	7/8/2016 03:54 AM
Molybdenum	5.6	0.039	0.50		µg/L	1	7/8/2016 03:54 AM
Selenium	1.2	0.028	0.50		µg/L	1	7/8/2016 03:54 AM

Qualifiers:

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

CLIENT: ARCADIS U.S., Inc. - California
Lab Order: N020228
Project: PG&E Topock - RMP, RC000753.0801
Lab ID: N020228-012

Client Sample ID: C-R27-D-Q316
Collection Date: 7/6/2016 12:25:00 PM
Matrix: GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
DISSOLVED METALS BY ICP-MS							
	EPA 3010A			**EPA 6020**			
RunID: **ICP7_160707G**	QC Batch: **58934**			PrepDate:		**7/7/2016**	Analyst: **CEI**
Arsenic	2.3	0.025	0.10		µg/L	1	7/8/2016 04:00 AM
Barium	130	0.070	1.0		µg/L	1	7/8/2016 04:00 AM
Manganese	1.6	0.056	0.50		µg/L	1	7/8/2016 04:00 AM
Molybdenum	5.2	0.039	0.50		µg/L	1	7/8/2016 04:00 AM
Selenium	1.6	0.028	0.50		µg/L	1	7/8/2016 04:00 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		

CLIENT: ARCADIS U.S., Inc. - California
Lab Order: N020228
Project: PG&E Topock - RMP, RC000753.0801
Lab ID: N020228-013

Client Sample ID: C-R27-S-Q316
Collection Date: 7/6/2016 12:40:00 PM
Matrix: GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
DISSOLVED METALS BY ICP-MS							
	EPA 3010A			**EPA 6020**			
RunID: **ICP7_160707G**	QC Batch: **58934**			PrepDate:		**7/7/2016**	Analyst: **CEI**
Arsenic	2.3	0.025	0.10		µg/L	1	7/8/2016 04:05 AM
Barium	130	0.070	1.0		µg/L	1	7/8/2016 04:05 AM
Manganese	1.1	0.056	0.50		µg/L	1	7/8/2016 04:05 AM
Molybdenum	5.3	0.039	0.50		µg/L	1	7/8/2016 04:05 AM
Selenium	1.5	0.028	0.50		µg/L	1	7/8/2016 04:05 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		

CLIENT: ARCADIS U.S., Inc. - California
Work Order: N020228
Project: PG&E Topock - RMP, RC000753.0801

ANALYTICAL QC SUMMARY REPORT

TestCode: 6020_DIS

Sample ID: **MB-58934**	SampType: **MBLK**	TestCode: **6020_DIS**	Units: **µg/L**	Prep Date: **7/7/2016**	RunNo: **109344**
Client ID: **PBW**	Batch ID: **58934**	TestNo: **EPA 6020**	**EPA 3010A**	Analysis Date: **7/8/2016**	SeqNo: **2367788**

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									
Selenium	ND	0.50									

Sample ID: **LCS-58934**	SampType: **LCS**	TestCode: **6020_DIS**	Units: **µg/L**	Prep Date: **7/7/2016**	RunNo: **109344**
Client ID: **LCSW**	Batch ID: **58934**	TestNo: **EPA 6020**	**EPA 3010A**	Analysis Date: **7/8/2016**	SeqNo: **2367789**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	9.764	0.10	10.00	0	97.6	85	115				
Barium	98.840	1.0	100.0	0	98.8	85	115				
Manganese	100.328	0.50	100.0	0	100	85	115				
Molybdenum	9.859	0.50	10.00	0	98.6	85	115				
Selenium	10.131	0.50	10.00	0	101	85	115				

Sample ID: **N020230-011B-MS**	SampType: **MS**	TestCode: **6020_DIS**	Units: **µg/L**	Prep Date: **7/7/2016**	RunNo: **109344**
Client ID: **ZZZZZZ**	Batch ID: **58934**	TestNo: **EPA 6020**	**EPA 3010A**	Analysis Date: **7/8/2016**	SeqNo: **2367798**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	46.391	0.10	10.00	38.16	82.3	75	125				
Barium	126.471	1.0	100.0	27.76	98.7	75	125				
Manganese	94.578	0.50	100.0	0.4004	94.2	75	125				
Molybdenum	20.593	0.50	10.00	9.847	107	75	125				
Selenium	8.985	0.50	10.00	0.2560	87.3	75	125				

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: N020228
Project: PG&E Topock - RMP, RC000753.0801

ANALYTICAL QC SUMMARY REPORT

TestCode: 6020_DIS

Sample ID: **N020230-011B-MSD**	SampType: **MSD**	TestCode: **6020_DIS**	Units: **µg/L**	Prep Date: **7/7/2016**	RunNo: **109344**
Client ID: **ZZZZZZ**	Batch ID: **58934**	TestNo: **EPA 6020**	**EPA 3010A**	Analysis Date: **7/8/2016**	SeqNo: **2367799**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	46.239	0.10	10.00	38.16	80.7	75	125	46.39	0.329	20	
Barium	126.462	1.0	100.0	27.76	98.7	75	125	126.5	0.00661	20	
Manganese	94.493	0.50	100.0	0.4004	94.1	75	125	94.58	0.0896	20	
Molybdenum	20.428	0.50	10.00	9.847	106	75	125	20.59	0.805	20	
Selenium	9.016	0.50	10.00	0.2560	87.6	75	125	8.985	0.349	20	

Sample ID: **N020229-001B-MS**	SampType: **MS**	TestCode: **6020_DIS**	Units: **µg/L**	Prep Date: **7/7/2016**	RunNo: **109344**
Client ID: **ZZZZZZ**	Batch ID: **58934**	TestNo: **EPA 6020**	**EPA 3010A**	Analysis Date: **7/8/2016**	SeqNo: **2367816**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	12.426	0.10	10.00	2.795	96.3	75	125				
Barium	120.481	1.0	100.0	23.85	96.6	75	125				
Molybdenum	27.592	0.50	10.00	15.88	117	75	125				

Sample ID: **N020229-001B-MS**	SampType: **MS**	TestCode: **6020_DIS**	Units: **µg/L**	Prep Date: **7/7/2016**	RunNo: **109344**
Client ID: **ZZZZZZ**	Batch ID: **58934**	TestNo: **EPA 6020**	**EPA 3010A**	Analysis Date: **7/8/2016**	SeqNo: **2367826**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Manganese	304.434	2.5	100.0	207.3	97.1	75	125				
Selenium	9.987	2.5	10.00	0	99.9	75	125				

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

SAMPLE RECEIVING ITEMS

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CHAIN OF CUSTODY RECORD

Page 1 of 3

Client: Arcadis	Report to: Dan Bush	Bill to: Marty Bloes	EDD Requirement: Excel EDD; Geotracker; Labspec; Others ✓; Specify: RWQCB; Global ID
Address: 1410 Rocky Ridge Dr # 330	Company: Arcadis	Address:	QA/QC: RTNE; RWQCB ✓; CalTrans; LEVEL III; LEVEL IV; Regulatory; Specify State:
Address: Roseville, CA 95661	Email: [redacted]	Address:	Sample Receipt Condition: 1. Chilled Y; 2. Headspace; 3. Container Intact; 4. Seal Present; 5. IR number 2; 6. Method of Cooling: ICE
Phone: 916-786-3302 Fax:	Address: 1410 Rocky Ridge Dr # 330, Roseville, CA 95661	Email to: mbloes@pivox.com	P O #
Submitted By:	Phone: 916-786-3302 Fax:	Phone: 949-727-1400, ext 200	Fax:
Title: Field Technician			
Signature: [signature] Date: 7-6-16	Sampled By: Joseph Mahon	Matrix: Ground x; Potable; NPDES; Surface; Sediment; Soil; Other Solid	Sample Temp: 3.3, 2.8, 2.1, 3.4 °C
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		Courier: ASSET
Project Name: PG&E Topock - RMP	Signature: [signature] Date: 7/6/16		Tracking No:
Project Number: RC000753.0801			

Item No.	Laboratory Work Order No.	Sample ID/Location	Sample Date	Sample Time	Others	Cr(VI) FF (E218.6); (NH4)2 SO4, NH4 OH — 3x250 mL poly	Field QC Cr(VI) FF (E218.6) (NH4)2 SO4, NH4, OH — 250 ml Poly	Dissolved metals (SW6010B/SW6020A(dis) FF, HNO3 Cr — 3x500mL poly	Dissolved metals (SW6010B/SW6020A(dis) FF, HNO3 Ca, Mg, K, Na, B — 3x500mL poly	Dissolved metals (SW6010B/SW6020A(dis) FF, HNO3 As, Mn, Fe, Se, Mo, Ba — 3x500mL poly	Total metals (SW6010B); HNO3 Fe — 500 mL 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 (SM4500N03) Nitrate, H2SO4 — 125 mL poly	Turn Around Time	No. of Container	Container Type	PRESERVATION	Remarks
1	N020228 - 01	RMP-AB1-Q316	7/6/2016	1025			X												E	1	P	BN

Reliquished by (Signature and Printed Name): [signature] Date/Time: 7/6/16 1545
Reliquished by (Signature and Printed Name): [signature] Date/Time: 7/6/16 @ 1530
Reliquished by (Signature and Printed Name): [signature] Date/Time: 7/6/16 @ 1751
Reliquished by (Signature and Printed Name): [signature] Date/Time: 7/6/16 @ 1751
Reliquished by (Signature and Printed Name): Date/Time:
Reliquished by (Signature and Printed Name): Date/Time:

Turn Around Time (TAT)

	A	= 24 Hrs or Same Day TAT
	B	= Next Workday
	C	= 2 Workdays
	D	= 3 Workdays
X	E	= Routine 5-7 Workdays

TAT Starts at 8 AM the following day if samples received after 3:00PM

Special Instruction:

Preservatives:

H=HCL	N=HNO_3	S=H_2SO_4	C=4°C
Z=Zn(AC)$_2$	O=NaOH	T=$Na_2S_2O_3$	
Others/Specify:	B	(NH4)2SO4/NH4OH	

Container Type:

T=Tube	V=VOA	P=Pint
J=Jar	B=Tedlar	G=Glass
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.
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 analyses, TAT and Surcharges will vary.

White=Laboratory Copy
Yellow=Customer's Copy

ASSET LABORATORIES
ANALYTICAL SUPPORT SERVICES FOR ENVIRONMENTAL TECHNOLOGIES

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

CHAIN OF CUSTODY RECORD

Client: Arcadis	Report to: Dan Bush	Bill to: Marty Bloes	EDD Requirement: Excel EDD; Geotracker; Labspec; Others ✓; Specify: RWQCB; Global ID.
Address: 1410 Rocky Ridge Dr # 330	Company: Arcadis	Address:	QA/QC: RTNE; RWQCB ✓; CalTrans; LEVEL III; LEVEL IV; Regulatory; Specify State:
Address: Roseville, CA 95661	Email: [redacted]	Address:	Sample Receipt Condition (Y / N): 1 Chilled ✓; 2 Headspace; 3. Container intact ✓; 4 Seal Present; 5 IR number 2; 6 Method of Cooling: ICE
Phone: 916-786-3302 Fax:	Address: 1410 Rocky Ridge Dr # 330 Roseville CA 95661	Email to: mbloes@pivox.com	P O #
Submitted By:	Phone: 916-786-3302 Fax:	Phone: 949-727-1400, ext 200	Fax
Title: Environmental Field Technician			Sample Temp: 1.3, 2.8, 2.1, 3.4°C
Signature: Date: 7-6-16	Sampled By: Jason Mahon	Matrix: Ground x Sediment; Potable; Soil; NPDES; Other Solid; Surface	Courier: ASSET
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		Tracking No
Project Name: PG&E Topock - RMP	Signature: Date: 7/6/16		
Project Number: RC000753.0801			

Item No.	Laboratory Work Order No.	Sample ID/Location	Sample Date	Sample Time	Others	Cr(VI) FF (E218.6) (NH4)2. SO4. NH4. OH (3x250 mL poly)	Field QC Cr(VI) FF (E218.6) (NH4)2. SO4. NH4. OH	Dissolved metals (SW6010B/SW6020A dis) FF. HNO3 Cr (500mL poly)	Dissolved metals (SW6010B/SW6020A dis) FF. HNO3 Ca. Mg. K. Na. B (500mL poly)	Dissolved metals (SW6010B/SW6020A dis) FF. HNO3 As. Mn. Fe. Se. Mo. Ba (500mL poly)	Total metals (SW6010B). HNO3 Fe (500 mL 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 (SM4500N03) Nitrate. H2SO4 (125 mL poly)	Turn Around Time	No. of Container	Container Type	PRESERVATION	Remarks
1	N020228 - 02	C-R22A-D-Q316	7/6/2016	1100		X		X		X	X		X	X			X	X	E	7	P	BNS
2	- 03	C-R22A-S-Q316	7/6/2016	1115		X		X		X	X		X	X			X	X	E	7	P	BNS
3	- 04	C-TAZ-D-Q316	7/6/2016	830		X		X		X	X		X	X			X	X	E	7	P	BNS
4	- 05	C-TAZ-S-Q316	7/6/2016	845		X		X		X	X		X	X			X	X	E	7	P	BNS
8	- 06	R63-Q316	7/6/2016	1015		X		X		X	X		X	X			X	X	E	7	P	BNS
9	- 07	C-BNS-Q316	7/6/2016	1145		X		X		X	X		X	X			X	X	E	7	P	BNS
11	- 08	C-I-3-D-Q316	7/6/2016	950		X		X		X	X		X	X			X	X	E	7	P	BNS
12	- 09	C-I-3-S-Q316	7/6/2016	935		X		X		X	X		X	X			X	X	E	7	P	BNS
13	- 10	C-MAR-D-Q316	7/6/2016	1305		X		X		X	X		X	X			X	X	E	7	P	BNS
14	- 11	C-MAR-S-Q316	7/6/2016	1335		X		X		X	X		X	X			X	X	E	7	P	BNS

Relinquished by (Signature and Printed Name)	Date/Time	Relinquished by (Signature and Printed Name)	Date/Time
	7/6/16 1545		7/6/16 @ 1530
Relinquished by (Signature and Printed Name)	Date/Time	Relinquished by (Signature and Printed Name)	Date/Time
	7/6/16 @ 1751		7/6/16 @ 1751
Relinquished by (Signature and Printed Name)	Date/Time	Relinquished by (Signature and Printed Name)	Date/Time

Turn Around Time (TAT)

- [ ] A = < 24 Hrs or Same Day TAT
- [ ] B = Next Workday
- [ ] C = 2 Workdays
- [ ] D = 3 Workdays
- [x] E = Routine 5-7 Workdays

TAT Starts at 8 AM the following day if samples received after 3.00PM.

Special Instruction:

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:
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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=HNO_3	S=H_2SO_4	C=4°C	T=Tube	V=VOA	P=Print
Z=Zn(AC)$_2$	O=NaOH	T=$Na_2S_2O_3$		J=Jar	B=Tedlar	G=Glass
Others/Specify:	B (NH4)2SO4/NH4OH			M=Metal	M=Metal	C=Can

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CHAIN OF CUSTODY RECORD

Client: Arcadis	Report to: Dan Bush	Bill to: Marty Bloes	EDD Requirement: Excel EDD; Geotracker; Labspec; Others ✓; Specify: RWQCB; Global ID:
Address: 1410 Rocky Ridge Dr # 330	Company: Arcadis	Address:	QA/QC: RTNE; RWQCB ✓; CalTrans; LEVEL III; LEVEL IV; Regulatory; Specify State
Address: Roseville, CA 95661	Email: [redacted]	Address:	Sample Receipt Condition (Y / N): 1 Chilled ✓; 2 Headspace; 3 Container Intact ✓; 4 Seal Present; 5 IR number 2; 6 Method of Cooling: ICE
Phone: 916-786-3302 Fax:	Address: 1410 Rocky Ridge Dr # 330, Roseville, CA 95661	Email to: mbloes@nivox.com P.O.#	Sample Temp: 3.9, 2.8, 2.1, 3.9 C
Submitted By:	Phone: 916-786-3302 Fax:	Phone: 949-727-1400, ext 200 Fax:	Courier: ASSET
Title: Environmental Field Technician	Sampled By: Jason Nelson	Matrix: Ground x; Potable; NPDES; Surface; Sediment; Soil; Other Solid	Tracking No.
Signature: Date: 7-6-16	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		
I hereby authorize ASSET Labs to perform the tests indicated below	Signature: Date: 7/6/16		
Project Name: PG&E Topock - RMP			
Project Number: RC000753.0801			

Item No.	Laboratory Work Order No.	Sample ID/Location	Sample Date	Sample Time	Others	Cr(VI) FF (E218.6) (NH4)2 SO4 NH4 OH (3x250 mL poly)	Field QC Cr(VI) FF (E218.6) (NH4)2 SO4, NH4 OH	Dissolved metals (SW6010B/SW6020Adis) FF HNO3 Cr (500mL poly)	Dissolved metals (SW6010B/SW6020Adis) FF, HNO3 Ca, Mg, K, Na, B (500mL poly)	Dissolved metals (SW6010B/SW6020Adis) FF, HNO3 As, Mn, Fe, Se, Mo, Ba (500mL poly)	Total metals (SW6010B), HNO3 Fe (500 mL 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) Nitrate, H2SO4 (125 mL poly)	Turn Around Time	No. of Container	Container Type	PRESERVATION	Remarks
10	N020288 - 12	C-R27-D-Q316		1225		X		X		X	X		X	X			X	X	E	7	P	BNS
11	- 13	C-R27-S-Q316		1240		X		X		X	X		X	X			X	X	E	7	P	BNS

Reliquished by (Signature and Printed Name): Date/Time: 7/6/16 1545
Reliquished by (Signature and Printed Name): Date/Time: 7/6/16 1530
Reliquished by (Signature and Printed Name): Date/Time: 7/6/16 1745
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Reliquished by (Signature and Printed Name): Date/Time:
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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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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=HNO_3	S=H_2SO_4	C=4°C	
Z=$Zn(AC)_2$	O=NaOH	T=$Na_2S_2O_3$		
Others/Specify	B	(NH4)2SO4/NH4OH		

Container Type:

T=Tube	V=VOA	P=Pint
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:	7/6/2016	Workorder:	N020228
Rep sample Temp (Deg C):	3.3/2.8/2.1/3.4	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 ☑	No ☐	Not Present ☐
2. Custody seals intact, signed, dated on shippping container/cooler?	Yes ☐	No ☐	Not Present ☑
3. Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
4. Chain of custody present?	Yes ☑	No ☐	
5. Sampler's name present in COC?	Yes ☑	No ☐	
6. Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
7. Chain of custody agrees with sample labels?	Yes ☑	No ☐	
8. Samples in proper container/bottle?	Yes ☑	No ☐	
9. Sample containers intact?	Yes ☑	No ☐	
10. Sufficient sample volume for indicated test?	Yes ☑	No ☐	
11. All samples received within holding time?	Yes ☐	No ☑	
12. Temperature of rep sample or Temp Blank within acceptable limit?	Yes ☑	No ☐	NA ☐
13. Water - VOA vials have zero headspace?	Yes ☐	No ☐	NA ☑
14. Water - pH acceptable upon receipt? Example: pH > 12 for (CN,S); pH<2 for Metals	Yes ☑	No ☐	NA ☐
15. Did the bottle labels indicate correct preservatives used?	Yes ☑	No ☐	NA ☐
16. Were there Non-Conformance issues at login?	Yes ☑	No ☐	NA ☐
Was Client notified?	Yes ☐	No ☐	NA ☑

Comments: Samples for pH were past holding time upon receipt.

Checklist Completed By: For: MBC 7/8/2016

Reviewed By: 7/13/2016

ASSET Laboratories

WORK ORDER Summary

08-Jul-16

WorkOrder: N020228

Client ID: ARCUS02

Project: PG&E Topock - RMP, RC000753.0801 **QC Level:** Level IV **Date Received:** 7/6/2016

Comments:

Sample ID	Client Sample ID	Date Collected	Date Due	Matrix	Test No	Test Name	Hld	MS	Sub	Storage
N020228-001A	RMP-AB1-Q316	7/6/2016 10:25:00 AM	7/20/2016	Groundwater	EPA 218.6	Hexavalent Chromium by IC	☐	☐	☐	WW
N020228-002A	C-R22A-D-Q316	7/6/2016 11:00:00 AM	7/20/2016		EPA 218.6	Hexavalent Chromium by IC	☐	☐	☐	WW
N020228-002B			7/20/2016		EPA 3010A	AQPREP TOTAL METALS: ICP, FLAA	☐	☐	☐	WW
			7/20/2016		EPA 3010A	AQPREP TOTAL METALS: ICP, FLAA	☐	☐	☐	WW
			7/20/2016		EPA 6010B	DISSOLVED METALS BY ICP	☐	☐	☐	WW
			7/20/2016		EPA 6020	DISSOLVED METALS BY ICP-MS	☐	☐	☐	WW
			7/20/2016		EPA 6020	DISSOLVED METALS BY ICP-MS	☐	☐	☐	WW
N020228-002C			7/20/2016		EPA 3010A	AQPREP TOTAL METALS: ICP, FLAA	☐	☐	☐	WW
			7/20/2016		EPA 6010B	TOTAL METALS BY ICP	☐	☐	☐	WW
N020228-002D			7/20/2016		EPA 120.1	SPECIFIC CONDUCTANCE	☐	☐	☐	LR
			7/20/2016		SM4500-H+B	pH	☐	☐	☐	LR
			7/20/2016		SM2540D	TOTAL NON-FILTERABLE RESIDUE	☐	☐	☐	LR
			7/20/2016			Total Suspended Solids Prep	☐	☐	☐	LR
N020228-002E			7/20/2016		SM4500-NO3F	NITRATE/NITRITE-N BY CADMIUM REDUCTION	☐	☐	☐	WW
N020228-003A	C-R22A-S-Q316	7/6/2016 11:15:00 AM	7/20/2016		EPA 218.6	Hexavalent Chromium by IC	☐	☐	☐	WW
N020228-003B			7/20/2016		EPA 3010A	AQPREP TOTAL METALS: ICP, FLAA	☐	☐	☐	WW
			7/20/2016		EPA 3010A	AQPREP TOTAL METALS: ICP, FLAA	☐	☐	☐	WW
			7/20/2016		EPA 6010B	DISSOLVED METALS BY ICP	☐	☐	☐	WW
			7/20/2016		EPA 6020	DISSOLVED METALS BY ICP-MS	☐	☐	☐	WW
			7/20/2016		EPA 6020	DISSOLVED METALS BY ICP-MS	☐	☐	☐	WW
N020228-003C			7/20/2016		EPA 3010A	AQPREP TOTAL METALS: ICP, FLAA	☐	☐	☐	WW
			7/20/2016		EPA 6010B	TOTAL METALS BY ICP	☐	☐	☐	WW

WORK ORDER Summary

08-Jul-16

WorkOrder: N020228

Client ID: ARCUS02

Project: PG&E Topock - RMP, RC000753.0801 **QC Level:** Level IV **Date Received:** 7/6/2016

Comments:

Sample ID	Client Sample ID	Date Collected	Date Due	Matrix	Test No	Test Name	Hld	MS	Sub	Storage
N020228-003D	C-R22A-S-Q316	7/6/2016 11:15:00 AM	7/20/2016	Groundwater	EPA 120.1	SPECIFIC CONDUCTANCE	☐	☐	☐	LR
			7/20/2016		SM4500-H+B	pH	☐	☐	☐	LR
			7/20/2016		SM2540D	TOTAL NON-FILTERABLE RESIDUE	☐	☐	☐	LR
			7/20/2016			Total Suspended Solids Prep	☐	☐	☐	LR
N020228-003E			7/20/2016		SM4500-NO3F	NITRATE/NITRITE-N BY CADMIUM REDUCTION	☐	☐	☐	WW
N020228-004A	C-TAZ-D-Q316	7/6/2016 8:30:00 AM	7/20/2016		EPA 218.6	Hexavalent Chromium by IC	☐	☐	☐	WW
N020228-004B			7/20/2016		EPA 3010A	AQPREP TOTAL METALS: ICP, FLAA	☐	☐	☐	WW
			7/20/2016		EPA 3010A	AQPREP TOTAL METALS: ICP, FLAA	☐	☐	☐	WW
			7/20/2016		EPA 6010B	DISSOLVED METALS BY ICP	☐	☐	☐	WW
			7/20/2016		EPA 6020	DISSOLVED METALS BY ICP-MS	☐	☐	☐	WW
			7/20/2016		EPA 6020	DISSOLVED METALS BY ICP-MS	☐	☐	☐	WW
N020228-004C			7/20/2016		EPA 3010A	AQPREP TOTAL METALS: ICP, FLAA	☐	☐	☐	WW
			7/20/2016		EPA 6010B	TOTAL METALS BY ICP	☐	☐	☐	WW
N020228-004D			7/20/2016		EPA 120.1	SPECIFIC CONDUCTANCE	☐	☐	☐	LR
			7/20/2016		SM4500-H+B	pH	☐	☐	☐	LR
			7/20/2016		SM2540D	TOTAL NON-FILTERABLE RESIDUE	☐	☐	☐	LR
			7/20/2016			Total Suspended Solids Prep	☐	☐	☐	LR
N020228-004E			7/20/2016		SM4500-NO3F	NITRATE/NITRITE-N BY CADMIUM REDUCTION	☐	☐	☐	WW
N020228-005A	C-TAZ-S-Q316	7/6/2016 8:45:00 AM	7/20/2016		EPA 218.6	Hexavalent Chromium by IC	☐	☐	☐	WW
N020228-005B			7/20/2016		EPA 3010A	AQPREP TOTAL METALS: ICP, FLAA	☐	☐	☐	WW
			7/20/2016		EPA 3010A	AQPREP TOTAL METALS: ICP, FLAA	☐	☐	☐	WW

WORK ORDER Summary

08-Jul-16

WorkOrder: N020228

Client ID: ARCUS02

Project: PG&E Topock - RMP, RC000753.0801 **QC Level:** Level IV **Date Received:** 7/6/2016

Comments:

Sample ID	Client Sample ID	Date Collected	Date Due	Matrix	Test No	Test Name	Hld	MS	Sub	Storage
N020228-005B	C-TAZ-S-Q316	7/6/2016 8:45:00 AM	7/20/2016	Groundwater	EPA 6010B	DISSOLVED METALS BY ICP	☐	☐	☐	WW
			7/20/2016		EPA 6020	DISSOLVED METALS BY ICP-MS	☐	☐	☐	WW
			7/20/2016		EPA 6020	DISSOLVED METALS BY ICP-MS	☐	☐	☐	WW
N020228-005C			7/20/2016		EPA 3010A	AQPREP TOTAL METALS: ICP, FLAA	☐	☐	☐	WW
			7/20/2016		EPA 6010B	TOTAL METALS BY ICP	☐	☐	☐	WW
N020228-005D			7/20/2016		EPA 120.1	SPECIFIC CONDUCTANCE	☐	☐	☐	LR
			7/20/2016		SM4500-H+B	pH	☐	☐	☐	LR
			7/20/2016		SM2540D	TOTAL NON-FILTERABLE RESIDUE	☐	☐	☐	LR
			7/20/2016			Total Suspended Solids Prep	☐	☐	☐	LR
N020228-005E			7/20/2016		SM4500-NO3F	NITRATE/NITRITE-N BY CADMIUM REDUCTION	☐	☐	☐	WW
N020228-006A	R63-Q316	7/6/2016 10:15:00 AM	7/20/2016		EPA 218.6	Hexavalent Chromium by IC	☐	☐	☐	WW
N020228-006B			7/20/2016		EPA 3010A	AQPREP TOTAL METALS: ICP, FLAA	☐	☐	☐	WW
			7/20/2016		EPA 3010A	AQPREP TOTAL METALS: ICP, FLAA	☐	☐	☐	WW
			7/20/2016		EPA 6010B	DISSOLVED METALS BY ICP	☐	☐	☐	WW
			7/20/2016		EPA 6020	DISSOLVED METALS BY ICP-MS	☐	☐	☐	WW
			7/20/2016		EPA 6020	DISSOLVED METALS BY ICP-MS	☐	☐	☐	WW
N020228-006C			7/20/2016		EPA 3010A	AQPREP TOTAL METALS: ICP, FLAA	☐	☐	☐	WW
			7/20/2016		EPA 6010B	TOTAL METALS BY ICP	☐	☐	☐	WW
N020228-006D			7/20/2016		EPA 120.1	SPECIFIC CONDUCTANCE	☐	☐	☐	LR
			7/20/2016		SM4500-H+B	pH	☐	☐	☐	LR
			7/20/2016		SM2540D	TOTAL NON-FILTERABLE RESIDUE	☐	☐	☐	LR
			7/20/2016			Total Suspended Solids Prep	☐	☐	☐	LR

WORK ORDER Summary

08-Jul-16

WorkOrder: N020228

Client ID: ARCUS02

Project: PG&E Topock - RMP, RC000753.0801 **QC Level:** Level IV **Date Received:** 7/6/2016

Comments:

Sample ID	Client Sample ID	Date Collected	Date Due	Matrix	Test No	Test Name	Hld	MS	Sub	Storage
N020228-006E	R63-Q316	7/6/2016 10:15:00 AM	7/20/2016	Groundwater	SM4500-NO3F	NITRATE/NITRITE-N BY CADMIUM REDUCTION	☐	☐	☐	WW
N020228-007A	C-BNS-Q316	7/6/2016 11:45:00 AM	7/20/2016		EPA 218.6	Hexavalent Chromium by IC	☐	☐	☐	WW
N020228-007B			7/20/2016		EPA 3010A	AQPREP TOTAL METALS: ICP, FLAA	☐	☐	☐	WW
			7/20/2016		EPA 3010A	AQPREP TOTAL METALS: ICP, FLAA	☐	☐	☐	WW
			7/20/2016		EPA 6010B	DISSOLVED METALS BY ICP	☐	☐	☐	WW
			7/20/2016		EPA 6020	DISSOLVED METALS BY ICP-MS	☐	☐	☐	WW
			7/20/2016		EPA 6020	DISSOLVED METALS BY ICP-MS	☐	☐	☐	WW
N020228-007C			7/20/2016		EPA 3010A	AQPREP TOTAL METALS: ICP, FLAA	☐	☐	☐	WW
			7/20/2016		EPA 6010B	TOTAL METALS BY ICP	☐	☐	☐	WW
N020228-007D			7/20/2016		EPA 120.1	SPECIFIC CONDUCTANCE	☐	☐	☐	LR
			7/20/2016		SM4500-H+B	pH	☐	☐	☐	LR
			7/20/2016		SM2540D	TOTAL NON-FILTERABLE RESIDUE	☐	☐	☐	LR
			7/20/2016			Total Suspended Solids Prep	☐	☐	☐	LR
N020228-007E			7/20/2016		SM4500-NO3F	NITRATE/NITRITE-N BY CADMIUM REDUCTION	☐	☐	☐	WW
N020228-008A	C-I-3-D-Q316	7/6/2016 9:50:00 AM	7/20/2016		EPA 218.6	Hexavalent Chromium by IC	☐	☐	☐	WW
N020228-008B			7/20/2016		EPA 3010A	AQPREP TOTAL METALS: ICP, FLAA	☐	☐	☐	WW
			7/20/2016		EPA 3010A	AQPREP TOTAL METALS: ICP, FLAA	☐	☐	☐	WW
			7/20/2016		EPA 6010B	DISSOLVED METALS BY ICP	☐	☐	☐	WW
			7/20/2016		EPA 6020	DISSOLVED METALS BY ICP-MS	☐	☐	☐	WW
			7/20/2016		EPA 6020	DISSOLVED METALS BY ICP-MS	☐	☐	☐	WW
N020228-008C			7/20/2016		EPA 3010A	AQPREP TOTAL METALS: ICP, FLAA	☐	☐	☐	WW

WORK ORDER Summary

08-Jul-16

WorkOrder: N020228

Client ID: ARCUS02

Project: PG&E Topock - RMP, RC000753.0801 **QC Level:** Level IV **Date Received:** 7/6/2016

Comments:

Sample ID	Client Sample ID	Date Collected	Date Due	Matrix	Test No	Test Name	Hld	MS	Sub	Storage
N020228-008C	C-I-3-D-Q316	7/6/2016 9:50:00 AM	7/20/2016	Groundwater	EPA 6010B	TOTAL METALS BY ICP	☐	☐	☐	WW
N020228-008D			7/20/2016		EPA 120.1	SPECIFIC CONDUCTANCE	☐	☐	☐	LR
			7/20/2016		SM4500-H+B	pH	☐	☐	☐	LR
			7/20/2016		SM2540D	TOTAL NON-FILTERABLE RESIDUE	☐	☐	☐	LR
			7/20/2016			Total Suspended Solids Prep	☐	☐	☐	LR
N020228-008E			7/20/2016		SM4500-NO3F	NITRATE/NITRITE-N BY CADMIUM REDUCTION	☐	☐	☐	WW
N020228-009A	C-I-3-S-Q316	7/6/2016 9:35:00 AM	7/20/2016		EPA 218.6	Hexavalent Chromium by IC	☐	☐	☐	WW
N020228-009B			7/20/2016		EPA 3010A	AQPREP TOTAL METALS: ICP, FLAA	☐	☐	☐	WW
			7/20/2016		EPA 3010A	AQPREP TOTAL METALS: ICP, FLAA	☐	☐	☐	WW
			7/20/2016		EPA 6010B	DISSOLVED METALS BY ICP	☐	☐	☐	WW
			7/20/2016		EPA 6020	DISSOLVED METALS BY ICP-MS	☐	☐	☐	WW
			7/20/2016		EPA 6020	DISSOLVED METALS BY ICP-MS	☐	☐	☐	WW
N020228-009C			7/20/2016		EPA 3010A	AQPREP TOTAL METALS: ICP, FLAA	☐	☐	☐	WW
			7/20/2016		EPA 6010B	TOTAL METALS BY ICP	☐	☐	☐	WW
N020228-009D			7/20/2016		EPA 120.1	SPECIFIC CONDUCTANCE	☐	☐	☐	LR
			7/20/2016		SM4500-H+B	pH	☐	☐	☐	LR
			7/20/2016		SM2540D	TOTAL NON-FILTERABLE RESIDUE	☐	☐	☐	LR
			7/20/2016			Total Suspended Solids Prep	☐	☐	☐	LR
N020228-009E			7/20/2016		SM4500-NO3F	NITRATE/NITRITE-N BY CADMIUM REDUCTION	☐	☐	☐	WW
N020228-010A	C-MAR-D-Q316	7/6/2016 1:05:00 PM	7/20/2016		EPA 218.6	Hexavalent Chromium by IC	☐	☐	☐	WW
N020228-010B			7/20/2016		EPA 3010A	AQPREP TOTAL METALS: ICP, FLAA	☐	☐	☐	WW

WORK ORDER Summary

08-Jul-16

WorkOrder: N020228

Client ID: ARCUS02

Project: PG&E Topock - RMP, RC000753.0801 **QC Level:** Level IV **Date Received:** 7/6/2016

Comments:

Sample ID	Client Sample ID	Date Collected	Date Due	Matrix	Test No	Test Name	Hld	MS	Sub	Storage
N020228-010B	C-MAR-D-Q316	7/6/2016 1:05:00 PM	7/20/2016	Groundwater	EPA 3010A	AQPREP TOTAL METALS: ICP, FLAA	☐	☐	☐	WW
			7/20/2016		EPA 6010B	DISSOLVED METALS BY ICP	☐	☐	☐	WW
			7/20/2016		EPA 6020	DISSOLVED METALS BY ICP-MS	☐	☐	☐	WW
			7/20/2016		EPA 6020	DISSOLVED METALS BY ICP-MS	☐	☐	☐	WW
N020228-010C			7/20/2016		EPA 3010A	AQPREP TOTAL METALS: ICP, FLAA	☐	☐	☐	WW
			7/20/2016		EPA 6010B	TOTAL METALS BY ICP	☐	☐	☐	WW
N020228-010D			7/20/2016		EPA 120.1	SPECIFIC CONDUCTANCE	☐	☐	☐	LR
			7/20/2016		SM4500-H+B	pH	☐	☐	☐	LR
			7/20/2016		SM2540D	TOTAL NON-FILTERABLE RESIDUE	☐	☐	☐	LR
			7/20/2016			Total Suspended Solids Prep	☐	☐	☐	LR
N020228-010E			7/20/2016		SM4500-NO3F	NITRATE/NITRITE-N BY CADMIUM REDUCTION	☐	☐	☐	WW
N020228-011A	C-MAR-S-Q316	7/6/2016 1:35:00 PM	7/20/2016		EPA 218.6	Hexavalent Chromium by IC	☐	☐	☐	WW
N020228-011B			7/20/2016		EPA 3010A	AQPREP TOTAL METALS: ICP, FLAA	☐	☐	☐	WW
			7/20/2016		EPA 3010A	AQPREP TOTAL METALS: ICP, FLAA	☐	☐	☐	WW
			7/20/2016		EPA 6010B	DISSOLVED METALS BY ICP	☐	☐	☐	WW
			7/20/2016		EPA 6020	DISSOLVED METALS BY ICP-MS	☐	☐	☐	WW
			7/20/2016		EPA 6020	DISSOLVED METALS BY ICP-MS	☐	☐	☐	WW
N020228-011C			7/20/2016		EPA 3010A	AQPREP TOTAL METALS: ICP, FLAA	☐	☐	☐	WW
			7/20/2016		EPA 6010B	TOTAL METALS BY ICP	☐	☐	☐	WW
N020228-011D			7/20/2016		EPA 120.1	SPECIFIC CONDUCTANCE	☐	☐	☐	LR
			7/20/2016		SM4500-H+B	pH	☐	☐	☐	LR
			7/20/2016		SM2540D	TOTAL NON-FILTERABLE RESIDUE	☐	☐	☐	LR

WORK ORDER Summary

08-Jul-16

WorkOrder: N020228

Client ID: ARCUS02

Project: PG&E Topock - RMP, RC000753.0801 **QC Level:** Level IV **Date Received:** 7/6/2016

Comments:

Sample ID	Client Sample ID	Date Collected	Date Due	Matrix	Test No	Test Name	Hld	MS	Sub	Storage
N020228-011D	C-MAR-S-Q316	7/6/2016 1:35:00 PM	7/20/2016	Groundwater		Total Suspended Solids Prep	☐	☐	☐	LR
N020228-011E			7/20/2016		SM4500-NO3F	NITRATE/NITRITE-N BY CADMIUM REDUCTION	☐	☐	☐	WW
N020228-012A	C-R27-D-Q316	7/6/2016 12:25:00 PM	7/20/2016		EPA 218.6	Hexavalent Chromium by IC	☐	☐	☐	WW
N020228-012B			7/20/2016		EPA 3010A	AQPREP TOTAL METALS: ICP, FLAA	☐	☐	☐	WW
			7/20/2016		EPA 3010A	AQPREP TOTAL METALS: ICP, FLAA	☐	☐	☐	WW
			7/20/2016		EPA 6010B	DISSOLVED METALS BY ICP	☐	☐	☐	WW
			7/20/2016		EPA 6020	DISSOLVED METALS BY ICP-MS	☐	☐	☐	WW
			7/20/2016		EPA 6020	DISSOLVED METALS BY ICP-MS	☐	☐	☐	WW
N020228-012C			7/20/2016		EPA 3010A	AQPREP TOTAL METALS: ICP, FLAA	☐	☐	☐	WW
			7/20/2016		EPA 6010B	TOTAL METALS BY ICP	☐	☐	☐	WW
N020228-012D			7/20/2016		EPA 120.1	SPECIFIC CONDUCTANCE	☐	☐	☐	LR
			7/20/2016		SM4500-H+B	pH	☐	☐	☐	LR
			7/20/2016		SM2540D	TOTAL NON-FILTERABLE RESIDUE	☐	☐	☐	LR
			7/20/2016			Total Suspended Solids Prep	☐	☐	☐	LR
N020228-012E			7/20/2016		SM4500-NO3F	NITRATE/NITRITE-N BY CADMIUM REDUCTION	☐	☐	☐	WW
N020228-013A	C-R27-S-Q316	7/6/2016 12:40:00 PM	7/20/2016		EPA 218.6	Hexavalent Chromium by IC	☐	☐	☐	WW
N020228-013B			7/20/2016		EPA 3010A	AQPREP TOTAL METALS: ICP, FLAA	☐	☐	☐	WW
			7/20/2016		EPA 3010A	AQPREP TOTAL METALS: ICP, FLAA	☐	☐	☐	WW
			7/20/2016		EPA 6010B	DISSOLVED METALS BY ICP	☐	☐	☐	WW
			7/20/2016		EPA 6020	DISSOLVED METALS BY ICP-MS	☐	☐	☐	WW
			7/20/2016		EPA 6020	DISSOLVED METALS BY ICP-MS	☐	☐	☐	WW

WORK ORDER Summary

08-Jul-16

WorkOrder: N020228

Client ID: ARCUS02

Project: PG&E Topock - RMP, RC000753.0801 **QC Level:** Level IV **Date Received:** 7/6/2016

Comments:

Sample ID	Client Sample ID	Date Collected	Date Due	Matrix	Test No	Test Name	Hld	MS	Sub	Storage
N020228-013C	C-R27-S-Q316	7/6/2016 12:40:00 PM	7/20/2016	Groundwater	EPA 3010A	AQPREP TOTAL METALS: ICP, FLAA	☐	☐	☐	WW
			7/20/2016		EPA 6010B	TOTAL METALS BY ICP	☐	☐	☐	WW
N020228-013D			7/20/2016		EPA 120.1	SPECIFIC CONDUCTANCE	☐	☐	☐	LR
			7/20/2016		SM4500-H+B	pH	☐	☐	☐	LR
			7/20/2016		SM2540D	TOTAL NON-FILTERABLE RESIDUE	☐	☐	☐	LR
			7/20/2016			Total Suspended Solids Prep	☐	☐	☐	LR
N020228-013E			7/20/2016		SM4500-NO3F	NITRATE/NITRITE-N BY CADMIUM REDUCTION	☐	☐	☐	WW
N020228-014A	FOLDER		7/20/2016		EDD	RWQCB	☐	☐	☐	LAB
			7/20/2016		Folder	Folder	☐	☐	☐	LAB

List of Analysts

ASSET Laboratories Work Order: **N020228**

NAME	TEST METHOD
Quennie Manimtim	EPA 218.6
Claire Ignacio	EPA 6010B, EPA 6020
Ryan Balilu	SM 4500-NO3F
Lilia Ramit	EPA 120.1, SM 4500-H+B, SM 2540D

EPA 120.1

Wet Chemistry Technical Batch Review Checklist (ARCUS02)

ASSET LABORATORIES - LAS VEGAS

FIRST LEVEL REVIEW:

QC Batch Number: R109287 **Analyst:** LSR

ASSET #: N020228 **Date Analyzed:** 7/7/2016

Method: EPA 120.1

Initial Calibration	1st Level Review Y	1st Level Review N	1st Level Review N/A	2nd Level Review Y	2nd Level Review N	2nd Level Review 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/MS~~D, 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:

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: 7/11/2016

2nd Level Reviewer: jas Date: 7/21/2016

LOGBOOK DATA, QUANTITATION REPORT and/or SPECTRA

Conductivity Logbook

Date: 7/7/16 930

Analyst: LSR

Standard	Std ID	Reading	Comments
931 µS/cm	CINV - 160111A	9.52 µS/cm @ 21.4°C	% Rec: (90-110%)
1411	160425A	1409 @ 21.5°C	
99885	160425B	10150 @ 21.5°C	
100005	160322B	101600 - @ 21.6°C	

	Sample ID	Matrix	Reading	Comments
1	NO 20228-0020	H2O	965 @ 20.3°C	
2	30		966 @ 20.4°C	
3	40		967 @ 20.4°C	
4	50		959 @ 20.8°C	
5	60		973 @ 20.5°C	
6	70		978 @ 20.3°C	
7	80		977 @ 20.3°C	
8	90		980 @ 20.3°C	
9	100		1052 @ 20.4°C	
10	110		1055 @ 20.7°C	
Dup	20 DUP		961 ~~@ 20.7°C~~	Accept: 10% water, 20% soil
	Std Chk:		@ 20.1°C	% Rec: (90-110%)

LSR

Date:

Analyst: CONT'D

Standard	Std ID	Reading	Comments
1413 µS/cm	CINV - 160111E	1465 µS/cm @ 21.4°C	% Rec: (90-110%)
10000	150909A	10280 @ 21.7°C	
998893	151130A	104100 @ 21.8	

	Sample ID	Matrix	Reading	Comments
1	NO 20228-0120	H2O	980 @ 21.0°C	
2	130		984 @ 20.9°C	
3	NO 20229-0010		4070 @ 20.7°C	
4	2C		7810 @ 20.7°C	
5	3C		6210 @ 20.9°C	
6	1C DUP		4040 @ 20.2°C	
7				
8				
9	1413 µS/cm	CINV-160111E	1467 @ 21.4°C	
10	10000	150909A	10320 @ 22.0°C	
Dup	998893	151130A	10390 @ 22.0°C	Accept: 10% water, 20% soil
	Std Chk:			% Rec: (90-110%)

Logbook # 5

ESSE LABORATORIES

Julia Ramit 7/11/2016

SM 4500 H+B

pH Technical Batch Review Checklist (ARCUS02)

ASSET LABORATORIES - LAS VEGAS

FIRST LEVEL REVIEW:

QC Batch Number: R109288 **Instrument ID:** pH meter

ASSET #: N020228 **Analyst:** LSR

Date Analyzed: 7/7/2016

Method: EPA 150.1

pH Meter Calibration	1st Level Review Y	1st Level Review N	1st Level Review N/A	2nd Level Review Y	2nd Level Review N	2nd Level Review 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					
Sample Information						
4. Are all samples analyzed within hold time.		X				
QC Items						
5. Was a duplicate sample analyzed?	X					
Raw Data and Miscellaneous Information						
6. Are Non-Conformances documented			X			
7. Runlog complete and included in package.	X					
Preliminary Report						
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:

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: 7/11/2016

2nd Level Reviewer: [signature] Date: 7/21/2016

LOGBOOK DATA, QUANTITATION REPORT and/or SPECTRA

pH Logbook

Date: 7/7/16 1050

Analyst: LSR

Standard	Std ID	pH	Comments
Buffer 4	CINV-160722A	4.02 @ 22.7°C	SLOPE: 95.3%
Buffer 7	160307A	7.00 @ 22.8°C	
Buffer 10	160609C	10.01 @ 22.6°C	

	Sample ID	Matrix	pH	Comments
1	NO20228-0020	H_2O	8.25 @ 21.5°C	
2	3D		8.26 @ 21.4°C	
3	4D		8.29 @ 21.3°C	
4	5D		8.28 @ 21.2°C	
5	6D		8.31 @ 21.3°C	
6	7D		8.28 @ 21.3°C	
7	8D		8.27 @ 21.3°C	
8	9D		8.29 @ 21.4°C	
9	10D		7.86 @ 20.7°C	
10	11D		8.08 @ 21.4°C	
Dup	10DDUP		7.81 @ 20.4°C	Accept: 10% water, 20% soil
	Buffer 4, (7), 10	CINV-160111C	7.02 @ 23.8°C	Accept: +/-0.1 pH units from expected value

(Circle one)

Date:

Analyst: ~~CONTD~~ CONTINUATION

Standard	Std ID	pH	Comments
Buffer 4			
Buffer 7			
Buffer 10			

	Sample ID	Matrix	pH	Comments
1	NO20228-0120	H_2O	8.24 @ 21.6°C	
2	13D		8.29 @ 21.5°C	
3	NO20229-001C		8.11 @ 21.8°C	
4	2C		7.69 @ 21.7°C	CANCELLED 7/7/16
5	3C		8.14 @ 21.6°C	
6	2C DUP		7.62 @ 21.4°C	
7	NO20228-012D DUP		8.20 @ 21.2°C	
8				
9				
10				
Dup				Accept: 10% water, 20% soil
	Buffer 4, (7), 10	CINV-160111C	7.01 @ 23.5°C	Accept: +/-0.1 pH units from expected value

(Circle one)

SM 2540D

Wet Chemistry Technical Batch Review Checklist (ARCUS02)

ASSET LABORATORIES - LAS VEGAS

FIRST LEVEL REVIEW:

QC Batch Number: 58950/58951 **Analyst:** LSR

ASSET #: N020228 **Date Analyzed:** 7/8/2016

Method: EPA 160.2

Initial Calibration	1st Level Review Y	N	N/A	2nd Level Review 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:

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: 7/12/2016

2nd Level Reviewer: [signature] Date: 7/21/2016

SAMPLE CALCULATION

SAMPLE CALCULATION

METHOD: SM 2540D
TEST NAME: Total Non-Filterable Residue
MATRIX: ~~Water~~ Groundwater

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 **N020228-002D,** TSS concentration in mg/L is calculated as follows:

$$\text{TSS, mg/L} = \frac{(1.4475- 1.4469) *1000000}{100}$$

= 6 mg/L

Since reporting limit is 10 mg/L, therefore:

TSS = ND

Julia Ramit 7/12/2016

SAMPLE PREPARATION LOG

ASSET Laboratories

PREP BATCH REPORT

Prep Start Date: **7/8/2016 12:07:13 P**
Prep End Date: **7/8/2016 6:00:00 P**
Reviewed/ Date: 7/21/2016
Initials/ Date: Lilia Ramit 7/12/2016
Prep Batch **58950** Prep Code: **160.2_W_PRE** Technician: **Lilia Ramit**
Prep Factor Units: **mL / mL** Temp. (°C): **105**

Sample ID	Matrix	pH	SampAmt	3 Replicates	Sol Added	Sol Recov	Fin Vol	factor	Clean Up Code	TURB Check
LCS-58950	Water		100	☐	0	0	100	1.000		
MB-58950	Water		100	☐	0	0	100	1.000		
N020216-001B	Groundwater		100	☐	0	0	100	1.000		
N020216-001B-DU	Groundwater		100	☐	0	0	100	1.000		
N020228-002D	Groundwater		100	☐	0	0	100	1.000		
N020228-003D	Groundwater		100	☐	0	0	100	1.000		
N020228-004D	Groundwater		100	☐	0	0	100	1.000		
N020228-005D	Groundwater		100	☐	0	0	100	1.000		
N020228-006D	Groundwater		100	☐	0	0	100	1.000		
N020228-007D	Groundwater		100	☐	0	0	100	1.000		
N020228-008D	Groundwater		100	☐	0	0	100	1.000		
N020228-009D	Groundwater		100	☐	0	0	100	1.000		
N020228-010D	Groundwater		100	☐	0	0	100	1.000		

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

Number	Reagent Name
8395	Glass Fiber Filter, 47mm

Spk ID	Spike Name	SampType	AmtAdd
IWST160520A	1000 ppm Talc	LCS	100

ASSET Laboratories

PREP BATCH REPORT

Prep Start Date: 7/8/2016 12:07:13 P
Prep End Date:

Reviewed/ Date: 7/21/2016

Initials/ Date: Lilia Ramit 7/12/2016

Prep Batch 58950 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-58950	Water 160.2_W_PRE 0524 A		100	☐	0	0	100	1.000		
MB-58950	Water		100	☐	0	0	100	1.000		
N020216-001B	Groundwater		100	☐	0	0	100	1.000		
N020216-001B-DU	Groundwater		100	☐	0	0	100	1.000		
N020228-002D	Groundwater		100	☐	0	0	100	1.000		
N020228-003D	Groundwater		100	☐	0	0	100	1.000		
N020228-004D	Groundwater		100	☐	0	0	100	1.000		
N020228-005D	Groundwater		100	☐	0	0	100	1.000		
N020228-006D	Groundwater		100	☐	0	0	100	1.000		
N020228-007D	Groundwater		100	☐	0	0	100	1.000		
N020228-008D	Groundwater		100	☐	0	0	100	1.000		
N020228-009D	Groundwater		100	☐	0	0	100	1.000		
N020228-010D	Groundwater		100	☐	0	0	100	1.000		

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

#93945

ASSET Laboratories

PREP BATCH REPORT

Prep Start Date: **7/8/2016 12:07:13 P**
Prep End Date: **7/8/2016 6:00:00 P**
Reviewed/ Date: 7/21/2016
Initials/ Date: Lilia Ramit 7/12/2016
Prep Batch **58951** Prep Code: **160.2_W_PRE** Technician: **Lilia Ramit**
Prep Factor Units: **mL / mL** Temp. (°C): **105**

Sample ID	Matrix	pH	SampAmt	3 Replicates	Sol Added	Sol Recov	Fin Vol	factor	Clean Up Code	TURB Check
LCS-58951	Water		100	☐	0	0	100	1.000		
MB-58951	Water		100	☐	0	0	100	1.000		
N020228-011D	Groundwater		100	☐	0	0	100	1.000		
N020228-012D	Groundwater		100	☐	0	0	100	1.000		
N020228-013D	Groundwater		100	☐	0	0	100	1.000		
N020244-001D	Groundwater		100	☐	0	0	100	1.000		
N020244-001D-DU	Groundwater		100	☐	0	0	100	1.000		
N020244-002D	Groundwater		100	☐	0	0	100	1.000		
N020244-003D	Groundwater		100	☐	0	0	100	1.000		
N020244-004D	Groundwater		100	☐	0	0	100	1.000		
N020244-005D	Groundwater		100	☐	0	0	100	1.000		
N020244-006D	Groundwater		100	☐	0	0	100	1.000		
N020244-007D	Groundwater		100	☐	0	0	100	1.000		

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

Number	Reagent Name
8395	Glass Fiber Filter, 47mm

Spk ID	Spike Name	SampType	AmtAdd
IWST160520A	1000 ppm Talc	LCS	100

ASSET Laboratories

PREP BATCH REPORT

Prep Start Date: **7/8/2016 12:07:13 P**
Prep End Date:

Reviewed/ Date: 7/21/2016
Initials/ Date: Lilia Ramit 7/12/2016

Prep Batch **58951** 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-58951	Water	1W ST160 520	100	☐	0	0	100	1.000		
MB-58951	Water		100	☐	0	0	100	1.000		
N020228-011D	Groundwater		100	☐	0	0	100	1.000		
N020228-012D	Groundwater		100	☐	0	0	100	1.000		
N020228-013D	Groundwater		100	☐	0	0	100	1.000		
N020244-001D	Groundwater		100	☐	0	0	100	1.000		
N020244-001D-DU	Groundwater		100	☐	0	0	100	1.000		
N020244-002D	Groundwater		100	☐	0	0	100	1.000		
N020244-003D	Groundwater		100	☐	0	0	100	1.000		
N020244-004D	Groundwater		100	☐	0	0	100	1.000		
N020244-005D	Groundwater		100	☐	0	0	100	1.000		
N020244-006D	Groundwater		100	☐	0	0	100	1.000		
N020244-007D	Groundwater		100	☐	0	0	100	1.000		

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

8395

LOGBOOK DATA, QUANTITATION REPORT and/or SPECTRA

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
7/8/16 1207	MB1 58950	100	1.4309 1.4307	1.4307 1.4307	
28	LCS1 58952	100	1.4239 1.4238	1.5175 1.5177	
1	NO20296-001B	100	1.4154 1.4152	1.4160 1.4159	
DUP	1B DUP	100	1.3828 1.3828	1.3837 1.3836	
2	NO20328-002D	100	1.4470 1.4469	1.4476 1.4475	
3	3D	100	1.4347 1.4345	1.4348 1.4347	
4	4D	100	1.4392 1.4393	1.4402 1.4399	
5	5D	100	1.4394 1.4392	1.4395 1.4393	
6	6D	100	1.4403 1.4401	1.4408 1.4409	
7	7D	100	1.4431 1.4430	1.4436 1.4434	

Julia Ramit 7/12/2016

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	NO2 228-0080	100	1.4319 1.4320	1.4327 1.4328	
9	90	100	1.4378 1.4380	1.4383 1.4384	
10	101	100	1.4520 1.4518	1.4676 1.4676	DUPLICY

Julia Ramit 7/12/2016

TOTAL SUSPENDED SOLIDS, TSS

TSS, mg/L = (A-B) * 10000*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

Date:	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
7/8/2016							
MBLK-58950	100	1.4307	1.4307	0.0000	1.00	0	MBLK
LCS-58950	100	1.4238	1.5177	939.0000	1.00	939	LCS
N020216-001B	100	1.4152	1.4159	7.0000	1.00	7	SAMP
N020216-001BDUP	100	1.3828	1.3836	8.0000	1.00	8	DUP
N020228-002D	100	1.4469	1.4475	6.0000	1.00	6	SAMP
N020228-003D	100	1.4345	1.4347	2.0000	1.00	2	SAMP
N020228-004D	100	1.4393	1.4399	6.0000	1.00	6	SAMP
N020228-005D	100	1.4392	1.4393	1.0000	1.00	1	SAMP
N020228-006D	100	1.4401	1.4409	8.0000	1.00	8	SAMP
N020228-007D	100	1.443	1.4434	4.0000	1.00	4	SAMP
N020228-008D	100	1.432	1.4328	8.0000	1.00	8	SAMP
N020228-009D	100	1.438	1.4384	4.0000	1.00	4	SAMP
N020228-010D	100	1.4518	1.4676	158.0000	1.00	158	SAMP

Silvia Ramit 7/12/2016

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
7/8/16 1207	MB2 58951	100	1.3755 1.3753	1.3753 1.3752	
2m	CCS2 58951	100	1.4410 1.4409	1.5348 1.5351	
11	NO20228-0110	100	1.4423 1.4425	1.4577 1.4574	murky
12	12D	100	1.4268 1.4266	1.4273 1.4274	
13	13D	100	1.4282 1.4280	1.4286 1.4287	
14	NO20244-0010	100	1.4498 1.4498	1.4505 1.4505	
100P3	1D DUP	100	1.3833 1.3833	1.3841 1.3841	
15	2D	100	1.4234 1.4237	1.4239 1.4240	
16	3D	100	1.4324 1.4324	1.4326 1.4328	
17	4D	100	1.4401 1.4404	1.4408 1.4407	

Julia Ramit 7/12/2016

TOTAL SUSPENDED SOLIDS, TSS

TSS, mg/L = (A-B) * 10000*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

Date:	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
7/8/2016							
MBLK-58951	100	1.3753	1.3752	-1.0000	1.00	-1	MBLK
LCS-58951	100	1.4409	1.5351	942.0000	1.00	942	LCS
N020228-011D	100	1.4425	1.4574	149.0000	1.00	149	SAMP
N020228-012D	100	1.4266	1.4274	8.0000	1.00	8	SAMP
N020228-013D	100	1.428	1.4287	7.0000	1.00	7	SAMP
N020244-001D	100	1.4498	1.4505	7.0000	1.00	7	SAMP
N020244-001DDUP	100	1.3833	1.3841	8.0000	1.00	8	DUP
N020244-002D	100	1.4237	1.424	3.0000	1.00	3	SAMP
N020244-003D	100	1.4324	1.4328	4.0000	1.00	4	SAMP
N020244-004D	100	1.4404	1.4407	3.0000	1.00	3	SAMP
N020244-005D	100	1.4433	1.444	7.0000	1.00	7	SAMP
N020244-006D	100	1.4227	1.4234	7.0000	1.00	7	SAMP
N020244-007D	100	1.4455	1.446	5.0000	1.00	5	SAMP

Silvia Ramit 7/12/2016

EPA 218.6

IC Technical Batch Review Checklist (ARCUS02)

ASSET LABORATORIES - LAS VEGAS

IC ARCUS
REV 2.0
011416

QC Batch Number: R109313
ASSET #: N020228

Instrument ID: IC-07
Analyst: QBM
Date Analyzed: 7/7/2016

Method:

- [ ] EPA 300.0
- [ ] EPA 7199
- [x] 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					
Continuing Calibration						
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					
Sample Information						
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			
QC Items						
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			
Raw Data and Miscellaneous Information						
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					
Preliminary Report						
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 _____ Date: 7/21/2016

2nd Level Reviewer _____ Date: 7/21/2016

SAMPLE CALCULATION

Sample Calculation

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

FORMULA:

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

Cr^{+6}, μg/L = A * DF

where:

A = μg/L, IC Cr^{+6} calculated concentration
DF = dilution factor

For **N020228-002A** concentration in μg/L is calculated as follows:

Cr^{+6}, μg/L = 0.0911 * 1

= 0.0911

Since reporting limit is 0.2 mg/L,

Cr^{+6}, μg/L = ND

7/21/2016

ANALYSIS RUN LOG

INJECTION LOG: 160707A

Instrument ID: IC-07

Sample No	Sample Name	Type	DF	Peak Name	Injection Date/Time	Comments
1	BLANK	BLANK	1	Hexavalent Chromium	07/07/16 10:12 AM	Not Reported
2	iBLANK	iBLANK	1	Hexavalent Chromium	07/07/16 10:23 AM	Not Reported
3	STD-0.2 ppb	ICAL	1	Hexavalent Chromium	07/07/16 10:32 AM	Reported
4	STD-1.0 ppb	ICAL	1	Hexavalent Chromium	07/07/16 10:42 AM	Reported
5	STD-5.0 ppb	ICAL	1	Hexavalent Chromium	07/07/16 10:51 AM	Reported
6	STD-10.0 ppb	ICAL	1	Hexavalent Chromium	07/07/16 11:00 AM	Reported
7	STD-15.0 ppb	ICAL	1	Hexavalent Chromium	07/07/16 11:10 AM	Reported
8	STD-20.0 ppb	ICAL	1	Hexavalent Chromium	07/07/16 11:19 AM	Reported
9	ICV	ICV	1	Hexavalent Chromium	07/07/16 11:29 AM	Reported
10	PQL@0.2ppb	CCV2	1	Hexavalent Chromium	07/07/16 11:38 AM	Reported
11	ICB	ICB	1	Hexavalent Chromium	07/07/16 11:48 AM	Reported
12	MB-109313	MBLK	1	Hexavalent Chromium	07/07/16 11:59 AM	Reported
13	LCS-109313	LCS	1	Hexavalent Chromium	07/07/16 12:09 PM	Reported
14	N020228-001A	SAMP	1	Hexavalent Chromium	07/07/16 12:18 PM	Reported
15	N020228-001ADUP	DUP	1	Hexavalent Chromium	07/07/16 12:28 PM	Reported
16	N020228-001AMS	MS	1	Hexavalent Chromium	07/07/16 12:37 PM	Reported
17	N020228-002A	SAMP	1	Hexavalent Chromium	07/07/16 12:47 PM	Reported
18	N020228-002AMS	MS	1	Hexavalent Chromium	07/07/16 12:56 PM	Reported
19	N020228-002AMSD	MSD	1	Hexavalent Chromium	07/07/16 1:06 PM	Reported
20	N020228-003A	SAMP	1	Hexavalent Chromium	07/07/16 1:15 PM	Reported
21	N020228-003AMS	MS	1	Hexavalent Chromium	07/07/16 1:25 PM	Reported
22	CCV-1	CCV1	1	Hexavalent Chromium	07/07/16 1:34 PM	Reported
23	CCB-1	CCB	1	Hexavalent Chromium	07/07/16 1:44 PM	Reported
24	N020228-004A	SAMP	1	Hexavalent Chromium	07/07/16 1:53 PM	Reported
25	N020228-004AMS	MS	1	Hexavalent Chromium	07/07/16 2:02 PM	Reported
26	N020228-005A	SAMP	1	Hexavalent Chromium	07/07/16 2:12 PM	Reported
27	N020228-005AMS	MS	1	Hexavalent Chromium	07/07/16 2:21 PM	Not Reported
28	N020228-006A	SAMP	1	Hexavalent Chromium	07/07/16 2:31 PM	Reported
29	N020228-006AMS	MS	1	Hexavalent Chromium	07/07/16 2:40 PM	Reported
30	N020228-007A	SAMP	1	Hexavalent Chromium	07/07/16 2:50 PM	Reported
31	N020228-007AMS	MS	1	Hexavalent Chromium	07/07/16 2:59 PM	Reported
32	N020228-008A	SAMP	1	Hexavalent Chromium	07/07/16 3:09 PM	Reported
33	N020228-008AMS	MS	1	Hexavalent Chromium	07/07/16 3:18 PM	Reported
34	CCV-2	CCV	1	Hexavalent Chromium	07/07/16 3:28 PM	Reported
35	CCB-2	CCB	1	Hexavalent Chromium	07/07/16 3:37 PM	Reported
36	N020228-005AMS	MS	1	Hexavalent Chromium	07/07/16 3:47 PM	Reported
37	N020228-009A	SAMP	1	Hexavalent Chromium	07/07/16 3:56 PM	Reported
38	N020228-009AMS	MS	1	Hexavalent Chromium	07/07/16 4:05 PM	Reported
39	N020228-010A	SAMP	1	Hexavalent Chromium	07/07/16 4:15 PM	Reported
40	N020228-010AMS	MS	1	Hexavalent Chromium	07/07/16 4:24 PM	Reported
41	N020228-011A	SAMP	1	Hexavalent Chromium	07/07/16 4:34 PM	Reported
42	N020228-011AMS	MS	1	Hexavalent Chromium	07/07/16 4:44 PM	Reported

INJECTION LOG: 160707A

Instrument ID: IC-07

Sample No	Sample Name	Type	DF	Peak Name	Injection Date/Time	Comments
43	N020228-012A	SAMP	1	Hexavalent Chromium	07/07/16 4:53 PM	Reported
44	N020228-012AMS	MS	1	Hexavalent Chromium	07/07/16 5:02 PM	Reported
45	N020228-013A	SAMP	1	Hexavalent Chromium	07/07/16 5:12 PM	Reported
46	CCV-3	CCV1	1	Hexavalent Chromium	07/07/16 5:24 PM	Reported
47	CCB-3	CCB	1	Hexavalent Chromium	07/07/16 5:33 PM	Reported
48	N020229-001A	SAMP	1	Hexavalent Chromium	07/07/16 5:43 PM	Not Reported
49	N020228-013AMS	MS	1	Hexavalent Chromium	07/07/16 5:52 PM	Not Reported
50	N020228-013AMS	MS	1	Hexavalent Chromium	07/07/16 6:04 PM	Reported
51	N020229-001AMS	MS	1	Hexavalent Chromium	07/07/16 6:15 PM	Not Reported
52	N020230-001A	SAMP	1	Hexavalent Chromium	07/07/16 6:25 PM	Reported
53	N020230-002A	SAMP	1	Hexavalent Chromium	07/07/16 6:34 PM	Reported
54	N020230-003A	SAMP	1	Hexavalent Chromium	07/07/16 6:44 PM	Reported
55	N020230-004A	SAMP	1	Hexavalent Chromium	07/07/16 6:53 PM	Reported
56	N020230-005A	SAMP	1	Hexavalent Chromium	07/07/16 7:03 PM	Reported
57	N020230-006A	SAMP	1	Hexavalent Chromium	07/07/16 7:12 PM	Reported
58	CCV-4	CCV	1	Hexavalent Chromium	07/07/16 7:22 PM	Reported
59	CCB-4	CCB	1	Hexavalent Chromium	07/07/16 7:31 PM	Reported
60	N020229-001A	SAMP	1	Hexavalent Chromium	07/07/16 7:40 PM	Reported
61	N020229-001AMS	MS	1	Hexavalent Chromium	07/07/16 7:50 PM	Reported
62	CCV-5	CCV1	1	Hexavalent Chromium	07/07/16 7:59 PM	Reported
63	CCB-5	CCB	1	Hexavalent Chromium	07/07/16 8:09 PM	Reported

7/21/2016

Injection Log Summary

Sequence Details

Name:	**IC-07_160707B**	*Created On:*	**24/Jul/12 17:17:21**
Directory:	**Instrument Data\IC-7\2016**	*Created By:*	**ics 5000**
Data Vault:	**ChromeleonLocal**	*Updated On:*	**08/Jul/16 09:38:15**
No. of Injections:	**66**	*Updated By:*	**ics 5000**

Injection Details

No.	Injection Name	Position	Volume µL	Type	Level	Inject Time	Status	Comment
1	BLANK	3	1000	Unknown		07/07/2016 10:12	Finished	
2	iBLANK	4	1000	Unknown		07/07/2016 10:23	Finished	INSTRUMENT BLANK
3	STD1-0.2 ppb	5	1000	Calibration Standard	01	07/07/2016 10:32	Finished	0.2 ppb, IWST160401A
4	STD2-1.0 ppb	6	1000	Calibration Standard	02	07/07/2016 10:42	Finished	1.0 ppb, IWST160401A
5	STD3-5.0 ppb	7	1000	Calibration Standard	03	07/07/2016 10:51	Finished	5.0 ppb, IWST160401A
6	STD4-10.0 ppb	8	1000	Calibration Standard	04	07/07/2016 11:00	Finished	10 ppb, IWST160401A
7	STD5-15.0 ppb	9	1000	Calibration Standard	05	07/07/2016 11:10	Finished	15 ppb, IWST160401A
8	STD6-20.0 ppb	10	1000	Calibration Standard	06	07/07/2016 11:19	Finished	20 ppb, IWST160401A
9	ICV,ICV,1,	11	1000	Unknown		07/07/2016 11:29	Finished	ICV @5ppb, IWST-160401B
10	PQL@0.2ppb,CCV2,1	12	1000	Unknown		07/07/2016 11:38	Finished	PQL @ 0.2ppb
11	ICB,ICB,1,	13	1000	Unknown		07/07/2016 11:48	Finished	ICB R160629C
12	MB-H2O,MBLK,1	14	1000	Unknown		07/07/2016 11:59	Finished	MB R160629C
13	LCS-H2O,LCS,1	15	1000	Unknown		07/07/2016 12:09	Finished	LCS, IWST-160401B
14	N020228-001A,SAMP	16	1000	Unknown		07/07/2016 12:18	Finished	SAMP, 10 mL
15	N020228-001ADUP,D	17	1000	Unknown		07/07/2016 12:28	Finished	DUP, 10 mL
16	N020228-001AMS,MS	18	1000	Unknown		07/07/2016 12:37	Finished	MS (1ppb), IWST-160401B, 10
17	N020228-002A,SAMP	19	1000	Unknown		07/07/2016 12:47	Finished	SAMP, 10 mL
18	N020228-002AMS,MS	20	1000	Unknown		07/07/2016 12:56	Finished	MS (1ppb), IWST-160401B, 10
19	N020228-002AMSD,M	21	1000	Unknown		07/07/2016 13:06	Finished	MSD (1ppb), IWST-160401B, 1
20	N020228-003A,SAMP	22	1000	Unknown		07/07/2016 13:15	Finished	SAMP, 10 mL
21	N020228-003AMS,MS	23	1000	Unknown		07/07/2016 13:25	Finished	MS (1ppb), IWST-160401B, 10
22	CCV-1,CCV1,1,	24	1000	Unknown		07/07/2016 13:34	Finished	CCV @10ppb, IWST-160401A
23	CCB-1,CCB,1,	25	1000	Unknown		07/07/2016 13:44	Finished	CCB, R160629C
24	N020228-004A,SAMP	26	1000	Unknown		07/07/2016 13:53	Finished	SAMP, 10 mL
25	N020228-004AMS,MS	27	1000	Unknown		07/07/2016 14:02	Finished	MS (1ppb), IWST-160401B, 10
26	N020228-005A,SAMP	28	1000	Unknown		07/07/2016 14:12	Finished	SAMP, 10 mL
27	N020228-005AMS,MS	29	1000	Unknown		07/07/2016 14:21	Finished	MS (1ppb), IWST-160401B, 10
28	N020228-006A,SAMP	30	1000	Unknown		07/07/2016 14:31	Finished	SAMP, 10 mL
29	N020228-006AMS,MS	31	1000	Unknown		07/07/2016 14:40	Finished	MS (1ppb), IWST-160401B, 10
30	N020228-007A,SAMP	32	1000	Unknown		07/07/2016 14:50	Finished	SAMP, 10 mL
31	N020228-007AMS,MS	33	1000	Unknown		07/07/2016 14:59	Finished	MS (1ppb), IWST-160401B, 10
32	N020228-008A,SAMP	34	1000	Unknown		07/07/2016 15:09	Finished	SAMP, 10 mL
33	N020228-008AMS,MS	35	1000	Unknown		07/07/2016 15:18	Finished	MS (1ppb), IWST-160401B, 10
34	CCV-2,CCV,1,	36	1000	Unknown		07/07/2016 15:28	Finished	CCV @5ppb, IWST-160401A
35	CCB-2,CCB,1,	37	1000	Unknown		07/07/2016 15:37	Finished	CCB R160629C
36	N020228-005AMS,MS	38	1000	Unknown		07/07/2016 15:47	Finished	MS (1ppb), IWST-160401B, 10
37	N020228-009A,SAMP	39	1000	Unknown		07/07/2016 15:56	Finished	SAMP, 10 mL
38	N020228-009AMS,MS	40	1000	Unknown		07/07/2016 16:05	Finished	MS (1ppb), IWST-160401B, 10
39	N020228-010A,SAMP	41	1000	Unknown		07/07/2016 16:15	Finished	SAMP, 10 mL
40	N020228-010AMS,MS	42	1000	Unknown		07/07/2016 16:24	Finished	MS (1ppb), IWST-160401B, 10
41	N020228-011A,SAMP	43	1000	Unknown		07/07/2016 16:34	Finished	SAMP, 10 mL
42	N020228-011AMS,MS	44	1000	Unknown		07/07/2016 16:44	Finished	MS (1ppb), IWST-160401B, 10
43	N020228-012A,SAMP	45	1000	Unknown		07/07/2016 16:53	Finished	SAMP, 10 mL
44	N020228-012AMS,MS	46	1000	Unknown		07/07/2016 17:02	Finished	MS (1ppb), IWST-160401B, 10
45	N020228-013A,SAMP	1	1000	Unknown		07/07/2016 17:12	Finished	SAMP, 10 mL
46	CCV-3,CCV1,1,	2	1000	Unknown		07/07/2016 17:24	Finished	CCV @10ppb, IWST-160401A
47	CCB-3,CCB,1,	3	1000	Unknown		07/07/2016 17:33	Finished	CCB, R160629C
48	N020229-001A,SAMP	4	1000	Unknown		07/07/2016 17:43	Finished	SAMP, 10 mL
49	N020228-013AMS,MS	5	1000	Unknown		07/07/2016 17:52	Finished	MS (1ppb), IWST-160401B, 10
50	N020228-013AMS,MS	5	1000	Unknown		07/07/2016 18:04	Finished	MS (1ppb), IWST-160401B, 10
51	N020229-001AMS,MS	6	1000	Unknown		07/07/2016 18:15	Finished	MS (1ppb), IWST-160401B, 10
52	N020230-001A,SAMP	7	1000	Unknown		07/07/2016 18:25	Finished	SAMP, 10 mL
53	N020230-002A,SAMP	8	1000	Unknown		07/07/2016 18:34	Finished	SAMP, 10 mL
54	N020230-003A,SAMP	9	1000	Unknown		07/07/2016 18:44	Finished	SAMP, 10 mL
55	N020230-004A,SAMP	10	1000	Unknown		07/07/2016 18:53	Finished	SAMP, 10 mL
56	N020230-005A,SAMP	11	1000	Unknown		07/07/2016 19:03	Finished	SAMP, 10 mL
57	N020230-006A,SAMP	12	1000	Unknown		07/07/2016 19:12	Finished	SAMP, 10 mL
58	CCV-4,CCV,1,	13	1000	Unknown		07/07/2016 19:22	Finished	CCV @5ppb, IWST-160401A
59	CCB-4,CCB,1,	14	1000	Unknown		07/07/2016 19:31	Finished	CCB R160622B
60	N020229-001A,SAMP	15	1000	Unknown		07/07/2016 19:40	Finished	SAMP, 10 mL

61	N020229-001AMS,MS	16	1000	Unknown		07/07/2016 19:50	Finished	MS (1ppb), IWST-160401B, 10
62	CCV-5,CCV1,1,	17	1000	Unknown		07/07/2016 19:59	Finished	CCV @10ppb, IWST-160401A
63	CCB-5,CCB,1,	18	1000	Unknown		07/07/2016 20:09	Finished	CCB, R160629C
64	SHUTDOWN	19	1000	Unknown		07/07/2016 20:18	Finished	
65	Eluent: R160630C	20	1000	Unknown		n.a.	Finished	Eluent
66	PCR: R160706C	21	1000	Unknown		n.a.	Finished	Post-Column Reagent

SAMPLE PREPARATION LOG

Hexavalent Chromium Preparation and Runlog

Sample Preparation

Date Prepared: 7/7/16
Time Prepared: 10:30
Prepared By: MG

Slope 95.4%
ph 7 : 7.00 @ 21.0°C
ph 4 : 4.00 @ 20.9°C
ph 10 : 10.06 @ 20.9°C
LCS : 7.06 @ 20.4°C

Reagent ID:
Sulfuric Acid: #8457
Diphenylcarbazide: CINV-160125H
NH4OH + NH4SO4 eluent: R160630C / R160629A
NH4OH + NH4SO4 buffer: R160622B / R160629C

	Sample ID.	pH of sample	pH after treatment	Initial Volume of sample	Final Volume after buffer add'n	Volume of buffer added	Comments
1)	N020232-001A	9.49	–	~250 ml	~250 ml	–	R160622B
2)	002A	9.37	–			–	
3)	003A	9.47	–			–	
4)	004A	9.38	–			–	
5)	005A	9.35	–			–	
6)	006A	9.27	9.30			1drop 6N NaOH4	
7)	007A	9.19	9.33			2drops 6N NaOH4	
8)	008A	9.38	–			–	
9)	009A	9.31	–			–	
10)	N020228-001A	9.61	–				R160629C
11)	-002A	9.63 / 9.6 / 9.61	–				
12)	-003A	9.56 / 9.61 / 9.62	–				
13)	-004A	9.62 / 9.6 / 9.59	–				
14)	-005A	9.6 / 9.63 / 9.61	–				
15)	006A	9.63 / 9.59 / 9.62	–				
	007A	9.44 / 9.54 / 9.54	–				

Sample Preparation

Date Prepared: 7/7/16
Time Prepared: 10:30
Prepared By: Mark

Reagent ID:
Sulfuric Acid: #8457
Diphenylcarbazide: CINV-160125H
NH4OH + NH4SO4 eluent: R160630C / R160708A
NH4OH + NH4SO4 buffer: R160622B / R160629C

	Sample ID.	pH of sample	pH after treatment	Initial Volume of sample	Final Volume after buffer add'n	Volume of buffer added	Comments
1)	N020228 008A	9.55 / 9.54 / 9.55	–	~250 ml	~250 ml	–	R160629C
2)	009A	9.51 / 9.52 / 9.45	–			–	
3)	010 A	9.47 / 9.48 / 9.47	–			–	
4)	011 A	9.48 / 9.49 / 9.47	–			–	
5)	012 A	9.47 / 9.5 / 9.5	–			–	
6)	013 A	9.47 / 9.45 / 9.48	–			–	
7)	N020229-001A	9.26	9.32			1drop 6N NaOH4	
8)	002 A	9.31	–			–	
9)	003 A	9.28	9.33			1drop 6N NaOH	
10)	N020230-001A	9.05	9.32			3drops 6N NaOH	R160622B
11)	002A	9.20	9.33			2drops 6N NaOH	
12)	003A	9.17	9.30			2drops 6N NaOH	
13)	004A	9.15	9.32			2drops 6N NaOH	
14)	005A	9.17	9.30			2drops "	
15)	006A	9.15	9.36			3drops "	
	007A	9.32	–			–	

Logbook No. 10

INITIAL CALIBRATION DATA SUMMARY

(EPA 218.6) - INITIAL CALIBRATION

Instrument ID: IC-07
Date Calibrated: 7/7/2016

Initial Calibration:

Hexavalent Chromium	STD1	STD2	STD3	STD4	STD5	STD6	
COMPOUND, in ug/L	0.2	1	5	10	15	20	R^2
Area,mAU*min	0.0628	0.2582	1.2706	2.5192	3.8249	5.0640	1.0000

	Stock	Working
Standard Concentration:	1,000,000 PPB	1,000 PPB
Standard ID:	ISST150306A	IWST160401A

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.

7/21/2016

INITIAL CALIBRATION AND CONTINUING CALIBRATION VERIFICATION SUMMARY

CLIENT: ARCADIS U.S., Inc. - California
Work Order: N020228
Project: PG&E Topock - RMP, RC000753.0801

ANALYTICAL QC SUMMARY REPORT

TestCode: 218.6_WPGE

Sample ID: **ICV**	SampType: **ICV**	TestCode: **218.6_WPGE**	Units: **µg/L**	Prep Date:	RunNo: **109313**
Client ID: **ICV**	Batch ID: **R109313**	TestNo: **EPA 218.6**		Analysis Date: **7/7/2016**	SeqNo: **2366526**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	5.035	0.20	5.000	0	101	90	110				

Sample ID: **PQL@0.2ppb**	SampType: **CCV2**	TestCode: **218.6_WPGE**	Units: **µg/L**	Prep Date:	RunNo: **109313**
Client ID: **ZZZZZZ**	Batch ID: **R109313**	TestNo: **EPA 218.6**		Analysis Date: **7/7/2016**	SeqNo: **2366527**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	0.228	0.20	0.2000	0	114	80	120				

Sample ID: **CCV-1**	SampType: **CCV1**	TestCode: **218.6_WPGE**	Units: **µg/L**	Prep Date:	RunNo: **109313**
Client ID: **ZZZZZZ**	Batch ID: **R109313**	TestNo: **EPA 218.6**		Analysis Date: **7/7/2016**	SeqNo: **2366539**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	9.971	0.20	10.00	0	99.7	95	105				

Sample ID: **CCV-2**	SampType: **CCV**	TestCode: **218.6_WPGE**	Units: **µg/L**	Prep Date:	RunNo: **109313**
Client ID: **CCV**	Batch ID: **R109313**	TestNo: **EPA 218.6**		Analysis Date: **7/7/2016**	SeqNo: **2366550**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	5.106	0.20	5.000	0	102	95	105				

Sample ID: **CCV-3**	SampType: **CCV1**	TestCode: **218.6_WPGE**	Units: **µg/L**	Prep Date:	RunNo: **109313**
Client ID: **ZZZZZZ**	Batch ID: **R109313**	TestNo: **EPA 218.6**		Analysis Date: **7/7/2016**	SeqNo: **2366562**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	10.014	0.20	10.00	0	100	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: N020228
Project: PG&E Topock - RMP, RC000753.0801

ANALYTICAL QC SUMMARY REPORT

TestCode: 218.6_WPGE

Sample ID: **CCV-4**	SampType: **CCV**	TestCode: **218.6_WPGE**	Units: **µg/L**	Prep Date:	RunNo: **109313**
Client ID: **CCV**	Batch ID: **R109313**	TestNo: **EPA 218.6**		Analysis Date: **7/7/2016**	SeqNo: **2366571**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	5.089	0.20	5.000	0	102	95	105				

Sample ID: **CCV-5**	SampType: **CCV1**	TestCode: **218.6_WPGE**	Units: **µg/L**	Prep Date:	RunNo: **109313**
Client ID: **ZZZZZZ**	Batch ID: **R109313**	TestNo: **EPA 218.6**		Analysis Date: **7/7/2016**	SeqNo: **2366575**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	9.988	0.20	10.00	0	99.9	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

CLIENT: ARCADIS U.S., Inc. - California
Work Order: N020228
Project: PG&E Topock - RMP, RC000753.0801

ANALYTICAL QC SUMMARY REPORT

TestCode: 218.6_WPGE

Sample ID: **ICB**	SampType: **ICB**	TestCode: **218.6_WPGE**	Units: **µg/L**	Prep Date:	RunNo: **109313**
Client ID: **ICB**	Batch ID: **R109313**	TestNo: **EPA 218.6**		Analysis Date: **7/7/2016**	SeqNo: **2366528**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	ND	0.20									

Sample ID: **CCB-1**	SampType: **CCB**	TestCode: **218.6_WPGE**	Units: **µg/L**	Prep Date:	RunNo: **109313**
Client ID: **CCB**	Batch ID: **R109313**	TestNo: **EPA 218.6**		Analysis Date: **7/7/2016**	SeqNo: **2366540**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	ND	0.20									

Sample ID: **CCB-2**	SampType: **CCB**	TestCode: **218.6_WPGE**	Units: **µg/L**	Prep Date:	RunNo: **109313**
Client ID: **CCB**	Batch ID: **R109313**	TestNo: **EPA 218.6**		Analysis Date: **7/7/2016**	SeqNo: **2366551**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	ND	0.20									

Sample ID: **CCB-3**	SampType: **CCB**	TestCode: **218.6_WPGE**	Units: **µg/L**	Prep Date:	RunNo: **109313**
Client ID: **CCB**	Batch ID: **R109313**	TestNo: **EPA 218.6**		Analysis Date: **7/7/2016**	SeqNo: **2366563**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	ND	0.20									

Sample ID: **CCB-4**	SampType: **CCB**	TestCode: **218.6_WPGE**	Units: **µg/L**	Prep Date:	RunNo: **109313**
Client ID: **CCB**	Batch ID: **R109313**	TestNo: **EPA 218.6**		Analysis Date: **7/7/2016**	SeqNo: **2366572**

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
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: ARCADIS U.S., Inc. - California
Work Order: N020228
Project: PG&E Topock - RMP, RC000753.0801

ANALYTICAL QC SUMMARY REPORT

TestCode: 218.6_WPGE

Sample ID: **CCB-5** SampType: **CCB** TestCode: **218.6_WPGE** Units: **µg/L** Prep Date: RunNo: **109313**
Client ID: **CCB** Batch ID: **R109313** TestNo: **EPA 218.6** Analysis Date: **7/7/2016** SeqNo: **2366576**

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

RETENTION TIME (RT) SUMMARY

Instrument ID: IC-07

Analytical Sequence

Date Analyzed: 7/7/2016

Sample Name	Retention Time	Evaluation
ICV	5.048	
CCV-1	5.048	
CCV-2	5.056	
CCV-3	5.065	
CCV-4	5.056	
CCV-5	5.065	
Average	5.056	
Actual RT Window	4.976 - 5.136	
Applied RT Window	4.856 - 5.256	
MB-109313	N.A.	N.A.
LCS-109313	5.048	PASS
N020228-001A	N.A.	N.A.
N020228-001ADUP	N.A.	N.A.
N020228-001AMS	5.048	PASS
N020228-002A	5.040	PASS
N020228-002AMS	5.048	PASS
N020228-002AMSD	5.048	PASS
N020228-003A	5.048	PASS
N020228-003AMS	5.048	PASS
N020228-004A	5.040	PASS
N020228-004AMS	5.048	PASS
N020228-005A	5.048	PASS
N020228-005AMS	5.040	PASS
N020228-006A	5.040	PASS
N020228-006AMS	5.056	PASS
N020228-007A	5.048	PASS
N020228-007AMS	5.040	PASS
N020228-008A	5.040	PASS
N020228-008AMS	5.048	PASS
N020228-005AMS	5.048	PASS
N020228-009A	5.048	PASS
N020228-009AMS	5.048	PASS

7/21/2016

RETENTION TIME (RT) SUMMARY

Instrument ID: IC-07

Analytical Sequence

Date Analyzed: 7/7/2016

Sample Name	Retention Time	Evaluation
ICV	5.048	
CCV-1	5.048	
CCV-2	5.056	
CCV-3	5.065	
CCV-4	5.056	
CCV-5	5.065	
Average	5.056	
Actual RT Window	4.976 - 5.136	
Applied RT Window	4.856 - 5.256	
N020228-010A	5.065	PASS
N020228-010AMS	5.048	PASS
N020228-011A	5.073	PASS
N020228-011AMS	5.048	PASS
N020228-012A	5.048	PASS
N020228-012AMS	5.048	PASS
N020228-013A	5.048	PASS
N020229-001A	5.006	PASS
N020228-013AMS	5.048	PASS
N020228-013AMS	5.048	PASS
N020229-001AMS	5.006	PASS
N020230-001A	5.048	PASS
N020230-002A	5.048	PASS
N020230-003A	5.056	PASS
N020230-004A	5.056	PASS
N020230-005A	5.065	PASS
N020230-006A	5.023	PASS
N020229-001A	5.006	PASS
N020229-001AMS	5.006	PASS

7/21/2016

MDL STUDY

METHOD DETECTION LIMIT 2016

Method Name: **HEXAVALENT CHROMIUM by Ion Chromatography**
Method Number: EPA 218.6/EPA 7199
Analysis Date(s): 2/12/2016, 2/23/2016, 2/24/2016, 2/25/2016, 3/7/2016, 3/9/2016 & 3/11/2016
Analyst: Ryan Balilu, Jannette Soria

Matrix: **WATER**
Unit: ug/L

Instrument Name: **IC-06**

Acceptance Criteria: MDL < spike < 10X MDL

Datafile:	160212	160223	160224	160225	160307	160309	160311						
Analyte	**#1**	**#2**	**#3**	**#4**	**#5**	**#6**	**#7**	**Spike Conc., mg/L**	**SD**	**$t_{(n-1)}$ value**	**MDL**	**PQL**	**Remarks**
ICAL:													
Hexavalent Chromiu	0.2195	0.2048	0.2167	0.1675	0.2194	0.1811	0.1826	0.20	0.0215	3.143	**0.0675**	**0.20**	OK,meets criteria

Students' **t** Values at 99% CL

#	$t_{(n-1)}$
10	2.821
9	2.896
8	2.998
7	3.143

METHOD DETECTION LIMIT 2016

Method Name: **HEXAVALENT CHROMIUM by Ion Chromatography**
Method Number: EPA 218.6/EPA 7199
Analysis Date(s): 3/16/2016; 3/18/2016; 3/21/2016, 3/22/2016, 3/25/2016 & 3/30/2016
Analyst: Jannette Soria

Matrix: **WATER**
Unit: ug/L

Instrument Name: **IC-07**

Acceptance Criteria: MDL < spike < 10X MDL

Datafile:	160316	160318	160321	160322	160323	160325	160330						
Analyte	**#1**	**#2**	**#3**	**#4**	**#5**	**#6**	**#7**	**Spike Conc., mg/L**	**SD**	**$t_{(n-1)}$ value**	**MDL**	**PQL**	**Remarks**
ICAL:													
Hexavalent Chromiu	0.1906	0.2326	0.2339	0.2002	0.2394	0.2147	0.1920	0.20	0.0208	3.143	**0.0655**	**0.20**	OK,meets criteria

Students' **t** Values at 99% CL

#	$t_{(n-1)}$
10	2.821
9	2.896
8	2.998
7	3.143

RAW DATA

INITIAL CALIBRATION

INJECTION LOG: 160707A

Instrument ID: IC-07

Sample No	Sample Name	Type	DF	Peak Name	Injection Date/Time	Comments
1	BLANK	BLANK	1	Hexavalent Chromium	07/07/16 10:12 AM	Not Reported
2	iBLANK	iBLANK	1	Hexavalent Chromium	07/07/16 10:23 AM	Not Reported
3	STD-0.2 ppb	ICAL	1	Hexavalent Chromium	07/07/16 10:32 AM	Reported
4	STD-1.0 ppb	ICAL	1	Hexavalent Chromium	07/07/16 10:42 AM	Reported
5	STD-5.0 ppb	ICAL	1	Hexavalent Chromium	07/07/16 10:51 AM	Reported
6	STD-10.0 ppb	ICAL	1	Hexavalent Chromium	07/07/16 11:00 AM	Reported
7	STD-15.0 ppb	ICAL	1	Hexavalent Chromium	07/07/16 11:10 AM	Reported
8	STD-20.0 ppb	ICAL	1	Hexavalent Chromium	07/07/16 11:19 AM	Reported
9	ICV	ICV	1	Hexavalent Chromium	07/07/16 11:29 AM	Reported
10	PQL@0.2ppb	CCV2	1	Hexavalent Chromium	07/07/16 11:38 AM	Reported
11	ICB	ICB	1	Hexavalent Chromium	07/07/16 11:48 AM	Reported
12	MB-109313	MBLK	1	Hexavalent Chromium	07/07/16 11:59 AM	Reported
13	LCS-109313	LCS	1	Hexavalent Chromium	07/07/16 12:09 PM	Reported
14	N020228-001A	SAMP	1	Hexavalent Chromium	07/07/16 12:18 PM	Reported
15	N020228-001ADUP	DUP	1	Hexavalent Chromium	07/07/16 12:28 PM	Reported
16	N020228-001AMS	MS	1	Hexavalent Chromium	07/07/16 12:37 PM	Reported
17	N020228-002A	SAMP	1	Hexavalent Chromium	07/07/16 12:47 PM	Reported
18	N020228-002AMS	MS	1	Hexavalent Chromium	07/07/16 12:56 PM	Reported
19	N020228-002AMSD	MSD	1	Hexavalent Chromium	07/07/16 1:06 PM	Reported
20	N020228-003A	SAMP	1	Hexavalent Chromium	07/07/16 1:15 PM	Reported
21	N020228-003AMS	MS	1	Hexavalent Chromium	07/07/16 1:25 PM	Reported
22	CCV-1	CCV1	1	Hexavalent Chromium	07/07/16 1:34 PM	Reported
23	CCB-1	CCB	1	Hexavalent Chromium	07/07/16 1:44 PM	Reported
24	N020228-004A	SAMP	1	Hexavalent Chromium	07/07/16 1:53 PM	Reported
25	N020228-004AMS	MS	1	Hexavalent Chromium	07/07/16 2:02 PM	Reported
26	N020228-005A	SAMP	1	Hexavalent Chromium	07/07/16 2:12 PM	Reported
27	N020228-005AMS	MS	1	Hexavalent Chromium	07/07/16 2:21 PM	Not Reported
28	N020228-006A	SAMP	1	Hexavalent Chromium	07/07/16 2:31 PM	Reported
29	N020228-006AMS	MS	1	Hexavalent Chromium	07/07/16 2:40 PM	Reported
30	N020228-007A	SAMP	1	Hexavalent Chromium	07/07/16 2:50 PM	Reported
31	N020228-007AMS	MS	1	Hexavalent Chromium	07/07/16 2:59 PM	Reported
32	N020228-008A	SAMP	1	Hexavalent Chromium	07/07/16 3:09 PM	Reported
33	N020228-008AMS	MS	1	Hexavalent Chromium	07/07/16 3:18 PM	Reported
34	CCV-2	CCV	1	Hexavalent Chromium	07/07/16 3:28 PM	Reported
35	CCB-2	CCB	1	Hexavalent Chromium	07/07/16 3:37 PM	Reported
36	N020228-005AMS	MS	1	Hexavalent Chromium	07/07/16 3:47 PM	Reported
37	N020228-009A	SAMP	1	Hexavalent Chromium	07/07/16 3:56 PM	Reported
38	N020228-009AMS	MS	1	Hexavalent Chromium	07/07/16 4:05 PM	Reported
39	N020228-010A	SAMP	1	Hexavalent Chromium	07/07/16 4:15 PM	Reported
40	N020228-010AMS	MS	1	Hexavalent Chromium	07/07/16 4:24 PM	Reported
41	N020228-011A	SAMP	1	Hexavalent Chromium	07/07/16 4:34 PM	Reported
42	N020228-011AMS	MS	1	Hexavalent Chromium	07/07/16 4:44 PM	Reported

7/15/2016

INJECTION LOG: 160707A

Instrument ID: IC-07

Sample No	Sample Name	Type	DF	Peak Name	Injection Date/Time	Comments
43	N020228-012A	SAMP	1	Hexavalent Chromium	07/07/16 4:53 PM	Reported
44	N020228-012AMS	MS	1	Hexavalent Chromium	07/07/16 5:02 PM	Reported
45	N020228-013A	SAMP	1	Hexavalent Chromium	07/07/16 5:12 PM	Reported
46	CCV-3	CCV1	1	Hexavalent Chromium	07/07/16 5:24 PM	Reported
47	CCB-3	CCB	1	Hexavalent Chromium	07/07/16 5:33 PM	Reported
48	N020229-001A	SAMP	1	Hexavalent Chromium	07/07/16 5:43 PM	Not Reported
49	N020228-013AMS	MS	1	Hexavalent Chromium	07/07/16 5:52 PM	Not Reported
50	N020228-013AMS	MS	1	Hexavalent Chromium	07/07/16 6:04 PM	Reported
51	N020229-001AMS	MS	1	Hexavalent Chromium	07/07/16 6:15 PM	Not Reported
52	N020230-001A	SAMP	1	Hexavalent Chromium	07/07/16 6:25 PM	Reported
53	N020230-002A	SAMP	1	Hexavalent Chromium	07/07/16 6:34 PM	Reported
54	N020230-003A	SAMP	1	Hexavalent Chromium	07/07/16 6:44 PM	Reported
55	N020230-004A	SAMP	1	Hexavalent Chromium	07/07/16 6:53 PM	Reported
56	N020230-005A	SAMP	1	Hexavalent Chromium	07/07/16 7:03 PM	Reported
57	N020230-006A	SAMP	1	Hexavalent Chromium	07/07/16 7:12 PM	Reported
58	CCV-4	CCV	1	Hexavalent Chromium	07/07/16 7:22 PM	Reported
59	CCB-4	CCB	1	Hexavalent Chromium	07/07/16 7:31 PM	Reported
60	N020229-001A	SAMP	1	Hexavalent Chromium	07/07/16 7:40 PM	Reported
61	N020229-001AMS	MS	1	Hexavalent Chromium	07/07/16 7:50 PM	Reported
62	CCV-5	CCV1	1	Hexavalent Chromium	07/07/16 7:59 PM	Reported
63	CCB-5	CCB	1	Hexavalent Chromium	07/07/16 8:09 PM	Reported

7/15/2016

Injection Log Summary

Sequence Details

Name:	**IC-07_160707B**	*Created On:*	**24/Jul/12 17:17:21**
Directory:	**Instrument Data\IC-7\2016**	*Created By:*	**ics 5000**
Data Vault:	**ChromeleonLocal**	*Updated On:*	**08/Jul/16 09:38:15**
No. of Injections:	**66**	*Updated By:*	**ics 5000**

Injection Details

No.	Injection Name	Position	Volume µL	Type	Level	Inject Time	Status	Comment
1	BLANK	3	1000	Unknown		07/07/2016 10:12	Finished	
2	iBLANK	4	1000	Unknown		07/07/2016 10:23	Finished	INSTRUMENT BLANK
3	STD1-0.2 ppb	5	1000	Calibration Standard	01	07/07/2016 10:32	Finished	0.2 ppb, IWST160401A
4	STD2-1.0 ppb	6	1000	Calibration Standard	02	07/07/2016 10:42	Finished	1.0 ppb, IWST160401A
5	STD3-5.0 ppb	7	1000	Calibration Standard	03	07/07/2016 10:51	Finished	5.0 ppb, IWST160401A
6	STD4-10.0 ppb	8	1000	Calibration Standard	04	07/07/2016 11:00	Finished	10 ppb, IWST160401A
7	STD5-15.0 ppb	9	1000	Calibration Standard	05	07/07/2016 11:10	Finished	15 ppb, IWST160401A
8	STD6-20.0 ppb	10	1000	Calibration Standard	06	07/07/2016 11:19	Finished	20 ppb, IWST160401A
9	ICV,ICV,1,	11	1000	Unknown		07/07/2016 11:29	Finished	ICV @5ppb, IWST-160401B
10	PQL@0.2ppb,CCV2,1	12	1000	Unknown		07/07/2016 11:38	Finished	PQL @ 0.2ppb
11	ICB,ICB,1,	13	1000	Unknown		07/07/2016 11:48	Finished	ICB R160629C
12	MB-H2O,MBLK,1	14	1000	Unknown		07/07/2016 11:59	Finished	MB R160629C
13	LCS-H2O,LCS,1	15	1000	Unknown		07/07/2016 12:09	Finished	LCS, IWST-160401B
14	N020228-001A,SAMP	16	1000	Unknown		07/07/2016 12:18	Finished	SAMP, 10 mL
15	N020228-001ADUP,D	17	1000	Unknown		07/07/2016 12:28	Finished	DUP, 10 mL
16	N020228-001AMS,MS	18	1000	Unknown		07/07/2016 12:37	Finished	MS (1ppb), IWST-160401B, 10
17	N020228-002A,SAMP	19	1000	Unknown		07/07/2016 12:47	Finished	SAMP, 10 mL
18	N020228-002AMS,MS	20	1000	Unknown		07/07/2016 12:56	Finished	MS (1ppb), IWST-160401B, 10
19	N020228-002AMSD,M	21	1000	Unknown		07/07/2016 13:06	Finished	MSD (1ppb), IWST-160401B, 1
20	N020228-003A,SAMP	22	1000	Unknown		07/07/2016 13:15	Finished	SAMP, 10 mL
21	N020228-003AMS,MS	23	1000	Unknown		07/07/2016 13:25	Finished	MS (1ppb), IWST-160401B, 10
22	CCV-1,CCV1,1,	24	1000	Unknown		07/07/2016 13:34	Finished	CCV @10ppb, IWST-160401A
23	CCB-1,CCB,1,	25	1000	Unknown		07/07/2016 13:44	Finished	CCB, R160629C
24	N020228-004A,SAMP	26	1000	Unknown		07/07/2016 13:53	Finished	SAMP, 10 mL
25	N020228-004AMS,MS	27	1000	Unknown		07/07/2016 14:02	Finished	MS (1ppb), IWST-160401B, 10
26	N020228-005A,SAMP	28	1000	Unknown		07/07/2016 14:12	Finished	SAMP, 10 mL
27	N020228-005AMS,MS	29	1000	Unknown		07/07/2016 14:21	Finished	MS (1ppb), IWST-160401B, 10
28	N020228-006A,SAMP	30	1000	Unknown		07/07/2016 14:31	Finished	SAMP, 10 mL
29	N020228-006AMS,MS	31	1000	Unknown		07/07/2016 14:40	Finished	MS (1ppb), IWST-160401B, 10
30	N020228-007A,SAMP	32	1000	Unknown		07/07/2016 14:50	Finished	SAMP, 10 mL
31	N020228-007AMS,MS	33	1000	Unknown		07/07/2016 14:59	Finished	MS (1ppb), IWST-160401B, 10
32	N020228-008A,SAMP	34	1000	Unknown		07/07/2016 15:09	Finished	SAMP, 10 mL
33	N020228-008AMS,MS	35	1000	Unknown		07/07/2016 15:18	Finished	MS (1ppb), IWST-160401B, 10
34	CCV-2,CCV,1,	36	1000	Unknown		07/07/2016 15:28	Finished	CCV @5ppb, IWST-160401A
35	CCB-2,CCB,1,	37	1000	Unknown		07/07/2016 15:37	Finished	CCB R160629C
36	N020228-005AMS,MS	38	1000	Unknown		07/07/2016 15:47	Finished	MS (1ppb), IWST-160401B, 10
37	N020228-009A,SAMP	39	1000	Unknown		07/07/2016 15:56	Finished	SAMP, 10 mL
38	N020228-009AMS,MS	40	1000	Unknown		07/07/2016 16:05	Finished	MS (1ppb), IWST-160401B, 10
39	N020228-010A,SAMP	41	1000	Unknown		07/07/2016 16:15	Finished	SAMP, 10 mL
40	N020228-010AMS,MS	42	1000	Unknown		07/07/2016 16:24	Finished	MS (1ppb), IWST-160401B, 10
41	N020228-011A,SAMP	43	1000	Unknown		07/07/2016 16:34	Finished	SAMP, 10 mL
42	N020228-011AMS,MS	44	1000	Unknown		07/07/2016 16:44	Finished	MS (1ppb), IWST-160401B, 10
43	N020228-012A,SAMP	45	1000	Unknown		07/07/2016 16:53	Finished	SAMP, 10 mL
44	N020228-012AMS,MS	46	1000	Unknown		07/07/2016 17:02	Finished	MS (1ppb), IWST-160401B, 10
45	N020228-013A,SAMP	1	1000	Unknown		07/07/2016 17:12	Finished	SAMP, 10 mL
46	CCV-3,CCV1,1,	2	1000	Unknown		07/07/2016 17:24	Finished	CCV @10ppb, IWST-160401A
47	CCB-3,CCB,1,	3	1000	Unknown		07/07/2016 17:33	Finished	CCB, R160629C
48	N020229-001A,SAMP	4	1000	Unknown		07/07/2016 17:43	Finished	SAMP, 10 mL
49	N020228-013AMS,MS	5	1000	Unknown		07/07/2016 17:52	Finished	MS (1ppb), IWST-160401B, 10
50	N020228-013AMS,MS	5	1000	Unknown		07/07/2016 18:04	Finished	MS (1ppb), IWST-160401B, 10
51	N020229-001AMS,MS	6	1000	Unknown		07/07/2016 18:15	Finished	MS (1ppb), IWST-160401B, 10
52	N020230-001A,SAMP	7	1000	Unknown		07/07/2016 18:25	Finished	SAMP, 10 mL
53	N020230-002A,SAMP	8	1000	Unknown		07/07/2016 18:34	Finished	SAMP, 10 mL
54	N020230-003A,SAMP	9	1000	Unknown		07/07/2016 18:44	Finished	SAMP, 10 mL
55	N020230-004A,SAMP	10	1000	Unknown		07/07/2016 18:53	Finished	SAMP, 10 mL
56	N020230-005A,SAMP	11	1000	Unknown		07/07/2016 19:03	Finished	SAMP, 10 mL
57	N020230-006A,SAMP	12	1000	Unknown		07/07/2016 19:12	Finished	SAMP, 10 mL
58	CCV-4,CCV,1,	13	1000	Unknown		07/07/2016 19:22	Finished	CCV @5ppb, IWST-160401A
59	CCB-4,CCB,1,	14	1000	Unknown		07/07/2016 19:31	Finished	CCB R160622B
60	N020229-001A,SAMP	15	1000	Unknown		07/07/2016 19:40	Finished	SAMP, 10 mL

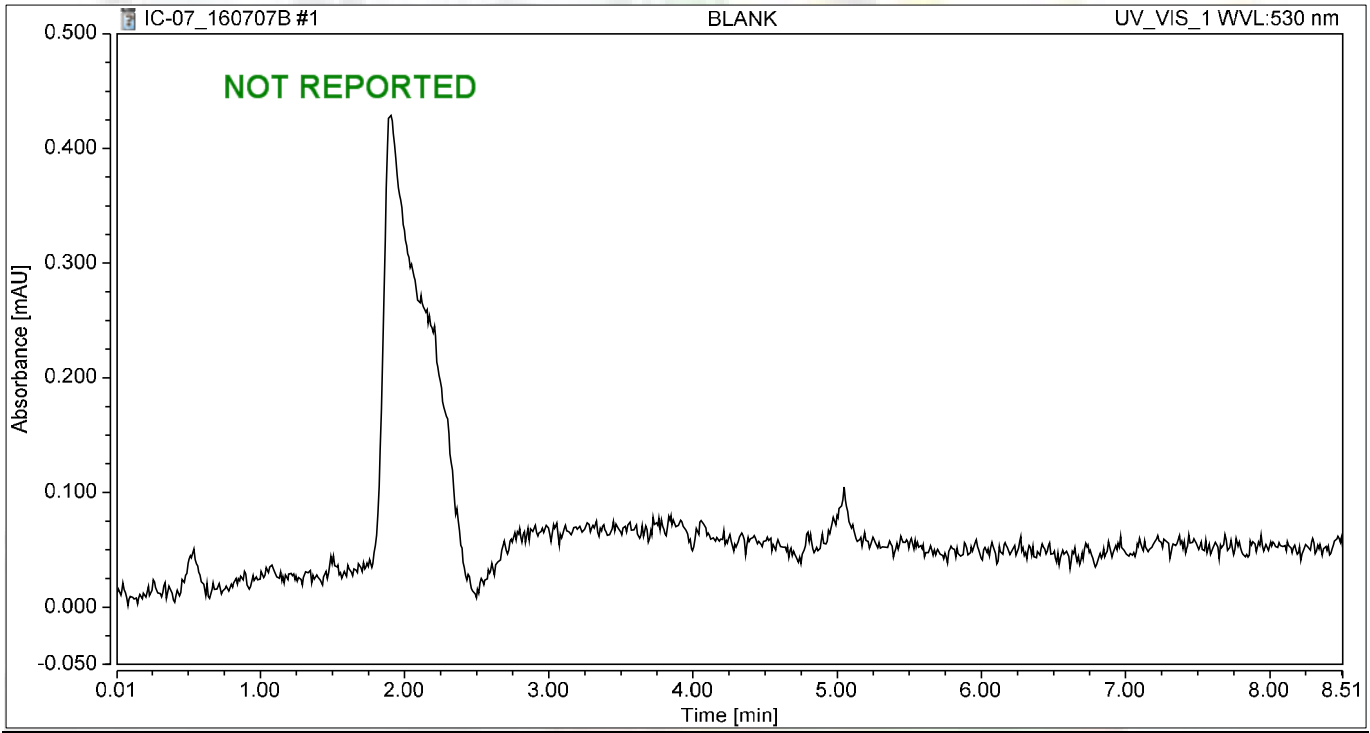
61	N020229-001AMS,MS	16	1000	Unknown		07/07/2016 19:50	Finished	MS (1ppb), IWST-160401B, 10
62	CCV-5,CCV1,1,	17	1000	Unknown		07/07/2016 19:59	Finished	CCV @10ppb, IWST-160401A
63	CCB-5,CCB,1,	18	1000	Unknown		07/07/2016 20:09	Finished	CCB, R160629C
64	SHUTDOWN	19	1000	Unknown		07/07/2016 20:18	Finished	
65	Eluent: R160630C	20	1000	Unknown		n.a.	Finished	Eluent
66	PCR: R160706C	21	1000	Unknown		n.a.	Finished	Post-Column Reagent

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:	**160707_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**07/Jul/16 10:12**	*Sample Weight:*	**1.0000**

Chromatogram



Integration Results

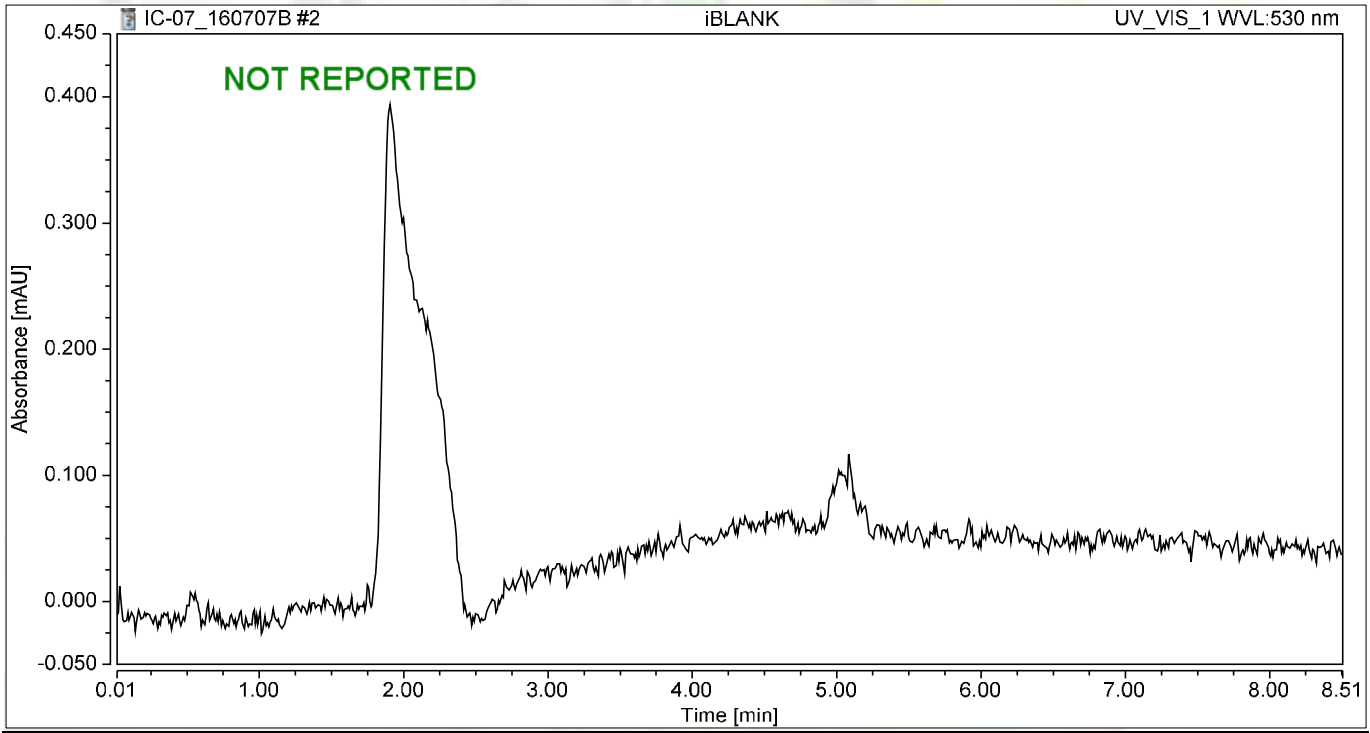
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
n.a.	Hexavalent Chromium	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Total:			**0.000**	**0.000**	**0.00**	**0.00**	

Chromatogram and Results

Injection Details

Injection Name:	**iBLANK**	*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:	**160707_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**07/Jul/16 10:23**	*Sample Weight:*	**1.0000**

Chromatogram



Integration Results

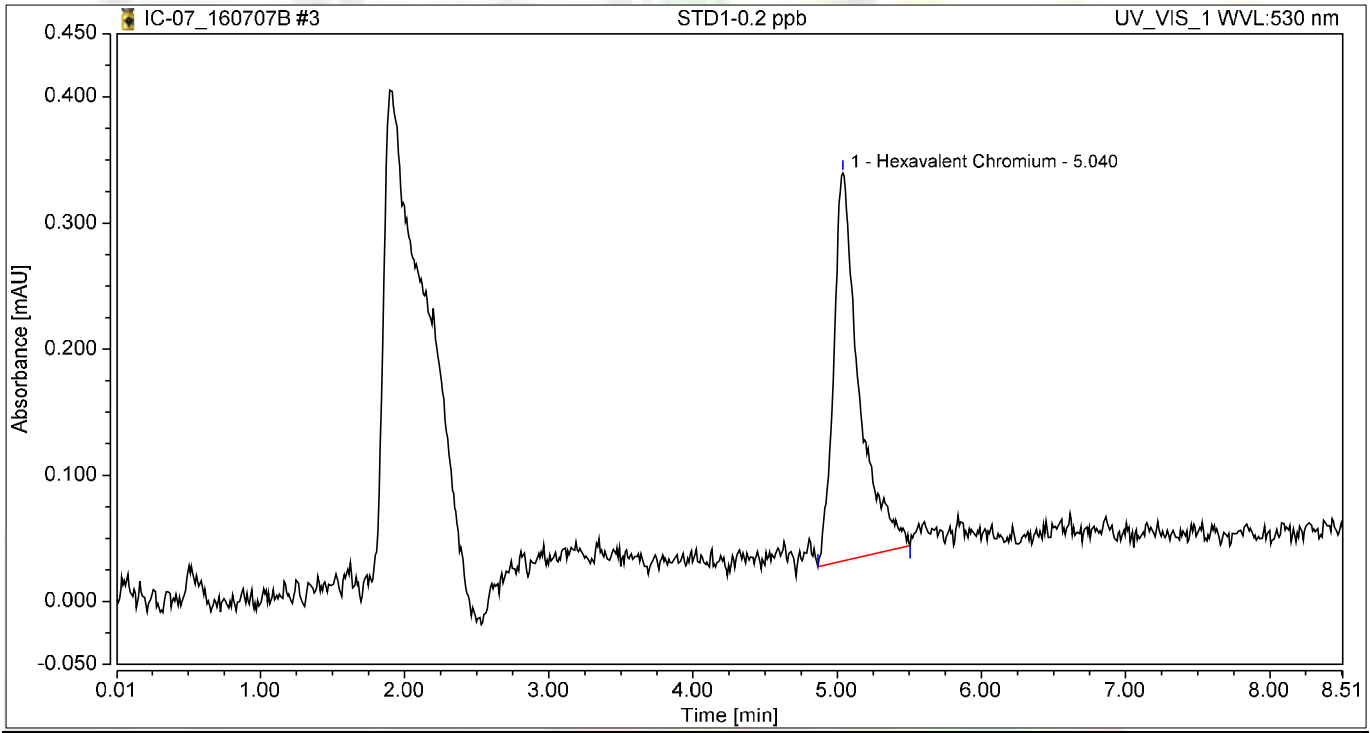
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
n.a.	Hexavalent Chromium	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Total:			**0.000**	**0.000**	**0.00**	**0.00**	

Chromatogram and Results

Injection Details

Injection Name:	**STD1-0.2 ppb**	*Run Time (min):*	**8.50**
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:	**160707_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**07/Jul/16 10:32**	*Sample Weight:*	**1.0000**

Chromatogram



Integration Results

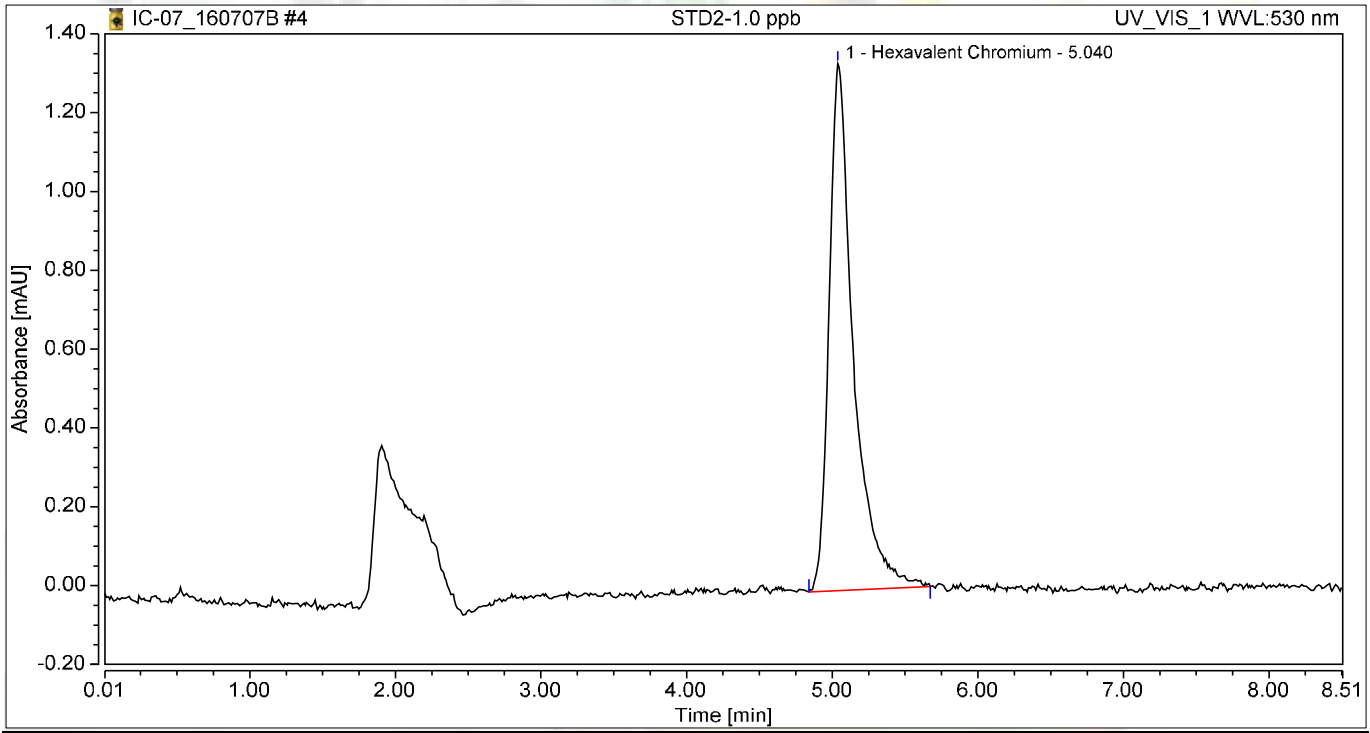
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	5.040	0.063	0.308	100.00	100.00	0.2475
Total:			**0.063**	**0.308**	**100.00**	**100.00**	

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:	**160707_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**07/Jul/16 10:42**	*Sample Weight:*	**1.0000**

Chromatogram



Integration Results

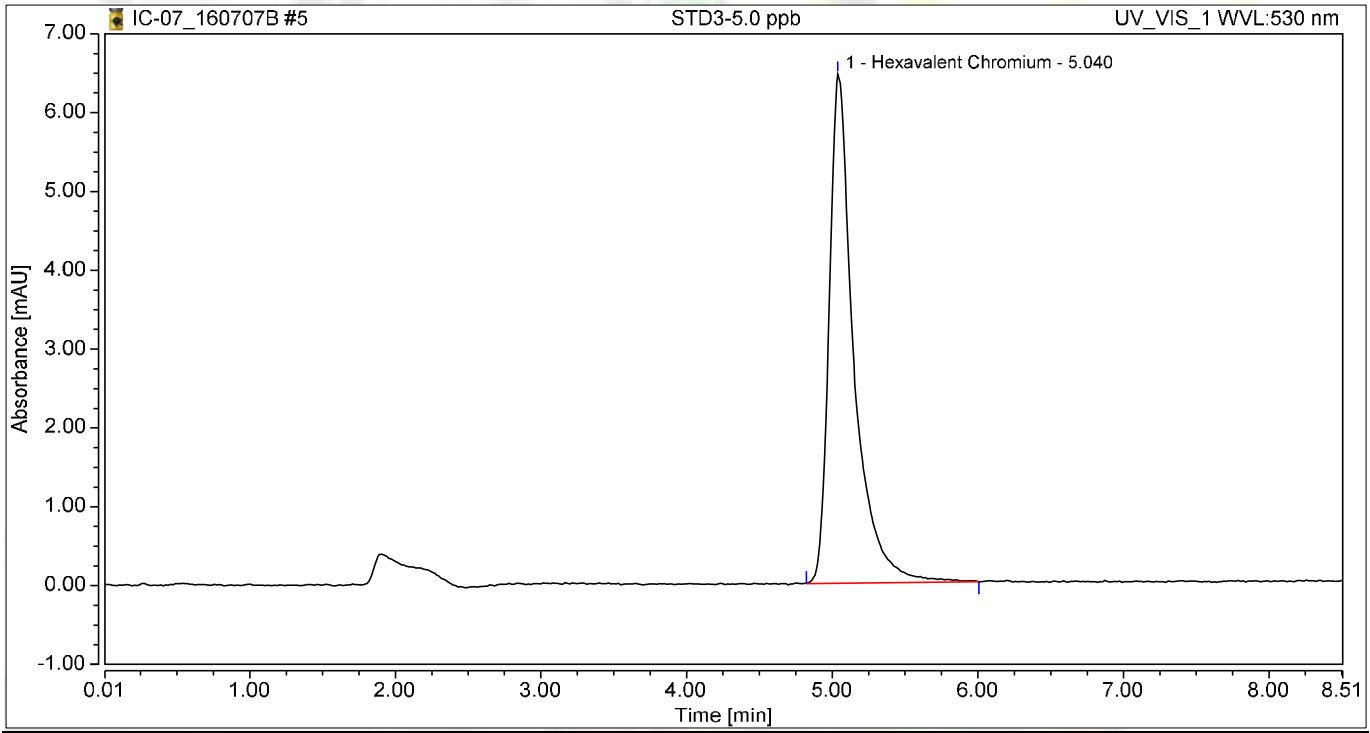
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	5.040	0.258	1.336	100.00	100.00	1.0183
Total:			**0.258**	**1.336**	**100.00**	**100.00**	

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:	**160707_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**07/Jul/16 10:51**	*Sample Weight:*	**1.0000**

Chromatogram



Integration Results

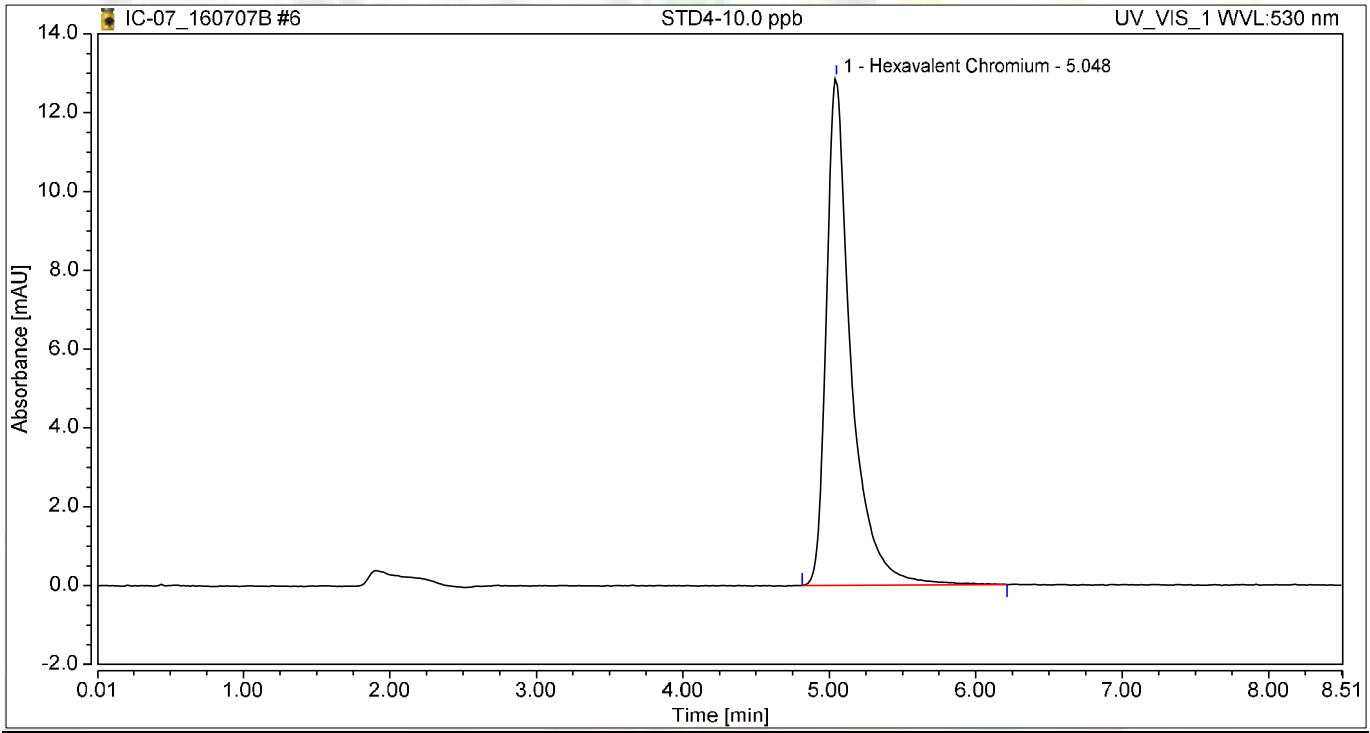
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	5.040	1.271	6.462	100.00	100.00	5.0100
Total:			**1.271**	**6.462**	**100.00**	**100.00**	

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:	**160707_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**07/Jul/16 11:00**	*Sample Weight:*	**1.0000**

Chromatogram



Integration Results

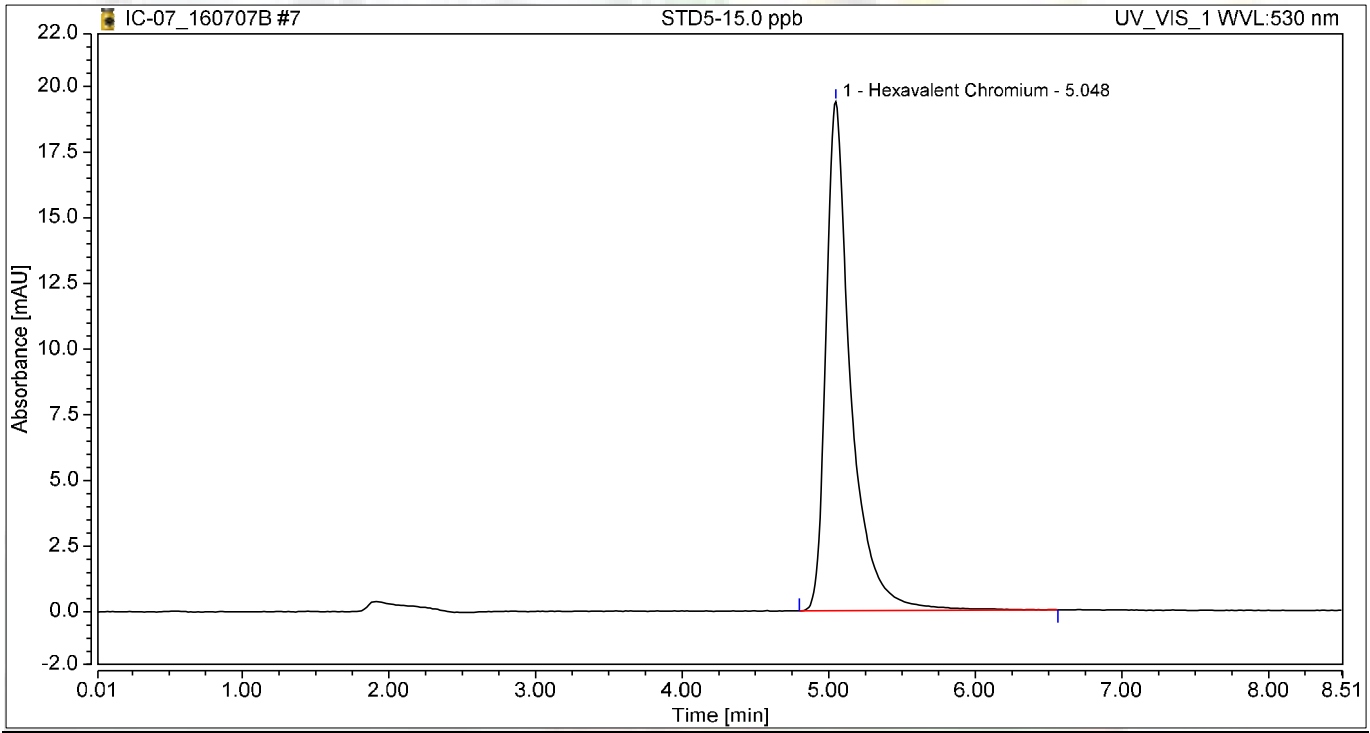
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	5.048	2.519	12.882	100.00	100.00	9.9335
Total:			**2.519**	**12.882**	**100.00**	**100.00**	

Chromatogram and Results

Injection Details

Injection Name:	**STD5-15.0 ppb**	*Run Time (min):*	**8.49**
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:	**160707_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**07/Jul/16 11:10**	*Sample Weight:*	**1.0000**

Chromatogram



Integration Results

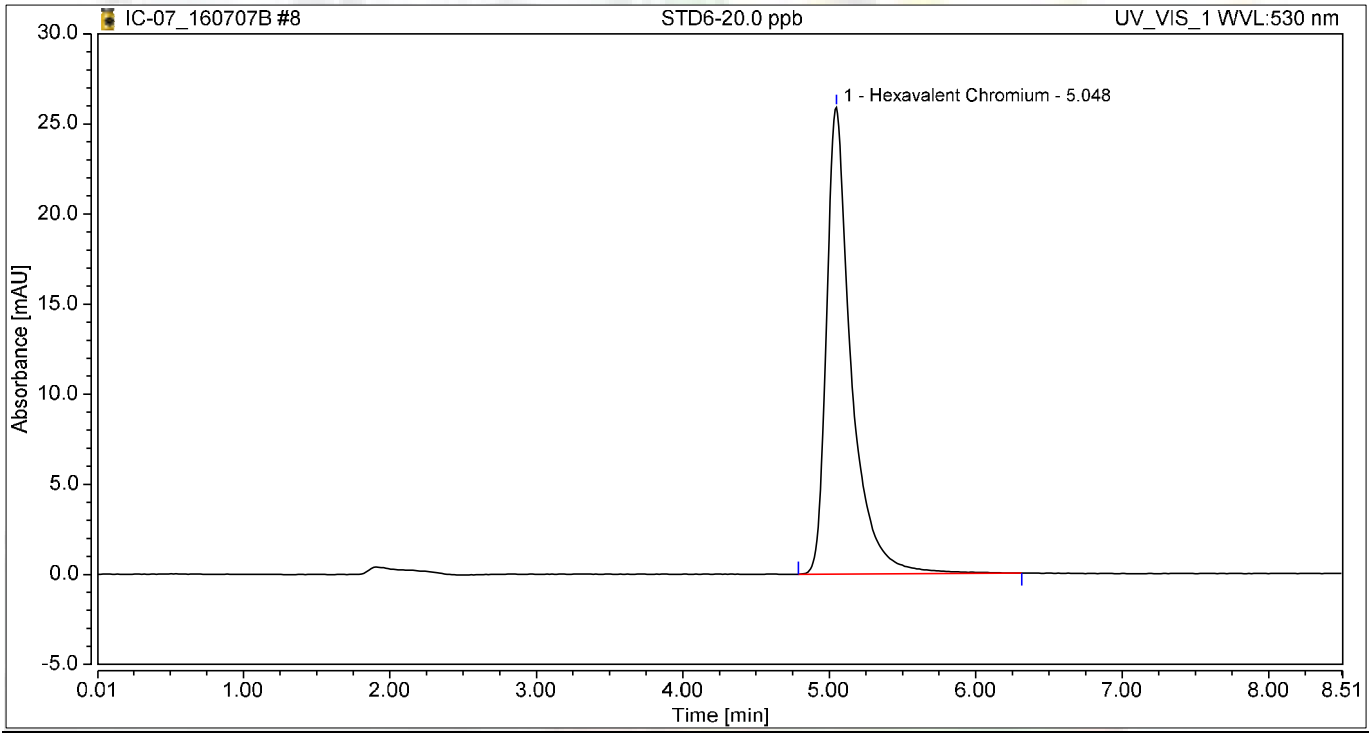
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	5.048	3.825	19.377	100.00	100.00	15.0822
Total:			**3.825**	**19.377**	**100.00**	**100.00**	

Chromatogram and Results

Injection Details

Injection Name:	**STD6-20.0 ppb**	*Run Time (min):*	**8.50**
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:	**160707_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**07/Jul/16 11:19**	*Sample Weight:*	**1.0000**

Chromatogram



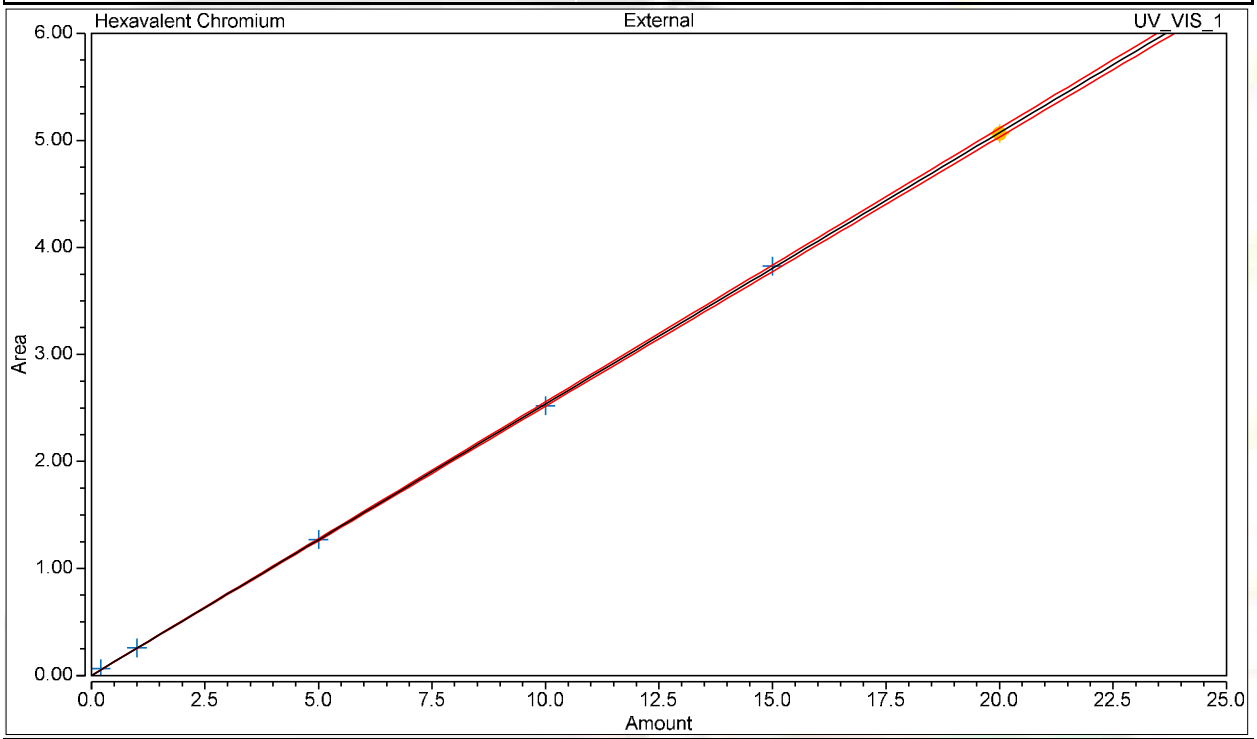
Integration Results

No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	5.048	5.064	25.901	100.00	100.00	19.9677
Total:			**5.064**	**25.901**	**100.00**	**100.00**	

Initial Calibration Summary

Calibration Details	Hexavalent Chromium		
Calibration Type	Lin	*Offset (C0)*	0.0000
Evaluation Type	Area	*Slope (C1)*	0.2536
Number of Calibration Points	6	*Curve (C2)*	0.0000
Number of disabled Calibration Points	0	*R-Square*	0.99995

Calibration Plot Hexavalent Chromium



Calibration Results Hexavalent Chromium

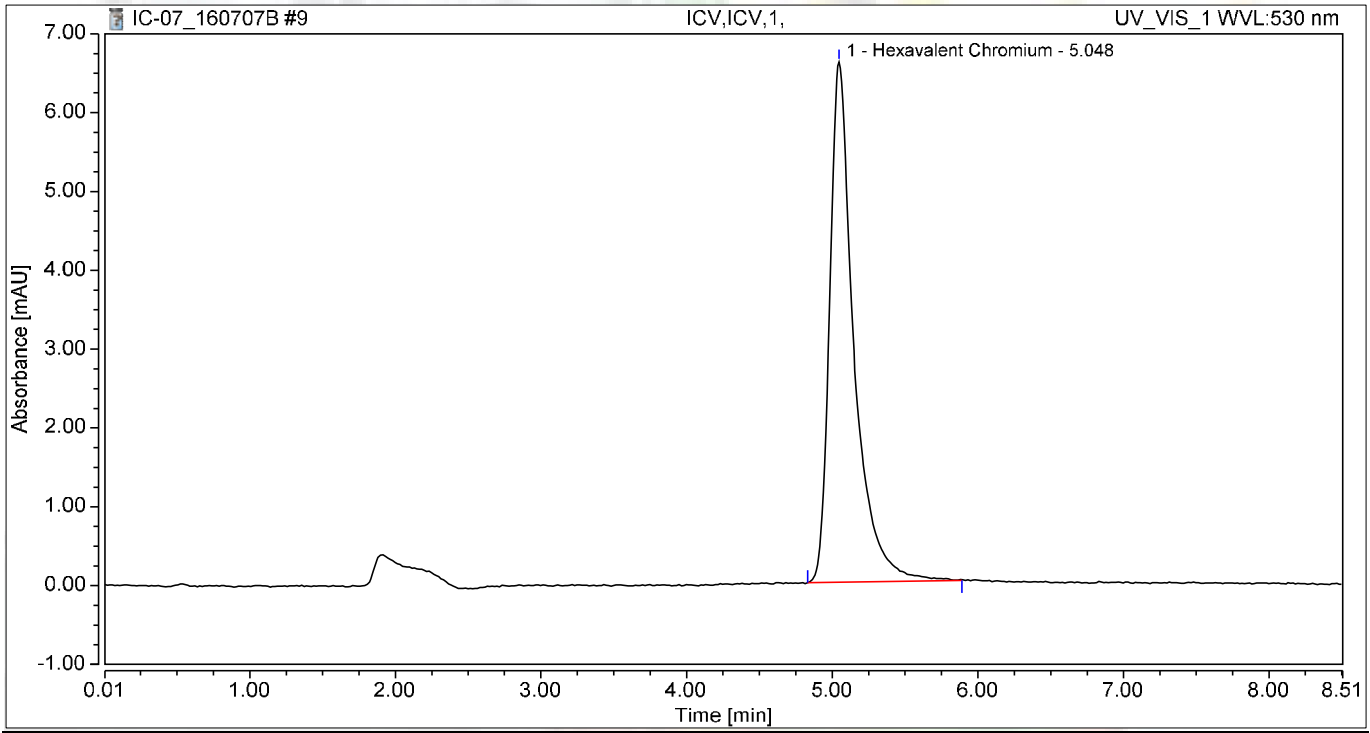
No.	Injection Name	Calibration Level	X Value	Y Value	Area mAU*min	Height mAU
3	STD1-0.2 ppb	01	0.2000	0.0628	0.063	0.308
4	STD2-1.0 ppb	02	1.0000	0.2582	0.258	1.336
5	STD3-5.0 ppb	03	5.0000	1.2706	1.271	6.462
6	STD4-10.0 ppb	04	10.0000	2.5192	2.519	12.882
7	STD5-15.0 ppb	05	15.0000	3.8249	3.825	19.377
8	STD6-20.0 ppb	06	20.0000	5.0640	5.064	25.901

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:	**160707_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**07/Jul/16 11:29**	*Sample Weight:*	**1.0000**

Chromatogram



Integration Results

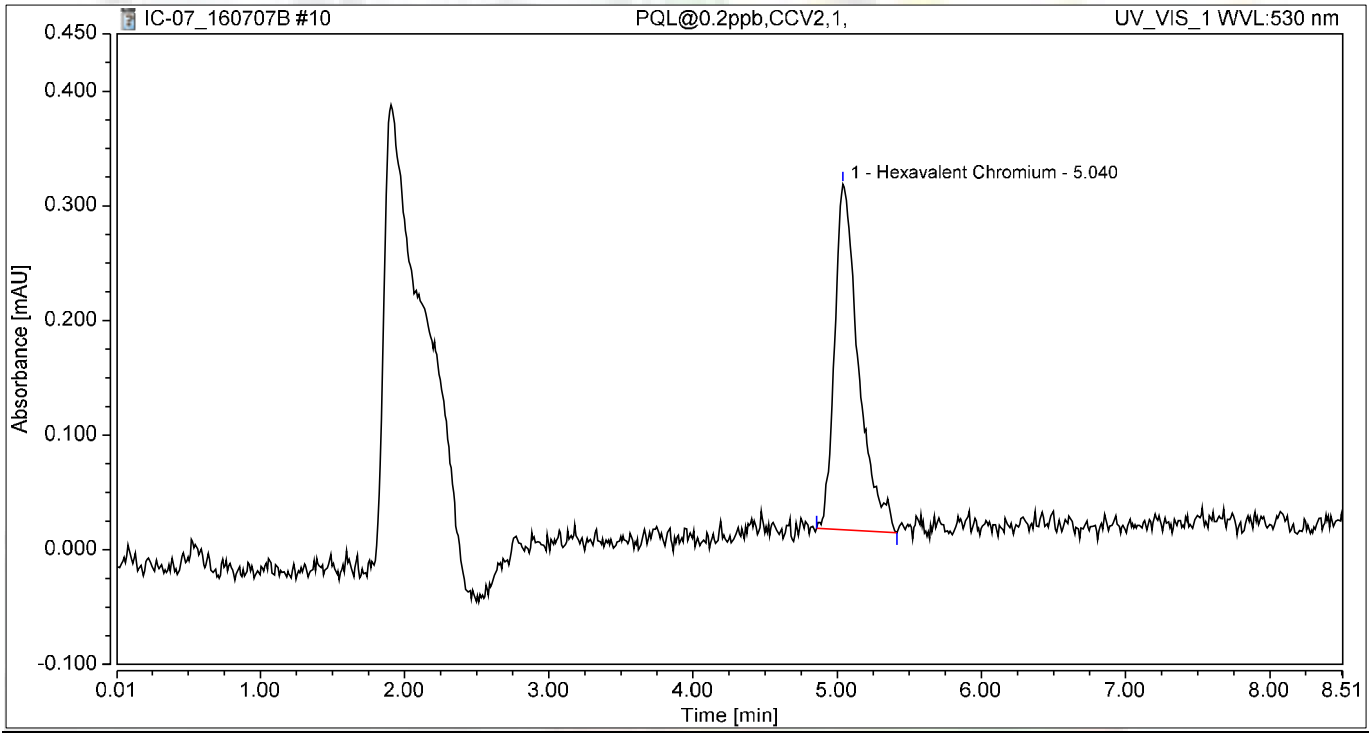
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	5.048	1.277	6.598	100.00	100.00	5.0352
Total:			**1.277**	**6.598**	**100.00**	**100.00**	

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:	**160707_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**07/Jul/16 11:38**	*Sample Weight:*	**1.0000**

Chromatogram



Integration Results

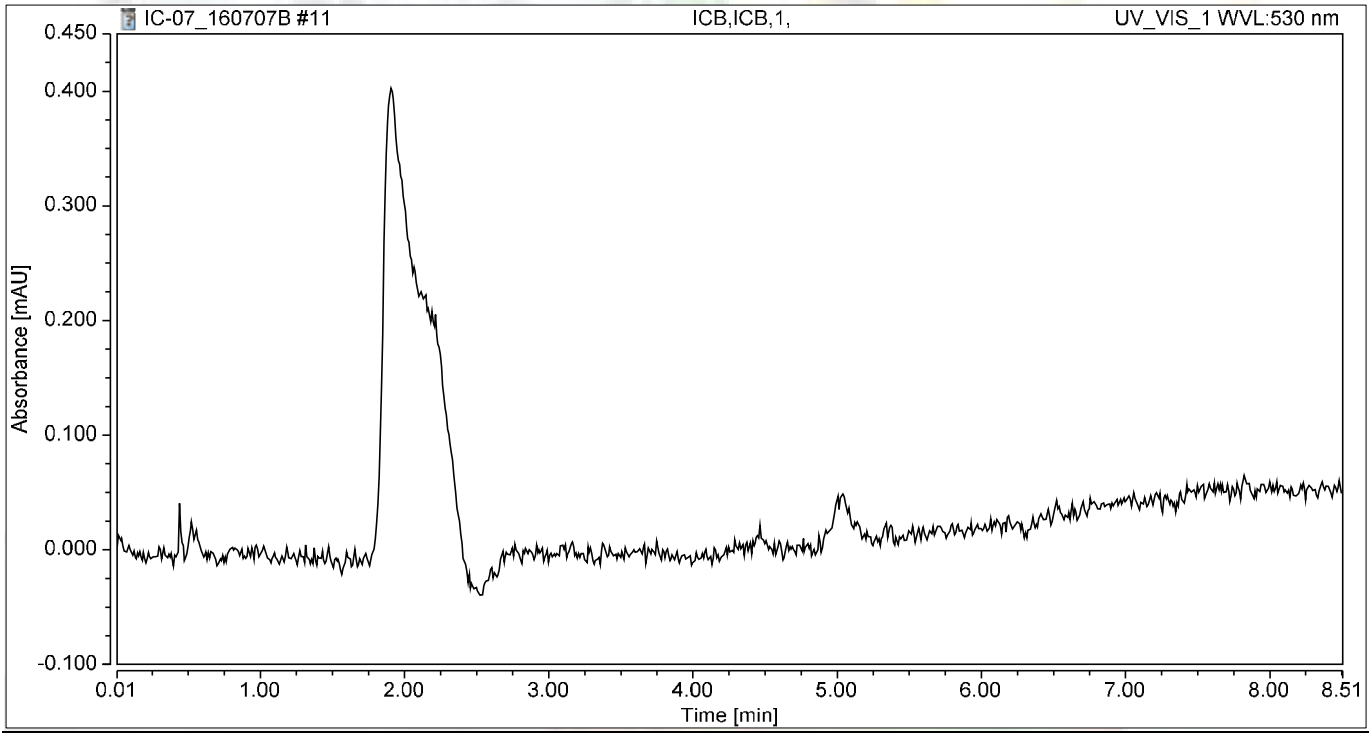
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	5.040	0.058	0.301	100.00	100.00	0.2276
Total:			**0.058**	**0.301**	**100.00**	**100.00**	

Chromatogram and Results

Injection Details

Injection Name:	**ICB,ICB,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:	**160707_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**07/Jul/16 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
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**	

RAW DATA

INJECTION LOG: 160707A

Instrument ID: IC-07

Sample No	Sample Name	Type	DF	Peak Name	Injection Date/Time	Comments
1	BLANK	BLANK	1	Hexavalent Chromium	07/07/16 10:12 AM	Not Reported
2	iBLANK	iBLANK	1	Hexavalent Chromium	07/07/16 10:23 AM	Not Reported
3	STD-0.2 ppb	ICAL	1	Hexavalent Chromium	07/07/16 10:32 AM	Reported
4	STD-1.0 ppb	ICAL	1	Hexavalent Chromium	07/07/16 10:42 AM	Reported
5	STD-5.0 ppb	ICAL	1	Hexavalent Chromium	07/07/16 10:51 AM	Reported
6	STD-10.0 ppb	ICAL	1	Hexavalent Chromium	07/07/16 11:00 AM	Reported
7	STD-15.0 ppb	ICAL	1	Hexavalent Chromium	07/07/16 11:10 AM	Reported
8	STD-20.0 ppb	ICAL	1	Hexavalent Chromium	07/07/16 11:19 AM	Reported
9	ICV	ICV	1	Hexavalent Chromium	07/07/16 11:29 AM	Reported
10	PQL@0.2ppb	CCV2	1	Hexavalent Chromium	07/07/16 11:38 AM	Reported
11	ICB	ICB	1	Hexavalent Chromium	07/07/16 11:48 AM	Reported
12	MB-109313	MBLK	1	Hexavalent Chromium	07/07/16 11:59 AM	Reported
13	LCS-109313	LCS	1	Hexavalent Chromium	07/07/16 12:09 PM	Reported
14	N020228-001A	SAMP	1	Hexavalent Chromium	07/07/16 12:18 PM	Reported
15	N020228-001ADUP	DUP	1	Hexavalent Chromium	07/07/16 12:28 PM	Reported
16	N020228-001AMS	MS	1	Hexavalent Chromium	07/07/16 12:37 PM	Reported
17	N020228-002A	SAMP	1	Hexavalent Chromium	07/07/16 12:47 PM	Reported
18	N020228-002AMS	MS	1	Hexavalent Chromium	07/07/16 12:56 PM	Reported
19	N020228-002AMSD	MSD	1	Hexavalent Chromium	07/07/16 1:06 PM	Reported
20	N020228-003A	SAMP	1	Hexavalent Chromium	07/07/16 1:15 PM	Reported
21	N020228-003AMS	MS	1	Hexavalent Chromium	07/07/16 1:25 PM	Reported
22	CCV-1	CCV1	1	Hexavalent Chromium	07/07/16 1:34 PM	Reported
23	CCB-1	CCB	1	Hexavalent Chromium	07/07/16 1:44 PM	Reported
24	N020228-004A	SAMP	1	Hexavalent Chromium	07/07/16 1:53 PM	Reported
25	N020228-004AMS	MS	1	Hexavalent Chromium	07/07/16 2:02 PM	Reported
26	N020228-005A	SAMP	1	Hexavalent Chromium	07/07/16 2:12 PM	Reported
27	N020228-005AMS	MS	1	Hexavalent Chromium	07/07/16 2:21 PM	Not Reported
28	N020228-006A	SAMP	1	Hexavalent Chromium	07/07/16 2:31 PM	Reported
29	N020228-006AMS	MS	1	Hexavalent Chromium	07/07/16 2:40 PM	Reported
30	N020228-007A	SAMP	1	Hexavalent Chromium	07/07/16 2:50 PM	Reported
31	N020228-007AMS	MS	1	Hexavalent Chromium	07/07/16 2:59 PM	Reported
32	N020228-008A	SAMP	1	Hexavalent Chromium	07/07/16 3:09 PM	Reported
33	N020228-008AMS	MS	1	Hexavalent Chromium	07/07/16 3:18 PM	Reported
34	CCV-2	CCV	1	Hexavalent Chromium	07/07/16 3:28 PM	Reported
35	CCB-2	CCB	1	Hexavalent Chromium	07/07/16 3:37 PM	Reported
36	N020228-005AMS	MS	1	Hexavalent Chromium	07/07/16 3:47 PM	Reported
37	N020228-009A	SAMP	1	Hexavalent Chromium	07/07/16 3:56 PM	Reported
38	N020228-009AMS	MS	1	Hexavalent Chromium	07/07/16 4:05 PM	Reported
39	N020228-010A	SAMP	1	Hexavalent Chromium	07/07/16 4:15 PM	Reported
40	N020228-010AMS	MS	1	Hexavalent Chromium	07/07/16 4:24 PM	Reported
41	N020228-011A	SAMP	1	Hexavalent Chromium	07/07/16 4:34 PM	Reported
42	N020228-011AMS	MS	1	Hexavalent Chromium	07/07/16 4:44 PM	Reported

7/21/2016

INJECTION LOG: 160707A

Instrument ID: IC-07

Sample No	Sample Name	Type	DF	Peak Name	Injection Date/Time	Comments
43	N020228-012A	SAMP	1	Hexavalent Chromium	07/07/16 4:53 PM	Reported
44	N020228-012AMS	MS	1	Hexavalent Chromium	07/07/16 5:02 PM	Reported
45	N020228-013A	SAMP	1	Hexavalent Chromium	07/07/16 5:12 PM	Reported
46	CCV-3	CCV1	1	Hexavalent Chromium	07/07/16 5:24 PM	Reported
47	CCB-3	CCB	1	Hexavalent Chromium	07/07/16 5:33 PM	Reported
48	N020229-001A	SAMP	1	Hexavalent Chromium	07/07/16 5:43 PM	Not Reported
49	N020228-013AMS	MS	1	Hexavalent Chromium	07/07/16 5:52 PM	Not Reported
50	N020228-013AMS	MS	1	Hexavalent Chromium	07/07/16 6:04 PM	Reported
51	N020229-001AMS	MS	1	Hexavalent Chromium	07/07/16 6:15 PM	Not Reported
52	N020230-001A	SAMP	1	Hexavalent Chromium	07/07/16 6:25 PM	Reported
53	N020230-002A	SAMP	1	Hexavalent Chromium	07/07/16 6:34 PM	Reported
54	N020230-003A	SAMP	1	Hexavalent Chromium	07/07/16 6:44 PM	Reported
55	N020230-004A	SAMP	1	Hexavalent Chromium	07/07/16 6:53 PM	Reported
56	N020230-005A	SAMP	1	Hexavalent Chromium	07/07/16 7:03 PM	Reported
57	N020230-006A	SAMP	1	Hexavalent Chromium	07/07/16 7:12 PM	Reported
58	CCV-4	CCV	1	Hexavalent Chromium	07/07/16 7:22 PM	Reported
59	CCB-4	CCB	1	Hexavalent Chromium	07/07/16 7:31 PM	Reported
60	N020229-001A	SAMP	1	Hexavalent Chromium	07/07/16 7:40 PM	Reported
61	N020229-001AMS	MS	1	Hexavalent Chromium	07/07/16 7:50 PM	Reported
62	CCV-5	CCV1	1	Hexavalent Chromium	07/07/16 7:59 PM	Reported
63	CCB-5	CCB	1	Hexavalent Chromium	07/07/16 8:09 PM	Reported

Reviewed by:

7/21/2016

7/21/2016

Injection Log Summary

Sequence Details

Name:	**IC-07_160707B**	*Created On:*	**24/Jul/12 17:17:21**
Directory:	**Instrument Data\IC-7\2016**	*Created By:*	**ics 5000**
Data Vault:	**ChromeleonLocal**	*Updated On:*	**08/Jul/16 09:38:15**
No. of Injections:	**66**	*Updated By:*	**ics 5000**

Injection Details

No.	Injection Name	Position	Volume µL	Type	Level	Inject Time	Status	Comment
1	BLANK	3	1000	Unknown		07/07/2016 10:12	Finished	
2	iBLANK	4	1000	Unknown		07/07/2016 10:23	Finished	INSTRUMENT BLANK
3	STD1-0.2 ppb	5	1000	Calibration Standard	01	07/07/2016 10:32	Finished	0.2 ppb, IWST160401A
4	STD2-1.0 ppb	6	1000	Calibration Standard	02	07/07/2016 10:42	Finished	1.0 ppb, IWST160401A
5	STD3-5.0 ppb	7	1000	Calibration Standard	03	07/07/2016 10:51	Finished	5.0 ppb, IWST160401A
6	STD4-10.0 ppb	8	1000	Calibration Standard	04	07/07/2016 11:00	Finished	10 ppb, IWST160401A
7	STD5-15.0 ppb	9	1000	Calibration Standard	05	07/07/2016 11:10	Finished	15 ppb, IWST160401A
8	STD6-20.0 ppb	10	1000	Calibration Standard	06	07/07/2016 11:19	Finished	20 ppb, IWST160401A
9	ICV,ICV,1,	11	1000	Unknown		07/07/2016 11:29	Finished	ICV @5ppb, IWST-160401B
10	PQL@0.2ppb,CCV2,1	12	1000	Unknown		07/07/2016 11:38	Finished	PQL @ 0.2ppb
11	ICB,ICB,1,	13	1000	Unknown		07/07/2016 11:48	Finished	ICB R160629C
12	MB-H2O,MBLK,1	14	1000	Unknown		07/07/2016 11:59	Finished	MB R160629C
13	LCS-H2O,LCS,1	15	1000	Unknown		07/07/2016 12:09	Finished	LCS, IWST-160401B
14	N020228-001A,SAMP	16	1000	Unknown		07/07/2016 12:18	Finished	SAMP, 10 mL
15	N020228-001ADUP,D	17	1000	Unknown		07/07/2016 12:28	Finished	DUP, 10 mL
16	N020228-001AMS,MS	18	1000	Unknown		07/07/2016 12:37	Finished	MS (1ppb), IWST-160401B, 10
17	N020228-002A,SAMP	19	1000	Unknown		07/07/2016 12:47	Finished	SAMP, 10 mL
18	N020228-002AMS,MS	20	1000	Unknown		07/07/2016 12:56	Finished	MS (1ppb), IWST-160401B, 10
19	N020228-002AMSD,M	21	1000	Unknown		07/07/2016 13:06	Finished	MSD (1ppb), IWST-160401B, 1
20	N020228-003A,SAMP	22	1000	Unknown		07/07/2016 13:15	Finished	SAMP, 10 mL
21	N020228-003AMS,MS	23	1000	Unknown		07/07/2016 13:25	Finished	MS (1ppb), IWST-160401B, 10
22	CCV-1,CCV1,1,	24	1000	Unknown		07/07/2016 13:34	Finished	CCV @10ppb, IWST-160401A
23	CCB-1,CCB,1,	25	1000	Unknown		07/07/2016 13:44	Finished	CCB, R160629C
24	N020228-004A,SAMP	26	1000	Unknown		07/07/2016 13:53	Finished	SAMP, 10 mL
25	N020228-004AMS,MS	27	1000	Unknown		07/07/2016 14:02	Finished	MS (1ppb), IWST-160401B, 10
26	N020228-005A,SAMP	28	1000	Unknown		07/07/2016 14:12	Finished	SAMP, 10 mL
27	N020228-005AMS,MS	29	1000	Unknown		07/07/2016 14:21	Finished	MS (1ppb), IWST-160401B, 10
28	N020228-006A,SAMP	30	1000	Unknown		07/07/2016 14:31	Finished	SAMP, 10 mL
29	N020228-006AMS,MS	31	1000	Unknown		07/07/2016 14:40	Finished	MS (1ppb), IWST-160401B, 10
30	N020228-007A,SAMP	32	1000	Unknown		07/07/2016 14:50	Finished	SAMP, 10 mL
31	N020228-007AMS,MS	33	1000	Unknown		07/07/2016 14:59	Finished	MS (1ppb), IWST-160401B, 10
32	N020228-008A,SAMP	34	1000	Unknown		07/07/2016 15:09	Finished	SAMP, 10 mL
33	N020228-008AMS,MS	35	1000	Unknown		07/07/2016 15:18	Finished	MS (1ppb), IWST-160401B, 10
34	CCV-2,CCV,1,	36	1000	Unknown		07/07/2016 15:28	Finished	CCV @5ppb, IWST-160401A
35	CCB-2,CCB,1,	37	1000	Unknown		07/07/2016 15:37	Finished	CCB R160629C
36	N020228-005AMS,MS	38	1000	Unknown		07/07/2016 15:47	Finished	MS (1ppb), IWST-160401B, 10
37	N020228-009A,SAMP	39	1000	Unknown		07/07/2016 15:56	Finished	SAMP, 10 mL
38	N020228-009AMS,MS	40	1000	Unknown		07/07/2016 16:05	Finished	MS (1ppb), IWST-160401B, 10
39	N020228-010A,SAMP	41	1000	Unknown		07/07/2016 16:15	Finished	SAMP, 10 mL
40	N020228-010AMS,MS	42	1000	Unknown		07/07/2016 16:24	Finished	MS (1ppb), IWST-160401B, 10
41	N020228-011A,SAMP	43	1000	Unknown		07/07/2016 16:34	Finished	SAMP, 10 mL
42	N020228-011AMS,MS	44	1000	Unknown		07/07/2016 16:44	Finished	MS (1ppb), IWST-160401B, 10
43	N020228-012A,SAMP	45	1000	Unknown		07/07/2016 16:53	Finished	SAMP, 10 mL
44	N020228-012AMS,MS	46	1000	Unknown		07/07/2016 17:02	Finished	MS (1ppb), IWST-160401B, 10
45	N020228-013A,SAMP	1	1000	Unknown		07/07/2016 17:12	Finished	SAMP, 10 mL
46	CCV-3,CCV1,1,	2	1000	Unknown		07/07/2016 17:24	Finished	CCV @10ppb, IWST-160401A
47	CCB-3,CCB,1,	3	1000	Unknown		07/07/2016 17:33	Finished	CCB, R160629C
48	N020229-001A,SAMP	4	1000	Unknown		07/07/2016 17:43	Finished	SAMP, 10 mL
49	N020228-013AMS,MS	5	1000	Unknown		07/07/2016 17:52	Finished	MS (1ppb), IWST-160401B, 10
50	N020228-013AMS,MS	5	1000	Unknown		07/07/2016 18:04	Finished	MS (1ppb), IWST-160401B, 10
51	N020229-001AMS,MS	6	1000	Unknown		07/07/2016 18:15	Finished	MS (1ppb), IWST-160401B, 10
52	N020230-001A,SAMP	7	1000	Unknown		07/07/2016 18:25	Finished	SAMP, 10 mL
53	N020230-002A,SAMP	8	1000	Unknown		07/07/2016 18:34	Finished	SAMP, 10 mL
54	N020230-003A,SAMP	9	1000	Unknown		07/07/2016 18:44	Finished	SAMP, 10 mL
55	N020230-004A,SAMP	10	1000	Unknown		07/07/2016 18:53	Finished	SAMP, 10 mL
56	N020230-005A,SAMP	11	1000	Unknown		07/07/2016 19:03	Finished	SAMP, 10 mL
57	N020230-006A,SAMP	12	1000	Unknown		07/07/2016 19:12	Finished	SAMP, 10 mL
58	CCV-4,CCV,1,	13	1000	Unknown		07/07/2016 19:22	Finished	CCV @5ppb, IWST-160401A
59	CCB-4,CCB,1,	14	1000	Unknown		07/07/2016 19:31	Finished	CCB R160622B
60	N020229-001A,SAMP	15	1000	Unknown		07/07/2016 19:40	Finished	SAMP, 10 mL

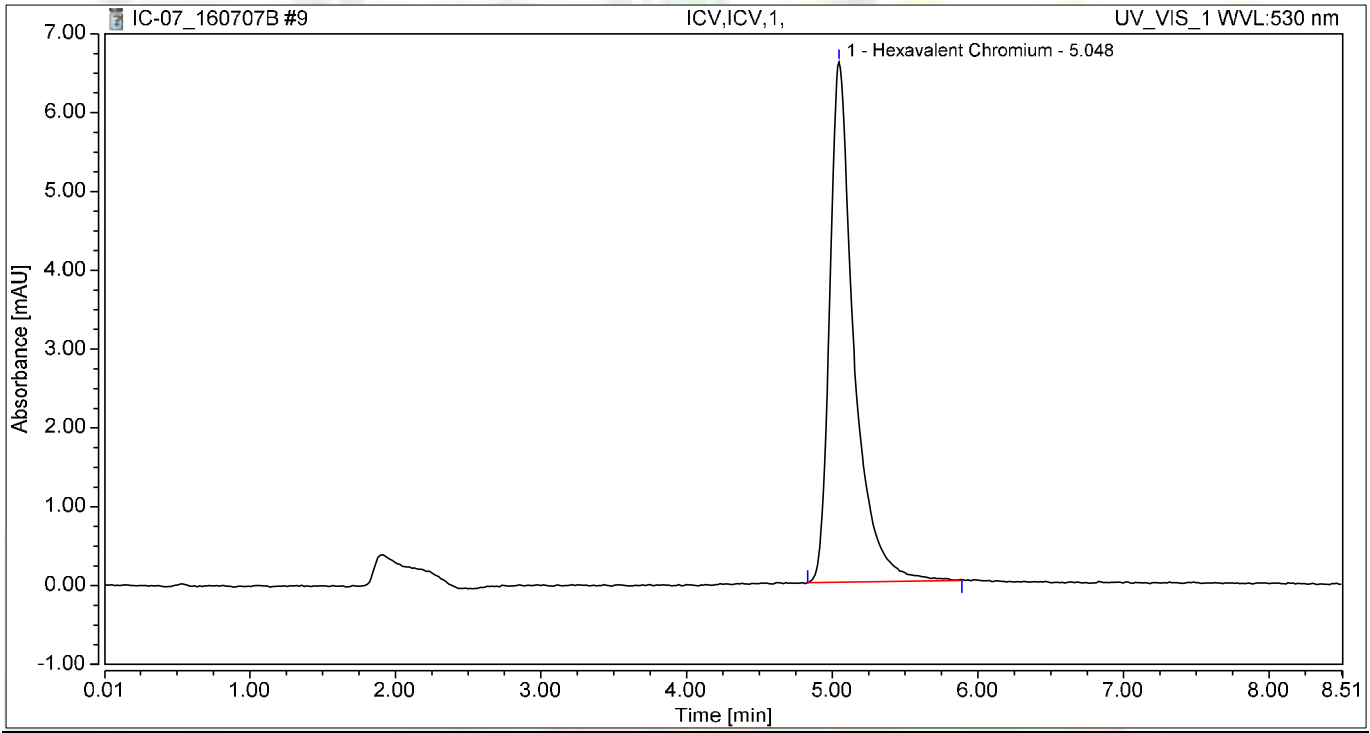
61	N020229-001AMS,MS	16	1000	Unknown		07/07/2016 19:50	Finished	MS (1ppb), IWST-160401B, 10
62	CCV-5,CCV1,1,	17	1000	Unknown		07/07/2016 19:59	Finished	CCV @10ppb, IWST-160401A
63	CCB-5,CCB,1,	18	1000	Unknown		07/07/2016 20:09	Finished	CCB, R160629C
64	SHUTDOWN	19	1000	Unknown		07/07/2016 20:18	Finished	
65	Eluent: R160630C	20	1000	Unknown		n.a.	Finished	Eluent
66	PCR: R160706C	21	1000	Unknown		n.a.	Finished	Post-Column Reagent

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:	**160707_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**07/Jul/16 11:29**	*Sample Weight:*	**1.0000**

Chromatogram



Integration Results

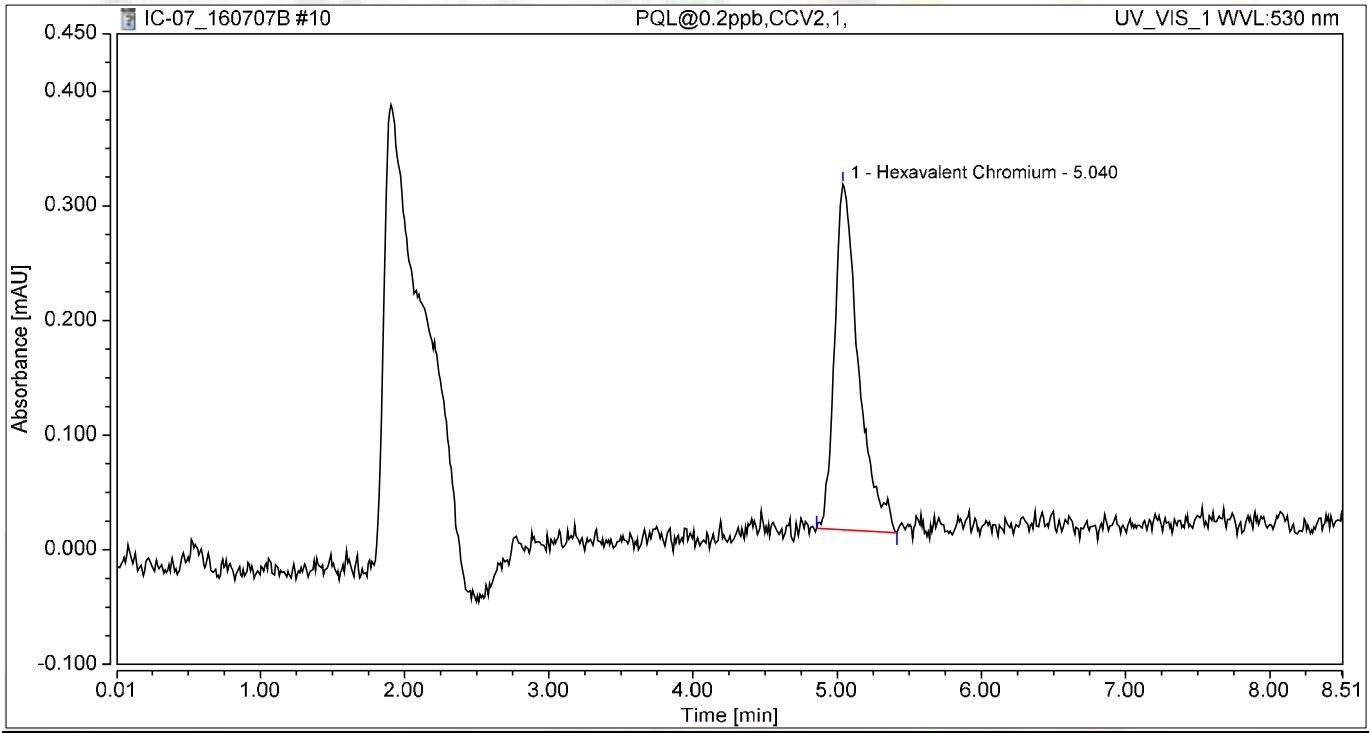
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	5.048	1.277	6.598	100.00	100.00	5.0352
Total:			**1.277**	**6.598**	**100.00**	**100.00**	

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:	**160707_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**07/Jul/16 11:38**	*Sample Weight:*	**1.0000**

Chromatogram



Integration Results

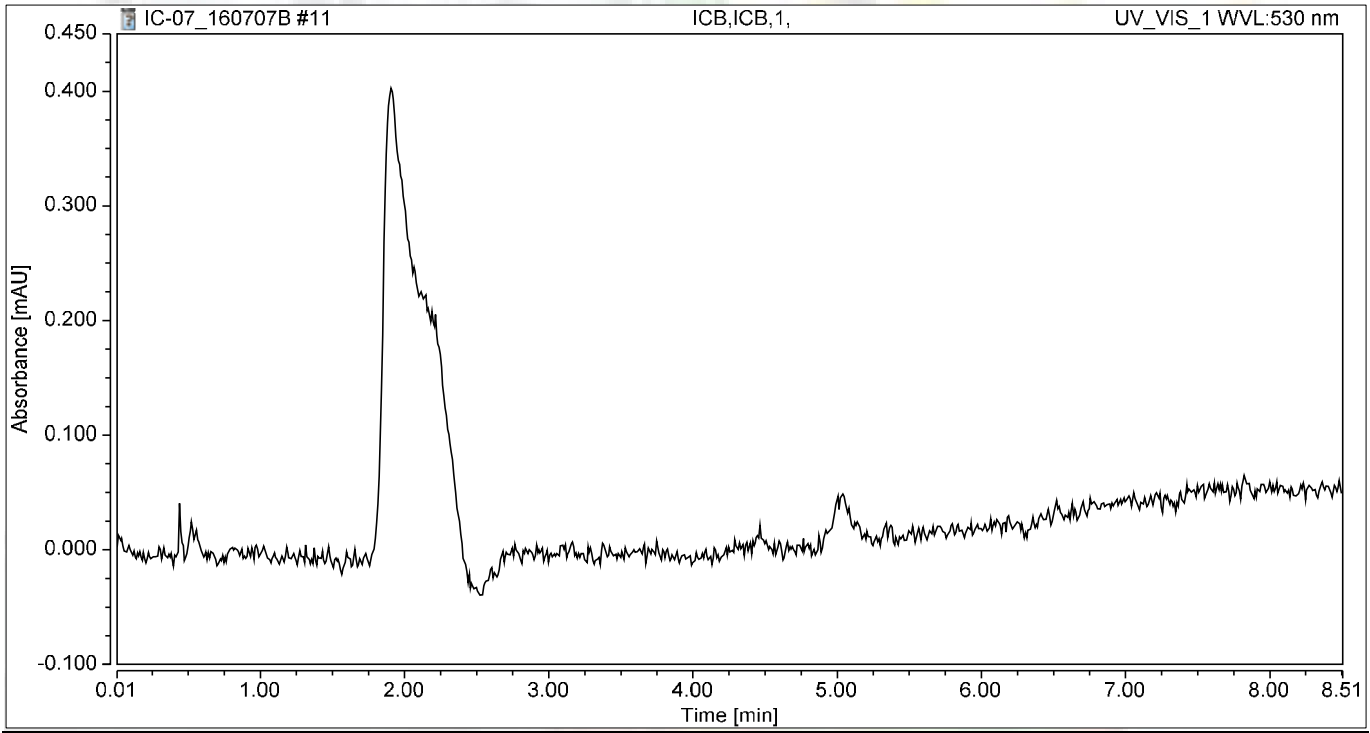
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	5.040	0.058	0.301	100.00	100.00	0.2276
Total:			**0.058**	**0.301**	**100.00**	**100.00**	

Chromatogram and Results

Injection Details

Injection Name:	**ICB,ICB,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:	**160707_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**07/Jul/16 11:48**	*Sample Weight:*	**1.0000**

Chromatogram



Integration Results

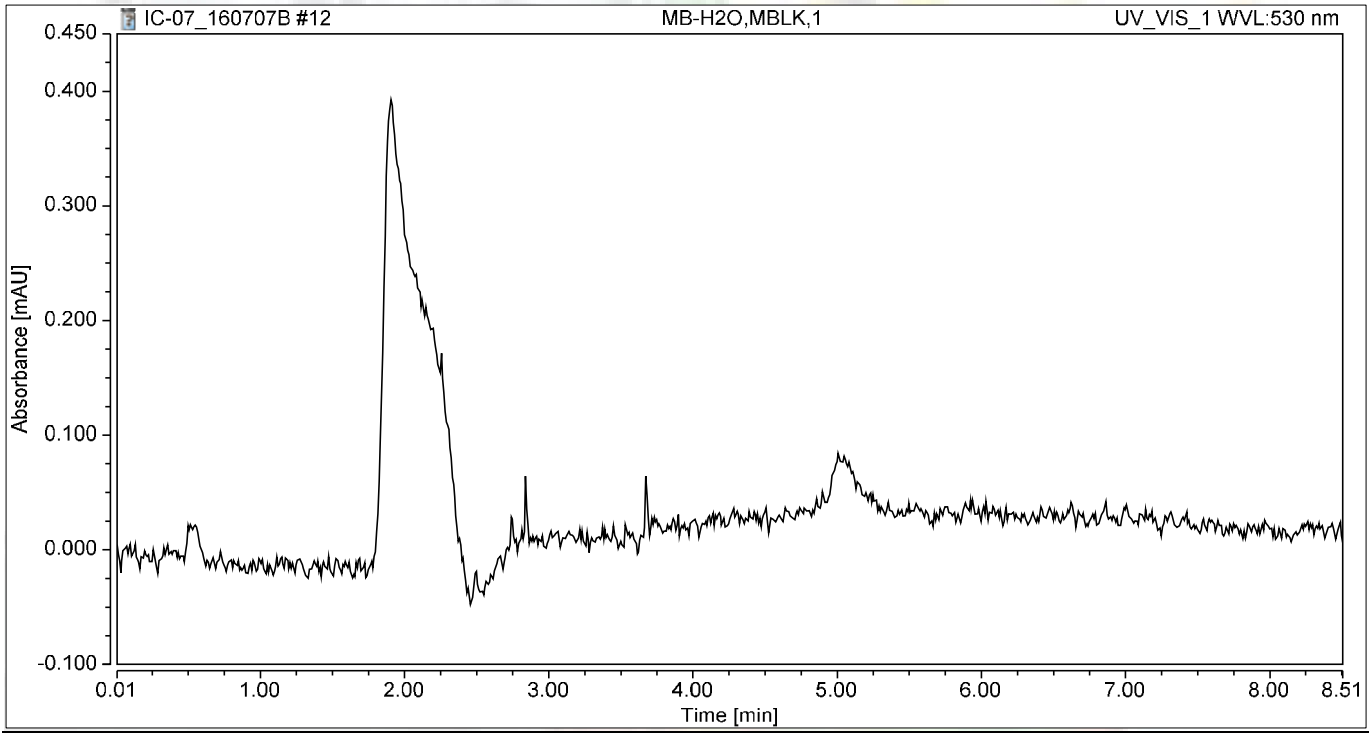
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
n.a.	Hexavalent Chromium	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Total:			**0.000**	**0.000**	**0.00**	**0.00**	

Chromatogram and Results

Injection Details

Injection Name:	**MB-H2O,MBLK,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:	**160707_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**07/Jul/16 11:59**	*Sample Weight:*	**1.0000**

Chromatogram



Integration Results

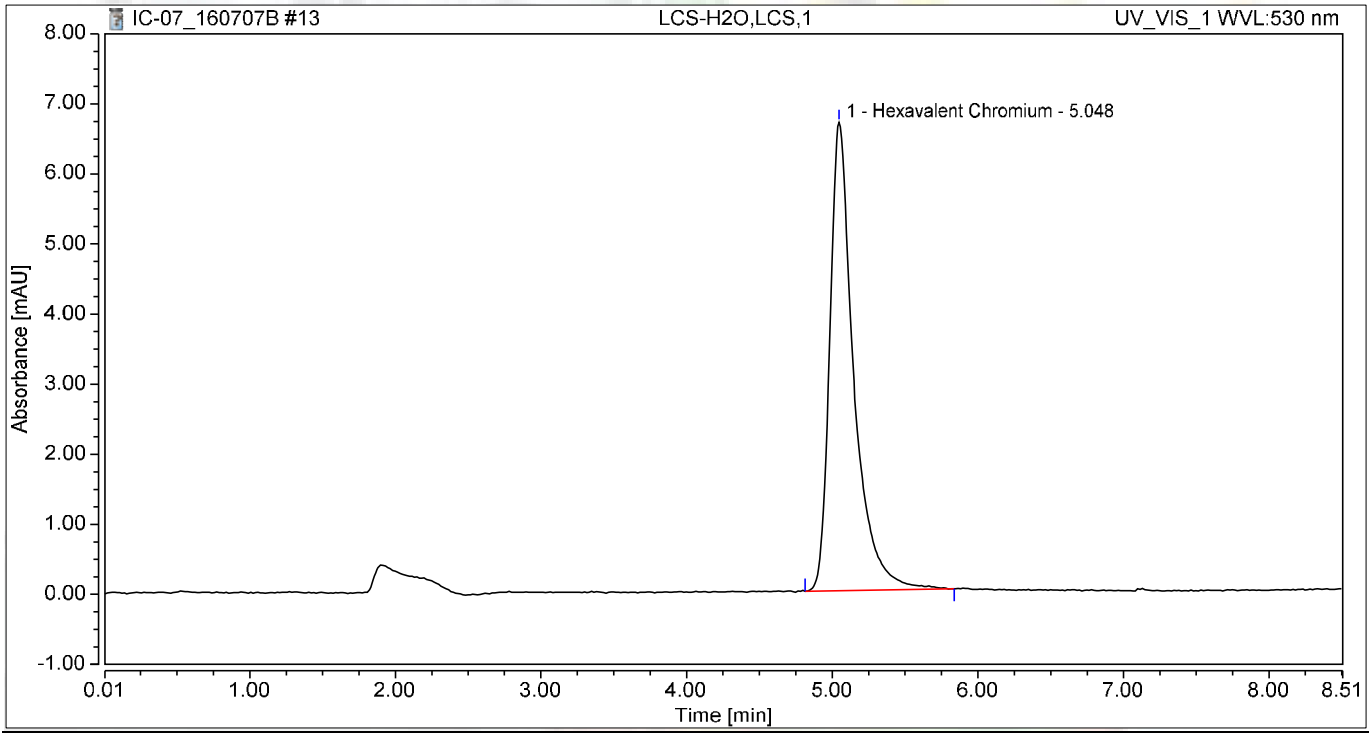
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
n.a.	Hexavalent Chromium	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Total:			**0.000**	**0.000**	**0.00**	**0.00**	

Chromatogram and Results

Injection Details

Injection Name:	**LCS-H2O,LCS,1**	*Run Time (min):*	**8.50**
Vial Number:	**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:	**160707_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**07/Jul/16 12:09**	*Sample Weight:*	**1.0000**

Chromatogram



Integration Results

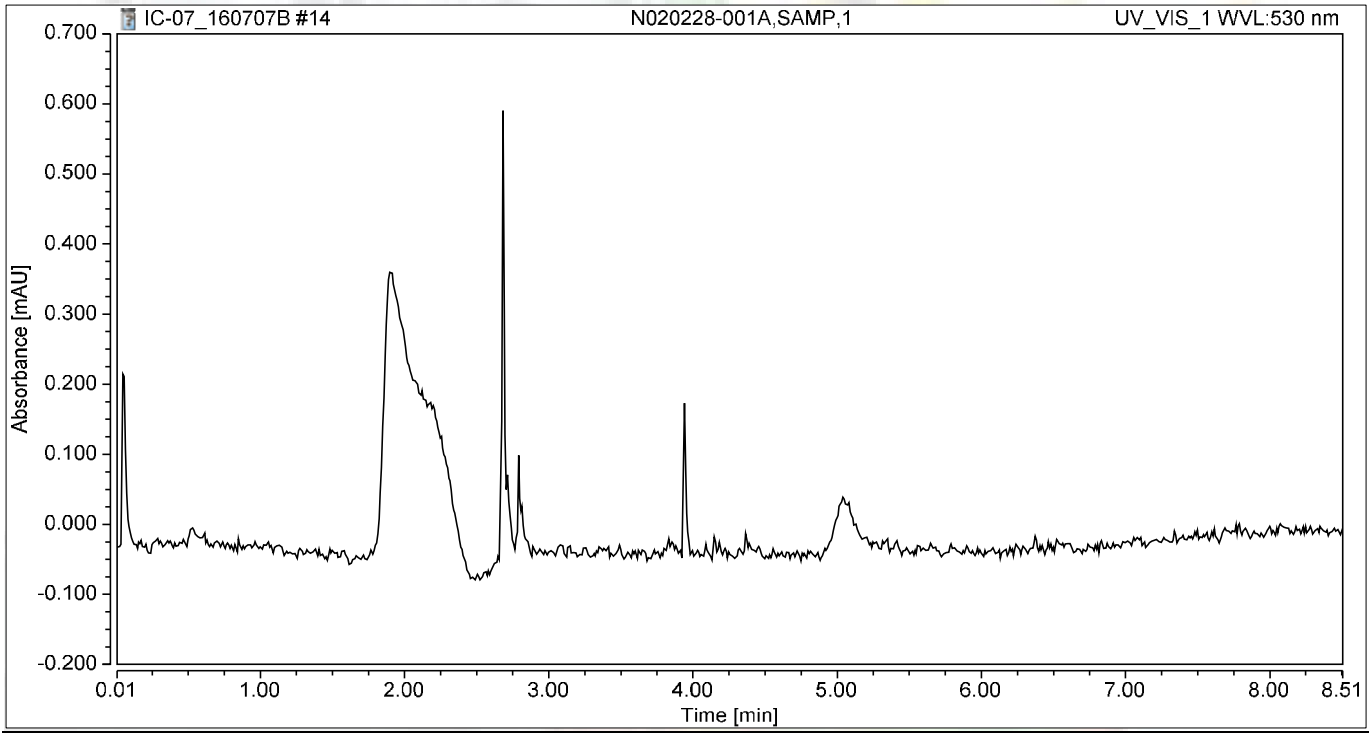
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	5.048	1.275	6.679	100.00	100.00	5.0294
Total:			**1.275**	**6.679**	**100.00**	**100.00**	

Chromatogram and Results

Injection Details

Injection Name:	**N020228-001A,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:	**160707_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**07/Jul/16 12:18**	*Sample Weight:*	**1.0000**

Chromatogram



Integration Results

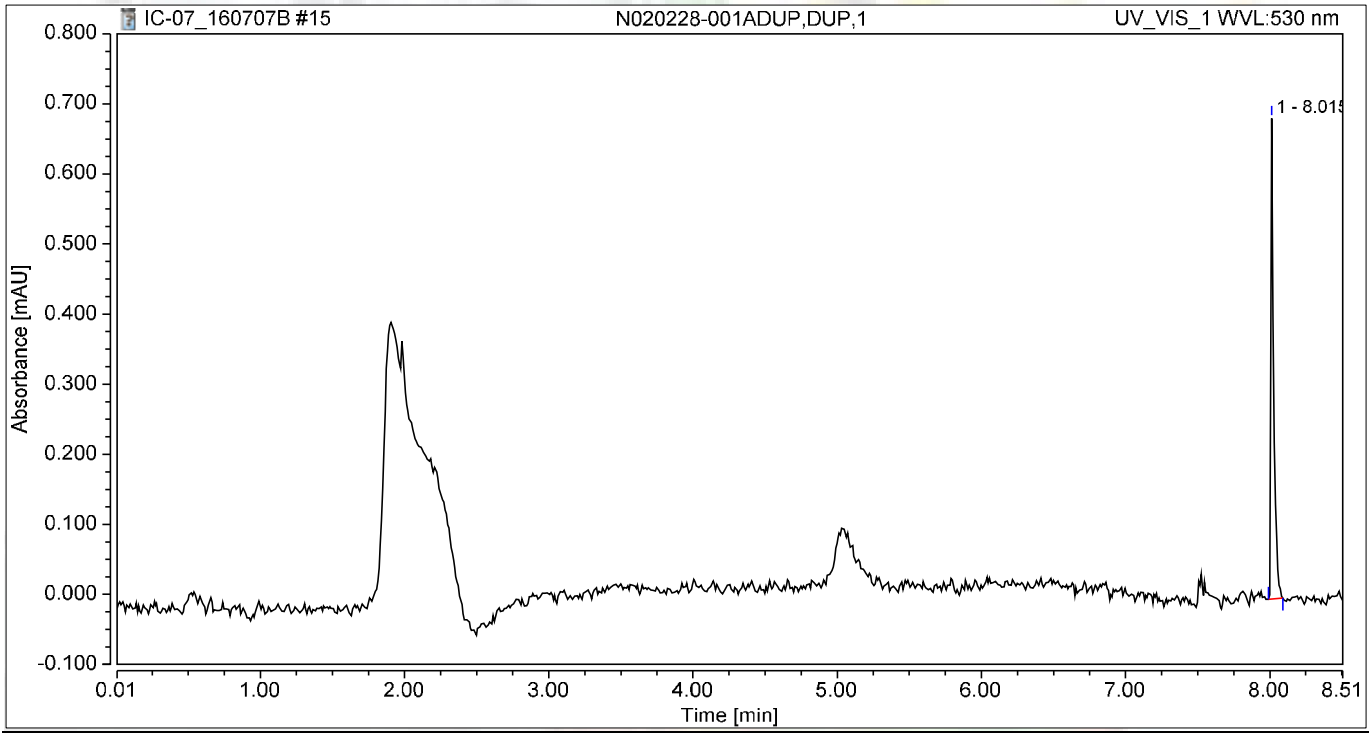
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
n.a.	Hexavalent Chromium	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Total:			**0.000**	**0.000**	**0.00**	**0.00**	

Chromatogram and Results

Injection Details

Injection Name:	**N020228-001ADUP,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:	**160707_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**07/Jul/16 12:28**	*Sample Weight:*	**1.0000**

Chromatogram



Integration Results

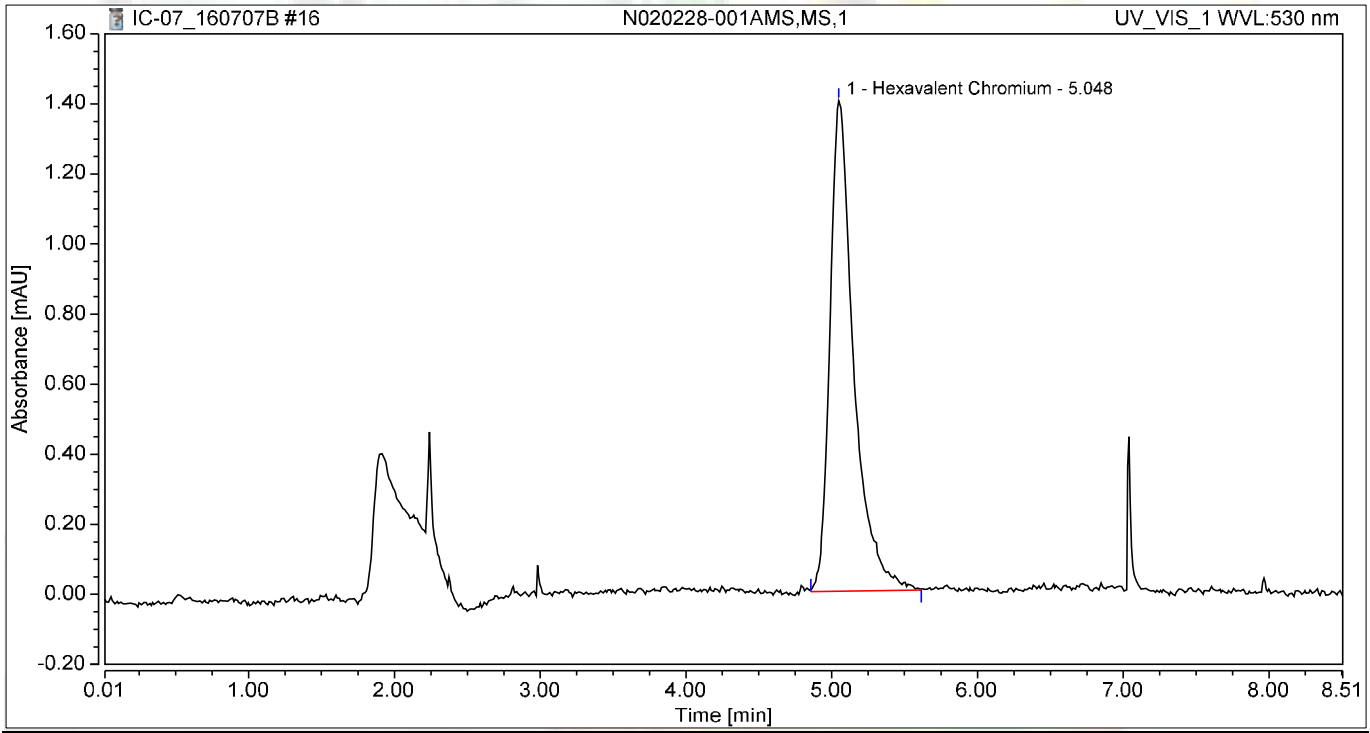
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
n.a.	Hexavalent Chromium	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
1		8.015	0.016	0.686	100.00	100.00	n.a.
Total:			**0.016**	**0.686**	**100.00**	**100.00**	

Chromatogram and Results

Injection Details

Injection Name:	**N020228-001AMS,MS,1**	*Run Time (min):*	**8.49**
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:	**160707_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**07/Jul/16 12:37**	*Sample Weight:*	**1.0000**

Chromatogram



Integration Results

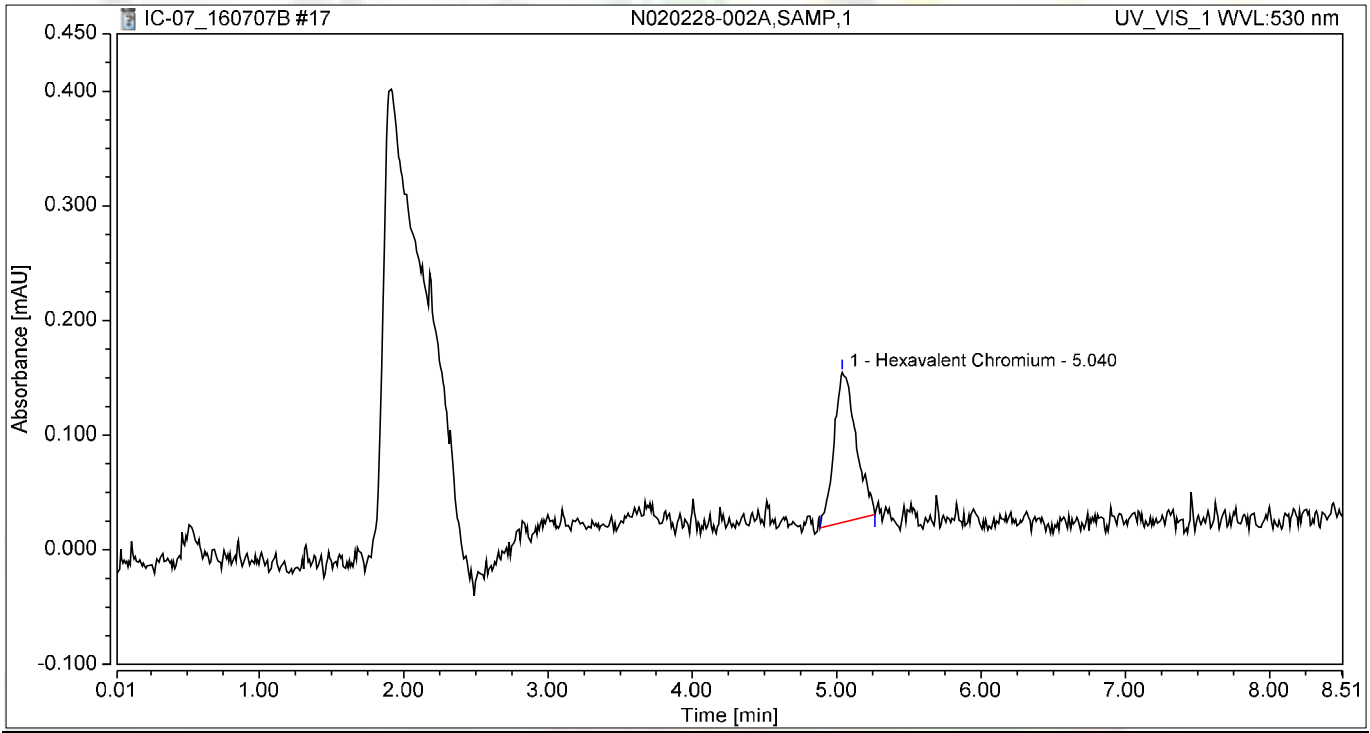
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	5.048	0.265	1.400	100.00	100.00	1.0437
Total:			**0.265**	**1.400**	**100.00**	**100.00**	

Chromatogram and Results

Injection Details

Injection Name:	**N020228-002A,SAMP,1**	*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:	**160707_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**07/Jul/16 12:47**	*Sample Weight:*	**1.0000**

Chromatogram



Integration Results

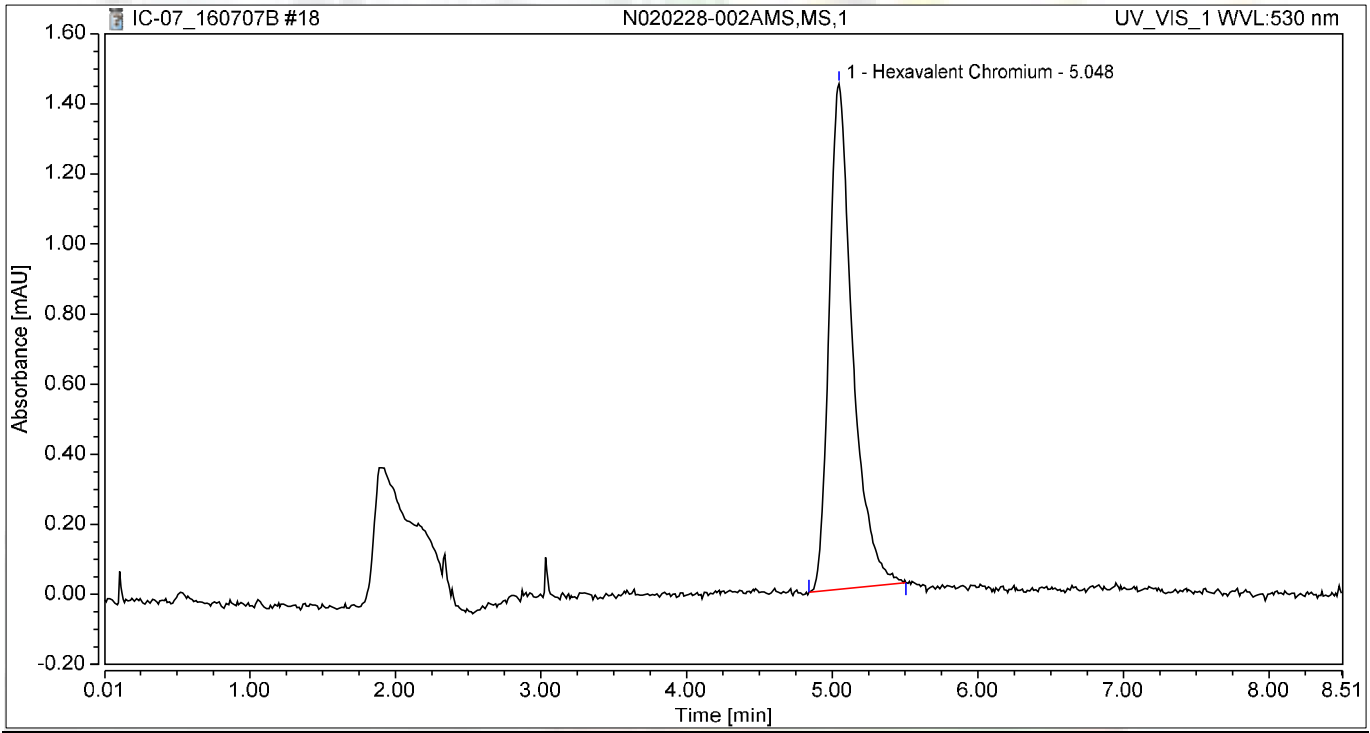
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	5.040	0.023	0.131	100.00	100.00	0.0911
Total:			**0.023**	**0.131**	**100.00**	**100.00**	

Chromatogram and Results

Injection Details

Injection Name:	**N020228-002AMS,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:	**160707_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**07/Jul/16 12:56**	*Sample Weight:*	**1.0000**

Chromatogram



Integration Results

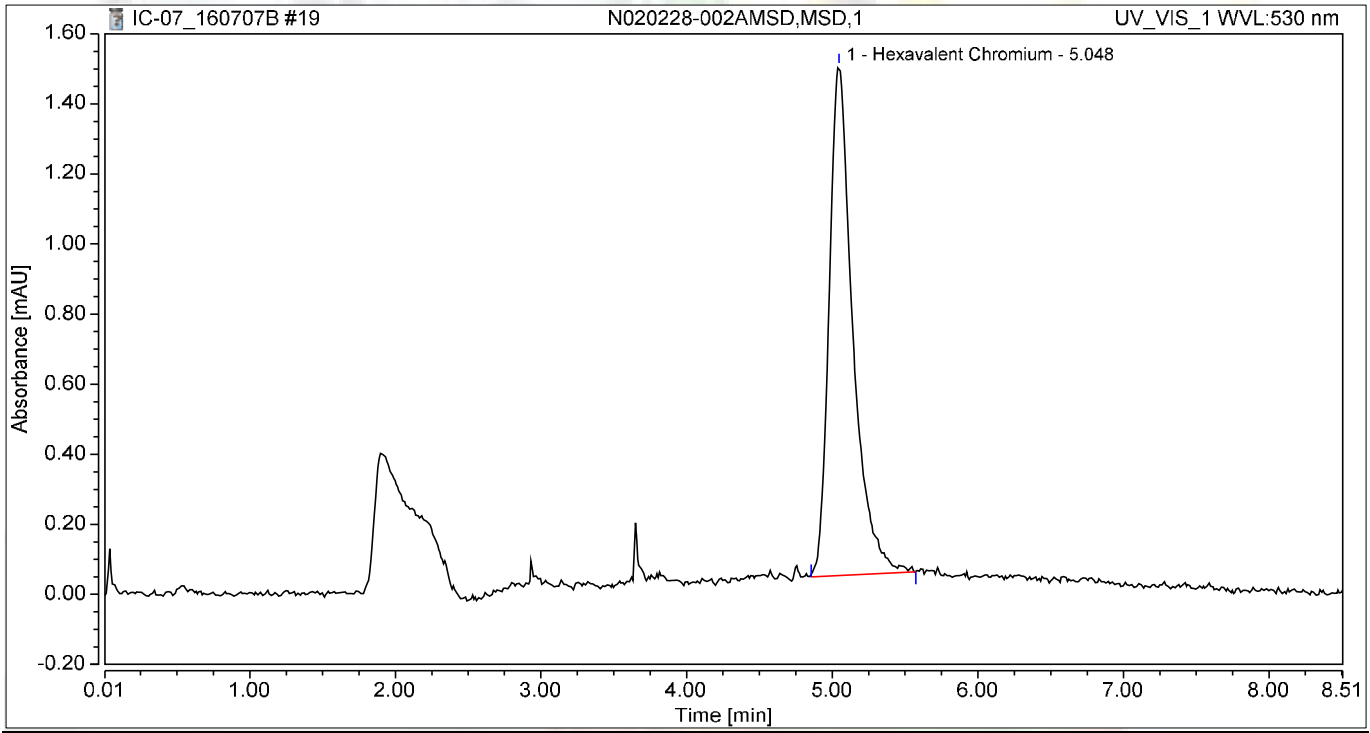
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	5.048	0.269	1.443	100.00	100.00	1.0608
Total:			**0.269**	**1.443**	**100.00**	**100.00**	

Chromatogram and Results

Injection Details

Injection Name:	**N020228-002AMSD,MSD,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:	**160707_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**07/Jul/16 13:06**	*Sample Weight:*	**1.0000**

Chromatogram



Integration Results

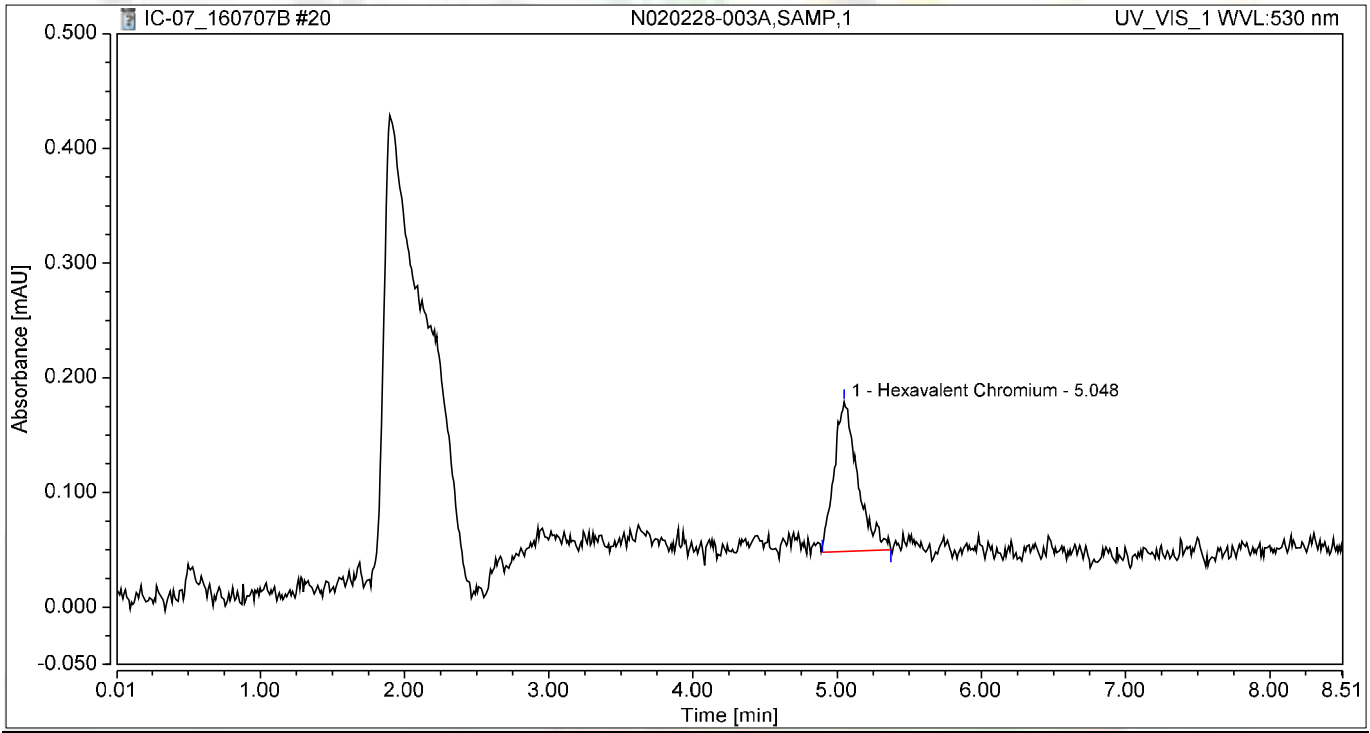
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	5.048	0.275	1.454	100.00	100.00	1.0824
Total:			**0.275**	**1.454**	**100.00**	**100.00**	

Chromatogram and Results

Injection Details

Injection Name:	**N020228-003A,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:	**160707_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**07/Jul/16 13:15**	*Sample Weight:*	**1.0000**

Chromatogram



Integration Results

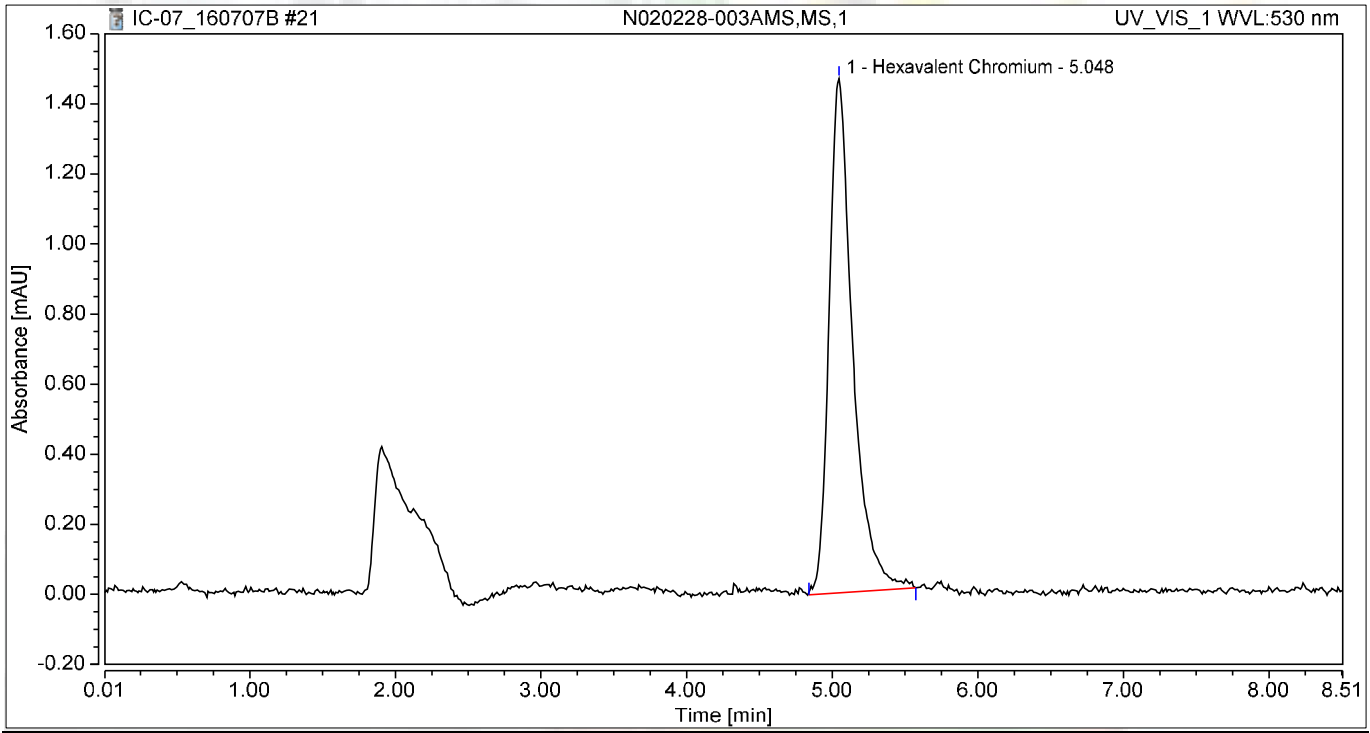
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	5.048	0.025	0.131	100.00	100.00	0.0980
Total:			**0.025**	**0.131**	**100.00**	**100.00**	

Chromatogram and Results

Injection Details

Injection Name:	**N020228-003AMS,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:	**160707_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**07/Jul/16 13:25**	*Sample Weight:*	**1.0000**

Chromatogram



Integration Results

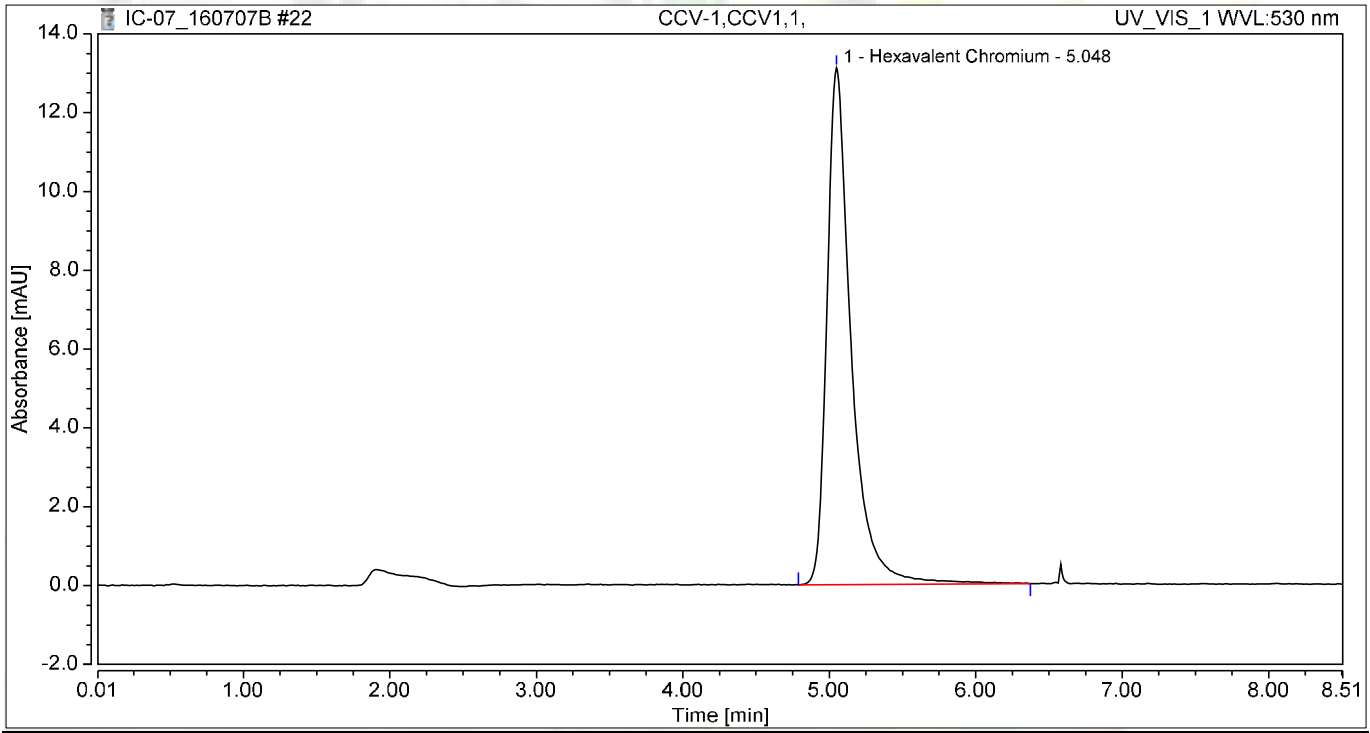
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	5.048	0.276	1.468	100.00	100.00	1.0886
Total:			**0.276**	**1.468**	**100.00**	**100.00**	

Chromatogram and Results

Injection Details

Injection Name:	**CCV-1,CCV1,1,**	*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:	**160707_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**07/Jul/16 13:34**	*Sample Weight:*	**1.0000**

Chromatogram



Integration Results

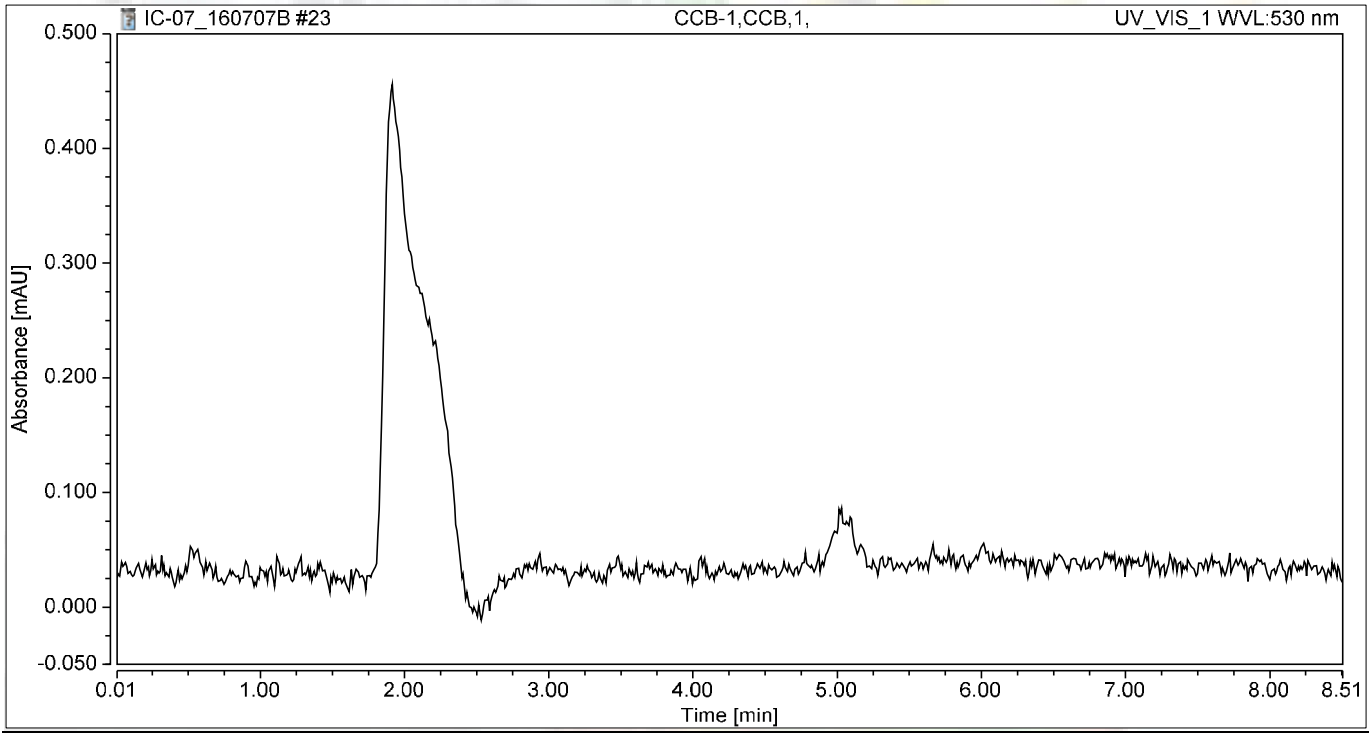
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	5.048	2.529	13.112	100.00	100.00	9.9710
Total:			**2.529**	**13.112**	**100.00**	**100.00**	

Chromatogram and Results

Injection Details

Injection Name:	**CCB-1,CCB,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:	**160707_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**07/Jul/16 13:44**	*Sample Weight:*	**1.0000**

Chromatogram



Integration Results

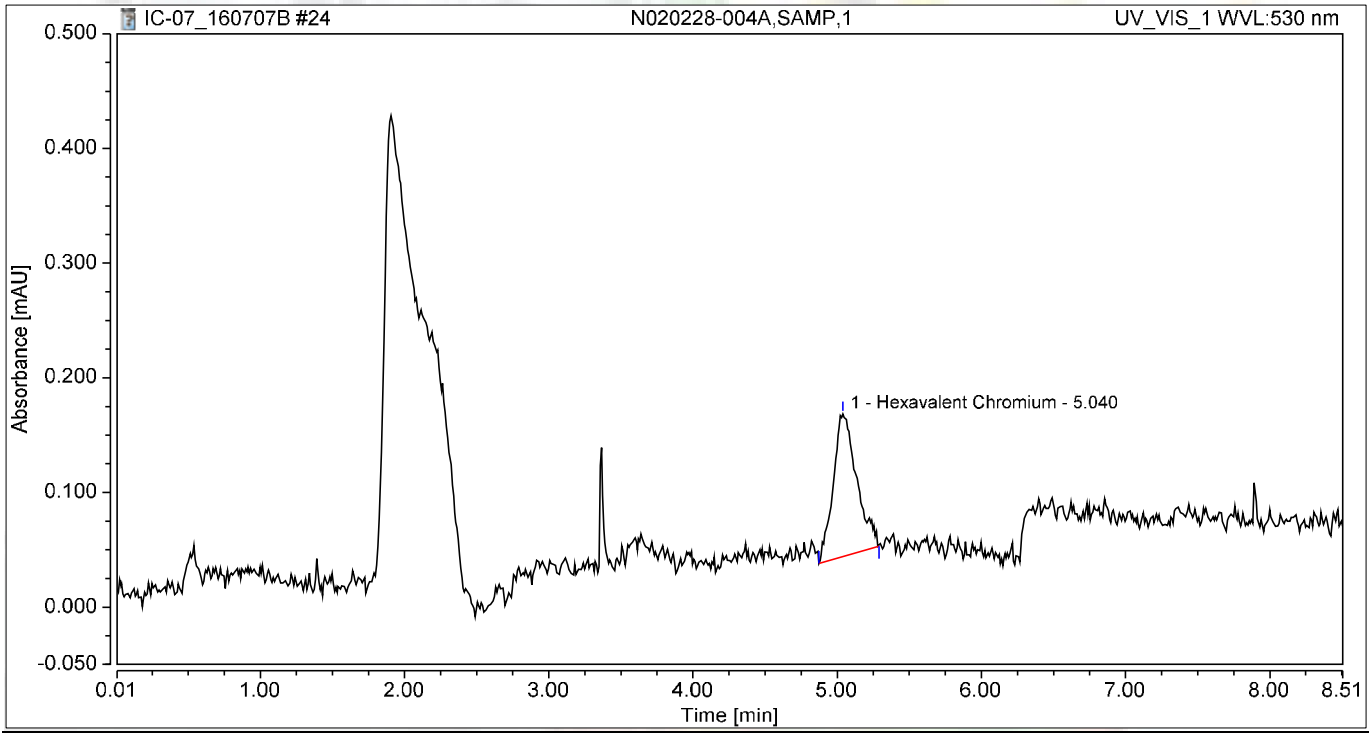
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
n.a.	Hexavalent Chromium	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Total:			**0.000**	**0.000**	**0.00**	**0.00**	

Chromatogram and Results

Injection Details

Injection Name:	**N020228-004A,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:	**160707_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**07/Jul/16 13:53**	*Sample Weight:*	**1.0000**

Chromatogram



Integration Results

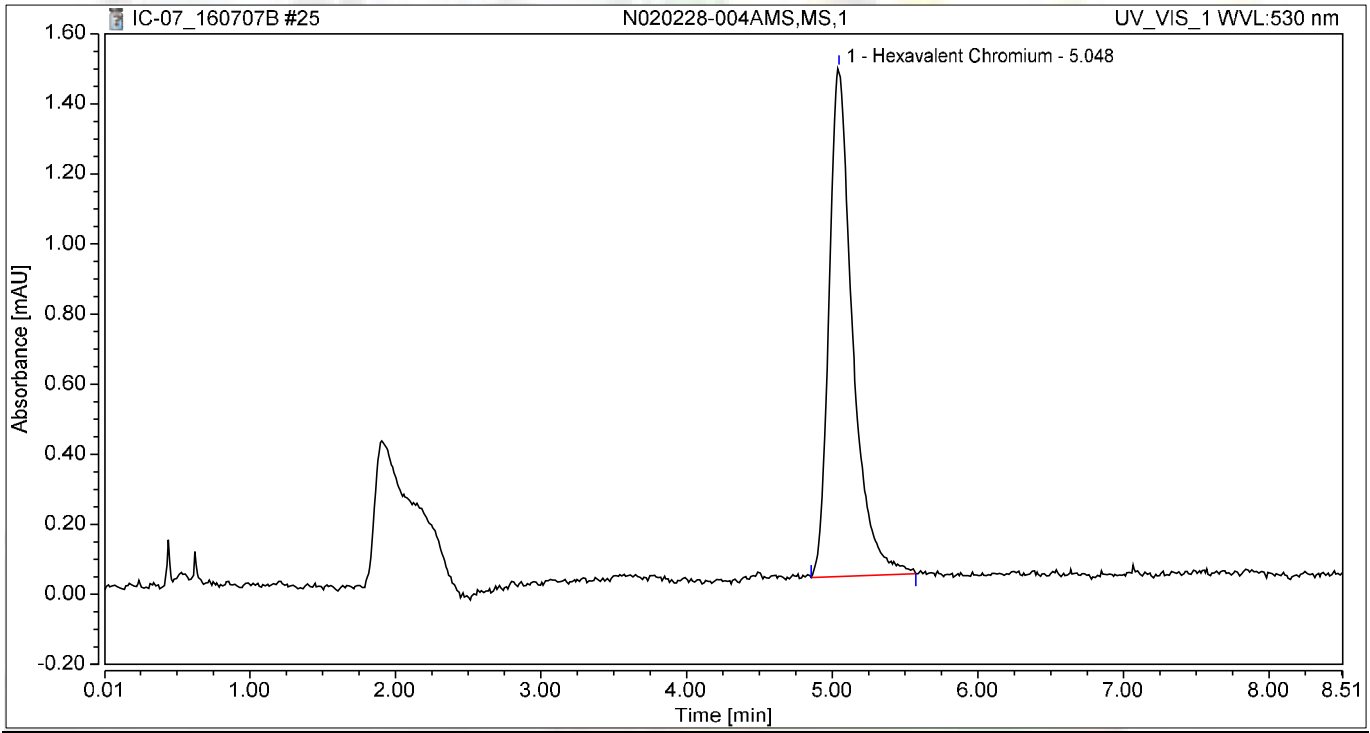
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	5.040	0.023	0.124	100.00	100.00	0.0921
Total:			**0.023**	**0.124**	**100.00**	**100.00**	

Chromatogram and Results

Injection Details

Injection Name:	**N020228-004AMS,MS,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:	**160707_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**07/Jul/16 14:02**	*Sample Weight:*	**1.0000**

Chromatogram



Integration Results

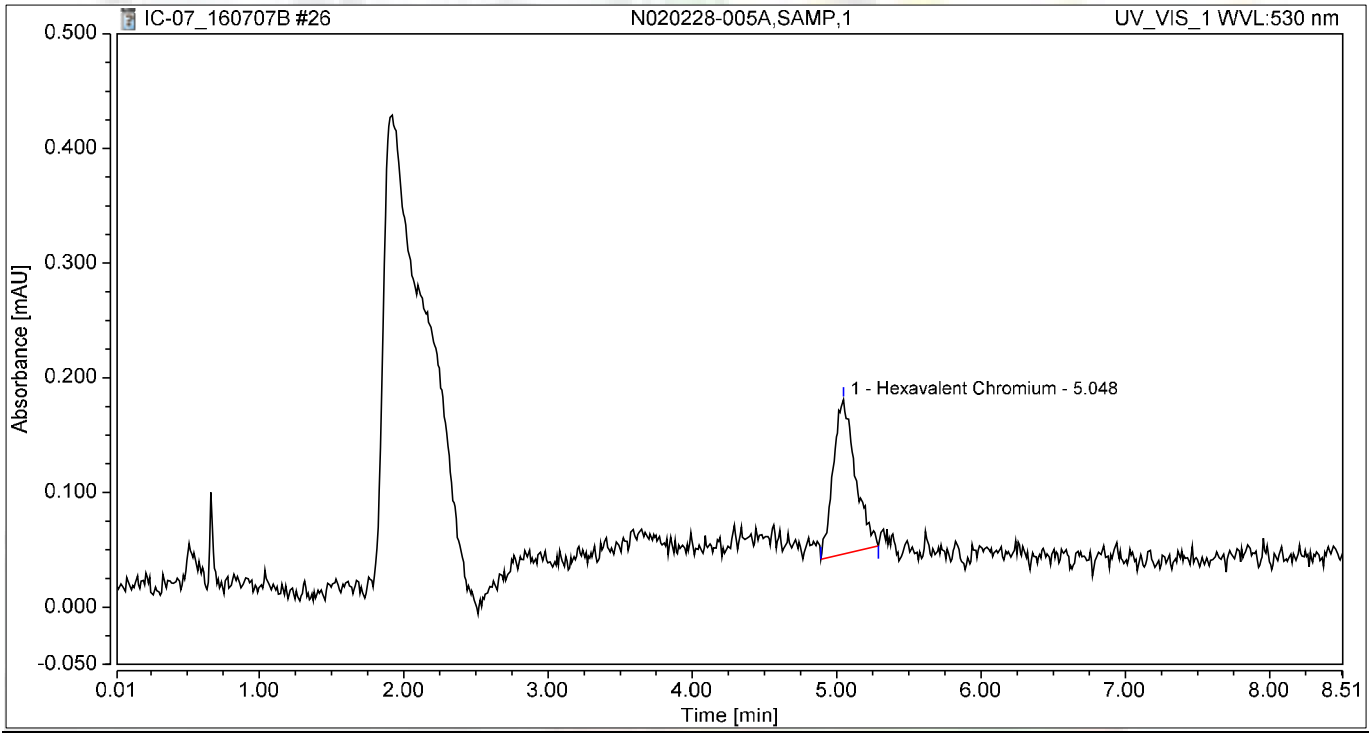
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	5.048	0.273	1.453	100.00	100.00	1.0747
Total:			**0.273**	**1.453**	**100.00**	**100.00**	

Chromatogram and Results

Injection Details

Injection Name:	**N020228-005A,SAMP,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:	**160707_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**07/Jul/16 14:12**	*Sample Weight:*	**1.0000**

Chromatogram



Integration Results

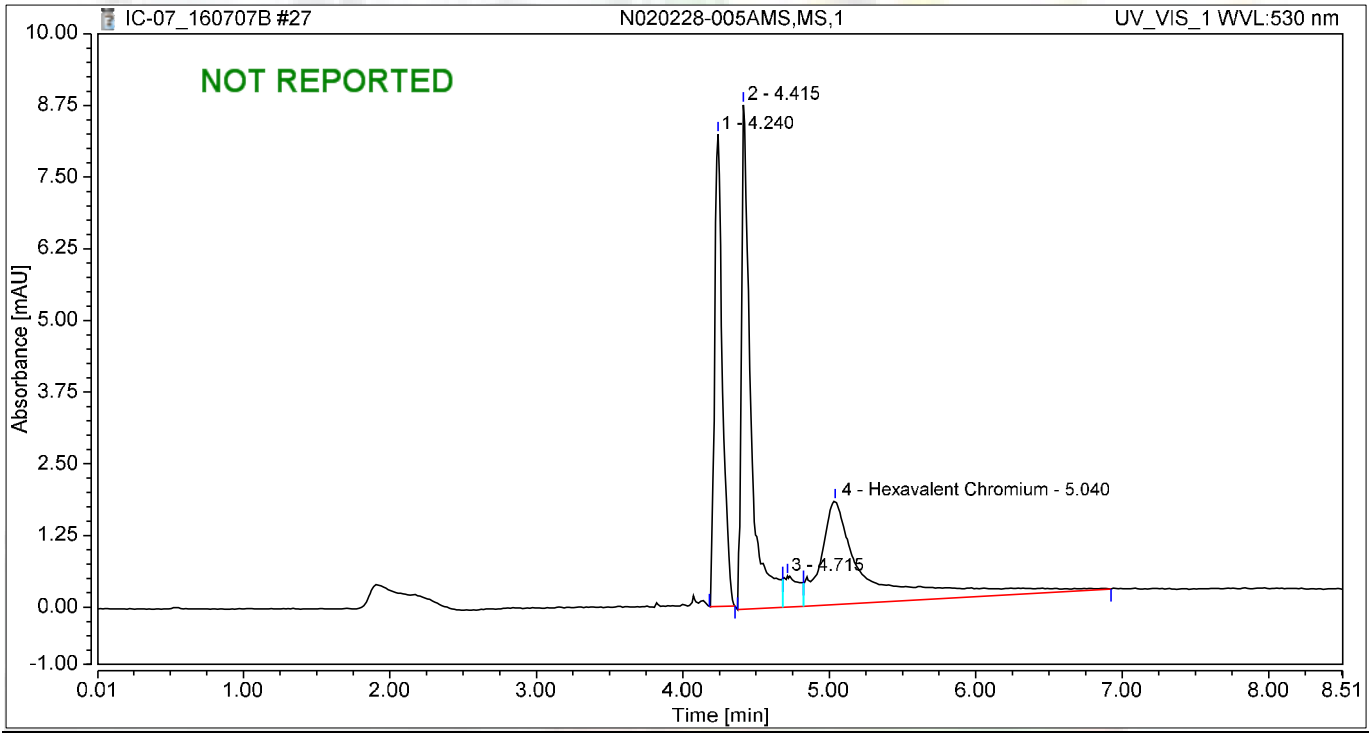
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	5.048	0.024	0.135	100.00	100.00	0.0939
Total:			**0.024**	**0.135**	**100.00**	**100.00**	

Chromatogram and Results

Injection Details

Injection Name:	**N020228-005AMS,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:	**160707_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**07/Jul/16 14:21**	*Sample Weight:*	**1.0000**

Chromatogram



Integration Results

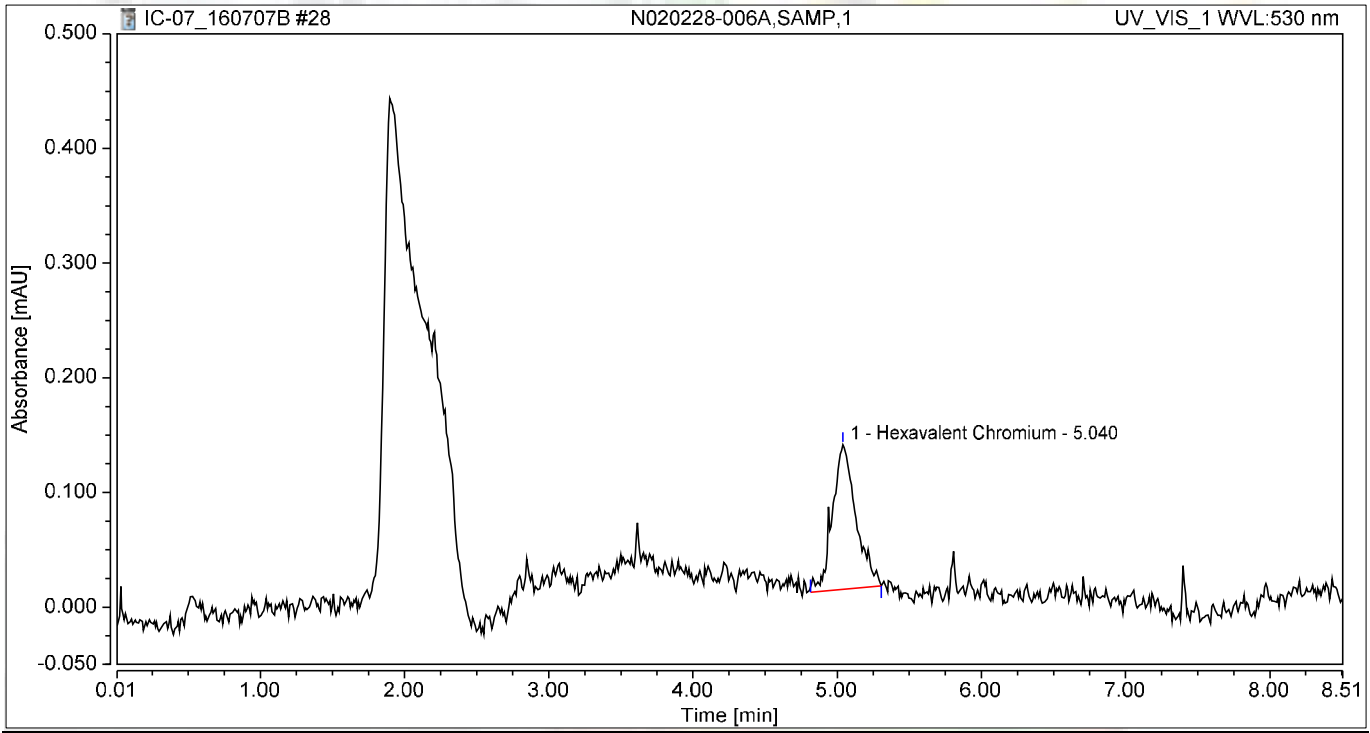
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1		4.240	0.517	8.233	27.44	42.51	n.a.
2		4.415	0.653	8.802	34.72	45.44	n.a.
3		4.715	0.066	0.537	3.49	2.77	n.a.
4	Hexavalent Chromium	5.040	0.646	1.797	34.34	9.28	2.5485
Total:			**1.882**	**19.369**	**100.00**	**100.00**	

Chromatogram and Results

Injection Details

Injection Name:	**N020228-006A,SAMP,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:	**160707_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**07/Jul/16 14:31**	*Sample Weight:*	**1.0000**

Chromatogram



Integration Results

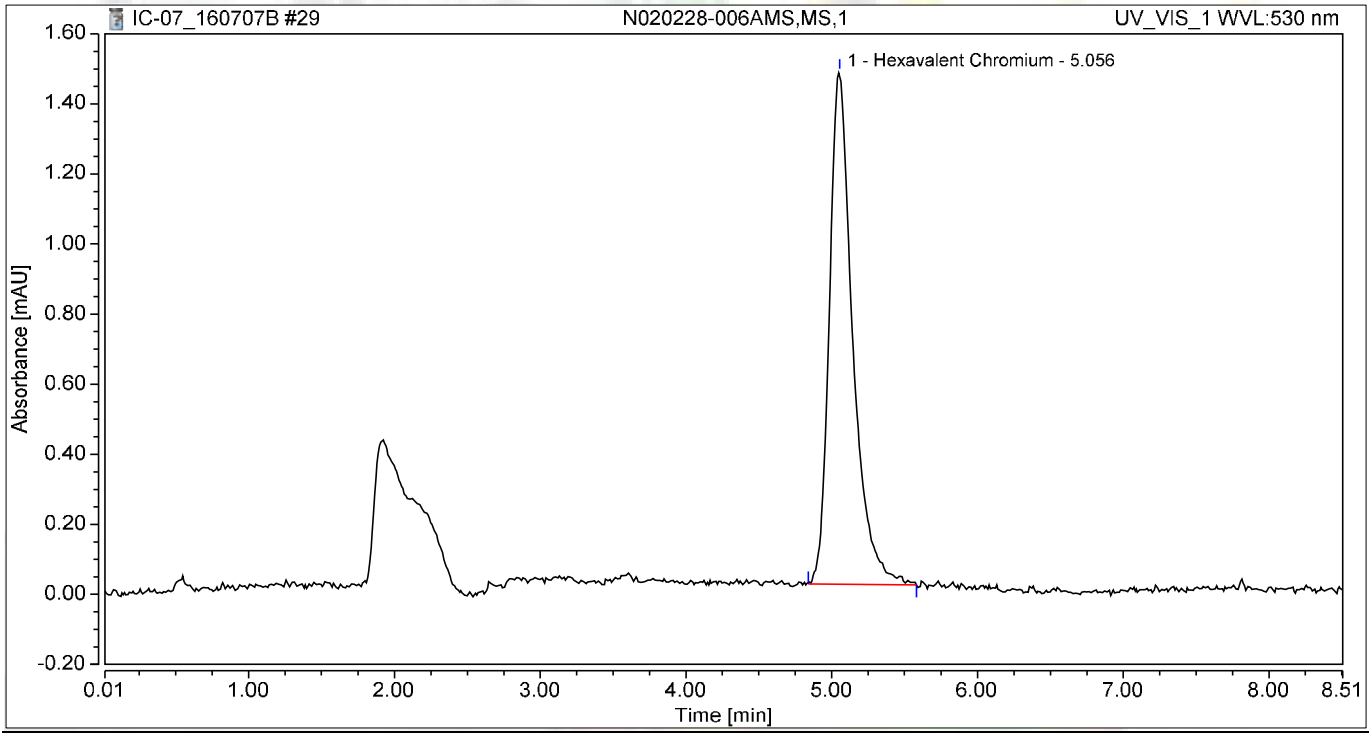
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	5.040	0.024	0.126	100.00	100.00	0.0944
Total:			**0.024**	**0.126**	**100.00**	**100.00**	

Chromatogram and Results

Injection Details

Injection Name:	**N020228-006AMS,MS,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:	**160707_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**07/Jul/16 14:40**	*Sample Weight:*	**1.0000**

Chromatogram



Integration Results

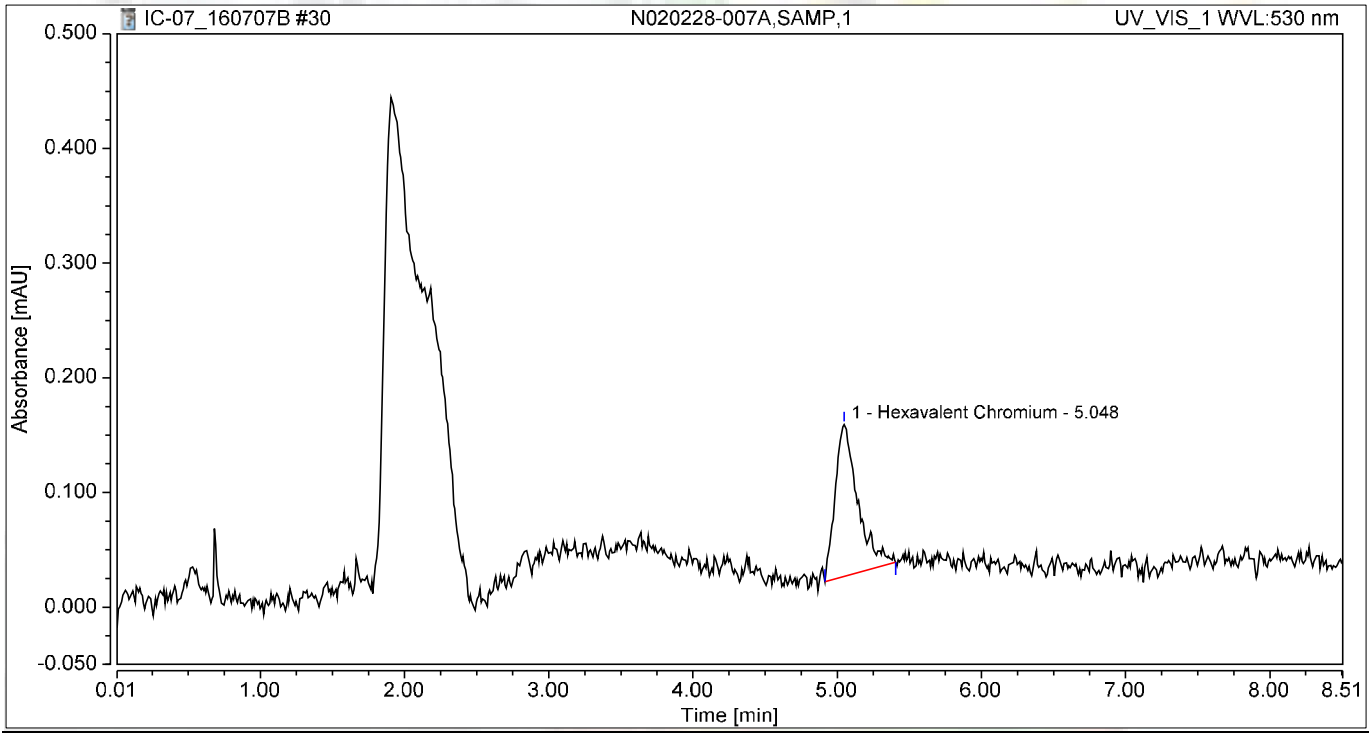
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	5.056	0.272	1.463	100.00	100.00	1.0728
Total:			**0.272**	**1.463**	**100.00**	**100.00**	

Chromatogram and Results

Injection Details

Injection Name:	**N020228-007A,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:	**160707_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**07/Jul/16 14:50**	*Sample Weight:*	**1.0000**

Chromatogram



Integration Results

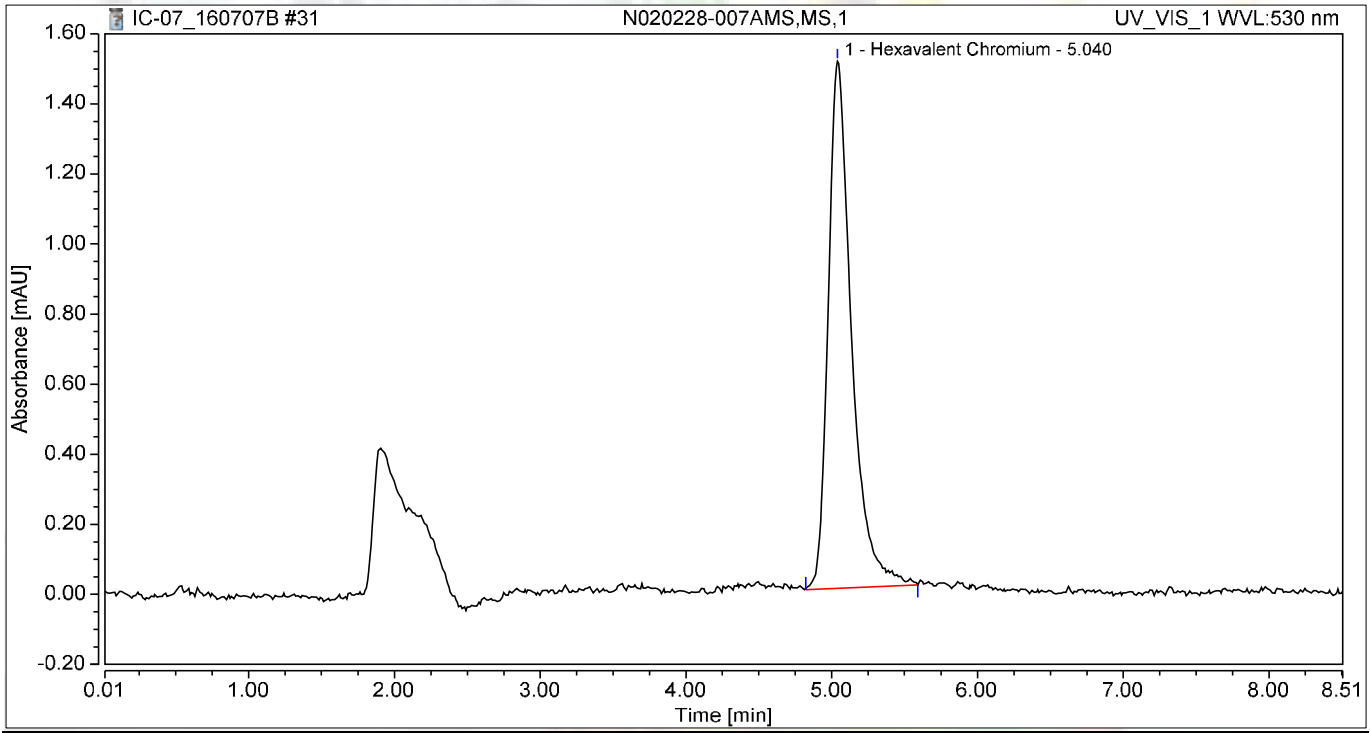
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	5.048	0.024	0.133	100.00	100.00	0.0950
Total:			**0.024**	**0.133**	**100.00**	**100.00**	

Chromatogram and Results

Injection Details

Injection Name:	**N020228-007AMS,MS,1**	*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:	**160707_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**07/Jul/16 14:59**	*Sample Weight:*	**1.0000**

Chromatogram



Integration Results

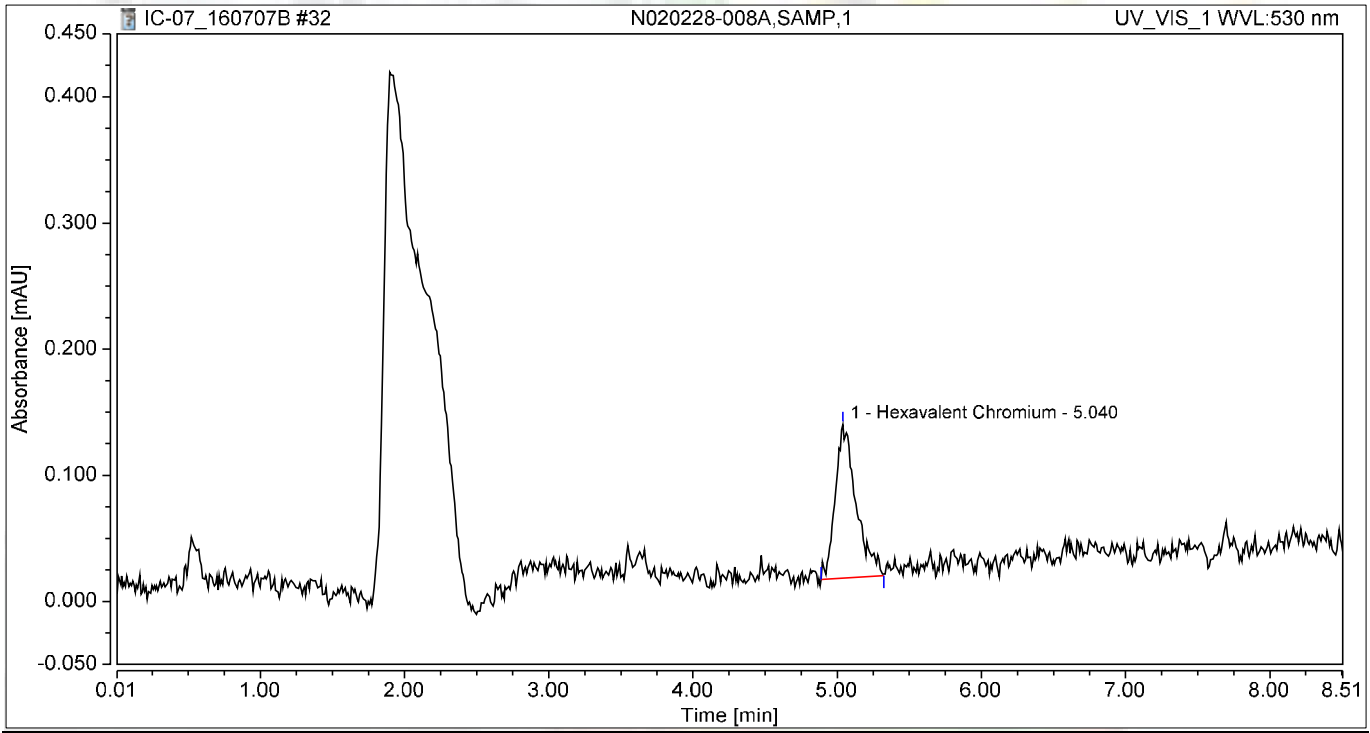
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	5.040	0.280	1.504	100.00	100.00	1.1022
Total:			**0.280**	**1.504**	**100.00**	**100.00**	

Chromatogram and Results

Injection Details

Injection Name:	**N020228-008A,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:	**160707_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**07/Jul/16 15:09**	*Sample Weight:*	**1.0000**

Chromatogram



Integration Results

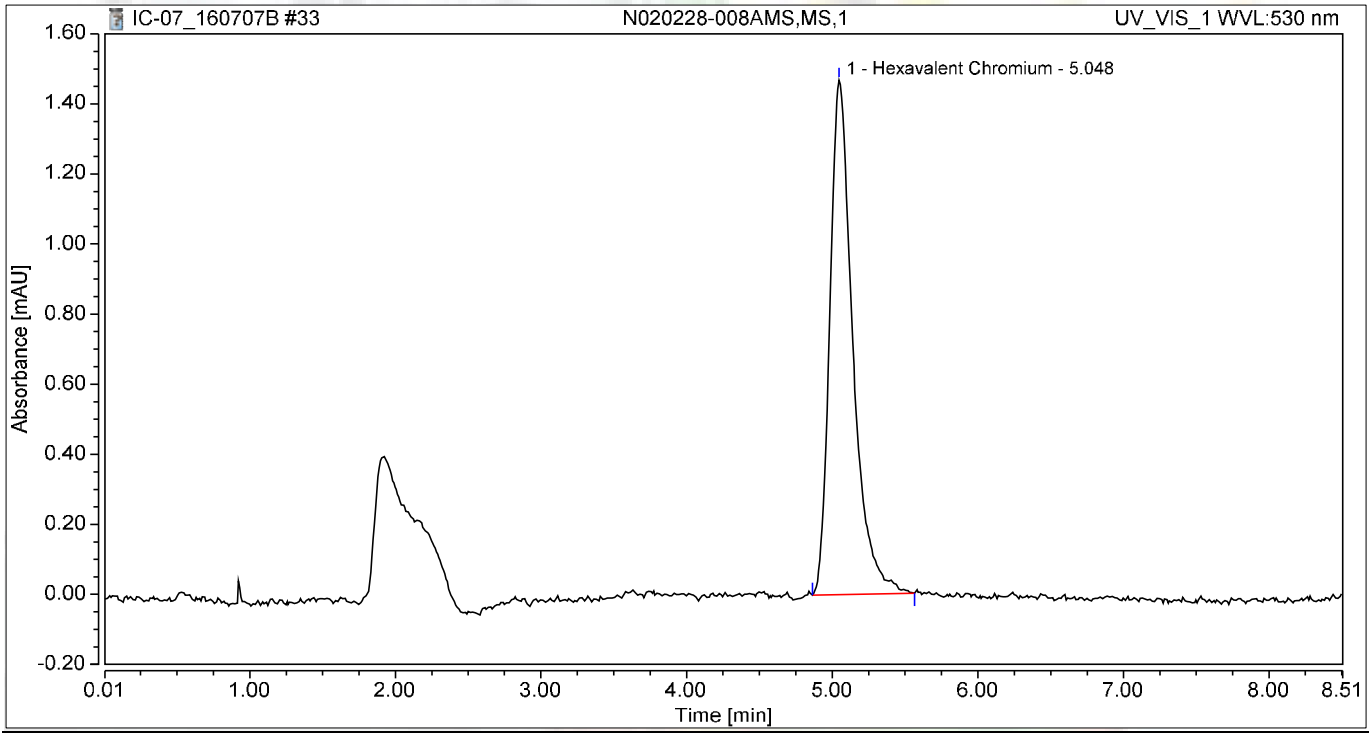
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	5.040	0.020	0.122	100.00	100.00	0.0806
Total:			**0.020**	**0.122**	**100.00**	**100.00**	

Chromatogram and Results

Injection Details

Injection Name:	**N020228-008AMS,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:	**160707_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**07/Jul/16 15:18**	*Sample Weight:*	**1.0000**

Chromatogram



Integration Results

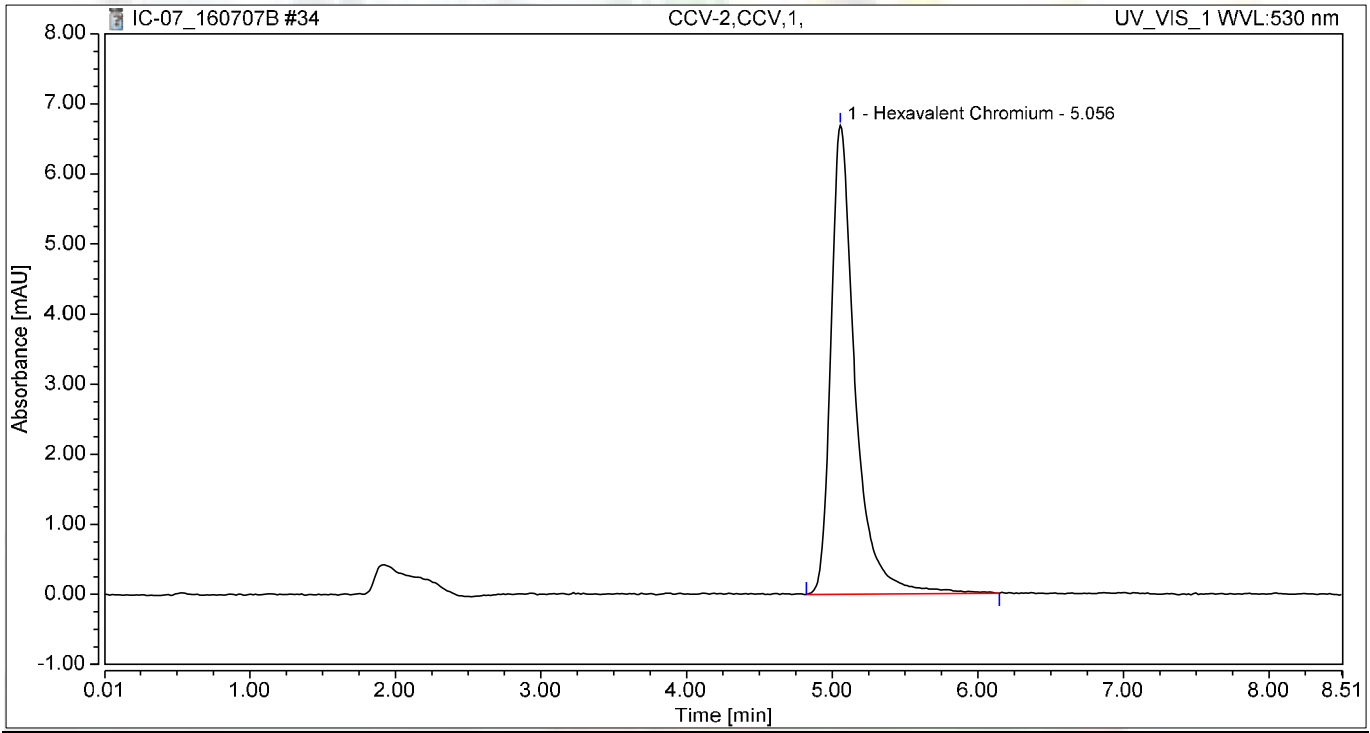
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	5.048	0.269	1.468	100.00	100.00	1.0605
Total:			**0.269**	**1.468**	**100.00**	**100.00**	

Chromatogram and Results

Injection Details

Injection Name:	**CCV-2,CCV,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:	**160707_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**07/Jul/16 15:28**	*Sample Weight:*	**1.0000**

Chromatogram



Integration Results

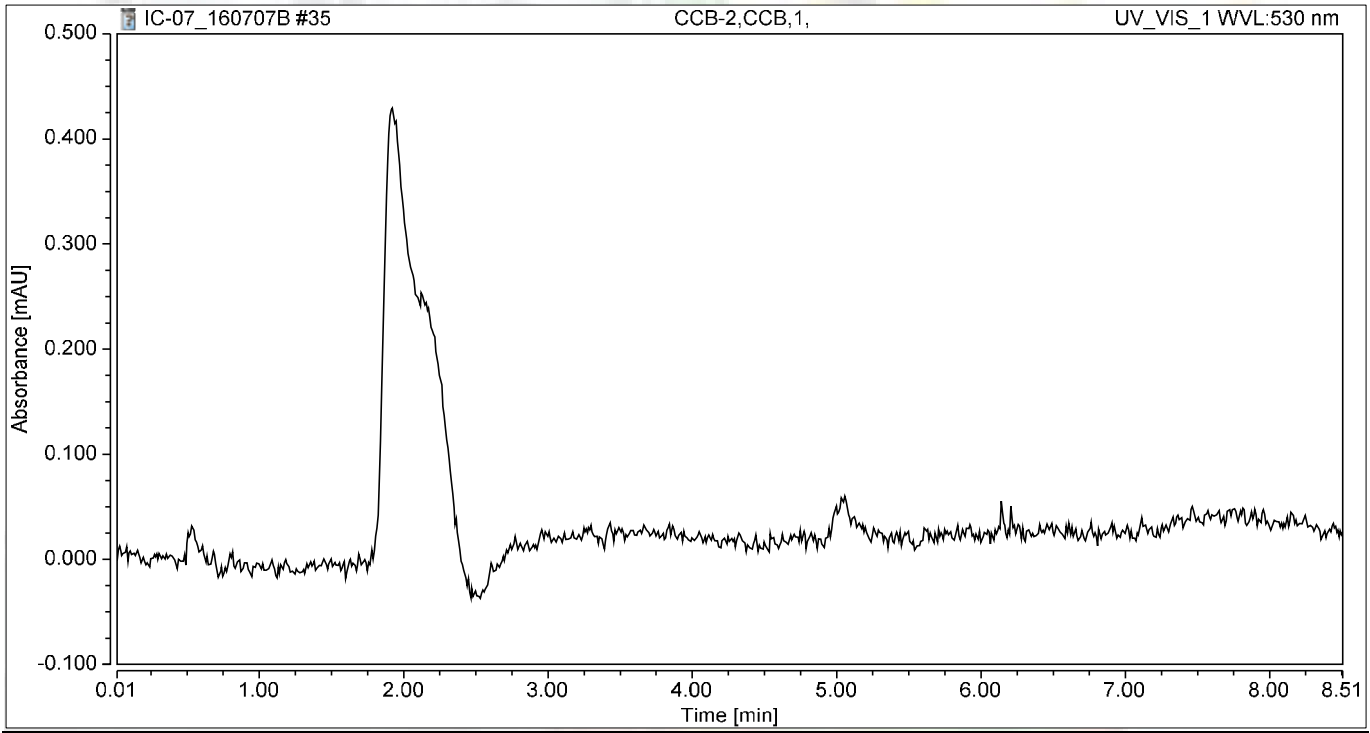
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	5.056	1.295	6.690	100.00	100.00	5.1059
Total:			**1.295**	**6.690**	**100.00**	**100.00**	

Chromatogram and Results

Injection Details

Injection Name:	**CCB-2,CCB,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:	**160707_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**07/Jul/16 15:37**	*Sample Weight:*	**1.0000**

Chromatogram



Integration Results

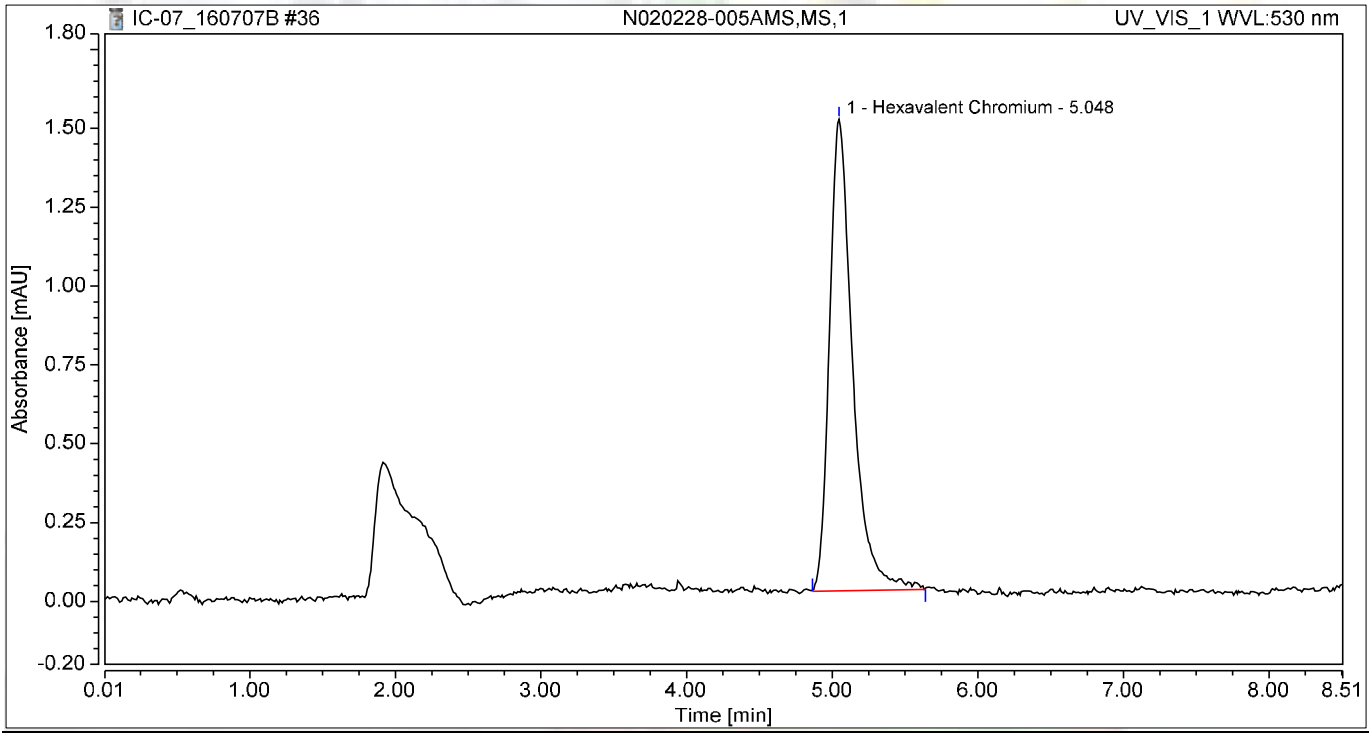
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
n.a.	Hexavalent Chromium	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Total:			**0.000**	**0.000**	**0.00**	**0.00**	

Chromatogram and Results

Injection Details

Injection Name:	**N020228-005AMS,MS,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:	**160707_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**07/Jul/16 15:47**	*Sample Weight:*	**1.0000**

Chromatogram



Integration Results

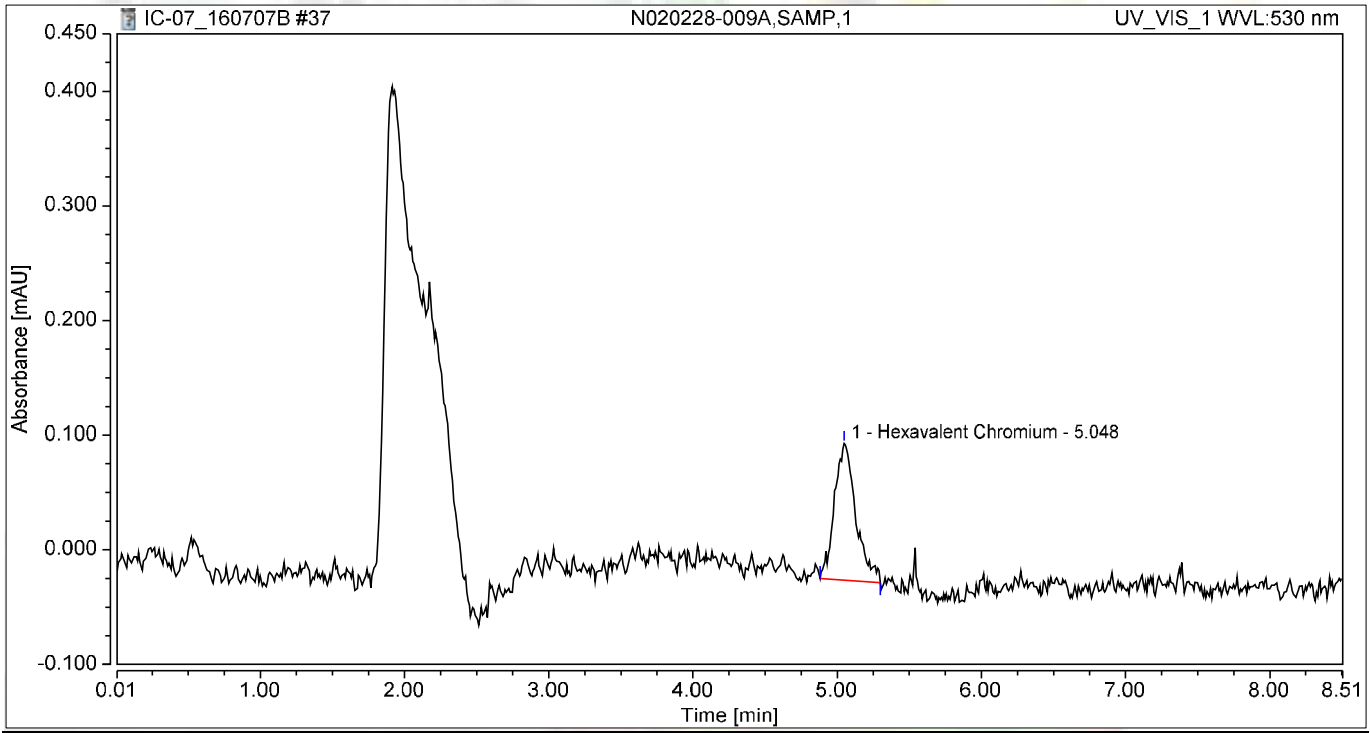
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	5.048	0.275	1.495	100.00	100.00	1.0862
Total:			**0.275**	**1.495**	**100.00**	**100.00**	

Chromatogram and Results

Injection Details

Injection Name:	**N020228-009A,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:	**160707_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**07/Jul/16 15:56**	*Sample Weight:*	**1.0000**

Chromatogram



Integration Results

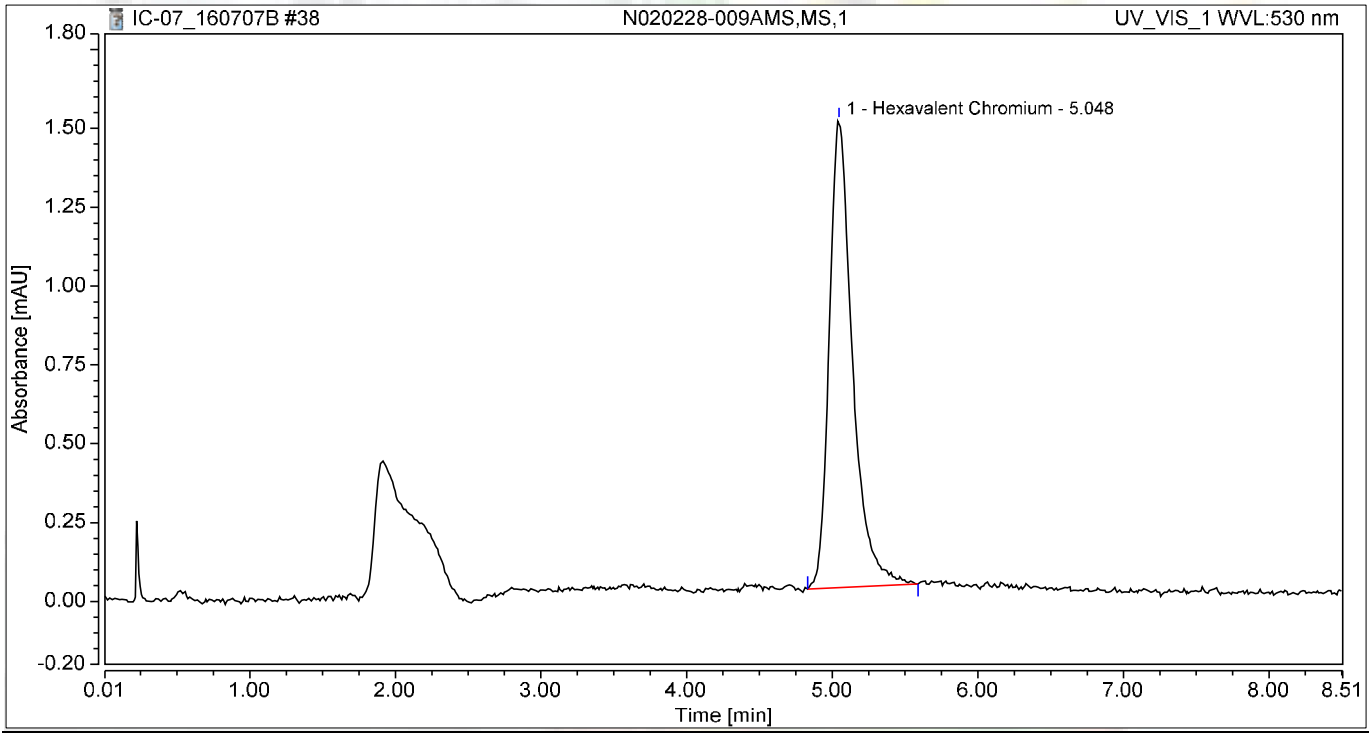
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	5.048	0.020	0.119	100.00	100.00	0.0808
Total:			**0.020**	**0.119**	**100.00**	**100.00**	

Chromatogram and Results

Injection Details

Injection Name:	**N020228-009AMS,MS,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:	**160707_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**07/Jul/16 16:05**	*Sample Weight:*	**1.0000**

Chromatogram



Integration Results

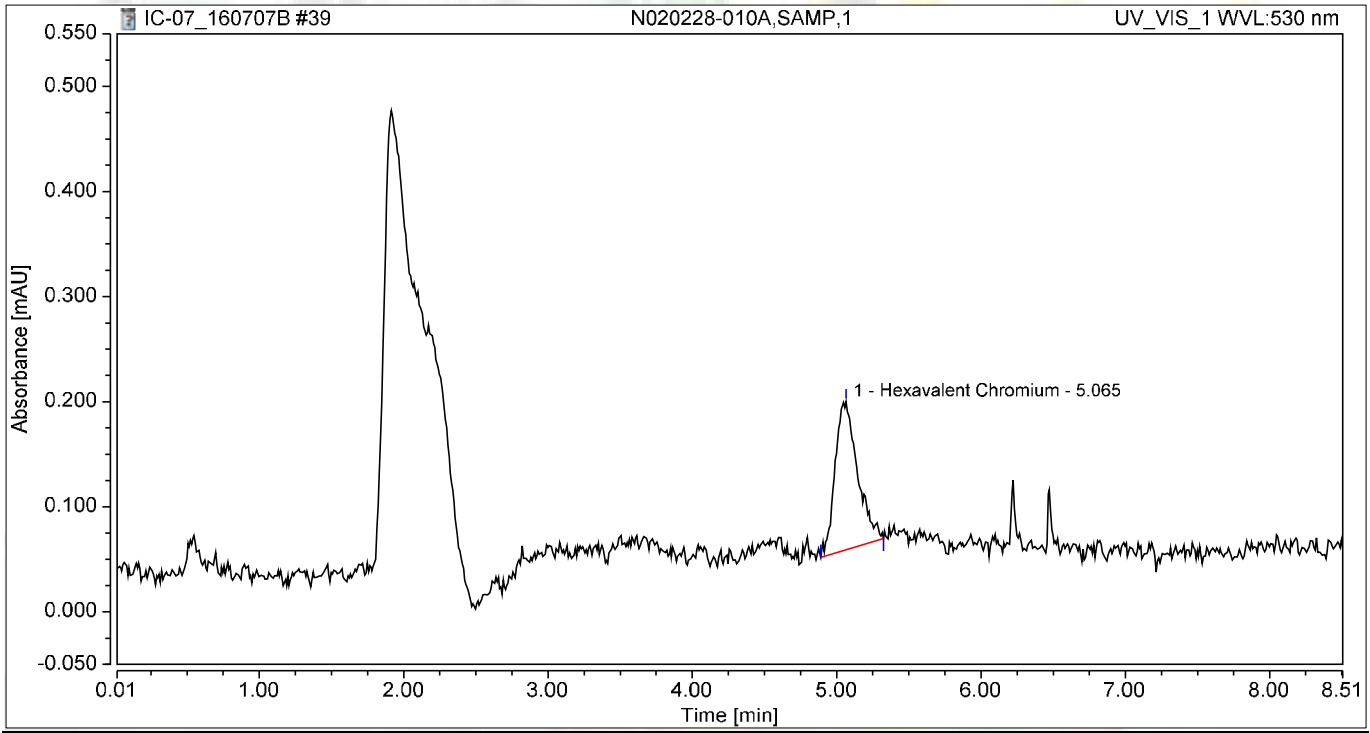
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	5.048	0.274	1.483	100.00	100.00	1.0810
Total:			**0.274**	**1.483**	**100.00**	**100.00**	

Chromatogram and Results

Injection Details

Injection Name:	**N020228-010A,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:	**160707_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**07/Jul/16 16:15**	*Sample Weight:*	**1.0000**

Chromatogram



Integration Results

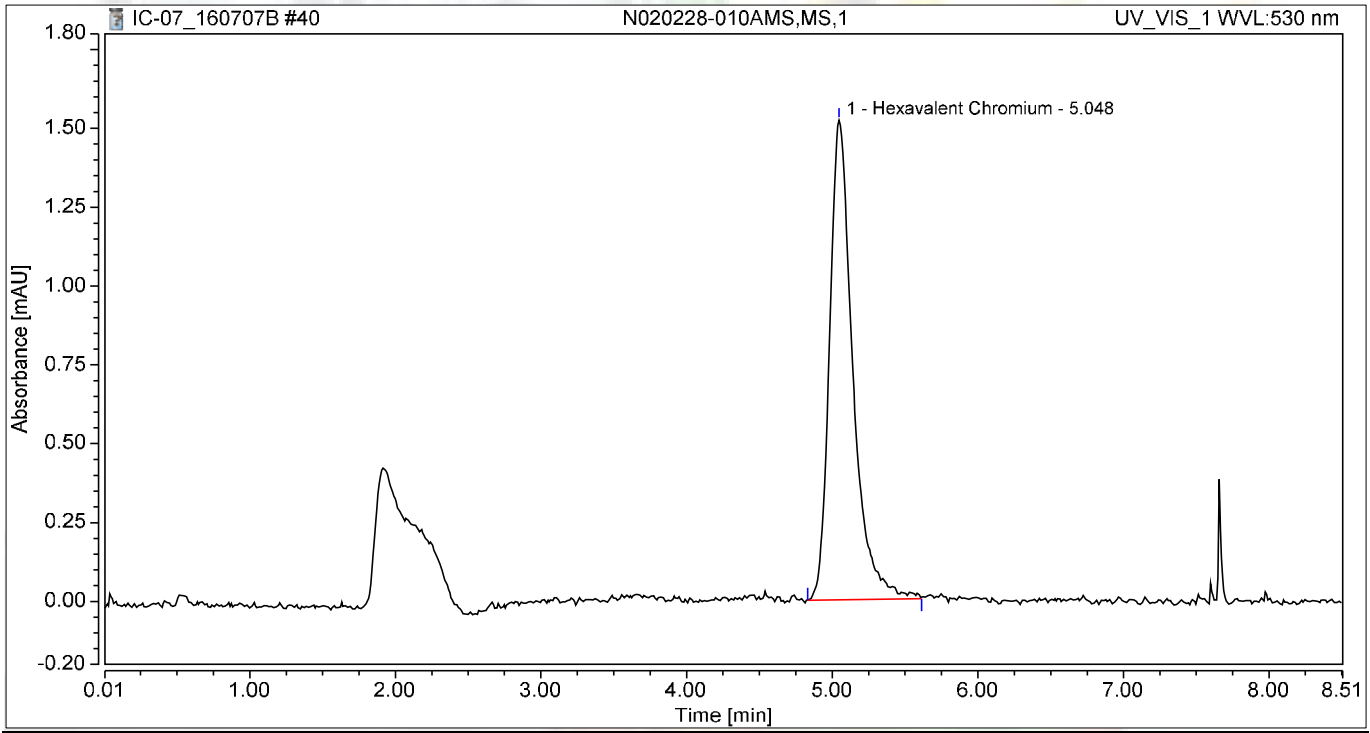
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	5.065	0.026	0.141	100.00	100.00	0.1008
Total:			**0.026**	**0.141**	**100.00**	**100.00**	

Chromatogram and Results

Injection Details

Injection Name:	**N020228-010AMS,MS,1**	*Run Time (min):*	**8.50**
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:	**160707_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**07/Jul/16 16:24**	*Sample Weight:*	**1.0000**

Chromatogram



Integration Results

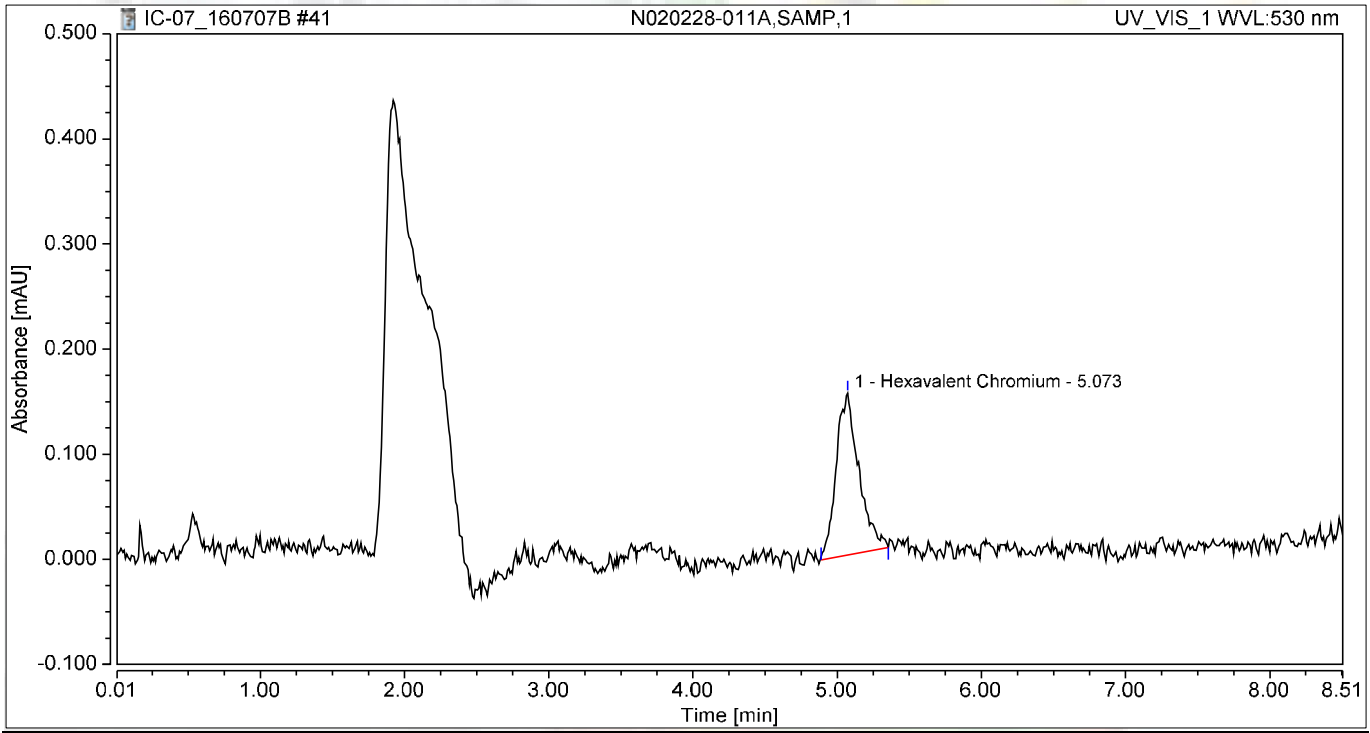
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	5.048	0.282	1.521	100.00	100.00	1.1127
Total:			**0.282**	**1.521**	**100.00**	**100.00**	

Chromatogram and Results

Injection Details

Injection Name:	**N020228-011A,SAMP,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:	**160707_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**07/Jul/16 16:34**	*Sample Weight:*	**1.0000**

Chromatogram



Integration Results

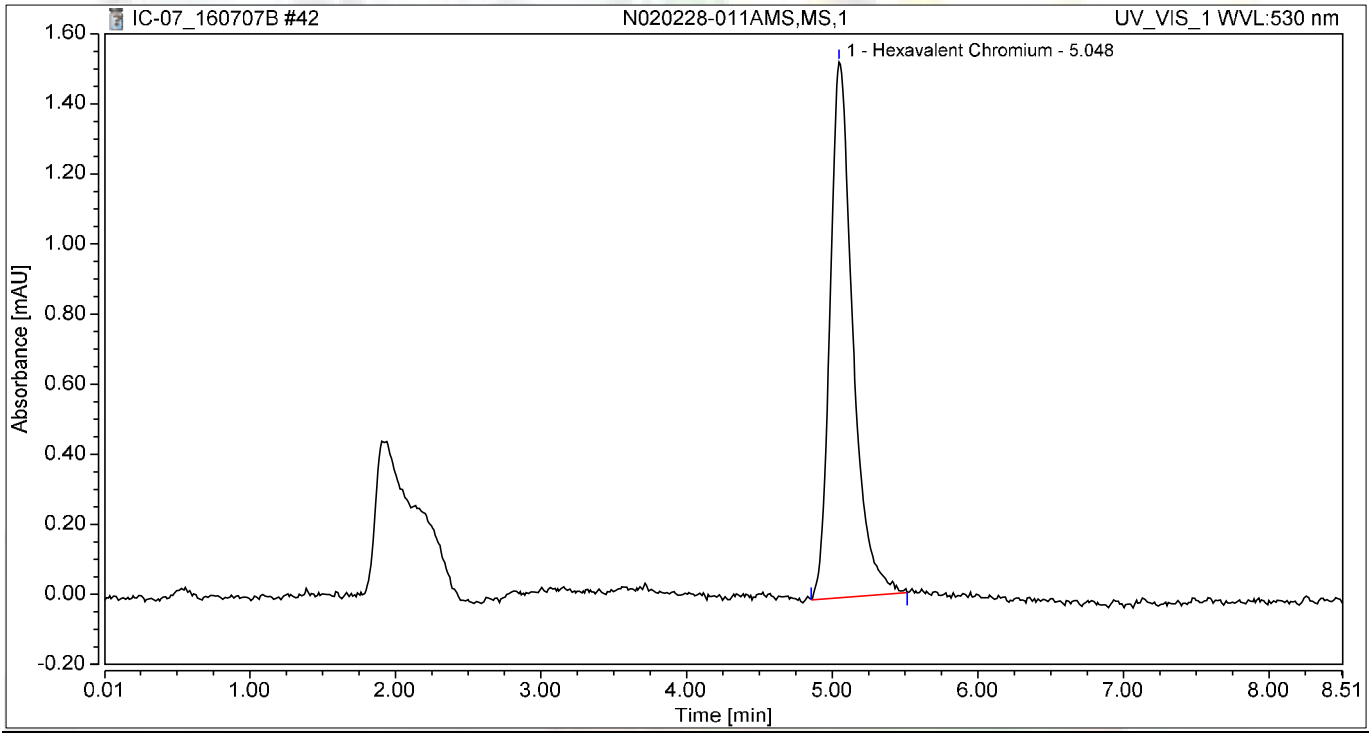
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	5.073	0.028	0.154	100.00	100.00	0.1110
Total:			**0.028**	**0.154**	**100.00**	**100.00**	

Chromatogram and Results

Injection Details

Injection Name:	**N020228-011AMS,MS,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:	**160707_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**07/Jul/16 16:44**	*Sample Weight:*	**1.0000**

Chromatogram



Integration Results

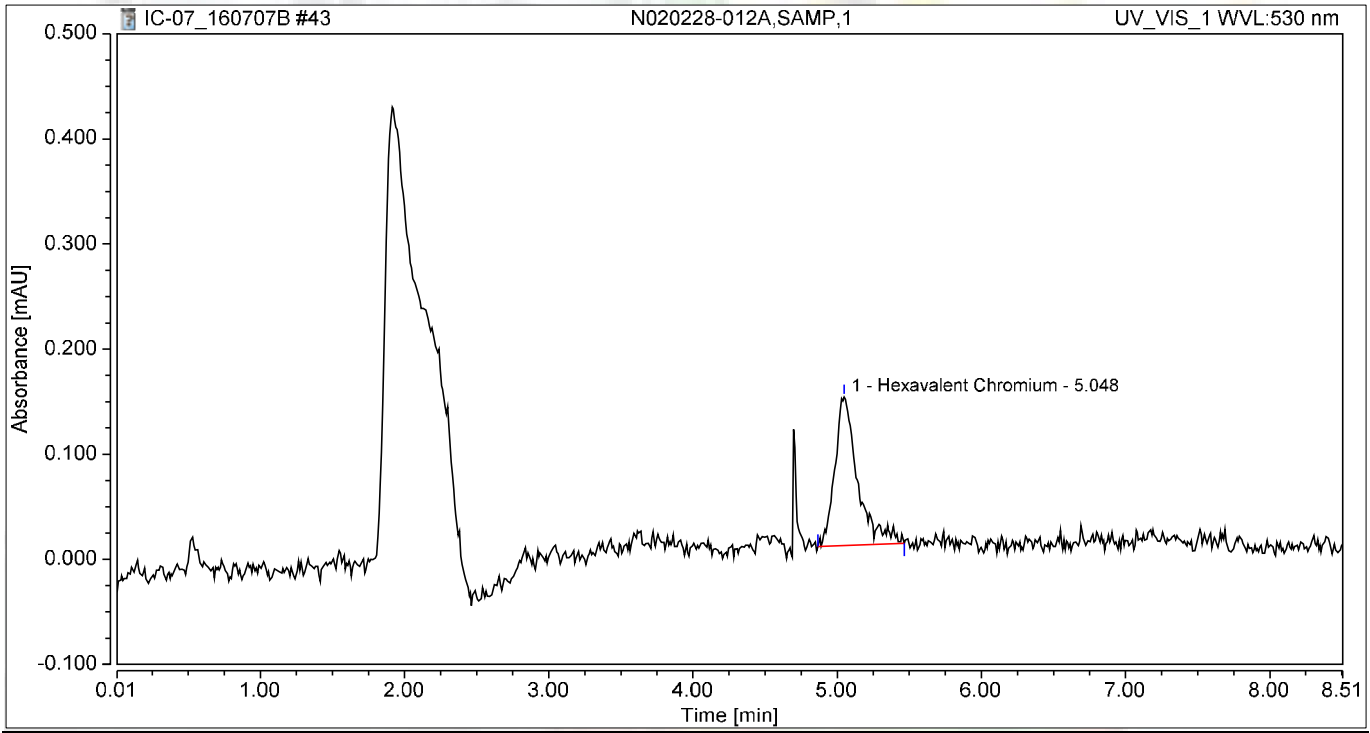
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	5.048	0.278	1.529	100.00	100.00	1.0980
Total:			**0.278**	**1.529**	**100.00**	**100.00**	

Chromatogram and Results

Injection Details

Injection Name:	**N020228-012A,SAMP,1**	*Run Time (min):*	**8.50**
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:	**160707_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**07/Jul/16 16:53**	*Sample Weight:*	**1.0000**

Chromatogram



Integration Results

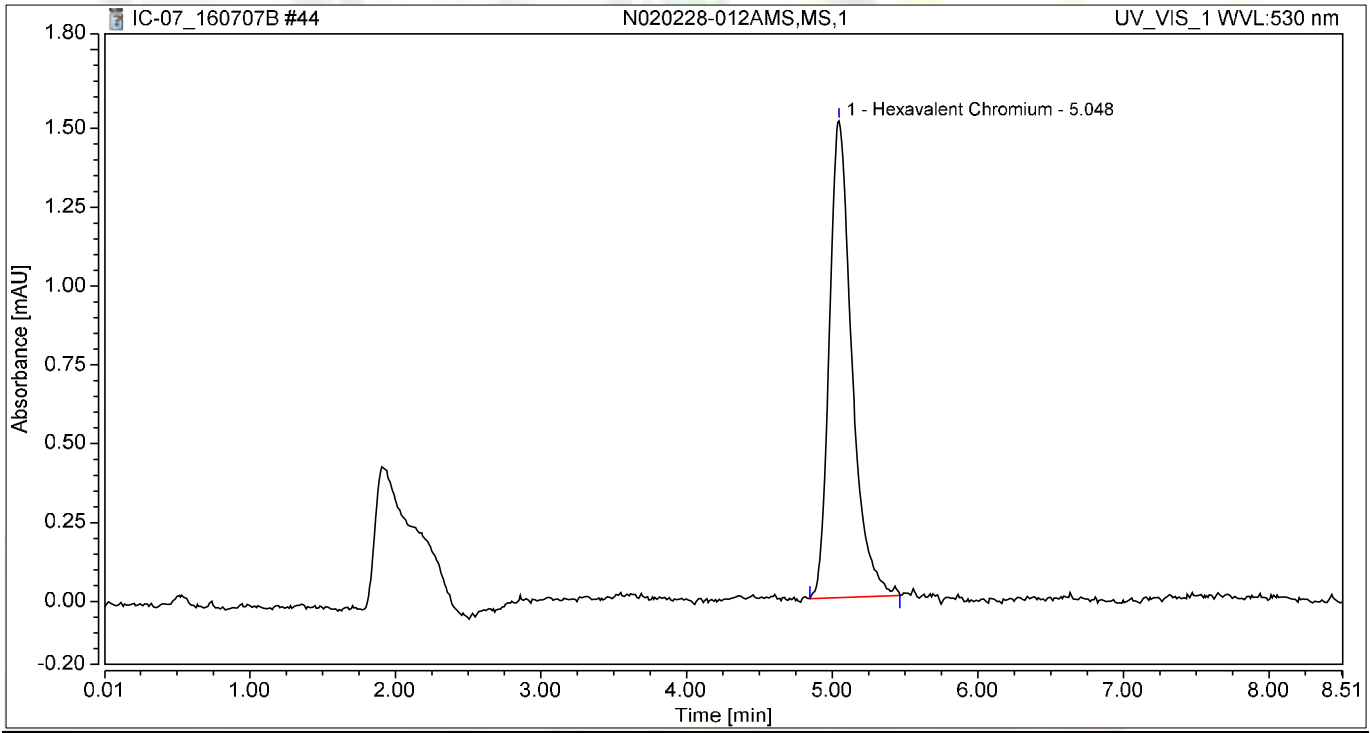
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	5.048	0.026	0.141	100.00	100.00	0.1025
Total:			**0.026**	**0.141**	**100.00**	**100.00**	

Chromatogram and Results

Injection Details

Injection Name:	**N020228-012AMS,MS,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:	**160707_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**07/Jul/16 17:02**	*Sample Weight:*	**1.0000**

Chromatogram



Integration Results

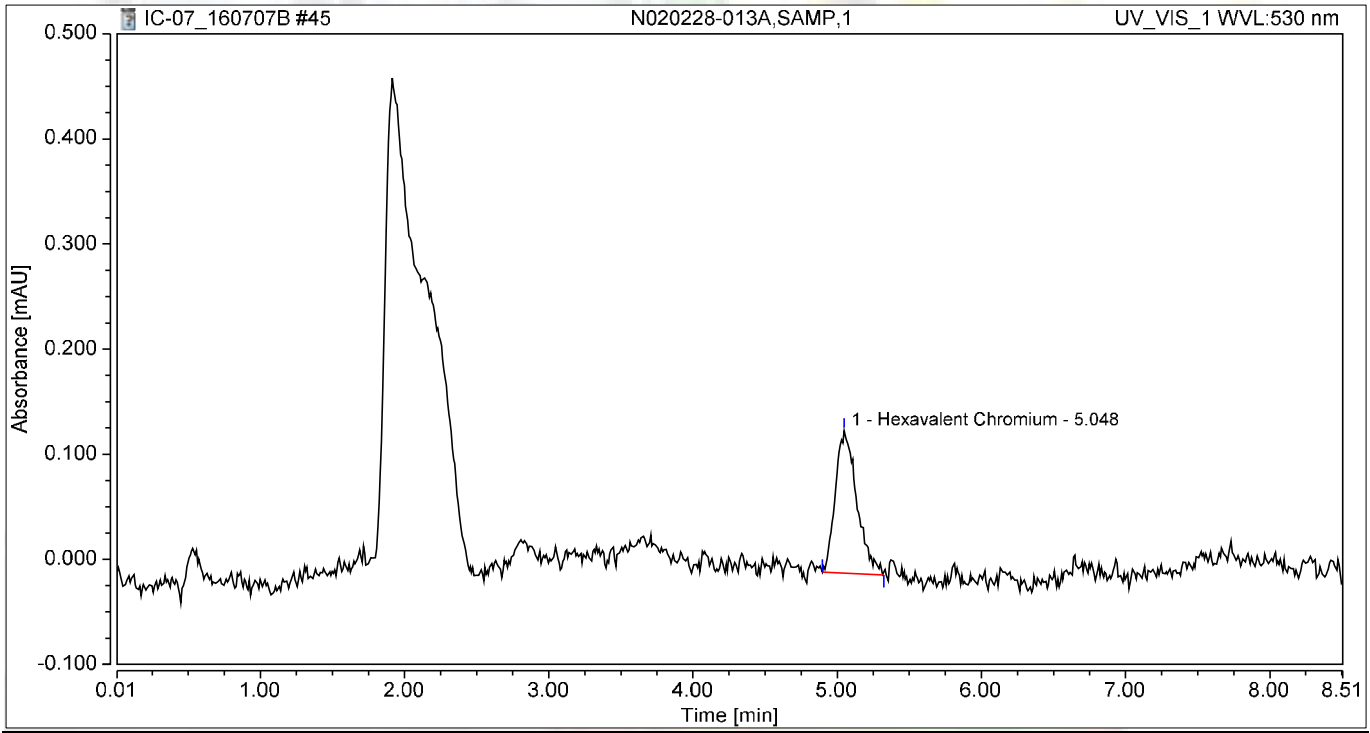
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	5.048	0.272	1.513	100.00	100.00	1.0731
Total:			**0.272**	**1.513**	**100.00**	**100.00**	

Chromatogram and Results

Injection Details

Injection Name:	**N020228-013A,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:	**160707_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**07/Jul/16 17:12**	*Sample Weight:*	**1.0000**

Chromatogram



Integration Results

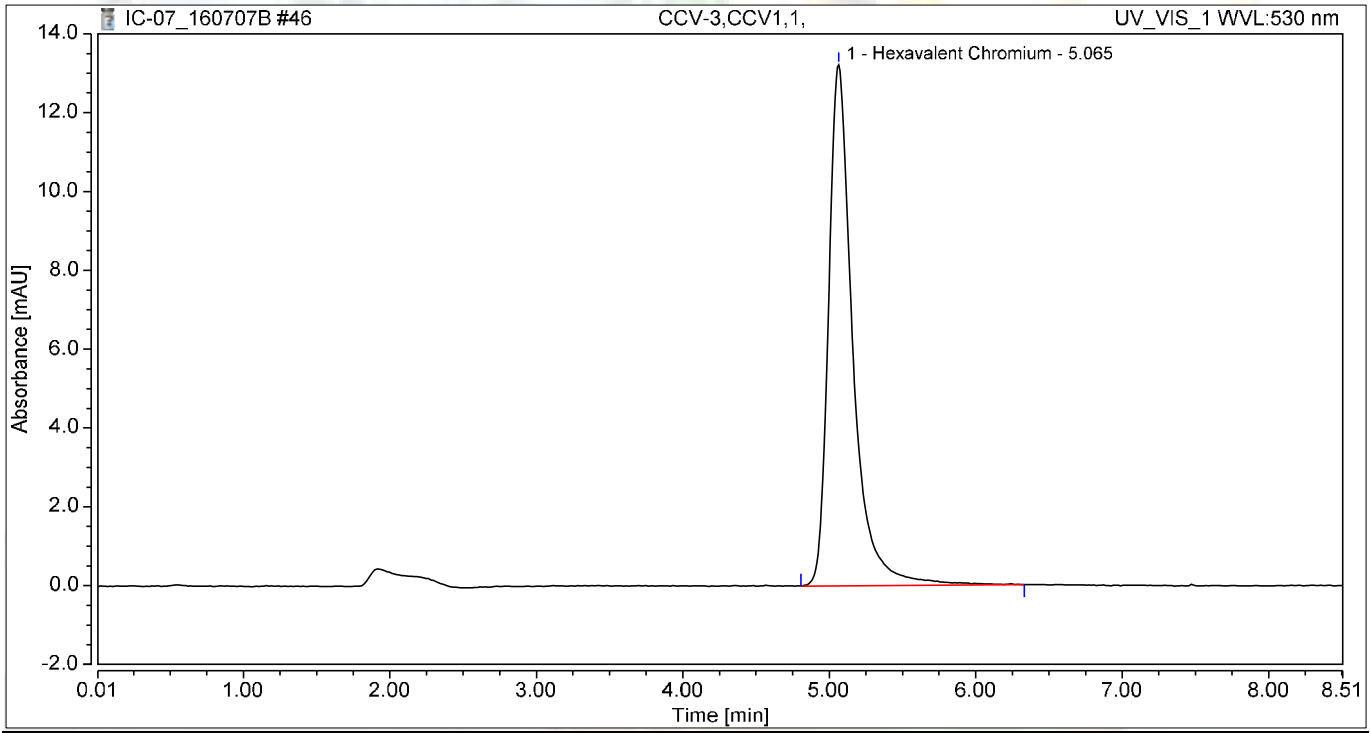
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	5.048	0.023	0.135	100.00	100.00	0.0922
Total:			**0.023**	**0.135**	**100.00**	**100.00**	

Chromatogram and Results

Injection Details

Injection Name:	**CCV-3,CCV1,1,**	*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:	**160707_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**07/Jul/16 17:24**	*Sample Weight:*	**1.0000**

Chromatogram



Integration Results

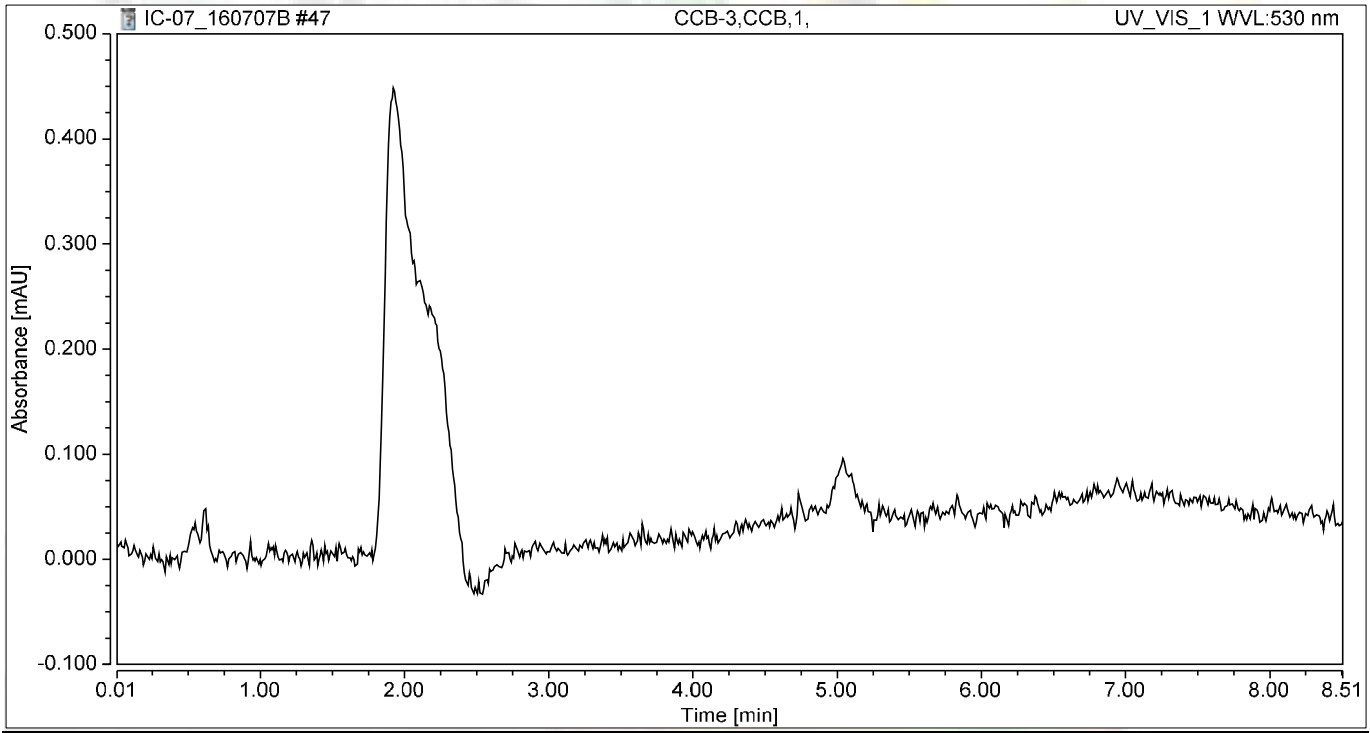
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	5.065	2.540	13.215	100.00	100.00	10.0142
Total:			**2.540**	**13.215**	**100.00**	**100.00**	

Chromatogram and Results

Injection Details

Injection Name:	**CCB-3,CCB,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:	**160707_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**07/Jul/16 17:33**	*Sample Weight:*	**1.0000**

Chromatogram



Integration Results

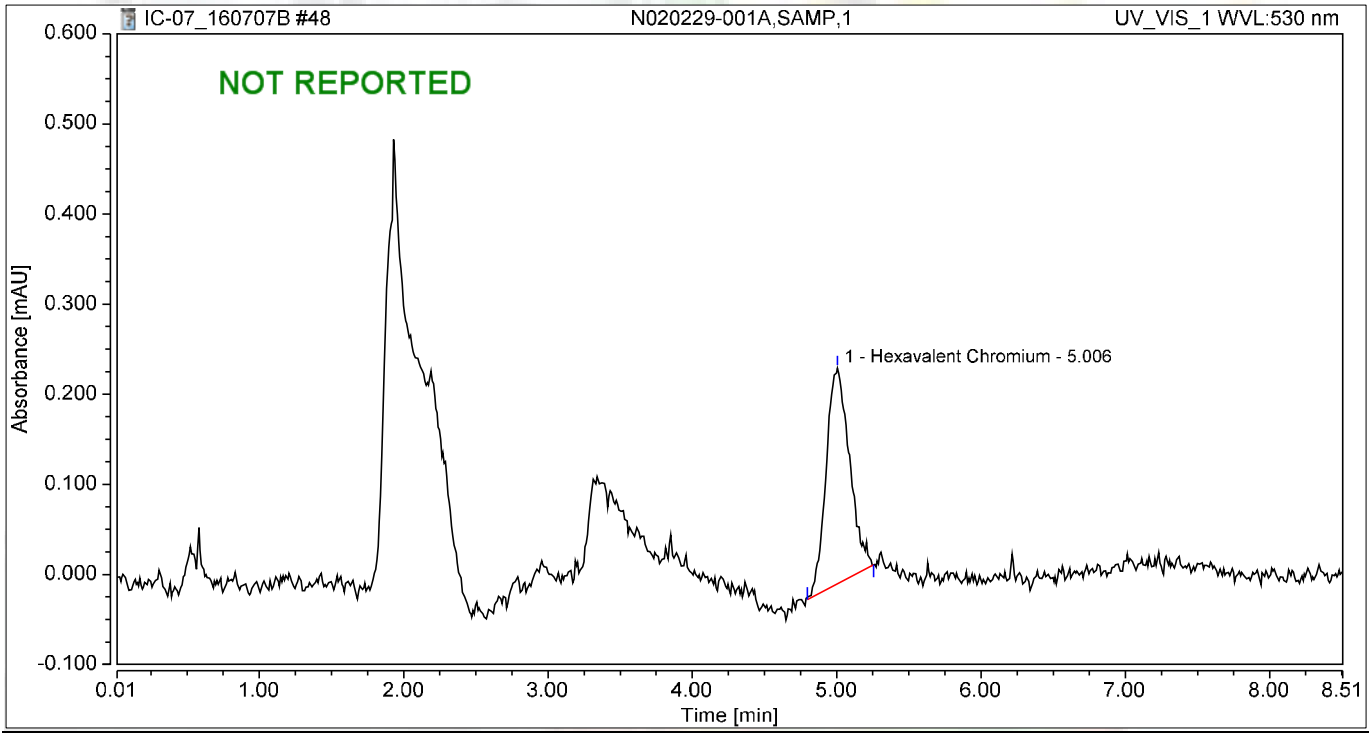
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
n.a.	Hexavalent Chromium	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Total:			**0.000**	**0.000**	**0.00**	**0.00**	

Chromatogram and Results

Injection Details

Injection Name:	**N020229-001A,SAMP,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:	**160707_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**07/Jul/16 17:43**	*Sample Weight:*	**1.0000**

Chromatogram



Integration Results

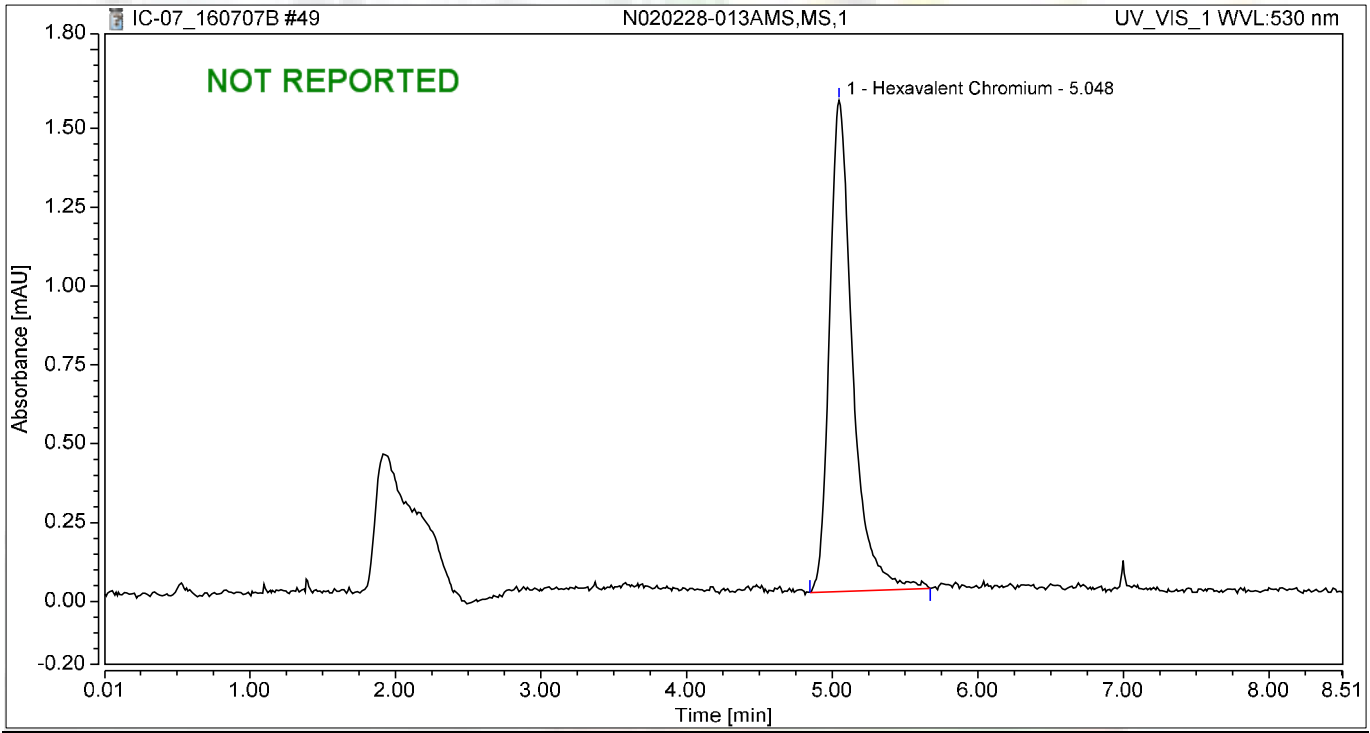
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	5.006	0.045	0.239	100.00	100.00	0.1770
Total:			**0.045**	**0.239**	**100.00**	**100.00**	

Chromatogram and Results

Injection Details

Injection Name:	**N020228-013AMS,MS,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:	**160707_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**07/Jul/16 17:52**	*Sample Weight:*	**1.0000**

Chromatogram



Integration Results

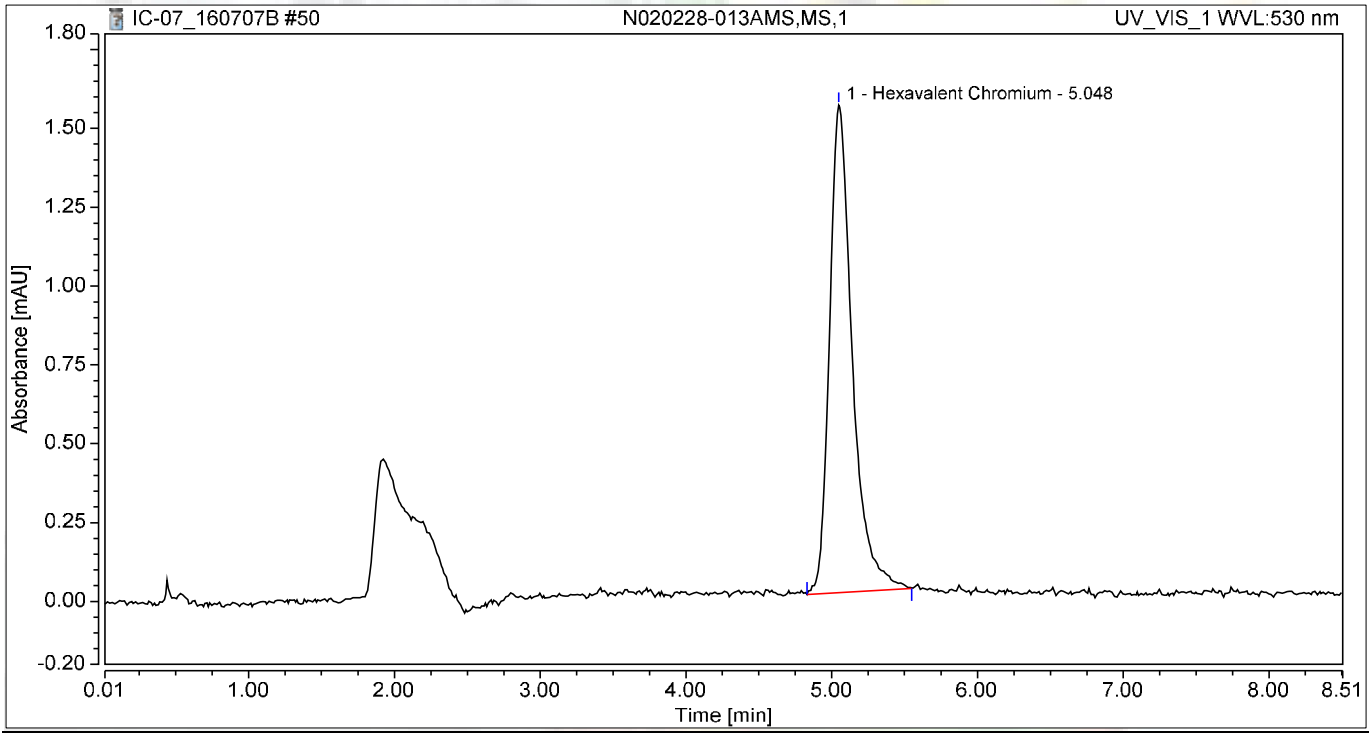
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	5.048	0.286	1.558	100.00	100.00	1.1294
Total:			**0.286**	**1.558**	**100.00**	**100.00**	

Chromatogram and Results

Injection Details

Injection Name:	**N020228-013AMS,MS,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:	**160707_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**07/Jul/16 18:04**	*Sample Weight:*	**1.0000**

Chromatogram



Integration Results

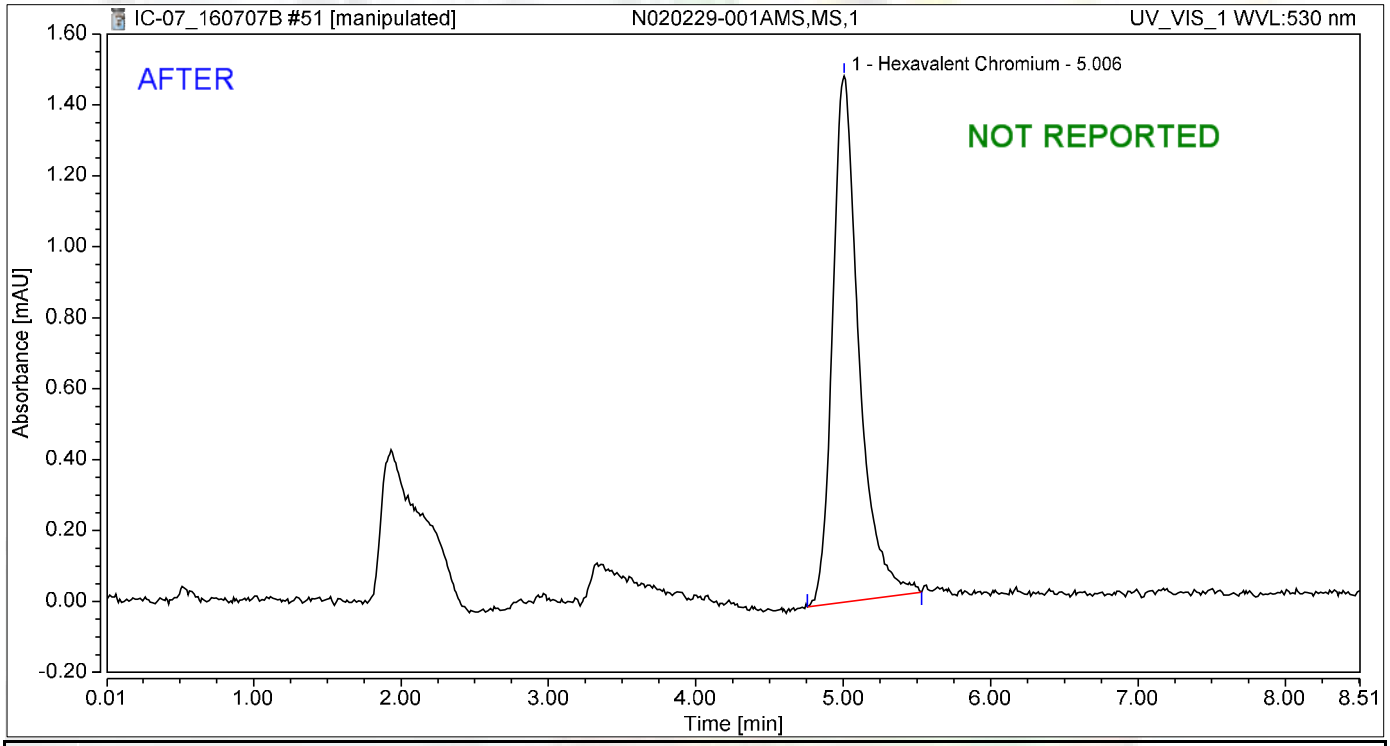
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	5.048	0.281	1.547	100.00	100.00	1.1076
Total:			**0.281**	**1.547**	**100.00**	**100.00**	

Chromatogram and Results

Injection Details

Injection Name:	**N020229-001AMS,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:	**160707_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**07/Jul/16 18:15**	*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	5.006	0.307	1.483	100.00	100.00	1.2102
Total:			**0.307**	**1.483**	**100.00**	**100.00**	

Reviewed by:

7/21/2016

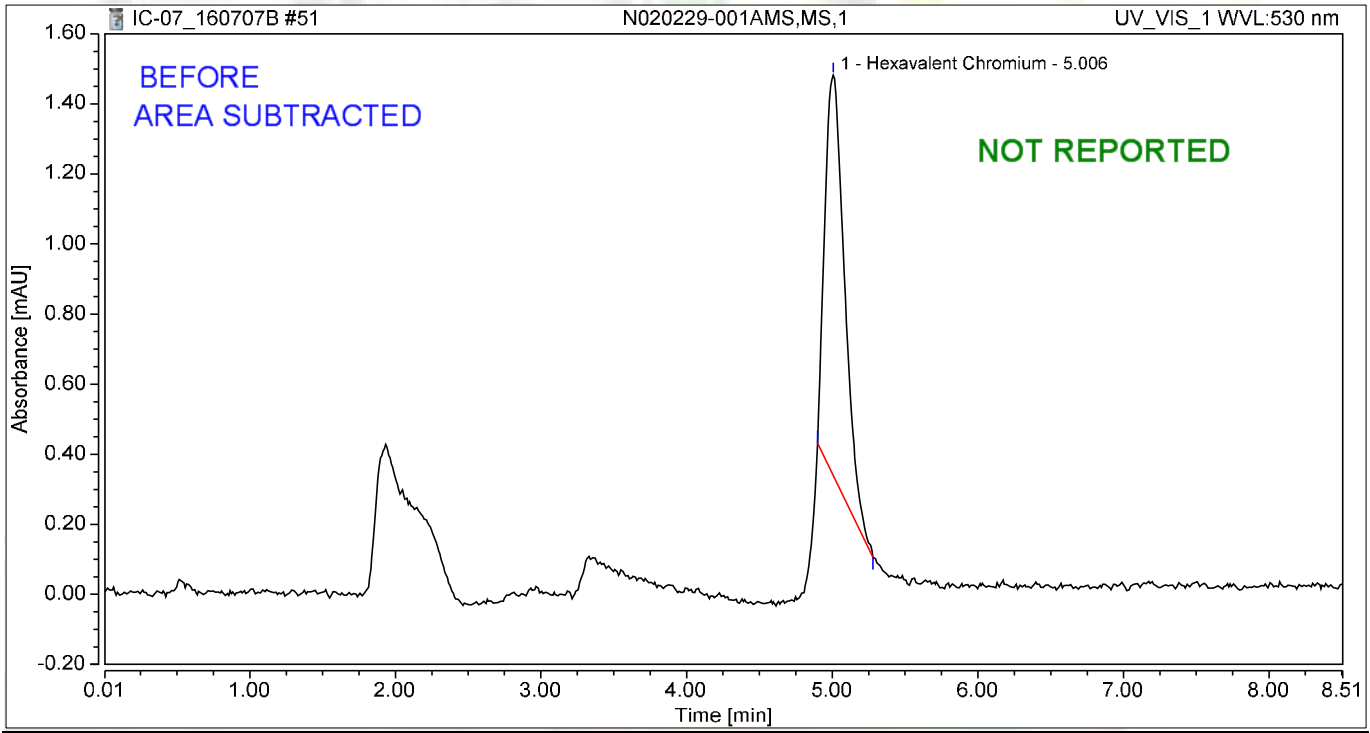
7/21/2016

Chromatogram and Results

Injection Details

Injection Name:	**N020229-001AMS,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:	**160707_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**07/Jul/16 18:15**	*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	5.006	0.179	1.143	100.00	100.00	0.7074
Total:			**0.179**	**1.143**	**100.00**	**100.00**	

7/21/2016

Reviewed by:

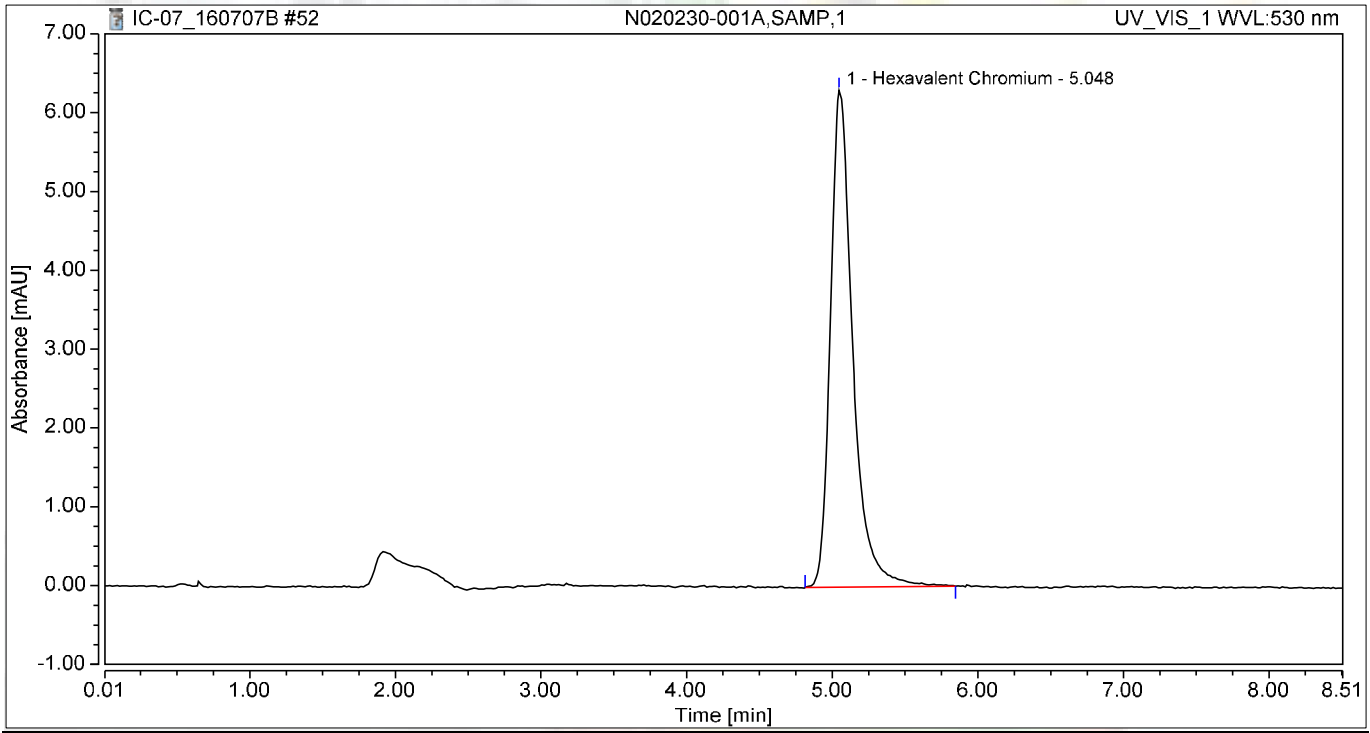
7/21/2016

Chromatogram and Results

Injection Details

Injection Name:	**N020230-001A,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:	**160707_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**07/Jul/16 18:25**	*Sample Weight:*	**1.0000**

Chromatogram



Integration Results

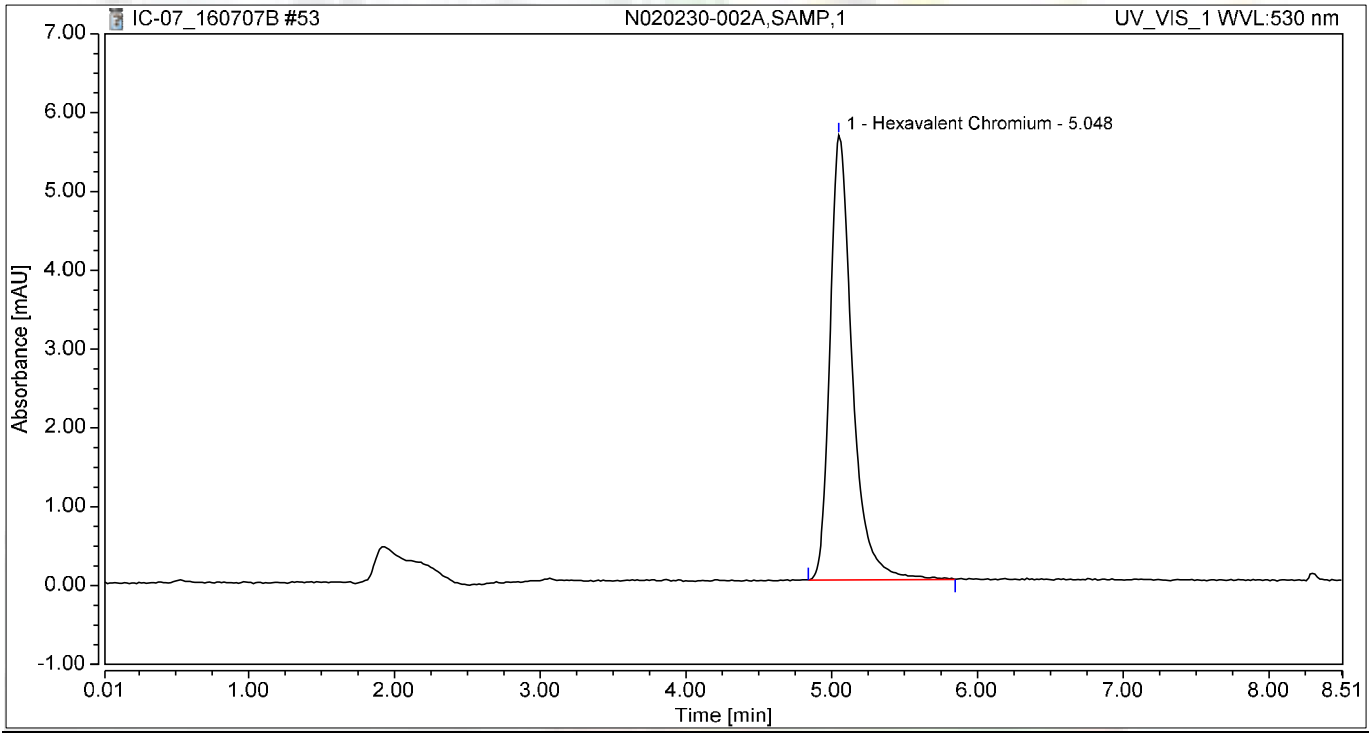
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	5.048	1.121	6.301	100.00	100.00	4.4192
Total:			**1.121**	**6.301**	**100.00**	**100.00**	

Chromatogram and Results

Injection Details

Injection Name:	**N020230-002A,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:	**160707_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**07/Jul/16 18:34**	*Sample Weight:*	**1.0000**

Chromatogram



Integration Results

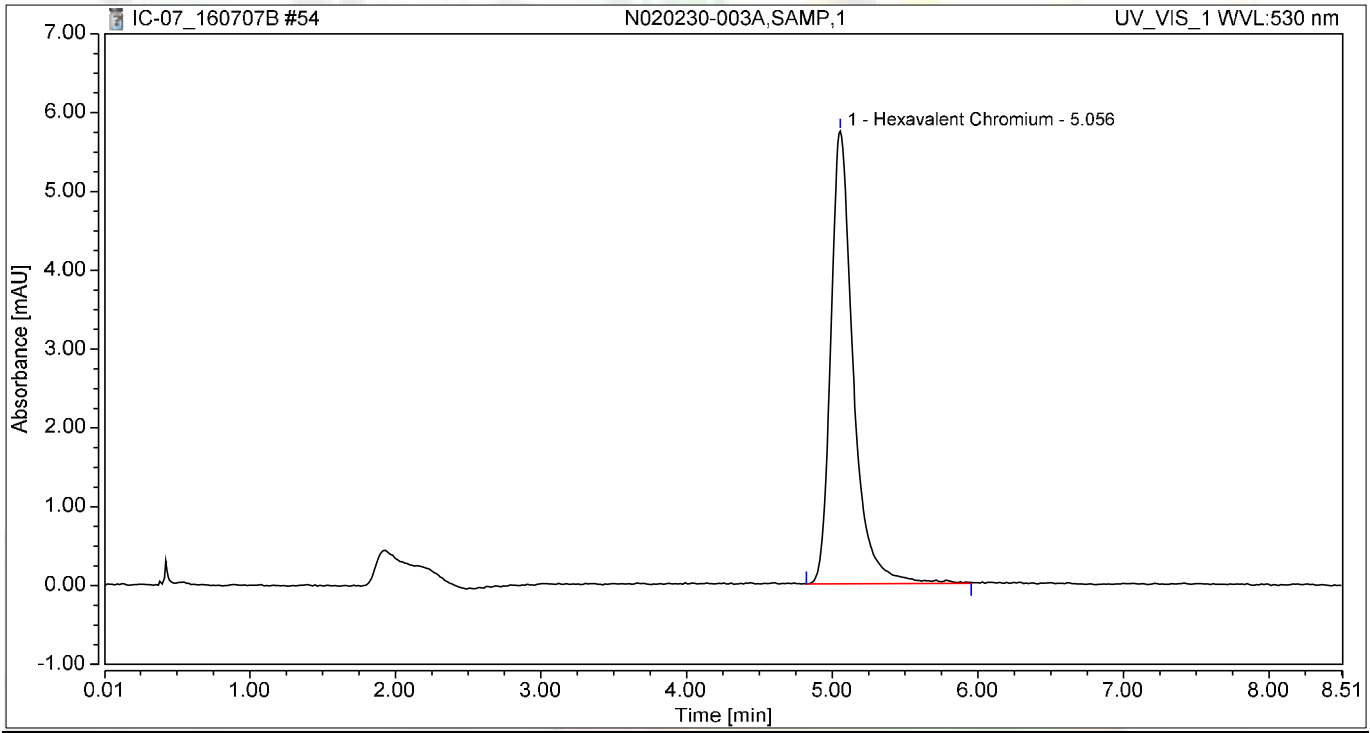
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	5.048	1.004	5.644	100.00	100.00	3.9578
Total:			**1.004**	**5.644**	**100.00**	**100.00**	

Chromatogram and Results

Injection Details

Injection Name:	**N020230-003A,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:	**160707_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**07/Jul/16 18:44**	*Sample Weight:*	**1.0000**

Chromatogram



Integration Results

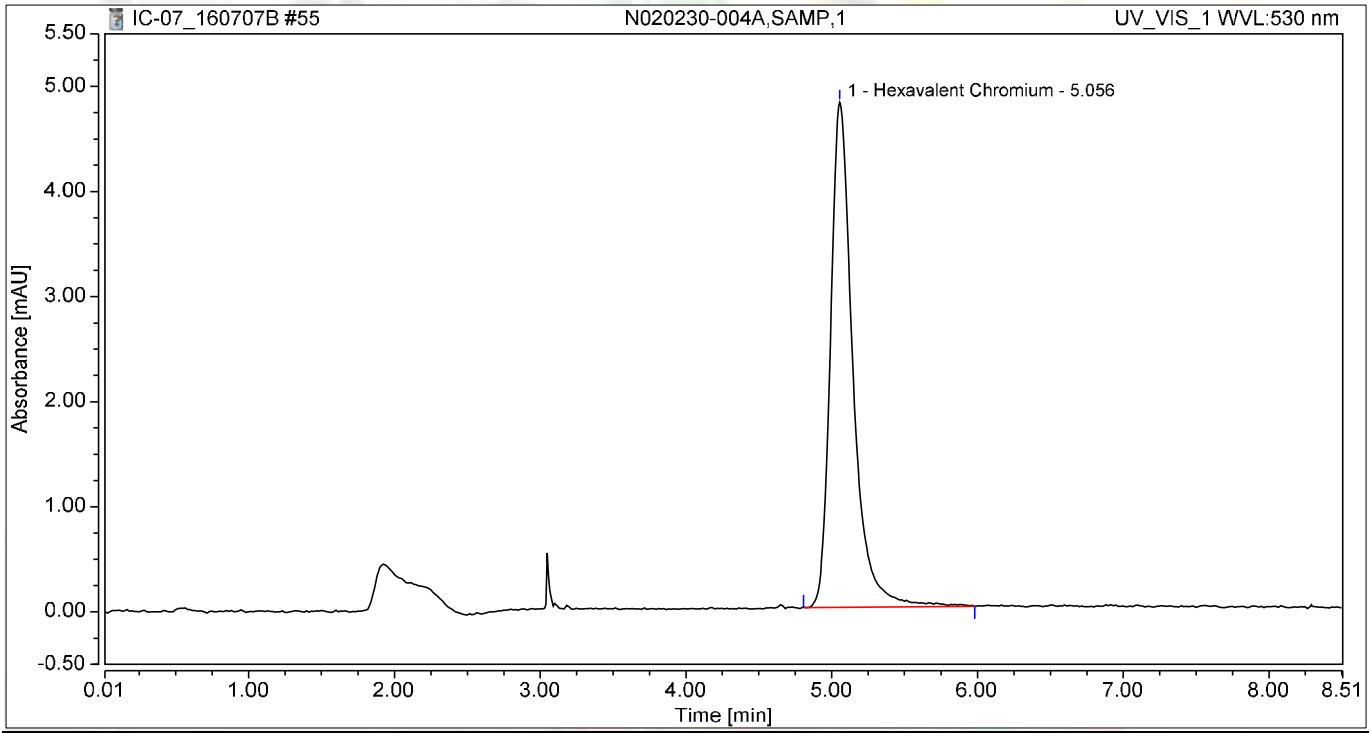
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	5.056	1.025	5.743	100.00	100.00	4.0407
Total:			**1.025**	**5.743**	**100.00**	**100.00**	

Chromatogram and Results

Injection Details

Injection Name:	**N020230-004A,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:	**160707_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**07/Jul/16 18:53**	*Sample Weight:*	**1.0000**

Chromatogram



Integration Results

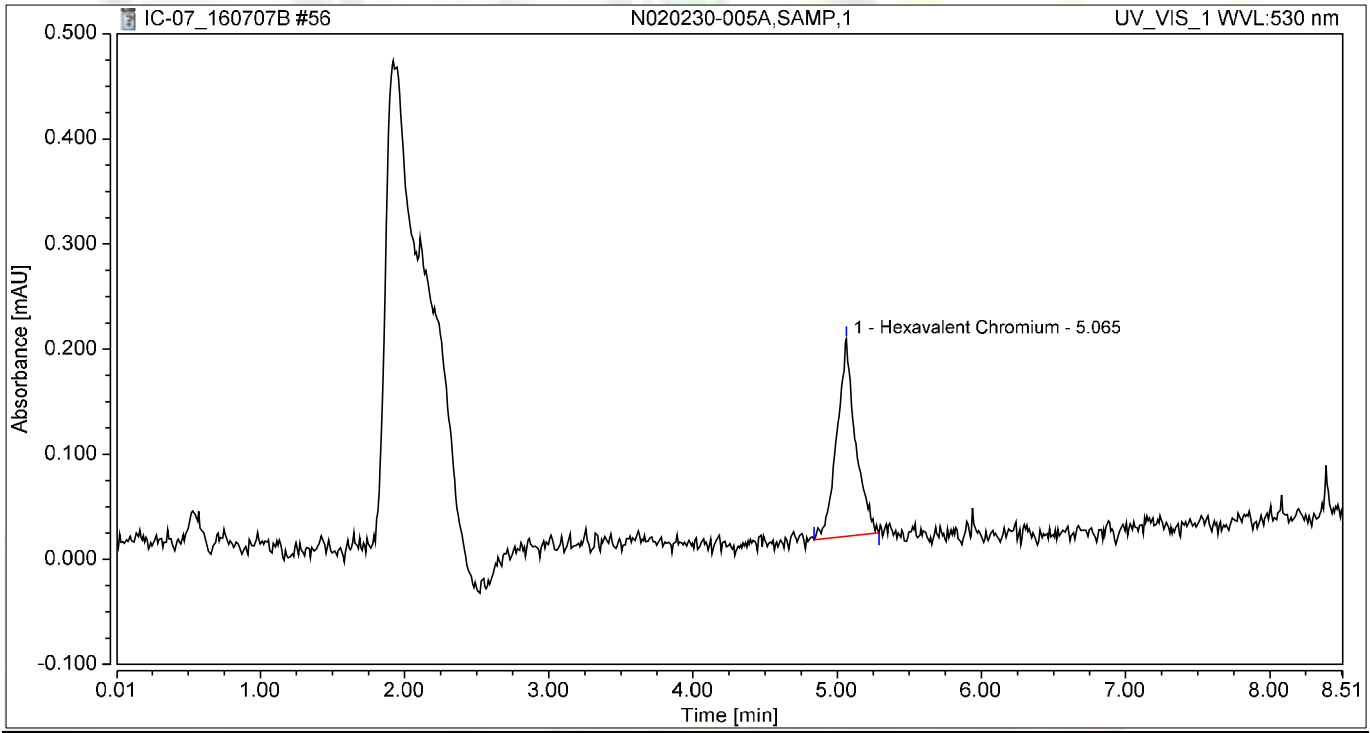
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	5.056	0.857	4.803	100.00	100.00	3.3790
Total:			**0.857**	**4.803**	**100.00**	**100.00**	

Chromatogram and Results

Injection Details

Injection Name:	**N020230-005A,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:	**160707_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**07/Jul/16 19:03**	*Sample Weight:*	**1.0000**

Chromatogram



Integration Results

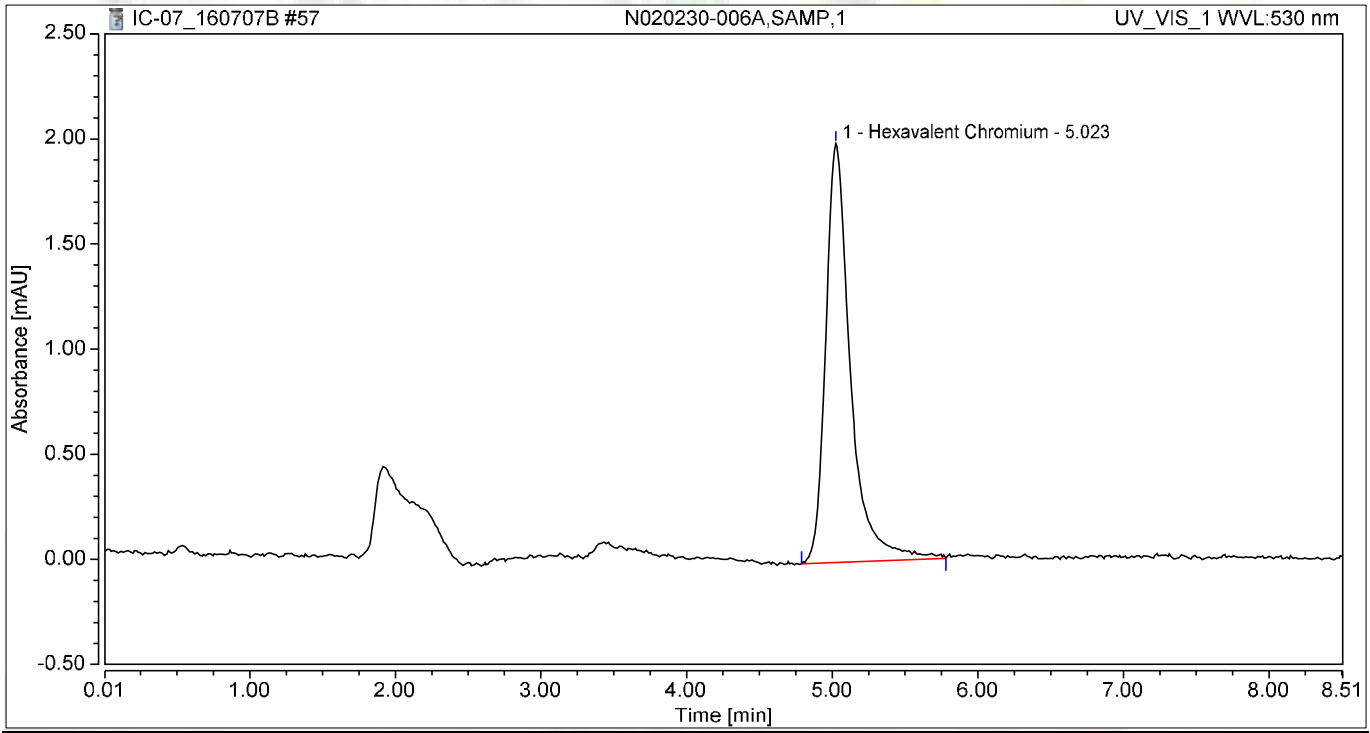
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	5.065	0.028	0.188	100.00	100.00	0.1099
Total:			**0.028**	**0.188**	**100.00**	**100.00**	

Chromatogram and Results

Injection Details

Injection Name:	**N020230-006A,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:	**160707_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**07/Jul/16 19:12**	*Sample Weight:*	**1.0000**

Chromatogram



Integration Results

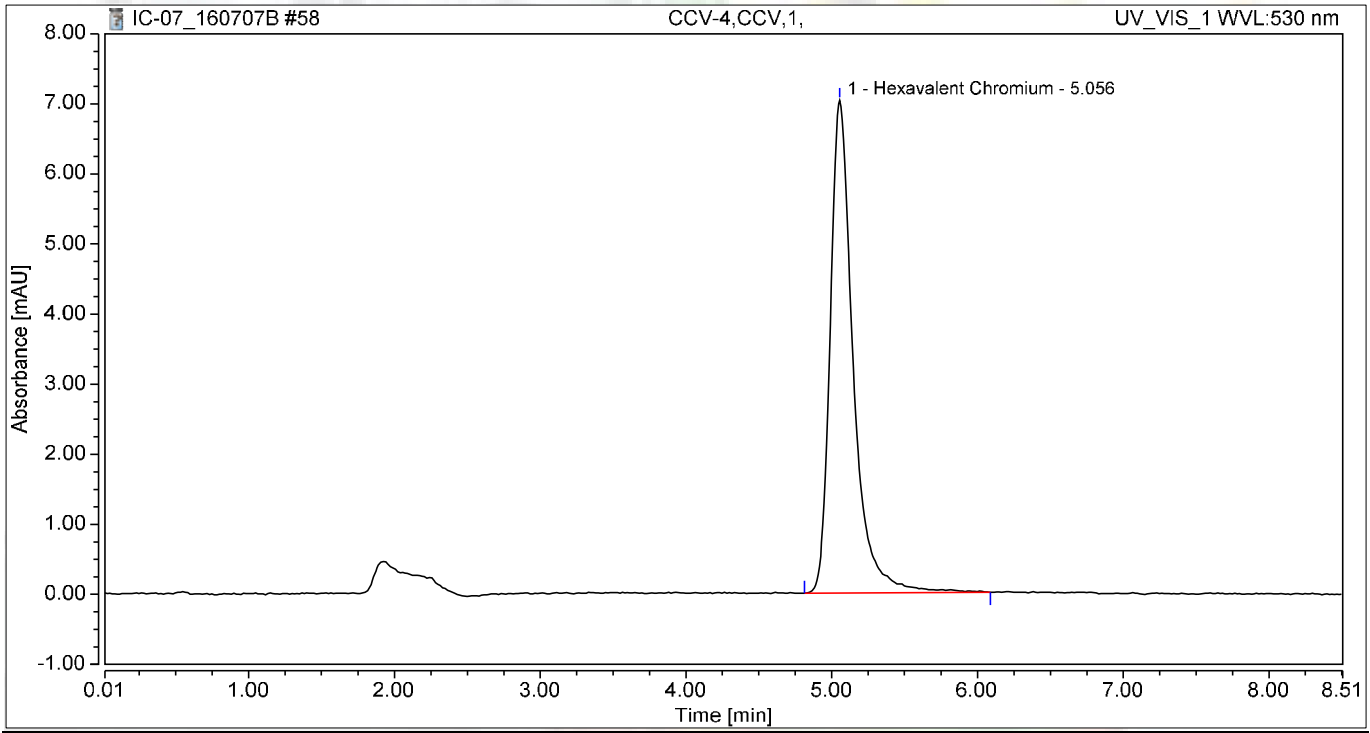
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	5.023	0.393	1.992	100.00	100.00	1.5479
Total:			**0.393**	**1.992**	**100.00**	**100.00**	

Chromatogram and Results

Injection Details

Injection Name:	**CCV-4,CCV,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:	**160707_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**07/Jul/16 19:22**	*Sample Weight:*	**1.0000**

Chromatogram



Integration Results

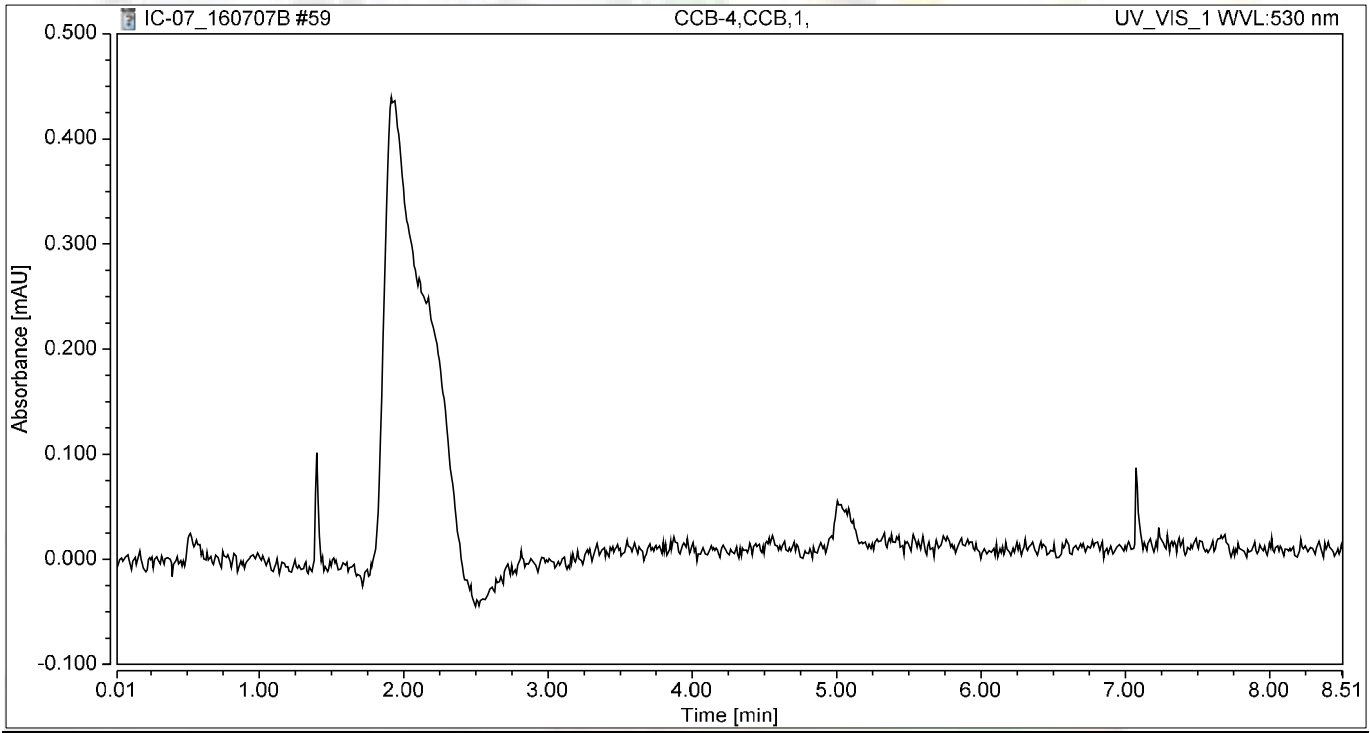
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	5.056	1.291	7.033	100.00	100.00	5.0891
Total:			**1.291**	**7.033**	**100.00**	**100.00**	

Chromatogram and Results

Injection Details

Injection Name:	**CCB-4,CCB,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:	**160707_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**07/Jul/16 19:31**	*Sample Weight:*	**1.0000**

Chromatogram



Integration Results

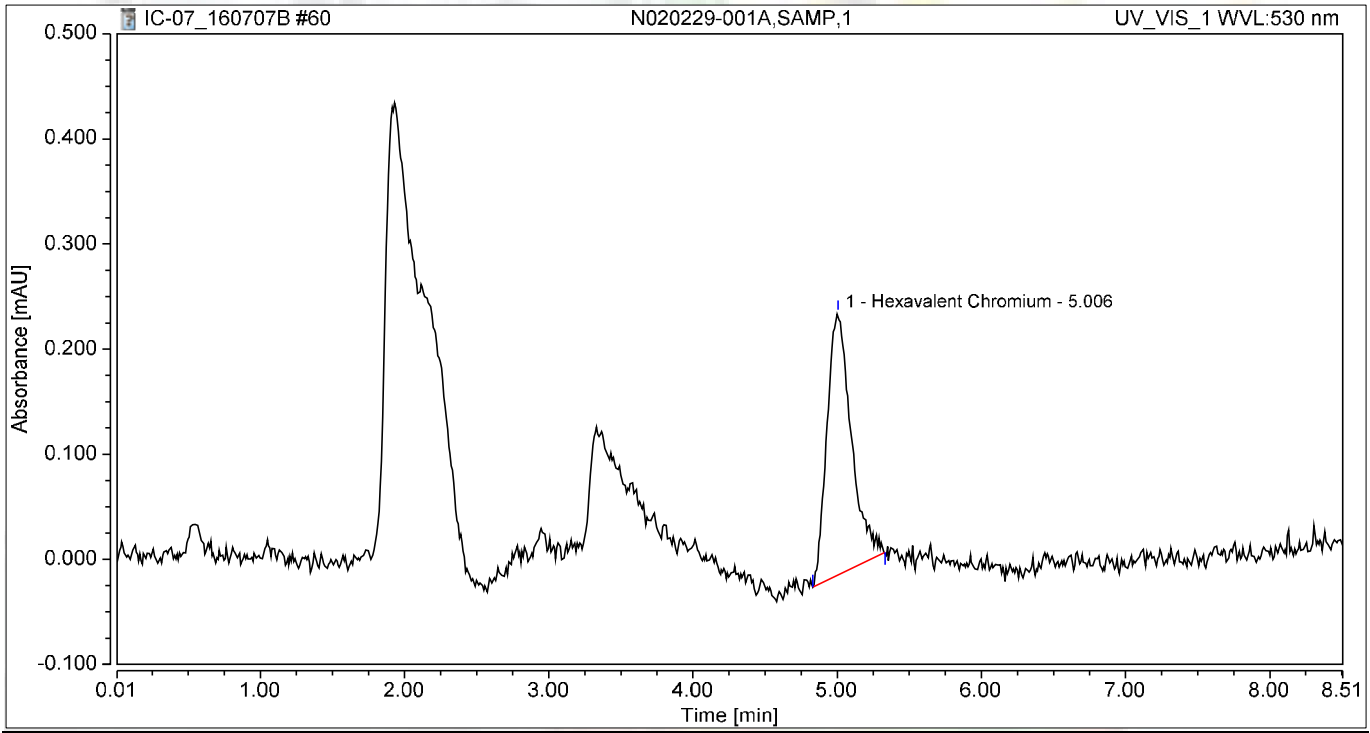
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
n.a.	Hexavalent Chromium	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Total:			**0.000**	**0.000**	**0.00**	**0.00**	

Chromatogram and Results

Injection Details

Injection Name:	**N020229-001A,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:	**160707_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**07/Jul/16 19:40**	*Sample Weight:*	**1.0000**

Chromatogram



Integration Results

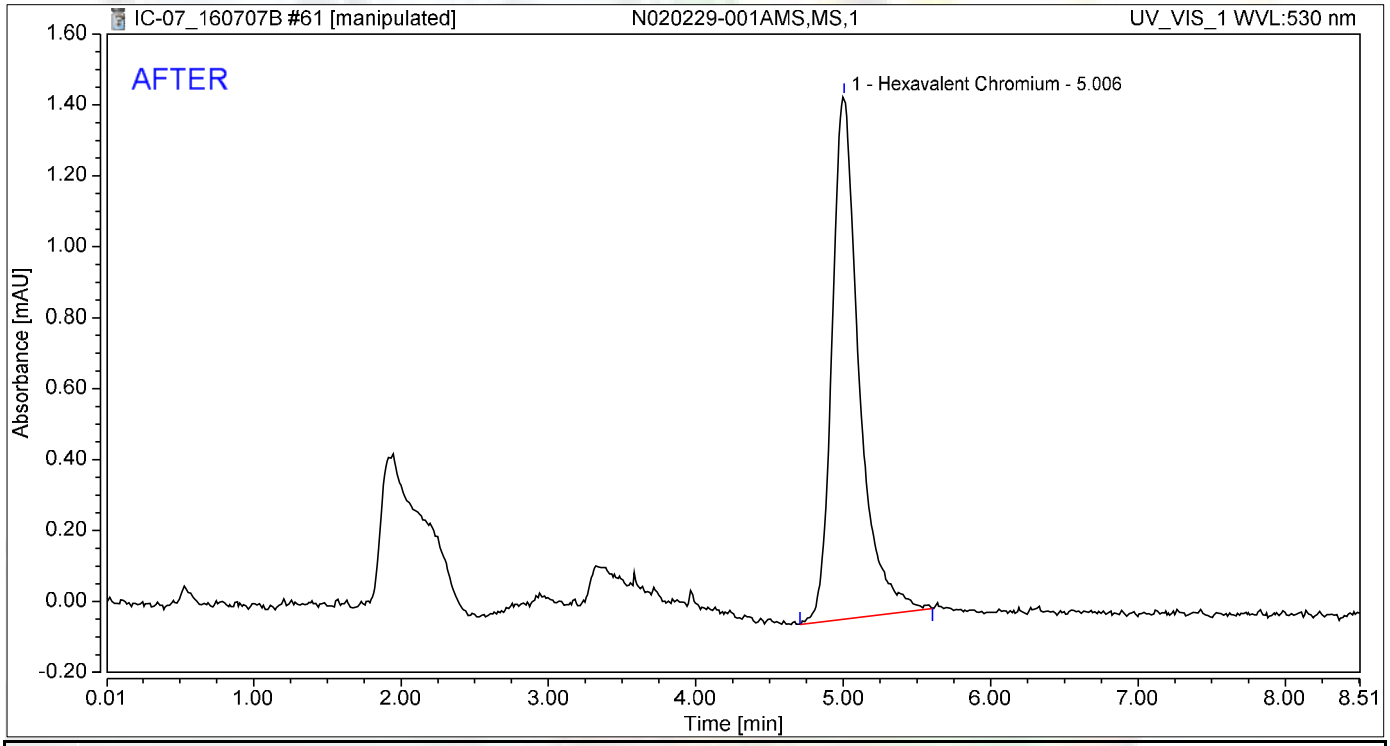
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	5.006	0.049	0.249	100.00	100.00	0.1928
Total:			**0.049**	**0.249**	**100.00**	**100.00**	

Chromatogram and Results

Injection Details

Injection Name:	**N020229-001AMS,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:	**160707_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**07/Jul/16 19:50**	*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	5.006	0.314	1.475	100.00	100.00	1.2383
Total:			**0.314**	**1.475**	**100.00**	**100.00**	

7/21/2016

Reviewed by:

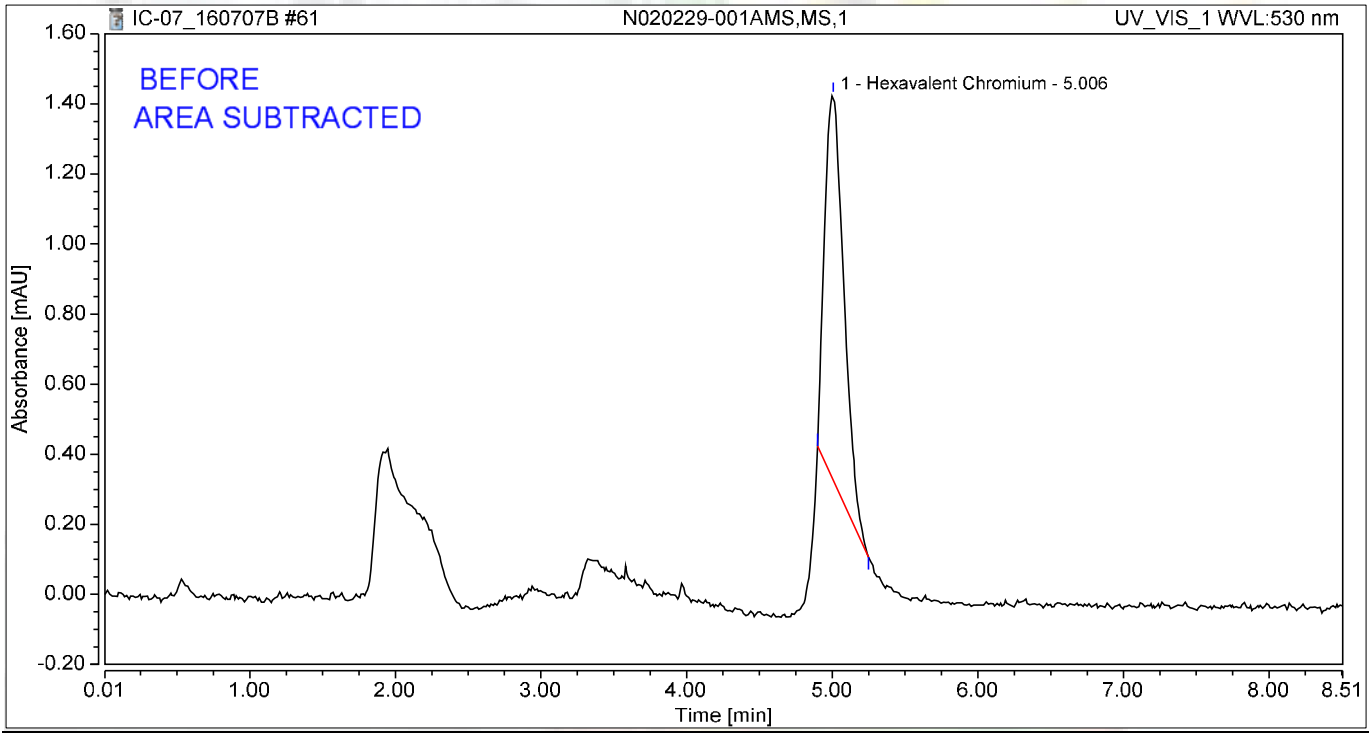
7/21/2016

Chromatogram and Results

Injection Details

Injection Name:	**N020229-001AMS,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:	**160707_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**07/Jul/16 19:50**	*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	5.006	0.169	1.100	100.00	100.00	0.6655
Total:			**0.169**	**1.100**	**100.00**	**100.00**	

Reviewed by: 7/21/2016

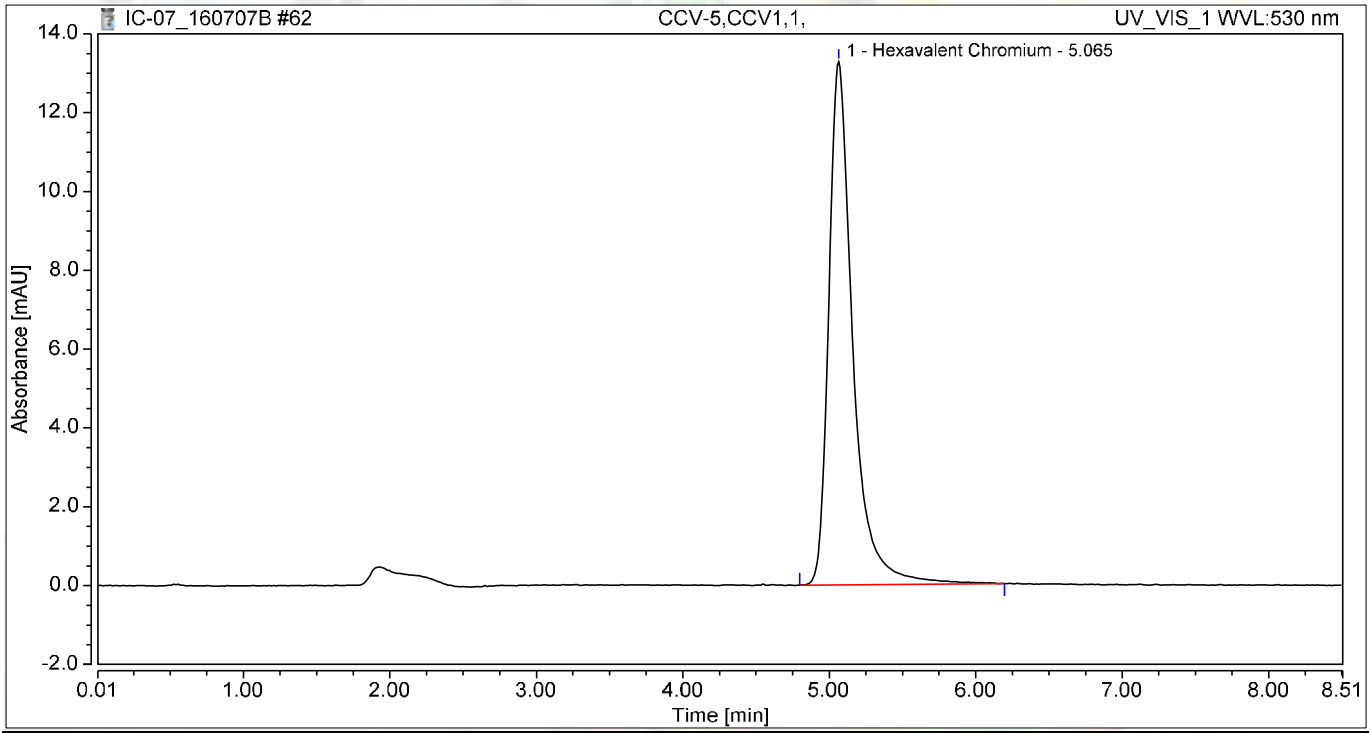
7/21/2016

Chromatogram and Results

Injection Details

Injection Name:	**CCV-5,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:	**160707_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**07/Jul/16 19:59**	*Sample Weight:*	**1.0000**

Chromatogram



Integration Results

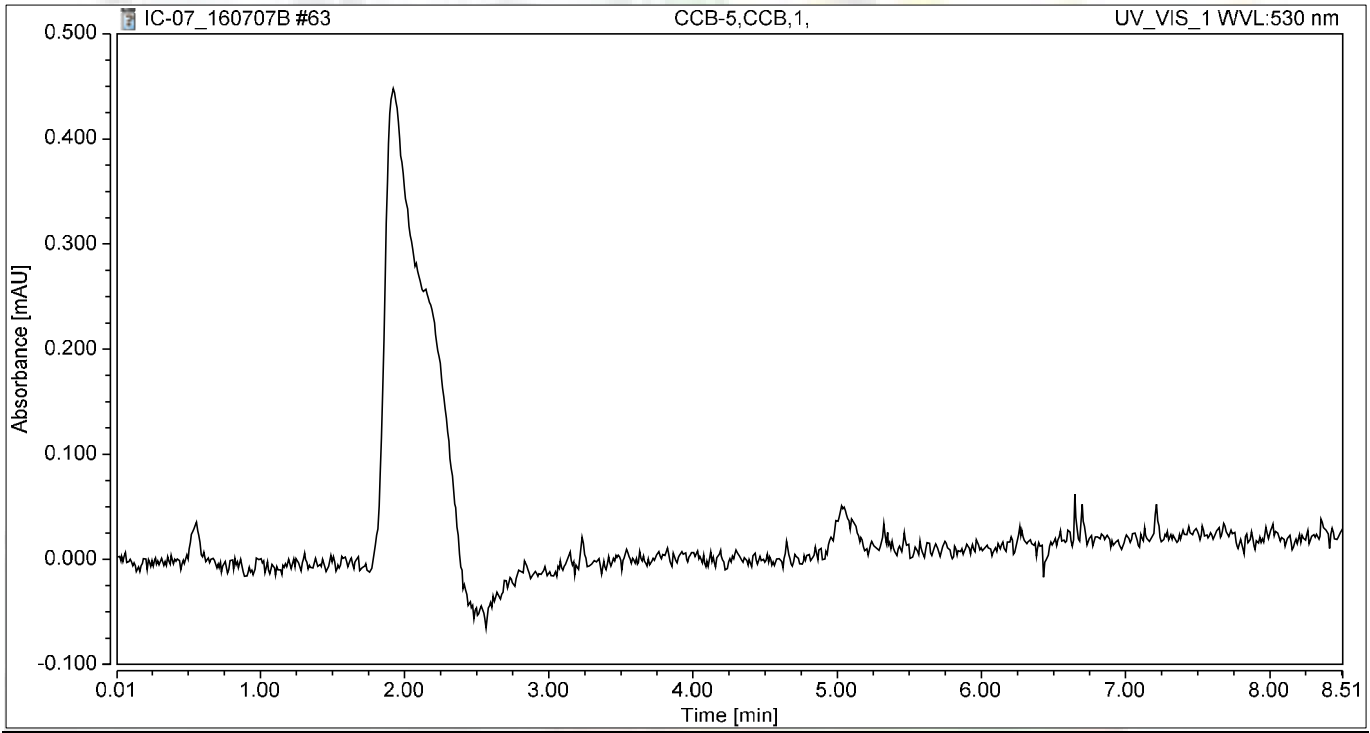
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	5.065	2.533	13.271	100.00	100.00	9.9877
Total:			**2.533**	**13.271**	**100.00**	**100.00**	

Chromatogram and Results

Injection Details

Injection Name:	**CCB-5,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:	**160707_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**07/Jul/16 20:09**	*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.
Total:			**0.000**	**0.000**	**0.00**	**0.00**	

SM 4500-NO3F

Wet Chemistry Technical Batch Review Checklist (ARCUS02)

ASSET LABORATORIES - LAS VEGAS

FIRST LEVEL REVIEW:

QC Batch Number: R109368 **Analyst:** REB

ASSET #: N020228 **Date Analyzed:** 7/11/2016

Method: 4500_NO3

Initial Calibration	1st Level Review Y	N	N/A	2nd Level Review 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:

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 Reb 07/19/2016 Date:

2nd Level Reviewer Date: 7/21/2016

SAMPLE CALCULATION

Sample Calculation

METHOD: EPA 4500NO3F
TEST NAME: Nitrate/Nitrite-N by Automated Cadmium Reduction
MATRIX: ~~Water~~ Groundwater

FORMULA:

Calculate the Nitrate/Nitrite-N concentration, in mg/L, in the original sample as follows:

Nitrate/Nitrite-N, mg/L = A * DF

where:

A = mg/L, Nitrate/Nitrite-N instrument calculated concentration
DF = dilution factor

For **N020228-002E**, concentration in mg/L is calculated as follows:

Nitrate/Nitrite-N, mg/L = 0.3719*1

= 0.3719 mg/L

Reporting results in two significant figures:
Nitrate/Nitrite-N, mg/L = 0.37

Reb 07/19/2016

INITIAL CALIBRATION DATA SUMMARY

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

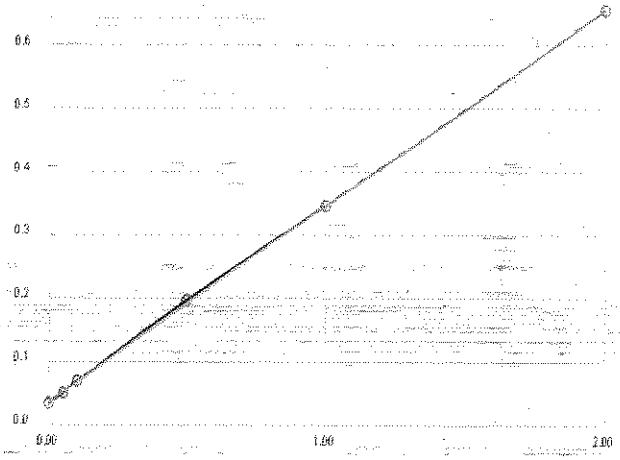
N.	Value	Tolerance
1	1	0.1

Calibration

Curve type	Linear (Calibrants)
Curve forced to zero	No
Blank inclusion	No

Formula	y = 0.3098x + 0.0369
Correlation	.99993

Calibrant	Energy	Set	Conc
1	0.0337	0.0000	-0.0104
2	0.0516	0.0500	0.0474
3	0.0683	0.1000	0.1013
4	0.1971	0.5000	0.5171
5	0.3459	1.0000	0.9975
6	0.6555	2.0000	1.9970



Notes:

2% CuSO4- R160619A
R1 Buffer- R160619B
R2 Coloring reagent- R160620B

STD 1°- ISST160211J
STD 2°- ISST150730E

Reb 07/19/2016

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INITIAL CALIBRATION AND CONTINUING CALIBRATION VERIFICATION SUMMARY

CLIENT: ARCADIS U.S., Inc. - California
Work Order: N020228
Project: PG&E Topock - RMP, RC000753.0801

ANALYTICAL QC SUMMARY REPORT

TestCode: 4500N03F_W

Sample ID **ICV**	SampType: **ICV**	TestCode: **4500N03F_W**	Units: **mg/L**	Prep Date:	RunNo: **109368**
Client ID: **ICV**	Batch ID: **R109368**	TestNo: **SM4500-NO3**		Analysis Date: **7/11/2016**	SeqNo: **2369505**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrate/Nitrite as N	0.511	0.050	0.5000	0	102	90	110				

Sample ID **CCV-1**	SampType: **CCV**	TestCode: **4500N03F_W**	Units: **mg/L**	Prep Date:	RunNo: **109368**
Client ID: **CCV**	Batch ID: **R109368**	TestNo: **SM4500-NO3**		Analysis Date: **7/11/2016**	SeqNo: **2369630**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrate/Nitrite as N	0.469	0.050	0.5000	0	93.8	90	110				

Sample ID **CCV-2**	SampType: **CCV**	TestCode: **4500N03F_W**	Units: **mg/L**	Prep Date:	RunNo: **109368**
Client ID: **CCV**	Batch ID: **R109368**	TestNo: **SM4500-NO3**		Analysis Date: **7/11/2016**	SeqNo: **2369648**

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	90	110				

Sample ID **CCV-3**	SampType: **CCV**	TestCode: **4500N03F_W**	Units: **mg/L**	Prep Date:	RunNo: **109368**
Client ID: **CCV**	Batch ID: **R109368**	TestNo: **SM4500-NO3**		Analysis Date: **7/11/2016**	SeqNo: **2369666**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrate/Nitrite as N	0.470	0.050	0.5000	0	94.1	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
DO	Surrogate Diluted Out		Calculations are based on raw values		

INITIAL CALIBRATION AND CONTINUING CALIBRATION BLANK SUMMARY

CLIENT: ARCADIS U.S., Inc. - California
Work Order: N020228
Project: PG&E Topock - RMP, RC000753.0801

ANALYTICAL QC SUMMARY REPORT

TestCode: 4500N03F_W

Sample ID **ICB**	SampType: **ICB**	TestCode: **4500N03F_W**	Units: **mg/L**	Prep Date:	RunNo: **109368**
Client ID: **ICB**	Batch ID: **R109368**	TestNo: **SM4500-NO3**		Analysis Date: **7/11/2016**	SeqNo: **2369506**

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 **CCB-1**	SampType: **CCB**	TestCode: **4500N03F_W**	Units: **mg/L**	Prep Date:	RunNo: **109368**
Client ID: **CCB**	Batch ID: **R109368**	TestNo: **SM4500-NO3**		Analysis Date: **7/11/2016**	SeqNo: **2369631**

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 **CCB-2**	SampType: **CCB**	TestCode: **4500N03F_W**	Units: **mg/L**	Prep Date:	RunNo: **109368**
Client ID: **CCB**	Batch ID: **R109368**	TestNo: **SM4500-NO3**		Analysis Date: **7/11/2016**	SeqNo: **2369651**

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 **CCB-3**	SampType: **CCB**	TestCode: **4500N03F_W**	Units: **mg/L**	Prep Date:	RunNo: **109368**
Client ID: **CCB**	Batch ID: **R109368**	TestNo: **SM4500-NO3**		Analysis Date: **7/11/2016**	SeqNo: **2369668**

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
DO	Surrogate Diluted Out		Calculations are based on raw values		

LOGBOOK DATA, QUANTITATION REPORT and/or SPECTRA

Advanced Technology Laboratories, Inc.

3151 W. Post Rd.
Las Vegas, NV. 89118
702-307-2659
702-307-2691
www.atl-labs.com

Time start: 07-11-2016 16:41
Time end: 07-11-2016 19:29

			EPA 353.2 NO3 as N		
			ppm	Flags	OD
1	<BLANK>	18:50:39	-0.0068		0.0348
2	<BLANK>	18:51:40	-0.0062		0.0350
3	<CAL1>	18:52:33	-0.0104	[0]	0.0337
4	<CAL2>	18:53:29	0.0474	[0.05]	0.0516
5	<CAL3>	18:54:24	0.1013	[0.1]	0.0683
6	<CAL4>	18:55:24	0.5171	[0.5]	0.1971
7	<CAL5>	18:56:20	0.9975	[1]	0.3459
8	<CAL6>	18:57:21	1.9970	[2]	0.6555
9	,BLANK,BLANK,1,	18:58:17	0.0374		0.0485
10	,ICV,ICV,1,	18:59:11	0.5107		0.1951
11	,ICB,ICB,1,	19:00:12	0.0016		0.0374
12	,MB-H2O,MBLK,1,	19:01:08	-0.0036		0.0358
13	,LCS-H2O,LCS,1,	19:02:02	0.4929		0.1896
14	,N020223-001D,SAMP,5,	19:03:03	0.5717		0.2140
15	,N020223-001DDUP,DUP,5,	19:03:59	0.6020		0.2234
16	,N020223-001DMS,MS,5,	19:04:54	1.1424		0.3908
17	,N020223-001DMSD,MSD,5,	19:05:54	1.1353		0.3886
18	,N020223-002D,SAMP,5,	19:06:50	0.5859		0.2184
19	,N020224-001C,SAMP,1,	19:07:46	0.0991		0.0676
20	,N020224-002C,SAMP,5,	19:08:46	0.5901		0.2197
21	,BLANK,BLANK,1	19:09:41	0.0035		0.0380
22	,CCV-1,CCV,1,	19:10:37	0.4690		0.1822
23	,CCB-1,CCB,1,	19:11:38	0.0016		0.0374
24	,N020228-002E,SAMP,1,	19:12:32	0.3719		0.1521
25	,N020228-003E,SAMP,1,	19:13:34	0.3954		0.1594
26	,N020228-004E,SAMP,1,	19:14:17	0.4148		0.1654

Reb 07/19/2016

			EPA 353.2 NO3 as N		
			ppm	Flags	OD
27	,N020228-005E,SAMP,1,	19:15:05	0.4222		0.1677
28	,N020228-006E,SAMP,1,	19:15:49	0.3999		0.1608
29	,N020228-007E,SAMP,1,	19:16:37	0.3941		0.1590
30	,N020228-008E,SAMP,1,	19:17:20	0.4232		0.1680
31	,N020228-009E,SAMP,1,	19:18:02	0.4196		0.1669
32	,N020228-010E,SAMP,1,	19:18:52	0.2908		0.1270
33	,BLANK,BLANK,1	19:19:35	-0.0049		0.0354
34	,CCV-2,CCV,1,	19:20:17	0.4810		0.1859
35	,CCB-2,CCB,1,	19:21:07	-0.0097		0.0339
36	,N020228-011E,SAMP,1,	19:21:49	0.2983		0.1293
37	,N020228-012E,SAMP,1,	19:22:32	0.3893		0.1575
38	,N020228-013E,SAMP,1,	19:23:20	0.3786		0.1542
39	,N020229-001D,SAMP,1,	19:24:03	0.0061		0.0388
40	,N020229-002D,SAMP,5,	19:24:47	0.5769		0.2156
41	,N020229-003D,SAMP,1,	19:25:35	1.4414		0.4834
42	,BLANK,BLANK,1	19:26:18	0.0171		0.0422
43	,CCV-3,CCV,1,	19:27:00	0.4703		0.1826
44	,CCB-3,CCB,1,	19:27:49	-0.0081		0.0344

Reb 07/19/2016

Nitrate/Nitrite as N by Cadmium Reduction Preparation and Runlog

Matrix:

Method: SM 4500-NO3-F/ EPA 353.2
Insturument: Easy Chem Analyzer

Slope: 95.0%
pH4: 3.96
pH7: 6.95
pH10: 10.04

LCS- 7.03 @ pH7

Reagent ID #
Ammonium Chloride reagent/Buffer: R160619B
Color reagent: R160620B
2% Copper Sulfate: R160619A
Ammonium Hydroxide: CINV-160527A

Date Analyzed: 07/11/2016
Time Analyzed: 16:41PM
Analyzed By: REB

	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)
1)	N020223-001D		8.85						
2)	N020223-002D		8.98						
3)	N020224-001C		8.50						
4)	N020224-002C		8.43						
5)	N020228-002E		6.74						
6)	N020228-003E		6.20						
7)	N020228-004E		8.45						
8)	N020228-005E		8.02						
9)	N020228-006E		8.16						
10)	N020228-007E		8.04						
11)	N020228-008E		8.09						
12)	N020228-009E		7.95						
13)	N020228-010E		8.89						
14)	N020228-011E		8.23						
15)	N020228-012E		8.35						
16)	N020228-013E		8.25						
17)	N020229-001D		7.81						
18)	N020229-002D		8.17						
19)	N020229-003D		7.81						
20)									
21)									
22)									
23)									

Advanced Technology Laboratories, Inc.
Book # 1

Reb 07/19/2016

EPA 6010B
Dissolved

Metals Technical Batch Review Checklist (ARCUS02)

ASSET LABORATORIES - LAS VEGAS

FIRST LEVEL REVIEW:

QC Batch Number: 58931
ASSET #: N020228

Instrument ID: ICP-02
Analyst: CEI

Method:

Date Analyzed: 7/7/2016

[X] EPA 6010B / 200.7
[ ] EPA 6020 / 200.8
[ ] EPA 7470A / 7471A/245.1
[ ] Other _____

Initial Calibration and Initial Calibration Verification	1st Level Review Y	N	N/A	2nd Level Review 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					
Interference Check						
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					
Continuing Calibration						
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 ICVand CCV analysis.	X					
11. Do all calibration blanks (ICB and CCBs) meet criteria? (< PQL)	X					
12 Is low level check twice during 8 hr period or at end within ± 30% of expected value? (ICP/ICPMS only)	X					
Sample Information						
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			
QC Items						
22. IS are within control limits (70-125% for ICPMS).	X					
23. Method blank values are below the PQL .	X					
24. LCS compounds within control limits.	X					
25. MS/MSD, RPD's are within control limits	X					
Raw Data and Miscellaneous Information						
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					
Preliminary Report						
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:

	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 7/21/2016 Date:

2nd Level Reviewer Date: 7/21/2016

SAMPLE CALCULATION

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:

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 **N020228-004B** , the concentration ir ug/L is calculated as follows:

Iron , ug/L = 0.01057 * 1 * (25/25) * 1000

Iron , ug/L = 10.57

Reporting results in two significant figures,

Iron , ug/L = 11

Since PQL of Iron , in ug/L = 20

Iron , ug/L = ND

% RSD SUMMARY

RSD SUMMARY: 160707C

Instrument ID: ICP-02

Sample Name	Type	DF	Analyte	Reported Conc	RSD	Criteria	Comment
CalBlk	IBLK	1	Fe	0	44.51	15	<PQL
Standard1	ICAL	1	Fe	0.02	3.75	15	PASS
Standard2	ICAL	1	Fe	0.05	1.028	15	PASS
Standard3	ICAL	1	Fe	2	0.066	15	PASS
Standard4	ICAL	1	Fe	5	0.037	15	PASS
Standard5	ICAL	1	Fe	7.5	0.071	15	PASS
Standard6	ICAL	1	Fe	10	0.057	15	PASS
Standard7	ICAL	1	Fe	20	0.031	15	PASS
ICV	ICV	1	Fe	10.07	0.1	15	PASS
ICB	ICB	1	Fe	-0.0045	10.071	15	PASS
LLICV	CCV1	1	Fe	0.017	0.63	20	PASS
ICSA1	ICSA	1	Fe	175.25	0.5	15	PASS
ICSAB1	ICSAB	1	Fe	179.19	0.56	15	PASS
CCV1	CCV	1	Fe	10	0.038	15	PASS
CCB1	CCB	1	Fe	-0.004	14.34	15	PASS
LLCCV1	CCV2	1	Fe	0.017	4.71	20	PASS
ICSA2	ICSA	1	Fe	177.28	0.65	15	PASS
ICSA2	ICSA	1	Fe	175.9	0.58	15	PASS
ICSAB2	ICSAB	1	Fe	178.26	0.66	15	PASS
CCV2	CCV	1	Fe	10	0.064	15	PASS
CCB2	CCB	1	Fe	-0.0029	18.12	15	<PQL
MB-58931	MBLK	1	Fe	-0.0061	5.12	15	PASS
CCV3	CCV	1	Fe	10.009	0.069	15	PASS
CCB3	CCB	1	Fe	-0.0038	16.72	15	<PQL
LCS1-58931	LCS	1	Fe	0.092	0.28	15	PASS
N020221-004B	SAMP	1	Fe	0.0043	78.91	15	<PQL
N020221-004B	SAMP	5	Fe	-0.0036	8.47	15	PASS
N020221-004B-PS	PS	1	Fe	0.1	1	15	PASS
N020221-004B-MS1	MS	1	Fe	0.094	0.73	15	PASS
N020221-004B-MSD1	MSD	1	Fe	0.094	0.93	15	PASS
N020228-002B	SAMP	1	Fe	0.00042	195.99	15	<PQL
N020228-003B	SAMP	1	Fe	0.0074	5.15	15	PASS
N020228-004B	SAMP	1	Fe	0.011	2.65	15	PASS
N020228-005B	SAMP	1	Fe	0.0061	6.18	15	PASS
CCV4	CCV	1	Fe	10.002	0.064	15	PASS
CCB4	CCB	1	Fe	-0.0042	16.0096	15	<PQL
N020228-006B	SAMP	1	Fe	0.0094	10.74	15	PASS
N020228-007B	SAMP	1	Fe	0.002	37.42	15	<PQL
N020228-008B	SAMP	1	Fe	-0.0022	18.71	15	<PQL
N020228-009B	SAMP	1	Fe	0.0034	15.43	15	<PQL
N020228-010B	SAMP	1	Fe	0.0056	10.58	15	PASS
N020228-011B	SAMP	1	Fe	0.023	4.013	15	PASS

RSD SUMMARY: 160707C

Instrument ID: ICP-02

Sample Name	Type	DF	Analyte	Reported Conc	RSD	Criteria	Comment
N020228-011B-MS1	MS	1	Fe	0.12	0.53	15	PASS
N020228-012B	SAMP	1	Fe	0.013	4.21	15	PASS
N020228-013B	SAMP	1	Fe	-0.001	3.062	15	PASS
N020229-001B	SAMP	1	Fe	0.0039	72.019	15	<PQL
CCV5	CCV	1	Fe	9.93	0.03	15	PASS
CCB5	CCB	1	Fe	-0.0043	9.42	15	PASS
N020229-002B	SAMP	1	Fe	0.0074	13.88	15	PASS
N020229-003B	SAMP	1	Fe	0.054	1.93	15	PASS
CCV6	CCV	1	Fe	9.98	0.057	15	PASS
CCB6	CCB	1	Fe	-0.0045	9.19	15	PASS
LLCCV2	CCV2	1	Fe	0.015	2.58	20	PASS
ICSA3	ICSA	1	Fe	172.59	0.35	15	PASS
ICSAB3	ICSAB	1	Fe	177.77	0.49	15	PASS

ANALYSIS RUN LOG

INJECTION LOG: 160707C

Instrument ID: ICP-02

STANDARD CODE	
Standard1	MWST-160608A,0.5<50mL
Standard2	MWST-160608F
Standard3	MWST-160608J,5<50mL
Standard4	MWST-160608J,12.5<50mL
Standard5	MWST-160608J,15<40mL
Standard6	MWST-160608J,25<50mL
Standard7	MWST-160608J
ICV	MWST-160701B
CCV	MWST-160608J,25<50mL
ICSA/ICSAB	MWST-160523A/MWST-160608K
Int. Std. (Y)	MSST-160323C
PS Spike	MWST-160201H/MWST-160531G/MWST-160701E

A/S Loc	Sample Name	Type	DF	Acq Date	Acq Time
1	CalBlk	IBLK	1	07/07/2016	04:56:26 PM
2	Standard1	ICAL	1	07/07/2016	05:01:31 PM
3	Standard2	ICAL	1	07/07/2016	05:06:35 PM
4	Standard3	ICAL	1	07/07/2016	05:11:41 PM
5	Standard4	ICAL	1	07/07/2016	05:16:49 PM
6	Standard5	ICAL	1	07/07/2016	05:23:38 PM
7	Standard6	ICAL	1	07/07/2016	05:29:55 PM
8	Standard7	ICAL	1	07/07/2016	05:36:12 PM
9	ICV	ICV	1	07/07/2016	05:42:31 PM
1	ICB	ICB	1	07/07/2016	05:58:45 PM
2	LLICV	CCV1	1	07/07/2016	06:03:49 PM
4	ICSA1	ICSA	1	07/07/2016	06:17:43 PM
5	ICSAB1	ICSAB	1	07/07/2016	06:24:38 PM
98	MB-58920	MBLK	1	07/07/2016	06:31:33 PM
99	LCS1-58920	LCS	1	07/07/2016	06:36:41 PM
105	N020232-006B	SAMP	1	07/07/2016	06:42:59 PM
106	N020232-006B-MS1	MS	1	07/07/2016	06:47:37 PM
111	N020223-001E	SAMP	1	07/07/2016	06:53:56 PM
112	N020223-001E	SAMP	5	07/07/2016	07:00:13 PM
113	N020223-001E-PS	PS	1	07/07/2016	07:05:21 PM
114	N020223-001E-MS1	MS	1	07/07/2016	07:11:38 PM
115	N020223-001E-MSD1	MSD	1	07/07/2016	07:17:57 PM
116	N020223-002E	SAMP	1	07/07/2016	07:24:16 PM
7	CCV1	CCV	1	07/07/2016	07:30:35 PM
1	CCB1	CCB	1	07/07/2016	07:39:57 PM
2	LLCCV1	CCV2	1	07/07/2016	07:43:26 PM
4	ICSA2	ICSA	1	07/07/2016	08:10:51 PM
4	ICSA2	ICSA	1	07/07/2016	08:19:24 PM

A/S Loc	Sample Name	Type	DF	Acq Date	Acq Time
5	ICSAB2	ICSAB	1	07/07/2016	08:26:19 PM
38	MB-58932	MBLK	1	07/07/2016	08:35:21 PM
39	LCS-58932	LCS	1	07/07/2016	08:40:26 PM
40	N020228-002C	SAMP	1	07/07/2016	08:47:01 PM
41	N020228-002C	SAMP	5	07/07/2016	08:51:36 PM
42	N020228-002C-PS	PS	1	07/07/2016	08:56:43 PM
43	N020228-002C-MS	MS	1	07/07/2016	09:03:00 PM
44	N020228-002C-MSD	MSD	1	07/07/2016	09:09:16 PM
45	N020228-003C	SAMP	1	07/07/2016	09:15:32 PM
46	N020228-004C	SAMP	1	07/07/2016	09:20:07 PM
47	N020228-005C	SAMP	1	07/07/2016	09:24:44 PM
7	CCV2	CCV	1	07/07/2016	09:29:51 PM
1	CCB2	CCB	1	07/07/2016	09:36:08 PM
48	N020228-006C	SAMP	1	07/07/2016	09:41:12 PM
49	N020228-007C	SAMP	1	07/07/2016	09:45:49 PM
50	N020228-008C	SAMP	1	07/07/2016	09:50:26 PM
51	N020228-009C	SAMP	1	07/07/2016	09:56:42 PM
52	N020228-010C	SAMP	1	07/07/2016	10:01:19 PM
53	N020228-011C	SAMP	1	07/07/2016	10:05:54 PM
54	N020228-012C	SAMP	1	07/07/2016	10:10:30 PM
55	N020228-012C-MS	MS	1	07/07/2016	10:15:06 PM
56	N020228-013C	SAMP	1	07/07/2016	10:21:24 PM
57	MB-58931	MBLK	1	07/07/2016	10:26:00 PM
7	CCV3	CCV	1	07/07/2016	10:31:05 PM
1	CCB3	CCB	1	07/07/2016	10:37:23 PM
58	LCS1-58931	LCS	1	07/07/2016	10:42:27 PM
59	N020221-004B	SAMP	1	07/07/2016	10:48:45 PM
60	N020221-004B	SAMP	5	07/07/2016	10:53:53 PM
61	N020221-004B-PS	PS	1	07/07/2016	10:58:59 PM
62	N020221-004B-MS1	MS	1	07/07/2016	11:05:18 PM
63	N020221-004B-MSD1	MSD	1	07/07/2016	11:11:37 PM
64	N020228-002B	SAMP	1	07/07/2016	11:17:55 PM
65	N020228-003B	SAMP	1	07/07/2016	11:22:30 PM
66	N020228-004B	SAMP	1	07/07/2016	11:27:05 PM
67	N020228-005B	SAMP	1	07/07/2016	11:32:11 PM
7	CCV4	CCV	1	07/07/2016	11:37:18 PM
1	CCB4	CCB	1	07/07/2016	11:43:35 PM
68	N020228-006B	SAMP	1	07/07/2016	11:48:38 PM
69	N020228-007B	SAMP	1	07/07/2016	11:53:13 PM
70	N020228-008B	SAMP	1	07/07/2016	11:57:49 PM
71	N020228-009B	SAMP	1	07/08/2016	12:02:55 AM
72	N020228-010B	SAMP	1	07/08/2016	12:07:31 AM
73	N020228-011B	SAMP	1	07/08/2016	12:12:07 AM
74	N020228-011B-MS1	MS	1	07/08/2016	12:16:44 AM
75	N020228-012B	SAMP	1	07/08/2016	12:23:02 AM
76	N020228-013B	SAMP	1	07/08/2016	12:28:08 AM

A/S Loc	Sample Name	Type	DF	Acq Date	Acq Time
77	N020229-001B	SAMP	1	07/08/2016	12:33:15 AM
7	CCV5	CCV	1	07/08/2016	12:39:32 AM
1	CCB5	CCB	1	07/08/2016	12:45:49 AM
78	N020229-002B	SAMP	1	07/08/2016	12:50:52 AM
79	N020229-003B	SAMP	1	07/08/2016	12:57:10 AM
7	CCV6	CCV	1	07/08/2016	01:03:27 AM
1	CCB6	CCB	1	07/08/2016	01:09:44 AM
2	LLCCV2	CCV2	1	07/08/2016	01:14:48 AM
4	ICSA3	ICSA	1	07/08/2016	01:19:52 AM
5	ICSAB3	ICSAB	1	07/08/2016	01:26:48 AM

SAMPLE PREPARATION LOG

ASSET Laboratories

PREP BATCH REPORT

Prep Start Date: **7/7/2016 2:30:00 P**
Prep End Date: **7/7/2016 7:00:00 P**
Prep Batch **58931** Prep Code: **3010_W_DISS**

Reviewed/ Date: 7/21/2016
Initials/ Date: 7/21/2016
Technician: **Amy Mata**

Prep Factor Units:	Temp. (°C):	Location:
mL / mL	**94.6**	**02-17**

Sample ID	Matrix	pH	SampAmt	3 Replicates	Sol Added	Sol Recov	Fin Vol	factor	Clean Up Code	TURB Check
LCS1-58931	Aqueous		25	☐	0	0	25	1.000		
LCS2-58931	Aqueous		25	☐	0	0	25	1.000		
MB-58931	Aqueous		25	☐	0	0	25	1.000		
N020221-004B	Groundwater	<2	25	☐	0	0	25	1.000		
N020221-004B-MS	Groundwater	<2	25	☐	0	0	25	1.000		
N020221-004B-MS	Groundwater	<2	25	☐	0	0	25	1.000		
N020228-002B	Groundwater	<2	25	☐	0	0	25	1.000		
N020228-003B	Groundwater	<2	25	☐	0	0	25	1.000		
N020228-004B	Groundwater	<2	25	☐	0	0	25	1.000		
N020228-005B	Groundwater	<2	25	☐	0	0	25	1.000		
N020228-006B	Groundwater	<2	25	☐	0	0	25	1.000		
N020228-007B	Groundwater	<2	25	☐	0	0	25	1.000		
N020228-008B	Groundwater	<2	25	☐	0	0	25	1.000		
N020228-009B	Groundwater	<2	25	☐	0	0	25	1.000		

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

Number	Reagent Name
8446	NITRIC ACID
8493	HYDROCHLORIC ACID

Spk ID	Spike Name	SampType	AmtAdd
MSST-111006A	Potassium, 10000ppm (Secondary)	LCS/MS/MSD	0.05
MSST-140120B	Sodium, 10000ppm (Secondary)	LCS/MS/MSD	0.05
MWST-160201H	ICP Solution B	LCS,MS,MSD	0.5
MWST-160531G	ICP Solution C	LCS,MS,MSD	0.5
MWST-160701E	ICP Solution A	LCS,MS,MSD	0.5

ASSET Laboratories

PREP BATCH REPORT

Prep Start Date: **7/7/2016 2:30:00 P**
Prep End Date: **7/7/2016 7:00:00 P**
Prep Batch **58931** Prep Code: **3010_W_DISS**

Reviewed/ Date: 7/21/2016
Initials/ Date: 7/21/2016
Technician: **Amy Mata**

Prep Factor Units:	Temp. (°C):	Location:
mL / mL	**94.6**	**02-17**

Sample ID	Matrix	pH	SampAmt	3 Replicates	Sol Added	Sol Recov	Fin Vol	factor	Clean Up Code	TURB Check
N020228-010B	Groundwater	<2	25	☐	0	0	25	1.000		
N020228-011B	Groundwater	<2	25	☐	0	0	25	1.000		
N020228-011B-MS	Groundwater	<2	25	☐	0	0	25	1.000		
N020228-012B	Groundwater	<2	25	☐	0	0	25	1.000		
N020228-012B-MS	Groundwater	<2	25	☐	0	0	25	1.000		
N020228-013B	Groundwater	<2	25	☐	0	0	25	1.000		
N020229-001B	Groundwater	<2	25	☐	0	0	25	1.000		
N020229-002B	Groundwater	<2	25	☐	0	0	25	1.000		
N020229-003B	Groundwater	<2	25	☐	0	0	25	1.000		
N020229-003B-MS	Groundwater	<2	25	☐	0	0	25	1.000		
N020229-003B-MS	Groundwater	<2	25	☐	0	0	25	1.000		

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

Number	Reagent Name
8446	NITRIC ACID
8493	HYDROCHLORIC ACID

Spk ID	Spike Name	SampType	AmtAdd
MSST-111006A	Potassium, 10000ppm (Secondary)	LCS/MS/MSD	0.05
MSST-140120B	Sodium, 10000ppm (Secondary)	LCS/MS/MSD	0.05
MWST-160201H	ICP Solution B	LCS,MS,MSD	0.5
MWST-160531G	ICP Solution C	LCS,MS,MSD	0.5
MWST-160701E	ICP Solution A	LCS,MS,MSD	0.5

INITIAL CALIBRATION DATA SUMMARY

INITIAL CALIBRATION SUMMARY: 160707C

Instrument ID: ICP-02

Sample ID	Date	Time	Elem	Wavelength	Corrected Intensity	Concentration	Units	R
Iron								
CalBlk	07/07/2016	04:56:26 PM	Fe	273.953	113	0.00	mg/L	
Standard1	07/07/2016	05:01:31 PM	Fe	273.953	661	0.0200	mg/L	
Standard2	07/07/2016	05:06:35 PM	Fe	273.953	1700	0.050	mg/L	
Standard3	07/07/2016	05:11:41 PM	Fe	273.953	73674	2.000	mg/L	
Standard4	07/07/2016	05:16:49 PM	Fe	273.953	183490	5.000	mg/L	
Standard5	07/07/2016	05:23:38 PM	Fe	273.953	271610	7.500	mg/L	
Standard6	07/07/2016	05:29:55 PM	Fe	273.953	358799	10.000	mg/L	
Standard7	07/07/2016	05:36:12 PM	Fe	273.953	707977	20.000	mg/L	0.9999

INITIAL CALIBRATION AND CONTINUING CALIBRATION VERIFICATION SUMMARY

CLIENT: ARCADIS U.S., Inc. - California
Work Order: N020228
Project: PG&E Topock - RMP, RC000753.0801

ANALYTICAL QC SUMMARY REPORT

TestCode: 6010_WDPGEPPB

Sample ID **ICV**	SampType: **ICV**	TestCode: **6010_WDPG**	Units: **ug/L**	Prep Date:	RunNo: **109304**
Client ID: **ICV**	Batch ID: **R109304**	TestNo: **EPA 6010B**		Analysis Date: **7/7/2016**	SeqNo: **2366371**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Iron	10070.346	20	10000	0	101	90	110				

Sample ID **LLICV**	SampType: **CCV1**	TestCode: **6010_WDPG**	Units: **ug/L**	Prep Date:	RunNo: **109304**
Client ID: **ZZZZZZ**	Batch ID: **R109304**	TestNo: **EPA 6010B**		Analysis Date: **7/7/2016**	SeqNo: **2366373**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Iron	16.940	20	20.00	0	84.7	80	120				

Sample ID **CCV1**	SampType: **CCV**	TestCode: **6010_WDPG**	Units: **ug/L**	Prep Date:	RunNo: **109304**
Client ID: **CCV**	Batch ID: **R109304**	TestNo: **EPA 6010B**		Analysis Date: **7/7/2016**	SeqNo: **2366386**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Iron	9999.190	20	10000	0	100	90	110				

Sample ID **LLCCV1**	SampType: **CCV2**	TestCode: **6010_WDPG**	Units: **ug/L**	Prep Date:	RunNo: **109304**
Client ID: **ZZZZZZ**	Batch ID: **R109304**	TestNo: **EPA 6010B**		Analysis Date: **7/7/2016**	SeqNo: **2366388**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Iron	16.572	20	20.00	0	82.9	70	130				

Sample ID **CCV2**	SampType: **CCV**	TestCode: **6010_WDPG**	Units: **ug/L**	Prep Date:	RunNo: **109304**
Client ID: **CCV**	Batch ID: **R109304**	TestNo: **EPA 6010B**		Analysis Date: **7/7/2016**	SeqNo: **2366402**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Iron	9999.685	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
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: ARCADIS U.S., Inc. - California
Work Order: N020228
Project: PG&E Topock - RMP, RC000753.0801

ANALYTICAL QC SUMMARY REPORT

TestCode: 6010_WDPGEPPB

Sample ID **CCV3**	SampType: **CCV**	TestCode: **6010_WDPG**	Units: **ug/L**	Prep Date:	RunNo: **109304**
Client ID: **CCV**	Batch ID: **R109304**	TestNo: **EPA 6010B**		Analysis Date: **7/7/2016**	SeqNo: **2366414**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Iron	10009.330	20	10000	0	100	90	110				

Sample ID **CCV4**	SampType: **CCV**	TestCode: **6010_WDPG**	Units: **ug/L**	Prep Date:	RunNo: **109304**
Client ID: **CCV**	Batch ID: **R109304**	TestNo: **EPA 6010B**		Analysis Date: **7/7/2016**	SeqNo: **2366426**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Iron	10001.815	20	10000	0	100	90	110				

Sample ID **CCV5**	SampType: **CCV**	TestCode: **6010_WDPG**	Units: **ug/L**	Prep Date:	RunNo: **109304**
Client ID: **CCV**	Batch ID: **R109304**	TestNo: **EPA 6010B**		Analysis Date: **7/8/2016**	SeqNo: **2366437**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Iron	9930.313	20	10000	0	99.3	90	110				

Sample ID **CCV6**	SampType: **CCV**	TestCode: **6010_WDPG**	Units: **ug/L**	Prep Date:	RunNo: **109304**
Client ID: **CCV**	Batch ID: **R109304**	TestNo: **EPA 6010B**		Analysis Date: **7/8/2016**	SeqNo: **2366441**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Iron	9978.808	20	10000	0	99.8	90	110				

Sample ID **LLCCV2**	SampType: **CCV2**	TestCode: **6010_WDPG**	Units: **ug/L**	Prep Date:	RunNo: **109304**
Client ID: **ZZZZZZ**	Batch ID: **R109304**	TestNo: **EPA 6010B**		Analysis Date: **7/8/2016**	SeqNo: **2366443**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Iron	15.302	20	20.00	0	76.5	70	130				

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

CLIENT: ARCADIS U.S., Inc. - California
Work Order: N020228
Project: PG&E Topock - RMP, RC000753.0801

ANALYTICAL QC SUMMARY REPORT

TestCode: 6010_WDPGEPPB

Sample ID **ICB**	SampType: **ICB**	TestCode: **6010_WDPG**	Units: **ug/L**	Prep Date:	RunNo: **109304**
Client ID: **ICB**	Batch ID: **R109304**	TestNo: **EPA 6010B**		Analysis Date: **7/7/2016**	SeqNo: **2366372**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Iron	-4.458174	20									

Sample ID **CCB1**	SampType: **CCB**	TestCode: **6010_WDPG**	Units: **ug/L**	Prep Date:	RunNo: **109304**
Client ID: **CCB**	Batch ID: **R109304**	TestNo: **EPA 6010B**		Analysis Date: **7/7/2016**	SeqNo: **2366387**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Iron	-4.030642	20									

Sample ID **CCB2**	SampType: **CCB**	TestCode: **6010_WDPG**	Units: **ug/L**	Prep Date:	RunNo: **109304**
Client ID: **CCB**	Batch ID: **R109304**	TestNo: **EPA 6010B**		Analysis Date: **7/7/2016**	SeqNo: **2366403**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Iron	-2.864066	20									

Sample ID **CCB3**	SampType: **CCB**	TestCode: **6010_WDPG**	Units: **ug/L**	Prep Date:	RunNo: **109304**
Client ID: **CCB**	Batch ID: **R109304**	TestNo: **EPA 6010B**		Analysis Date: **7/7/2016**	SeqNo: **2366415**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Iron	-3.766532	20									

Sample ID **CCB4**	SampType: **CCB**	TestCode: **6010_WDPG**	Units: **ug/L**	Prep Date:	RunNo: **109304**
Client ID: **CCB**	Batch ID: **R109304**	TestNo: **EPA 6010B**		Analysis Date: **7/7/2016**	SeqNo: **2366427**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Iron	-4.206	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
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: ARCADIS U.S., Inc. - California
Work Order: N020228
Project: PG&E Topock - RMP, RC000753.0801

ANALYTICAL QC SUMMARY REPORT

TestCode: 6010_WDPGEPPB

Sample ID **CCB5**	SampType: **CCB**	TestCode: **6010_WDPG**	Units: **ug/L**	Prep Date:	RunNo: **109304**
Client ID: **CCB**	Batch ID: **R109304**	TestNo: **EPA 6010B**		Analysis Date: **7/8/2016**	SeqNo: **2366438**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Iron	-4.311633	20									

Sample ID **CCB6**	SampType: **CCB**	TestCode: **6010_WDPG**	Units: **ug/L**	Prep Date:	RunNo: **109304**
Client ID: **CCB**	Batch ID: **R109304**	TestNo: **EPA 6010B**		Analysis Date: **7/8/2016**	SeqNo: **2366442**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Iron	-4.520805	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
DO	Surrogate Diluted Out		Calculations are based on raw values		

SUMMARY OF INSTRUMENT CHECK (ICSA & ICSAB)

CLIENT: ARCADIS U.S., Inc. - California
Work Order: N020228
Project: PG&E Topock - RMP, RC000753.0801

ANALYTICAL QC SUMMARY REPORT

TestCode: 6010_WDPGEPPB

Sample ID **ICSA1**	SampType: **ICSA**	TestCode: **6010_WDPG**	Units: **ug/L**	Prep Date:	RunNo: **109304**
Client ID: **ICSA**	Batch ID: **R109304**	TestNo: **EPA 6010B**		Analysis Date: **7/7/2016**	SeqNo: **2366374**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aluminum	467319.059	50	500000	0	93.5	80	120				
Calcium	462926.629	500	500000	0	92.6	80	120				
Iron	175248.057	20	200000	0	87.6	80	120				
Magnesium	455421.970	100	500000	0	91.1	80	120				

Sample ID **ICSAB1**	SampType: **ICSAB**	TestCode: **6010_WDPG**	Units: **ug/L**	Prep Date:	RunNo: **109304**
Client ID: **ICSAB**	Batch ID: **R109304**	TestNo: **EPA 6010B**		Analysis Date: **7/7/2016**	SeqNo: **2366375**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aluminum	562621.992	50	500000	0	113	80	120				
Calcium	554241.296	500	500000	0	111	80	120				
Iron	179190.495	20	200000	0	89.6	80	120				
Magnesium	508927.673	100	500000	0	102	80	120				

Sample ID **ICSA2**	SampType: **ICSA**	TestCode: **6010_WDPG**	Units: **ug/L**	Prep Date:	RunNo: **109304**
Client ID: **ICSA**	Batch ID: **R109304**	TestNo: **EPA 6010B**		Analysis Date: **7/7/2016**	SeqNo: **2366390**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aluminum	467660.383	50	500000	0	93.5	80	120				
Calcium	456608.626	500	500000	0	91.3	80	120				
Iron	175899.317	20	200000	0	87.9	80	120				
Magnesium	452782.302	100	500000	0	90.6	80	120				

Sample ID **ICSAB2**	SampType: **ICSAB**	TestCode: **6010_WDPG**	Units: **ug/L**	Prep Date:	RunNo: **109304**
Client ID: **ICSAB**	Batch ID: **R109304**	TestNo: **EPA 6010B**		Analysis Date: **7/7/2016**	SeqNo: **2366391**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aluminum	561980.116	50	500000	0	112	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: N020228
Project: PG&E Topock - RMP, RC000753.0801

ANALYTICAL QC SUMMARY REPORT

TestCode: 6010_WDPGEPPB

Sample ID **ICSAB2**	SampType: **ICSAB**	TestCode: **6010_WDPG**	Units: **ug/L**	Prep Date:	RunNo: **109304**
Client ID: **ICSAB**	Batch ID: **R109304**	TestNo: **EPA 6010B**		Analysis Date: **7/7/2016**	SeqNo: **2366391**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Calcium	551276.661	500	500000	0	110	80	120				
Iron	178257.777	20	200000	0	89.1	80	120				
Magnesium	503689.641	100	500000	0	101	80	120				

Sample ID **ICSA3**	SampType: **ICSA**	TestCode: **6010_WDPG**	Units: **ug/L**	Prep Date:	RunNo: **109304**
Client ID: **ICSA**	Batch ID: **R109304**	TestNo: **EPA 6010B**		Analysis Date: **7/8/2016**	SeqNo: **2366444**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aluminum	468505.831	50	500000	0	93.7	80	120				
Calcium	462759.709	500	500000	0	92.6	80	120				
Iron	172591.371	20	200000	0	86.3	80	120				
Magnesium	457144.547	100	500000	0	91.4	80	120				

Sample ID **ICSAB3**	SampType: **ICSAB**	TestCode: **6010_WDPG**	Units: **ug/L**	Prep Date:	RunNo: **109304**
Client ID: **ICSAB**	Batch ID: **R109304**	TestNo: **EPA 6010B**		Analysis Date: **7/8/2016**	SeqNo: **2366445**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aluminum	579879.659	50	500000	0	116	80	120				
Calcium	568756.169	500	500000	0	114	80	120				
Iron	177771.655	20	200000	0	88.9	80	120				
Magnesium	514774.780	100	500000	0	103	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

INTERNAL STANDARD SUMMARY

INTERNAL STANDARD: 160707C

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	99.95	65-125	PASS
Standard2	ICAL	1	1.0079	100.79	65-125	PASS
Standard3	ICAL	1	1.0037	100.37	65-125	PASS
Standard4	ICAL	1	1	99.67	65-125	PASS
Standard5	ICAL	1	1.0024	100.24	65-125	PASS
Standard6	ICAL	1	0.97	97.48	65-125	PASS
Standard7	ICAL	1	0.95	95.16	65-125	PASS
ICV	ICV	1	0.97	96.66	65-125	PASS
ICB	ICB	1	0.98	98.5	65-125	PASS
LLICV	CCV1	1	0.98	98.41	65-125	PASS
ICSA1	ICSA	1	0.97	96.91	65-125	PASS
ICSAB1	ICSAB	1	0.81	80.71	65-125	PASS
CCV1	CCV	1	0.99	98.63	65-125	PASS
CCB1	CCB	1	1.025	102.51	65-125	PASS
LLCCV1	CCV2	1	1.021	102.08	65-125	PASS
ICSA2	ICSA	1	0.94	93.82	65-125	PASS
ICSA2	ICSA	1	0.94	94.24	65-125	PASS
ICSAB2	ICSAB	1	0.79	79.35	65-125	PASS
CCV2	CCV	1	0.92	91.51	65-125	PASS
CCB2	CCB	1	0.95	95.17	65-125	PASS
MB-58931	MBLK	1	1.072	107.21	65-125	PASS
CCV3	CCV	1	1.014	101.45	65-125	PASS
CCB3	CCB	1	1.052	105.19	65-125	PASS
LCS1-58931	LCS	1	1.13	113.25	65-125	PASS
N020221-004B	SAMP	1	1.081	108.1	65-125	PASS
N020221-004B	SAMP	5	1.052	105.23	65-125	PASS
N020221-004B-PS	PS	1	1.022	102.24	65-125	PASS
N020221-004B-MS1	MS	1	1.077	107.71	65-125	PASS
N020221-004B-MSD1	MSD	1	1.071	107.1	65-125	PASS
N020228-002B	SAMP	1	1.068	106.76	65-125	PASS
N020228-003B	SAMP	1	1.083	108.33	65-125	PASS
N020228-004B	SAMP	1	1.065	106.55	65-125	PASS
N020228-005B	SAMP	1	1.074	107.4	65-125	PASS
CCV4	CCV	1	1.023	102.33	65-125	PASS
CCB4	CCB	1	1.047	104.73	65-125	PASS
N020228-006B	SAMP	1	1.079	107.9	65-125	PASS
N020228-007B	SAMP	1	1.073	107.35	65-125	PASS
N020228-008B	SAMP	1	1.045	104.46	65-125	PASS
N020228-009B	SAMP	1	1.06	105.97	65-125	PASS
N020228-010B	SAMP	1	1.06	105.97	65-125	PASS

INTERNAL STANDARD: 160707C

Instrument ID: ICP-02

Sample Name	Type	DF	Yttrium, 1.0 mg/L			
			Reported Conc	%REC	Criteria	Comment
N020228-011B	SAMP	1	1.088	108.81	65-125	PASS
N020228-011B-MS1	MS	1	1.068	106.81	65-125	PASS
N020228-012B	SAMP	1	1.11	110.98	65-125	PASS
N020228-013B	SAMP	1	1.1	109.98	65-125	PASS
N020229-001B	SAMP	1	1.024	102.45	65-125	PASS
CCV5	CCV	1	1.091	109.11	65-125	PASS
CCB5	CCB	1	1.11	111.35	65-125	PASS
N020229-002B	SAMP	1	0.98	97.92	65-125	PASS
N020229-003B	SAMP	1	0.99	98.68	65-125	PASS
CCV6	CCV	1	1.054	105.43	65-125	PASS
CCB6	CCB	1	1.099	109.88	65-125	PASS
LLCCV2	CCV2	1	1.096	109.59	65-125	PASS
ICSA3	ICSA	1	1.088	108.8	65-125	PASS
ICSAB3	ICSAB	1	0.92	91.92	65-125	PASS

SERIAL DILUTION/
POST DIGESTION SPIKE

ASSET Laboratories

ICP-Metals in Water

Dilution Test Summary

Work Order No.: N020228
Test Method: EPA 6010B
Analysis Date: 7/7/2016

Matrix: Groundwater
Batch No.: 58931

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
N020221-004B DT 5X	Iron	ug/L	0	NA	4.278246	100.00%	10

Note: NA - Not applicable

CLIENT: ARCADIS U.S., Inc. - California
Work Order: N020228
Project: PG&E Topock - RMP, RC000753.0801

ANALYTICAL QC SUMMARY REPORT

TestCode: 6010_WDPGEPPB

Sample ID **N020221-004B-PS**	SampType: **PS**	TestCode: **6010_WDPG**	Units: **ug/L**	Prep Date:				RunNo: **109304**				
Client ID: **ZZZZZZ**	Batch ID: **58931**	TestNo: **EPA 6010B**	**EPA 3010A**	Analysis Date: **7/7/2016**				SeqNo: **2366419**				
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual	
Iron	104.453	20	100.0	4.278	100	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

METHOD DETECTION LIMIT 2016

Method Name: **Metals by ICP**
Method Number: EPA 200.7/ 6010
Analysis Date(s): 4/1/2016, 4/4/2016
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	0.0021	0.0020	0.0020	0.0020	0.0019	0.0020	0.0020	0.00125	0.00005062	**0.00016**	**0.0025**
Al	237.312	0.0272	0.0288	0.0288	0.0267	0.0269	0.0277	0.0276	0.025	0.00085451	**0.00269**	**0.050**
As	188.983	0.0054	0.0049	0.0037	0.0044	0.0060	0.0041	0.0048	0.005	0.00075065	**0.00236**	**0.010**
B	249.679	0.0735	0.0561	0.0463	0.0445	0.0396	0.0464	0.0398	0.05	0.01193786	**0.03752**	**0.10**
Ba	233.529	0.0007	0.0007	0.0006	0.0006	0.0006	0.0007	0.0007	0.000625	0.00003047	**0.00010**	**0.0025**
Be	313.104	0.0007	0.0006	0.0006	0.0006	0.0006	0.0006	0.0007	0.0005	0.00004386	**0.00014**	**0.0010**
Ca	227.546	0.0967	0.1086	0.0893	0.0864	0.0826	0.0978	0.0988	0.1	0.00880307	**0.02767**	**0.20**
Cd	214.437	0.0006	0.0006	0.0007	0.0006	0.0007	0.0006	0.0006	0.000313	0.00003910	**0.00012**	**0.0025**
Co	228.614	0.0011	0.0011	0.0010	0.0010	0.0009	0.0010	0.0011	0.00125	0.00005473	**0.00017**	**0.0025**
Cr	267.719	0.0004	0.0003	0.0004	0.0004	0.0004	0.0003	0.0004	0.0005	0.00004860	**0.00015**	**0.0010**
Cu	324.753	0.0013	0.0015	0.0015	0.0022	0.0022	0.0016	0.0015	0.0025	0.00034907	**0.00110**	**0.0050**
Fe	273.953	0.0115	0.0117	0.0112	0.0102	0.0105	0.0114	0.0114	0.01	0.00057502	**0.00181**	**0.020**
Mg	279.079	0.0227	0.0231	0.0204	0.0225	0.0221	0.0222	0.0250	0.025	0.00138863	**0.00436**	**0.10**
Mn	257.607	0.0013	0.0013	0.0013	0.0012	0.0012	0.0012	0.0012	0.00125	0.00004429	**0.00014**	**0.010**
Mo	202.03	0.0031	0.0032	0.0031	0.0030	0.0026	0.0029	0.0029	0.0025	0.00018274	**0.00057**	**0.0050**
Ni	231.604	0.0019	0.0020	0.0020	0.0022	0.0022	0.0021	0.0021	0.0025	0.00012429	**0.00039**	**0.0050**
Pb	220.351	0.0049	0.0049	0.0048	0.0044	0.0048	0.0048	0.0050	0.005	0.00018831	**0.00059**	**0.010**
Sb	206.836	0.0035	0.0038	0.0020	0.0034	0.0033	0.0032	0.0046	0.005	0.00076686	**0.00241**	**0.010**
Se	196.025	0.0017	0.0033	0.0025	0.0025	0.0015	0.0034	0.0025	0.005	0.00070697	**0.00222**	**0.010**
Sn	189.927	0.0051	0.0048	0.0052	0.0051	0.0044	0.0045	0.0050	0.005	0.00031282	**0.00098**	**0.010**
Ti	334.943	0.0011	0.0011	0.0011	0.0010	0.0011	0.0010	0.0010	0.00125	0.00005159	**0.00016**	**0.010**
Tl	190.794	0.0067	0.0060	0.0064	0.0047	0.0062	0.0067	0.0062	0.0075	0.00070505	**0.00222**	**0.015**
V	292.404	0.0007	0.0007	0.0007	0.0006	0.0006	0.0007	0.0007	0.00125	0.00006264	**0.00020**	**0.0025**
Zn	206.201	0.0024	0.0026	0.0024	0.0024	0.0024	0.0024	0.0033	0.0025	0.00034911	**0.00110**	**0.010**

EPA 6010B

Metals Technical Batch Review Checklist (ARCUS02)

ASSET LABORATORIES - LAS VEGAS

FIRST LEVEL REVIEW:

QC Batch Number: 58932
ASSET #: N020228

Instrument ID: ICP-02
Analyst: CEI

Method:

Date Analyzed: 7/7/2016

[X] EPA 6010B / 200.7
[ ] EPA 6020 / 200.8
[ ] EPA 7470A / 7471A/245.1
[ ] Other _____

Initial Calibration and Initial Calibration Verification	1st Level Review Y	N	N/A	2nd Level Review 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					
Interference Check						
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					
Continuing Calibration						
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 ICVand CCV analysis.	X					
11. Do all calibration blanks (ICB and CCBs) meet criteria? (< PQL)	X					
12 Is low level check twice during 8 hr period or at end within ± 30% of expected value? (ICP/ICPMS only)	X					
Sample Information						
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			
QC Items						
22. IS are within control limits (70-125% for ICPMS).	X					
23. Method blank values are below the PQL .	X					
24. LCS compounds within control limits.	X					
25. MS/MSD, RPD's are within control limits	X					
Raw Data and Miscellaneous Information						
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					
Preliminary Report						
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:

	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 7/21/2016 Date:

2nd Level Reviewer Date: 7/21/2016

SAMPLE CALCULATION

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:

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 **N020228-002C** , the concentration ir ug/L is calculated as follows:

Iron , ug/L = 0.08483 * 1 * (25/25) * 1000

Iron , ug/L = 84.83

Reporting results in two significant figures,

Iron , ug/L = 85

% RSD SUMMARY

RSD SUMMARY: 160707C

Instrument ID: ICP-02

Sample Name	Type	DF	Analyte	Reported Conc	RSD	Criteria	Comment
CalBlk	IBLK	1	Fe	0	44.51	15	<PQL
Standard1	ICAL	1	Fe	0.02	3.75	15	PASS
Standard2	ICAL	1	Fe	0.05	1.028	15	PASS
Standard3	ICAL	1	Fe	2	0.066	15	PASS
Standard4	ICAL	1	Fe	5	0.037	15	PASS
Standard5	ICAL	1	Fe	7.5	0.071	15	PASS
Standard6	ICAL	1	Fe	10	0.057	15	PASS
Standard7	ICAL	1	Fe	20	0.031	15	PASS
ICV	ICV	1	Fe	10.07	0.1	15	PASS
ICB	ICB	1	Fe	-0.0045	10.071	15	PASS
LLICV	CCV1	1	Fe	0.017	0.63	20	PASS
ICSA1	ICSA	1	Fe	175.25	0.5	15	PASS
ICSAB1	ICSAB	1	Fe	179.19	0.56	15	PASS
CCV1	CCV	1	Fe	10	0.038	15	PASS
CCB1	CCB	1	Fe	-0.004	14.34	15	PASS
LLCCV1	CCV2	1	Fe	0.017	4.71	20	PASS
ICSA2	ICSA	1	Fe	177.28	0.65	15	PASS
ICSA2	ICSA	1	Fe	175.9	0.58	15	PASS
ICSAB2	ICSAB	1	Fe	178.26	0.66	15	PASS
MB-58932	MBLK	1	Fe	0.0073	49.18	15	<PQL
LCS-58932	LCS	1	Fe	0.1	1.3	15	PASS
N020228-002C	SAMP	1	Fe	0.085	5.29	15	PASS
N020228-002C	SAMP	5	Fe	0.017	2.78	15	PASS
N020228-002C-PS	PS	1	Fe	0.18	1.21	15	PASS
N020228-002C-MS	MS	1	Fe	0.18	0.16	15	PASS
N020228-002C-MSD	MSD	1	Fe	0.17	1.47	15	PASS
N020228-003C	SAMP	1	Fe	0.068	0.83	15	PASS
N020228-004C	SAMP	1	Fe	0.025	5.21	15	PASS
N020228-005C	SAMP	1	Fe	0.026	10.2	15	PASS
CCV2	CCV	1	Fe	10	0.064	15	PASS
CCB2	CCB	1	Fe	-0.0029	18.12	15	<PQL
N020228-006C	SAMP	1	Fe	0.19	0.52	15	PASS
N020228-007C	SAMP	1	Fe	0.07	5.68	15	PASS
N020228-008C	SAMP	1	Fe	0.043	6.31	15	PASS
N020228-009C	SAMP	1	Fe	0.031	2.33	15	PASS
N020228-010C	SAMP	1	Fe	0.58	0.76	15	PASS
N020228-011C	SAMP	1	Fe	0.6	0.12	15	PASS
N020228-012C	SAMP	1	Fe	0.031	2.27	15	PASS
N020228-012C-MS	MS	1	Fe	0.12	1.093	15	PASS
N020228-013C	SAMP	1	Fe	0.034	1.38	15	PASS
CCV3	CCV	1	Fe	10.009	0.069	15	PASS
CCB3	CCB	1	Fe	-0.0038	16.72	15	<PQL

RSD SUMMARY: 160707C

Instrument ID: ICP-02

Sample Name	Type	DF	Analyte	Reported Conc	RSD	Criteria	Comment
CCV4	CCV	1	Fe	10.002	0.064	15	PASS
CCB4	CCB	1	Fe	-0.0042	16.0096	15	<PQL
CCV5	CCV	1	Fe	9.93	0.03	15	PASS
CCB5	CCB	1	Fe	-0.0043	9.42	15	PASS
CCV6	CCV	1	Fe	9.98	0.057	15	PASS
CCB6	CCB	1	Fe	-0.0045	9.19	15	PASS
LLCCV2	CCV2	1	Fe	0.015	2.58	20	PASS
ICSA3	ICSA	1	Fe	172.59	0.35	15	PASS
ICSAB3	ICSAB	1	Fe	177.77	0.49	15	PASS

ANALYSIS RUN LOG

INJECTION LOG: 160707C

Instrument ID: ICP-02

STANDARD CODE	
Standard1	MWST-160608A,0.5<50mL
Standard2	MWST-160608F
Standard3	MWST-160608J,5<50mL
Standard4	MWST-160608J,12.5<50mL
Standard5	MWST-160608J,15<40mL
Standard6	MWST-160608J,25<50mL
Standard7	MWST-160608J
ICV	MWST-160701B
CCV	MWST-160608J,25<50mL
ICSA/ICSAB	MWST-160523A/MWST-160608K
Int. Std. (Y)	MSST-160323C
PS Spike	MWST-160201H/MWST-160531G/MWST-160701E

A/S Loc	Sample Name	Type	DF	Acq Date	Acq Time
1	CalBlk	IBLK	1	07/07/2016	04:56:26 PM
2	Standard1	ICAL	1	07/07/2016	05:01:31 PM
3	Standard2	ICAL	1	07/07/2016	05:06:35 PM
4	Standard3	ICAL	1	07/07/2016	05:11:41 PM
5	Standard4	ICAL	1	07/07/2016	05:16:49 PM
6	Standard5	ICAL	1	07/07/2016	05:23:38 PM
7	Standard6	ICAL	1	07/07/2016	05:29:55 PM
8	Standard7	ICAL	1	07/07/2016	05:36:12 PM
9	ICV	ICV	1	07/07/2016	05:42:31 PM
1	ICB	ICB	1	07/07/2016	05:58:45 PM
2	LLICV	CCV1	1	07/07/2016	06:03:49 PM
4	ICSA1	ICSA	1	07/07/2016	06:17:43 PM
5	ICSAB1	ICSAB	1	07/07/2016	06:24:38 PM
98	MB-58920	MBLK	1	07/07/2016	06:31:33 PM
99	LCS1-58920	LCS	1	07/07/2016	06:36:41 PM
105	N020232-006B	SAMP	1	07/07/2016	06:42:59 PM
106	N020232-006B-MS1	MS	1	07/07/2016	06:47:37 PM
111	N020223-001E	SAMP	1	07/07/2016	06:53:56 PM
112	N020223-001E	SAMP	5	07/07/2016	07:00:13 PM
113	N020223-001E-PS	PS	1	07/07/2016	07:05:21 PM
114	N020223-001E-MS1	MS	1	07/07/2016	07:11:38 PM
115	N020223-001E-MSD1	MSD	1	07/07/2016	07:17:57 PM
116	N020223-002E	SAMP	1	07/07/2016	07:24:16 PM
7	CCV1	CCV	1	07/07/2016	07:30:35 PM
1	CCB1	CCB	1	07/07/2016	07:39:57 PM
2	LLCCV1	CCV2	1	07/07/2016	07:43:26 PM
4	ICSA2	ICSA	1	07/07/2016	08:10:51 PM
4	ICSA2	ICSA	1	07/07/2016	08:19:24 PM

A/S Loc	Sample Name	Type	DF	Acq Date	Acq Time
5	ICSAB2	ICSAB	1	07/07/2016	08:26:19 PM
38	MB-58932	MBLK	1	07/07/2016	08:35:21 PM
39	LCS-58932	LCS	1	07/07/2016	08:40:26 PM
40	N020228-002C	SAMP	1	07/07/2016	08:47:01 PM
41	N020228-002C	SAMP	5	07/07/2016	08:51:36 PM
42	N020228-002C-PS	PS	1	07/07/2016	08:56:43 PM
43	N020228-002C-MS	MS	1	07/07/2016	09:03:00 PM
44	N020228-002C-MSD	MSD	1	07/07/2016	09:09:16 PM
45	N020228-003C	SAMP	1	07/07/2016	09:15:32 PM
46	N020228-004C	SAMP	1	07/07/2016	09:20:07 PM
47	N020228-005C	SAMP	1	07/07/2016	09:24:44 PM
7	CCV2	CCV	1	07/07/2016	09:29:51 PM
1	CCB2	CCB	1	07/07/2016	09:36:08 PM
48	N020228-006C	SAMP	1	07/07/2016	09:41:12 PM
49	N020228-007C	SAMP	1	07/07/2016	09:45:49 PM
50	N020228-008C	SAMP	1	07/07/2016	09:50:26 PM
51	N020228-009C	SAMP	1	07/07/2016	09:56:42 PM
52	N020228-010C	SAMP	1	07/07/2016	10:01:19 PM
53	N020228-011C	SAMP	1	07/07/2016	10:05:54 PM
54	N020228-012C	SAMP	1	07/07/2016	10:10:30 PM
55	N020228-012C-MS	MS	1	07/07/2016	10:15:06 PM
56	N020228-013C	SAMP	1	07/07/2016	10:21:24 PM
57	MB-58931	MBLK	1	07/07/2016	10:26:00 PM
7	CCV3	CCV	1	07/07/2016	10:31:05 PM
1	CCB3	CCB	1	07/07/2016	10:37:23 PM
58	LCS1-58931	LCS	1	07/07/2016	10:42:27 PM
59	N020221-004B	SAMP	1	07/07/2016	10:48:45 PM
60	N020221-004B	SAMP	5	07/07/2016	10:53:53 PM
61	N020221-004B-PS	PS	1	07/07/2016	10:58:59 PM
62	N020221-004B-MS1	MS	1	07/07/2016	11:05:18 PM
63	N020221-004B-MSD1	MSD	1	07/07/2016	11:11:37 PM
64	N020228-002B	SAMP	1	07/07/2016	11:17:55 PM
65	N020228-003B	SAMP	1	07/07/2016	11:22:30 PM
66	N020228-004B	SAMP	1	07/07/2016	11:27:05 PM
67	N020228-005B	SAMP	1	07/07/2016	11:32:11 PM
7	CCV4	CCV	1	07/07/2016	11:37:18 PM
1	CCB4	CCB	1	07/07/2016	11:43:35 PM
68	N020228-006B	SAMP	1	07/07/2016	11:48:38 PM
69	N020228-007B	SAMP	1	07/07/2016	11:53:13 PM
70	N020228-008B	SAMP	1	07/07/2016	11:57:49 PM
71	N020228-009B	SAMP	1	07/08/2016	12:02:55 AM
72	N020228-010B	SAMP	1	07/08/2016	12:07:31 AM
73	N020228-011B	SAMP	1	07/08/2016	12:12:07 AM
74	N020228-011B-MS1	MS	1	07/08/2016	12:16:44 AM
75	N020228-012B	SAMP	1	07/08/2016	12:23:02 AM
76	N020228-013B	SAMP	1	07/08/2016	12:28:08 AM

A/S Loc	Sample Name	Type	DF	Acq Date	Acq Time
77	N020229-001B	SAMP	1	07/08/2016	12:33:15 AM
7	CCV5	CCV	1	07/08/2016	12:39:32 AM
1	CCB5	CCB	1	07/08/2016	12:45:49 AM
78	N020229-002B	SAMP	1	07/08/2016	12:50:52 AM
79	N020229-003B	SAMP	1	07/08/2016	12:57:10 AM
7	CCV6	CCV	1	07/08/2016	01:03:27 AM
1	CCB6	CCB	1	07/08/2016	01:09:44 AM
2	LLCCV2	CCV2	1	07/08/2016	01:14:48 AM
4	ICSA3	ICSA	1	07/08/2016	01:19:52 AM
5	ICSAB3	ICSAB	1	07/08/2016	01:26:48 AM

SAMPLE PREPARATION LOG

ASSET Laboratories

PREP BATCH REPORT

Prep Start Date: **7/7/2016 12:30:00 P**
Prep End Date: **7/7/2016 4:30:00 P**
Prep Batch **58932** Prep Code: **3010_W**

Reviewed/ Date: 7/21/2016
Initials/ Date: 7/21/2016
Technician: **Amy Mata**

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-58932	Aqueous		25	☐	0	0	25	1.000		
MB-58932	Aqueous		25	☐	0	0	25	1.000		
N020228-002C	Groundwater	<2	25	☐	0	0	25	1.000		
N020228-002C-MS	Groundwater	<2	25	☐	0	0	25	1.000		
N020228-002C-MS	Groundwater	<2	25	☐	0	0	25	1.000		
N020228-003C	Groundwater	<2	25	☐	0	0	25	1.000		
N020228-004C	Groundwater	<2	25	☐	0	0	25	1.000		
N020228-005C	Groundwater	<2	25	☐	0	0	25	1.000		
N020228-006C	Groundwater	<2	25	☐	0	0	25	1.000		
N020228-007C	Groundwater	<2	25	☐	0	0	25	1.000		
N020228-008C	Groundwater	<2	25	☐	0	0	25	1.000		
N020228-009C	Groundwater	<2	25	☐	0	0	25	1.000		
N020228-010C	Groundwater	<2	25	☐	0	0	25	1.000		
N020228-011C	Groundwater	<2	25	☐	0	0	25	1.000		

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

Number	Reagent Name
8446	NITRIC ACID
8493	HYDROCHLORIC ACID

Spk ID	Spike Name	SampType	AmtAdd
MWST-160201H	ICP Solution B	LCS,MS,MSD	0.5
MWST-160531G	ICP Solution C	LCS,MS,MSD	0.5
MWST-160701E	ICP Solution A	LCS,MS,MSD	0.5

ASSET Laboratories

PREP BATCH REPORT

Prep Start Date: **7/7/2016 12:30:00 P**
Prep End Date: **7/7/2016 4:30:00 P**
Prep Batch **58932** Prep Code: **3010_W**

Reviewed/ Date: 7/21/2016
Initials/ Date: 7/21/2016
Technician: **Amy Mata**

Prep Factor Units: **mL / mL**

Sample ID	Matrix	pH	SampAmt	3 Replicates	Sol Added	Sol Recov	Fin Vol	factor	Clean Up Code	TURB Check
N020228-012C	Groundwater	<2	25	☐	0	0	25	1.000		
N020228-012C-MS	Groundwater	<2	25	☐	0	0	25	1.000		
N020228-013C	Groundwater	<2	25	☐	0	0	25	1.000		

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

Number	Reagent Name
8446	NITRIC ACID
8493	HYDROCHLORIC ACID

Spk ID	Spike Name	SampType	AmtAdd
MWST-160201H	ICP Solution B	LCS,MS,MSD	0.5
MWST-160531G	ICP Solution C	LCS,MS,MSD	0.5
MWST-160701E	ICP Solution A	LCS,MS,MSD	0.5

INITIAL CALIBRATION DATA SUMMARY

INITIAL CALIBRATION SUMMARY: 160707C

Instrument ID: ICP-02

Sample ID	Date	Time	Elem	Wavelength	Corrected Intensity	Concentration	Units	R
Iron								
CalBlk	07/07/2016	04:56:26 PM	Fe	273.953	113	0.00	mg/L	
Standard1	07/07/2016	05:01:31 PM	Fe	273.953	661	0.0200	mg/L	
Standard2	07/07/2016	05:06:35 PM	Fe	273.953	1700	0.050	mg/L	
Standard3	07/07/2016	05:11:41 PM	Fe	273.953	73674	2.000	mg/L	
Standard4	07/07/2016	05:16:49 PM	Fe	273.953	183490	5.000	mg/L	
Standard5	07/07/2016	05:23:38 PM	Fe	273.953	271610	7.500	mg/L	
Standard6	07/07/2016	05:29:55 PM	Fe	273.953	358799	10.000	mg/L	
Standard7	07/07/2016	05:36:12 PM	Fe	273.953	707977	20.000	mg/L	0.9999

INITIAL CALIBRATION AND CONTINUING CALIBRATION VERIFICATION SUMMARY

CLIENT: ARCADIS U.S., Inc. - California
Work Order: N020228
Project: PG&E Topock - RMP, RC000753.0801

ANALYTICAL QC SUMMARY REPORT

TestCode: 6010_WPGEPPB

Sample ID **ICV**	SampType: **ICV**	TestCode: **6010_WPGE**	Units: **ug/L**	Prep Date:	RunNo: **109304**
Client ID: **ICV**	Batch ID: **R109304**	TestNo: **EPA 6010B**		Analysis Date: **7/7/2016**	SeqNo: **2366295**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Iron	10070.346	20	10000	0	101	90	110				

Sample ID **LLICV**	SampType: **CCV1**	TestCode: **6010_WPGE**	Units: **ug/L**	Prep Date:	RunNo: **109304**
Client ID: **ZZZZZZ**	Batch ID: **R109304**	TestNo: **EPA 6010B**		Analysis Date: **7/7/2016**	SeqNo: **2366297**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Iron	16.940	20	20.00	0	84.7	80	120				

Sample ID **CCV1**	SampType: **CCV**	TestCode: **6010_WPGE**	Units: **ug/L**	Prep Date:	RunNo: **109304**
Client ID: **CCV**	Batch ID: **R109304**	TestNo: **EPA 6010B**		Analysis Date: **7/7/2016**	SeqNo: **2366310**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Iron	9999.190	20	10000	0	100	90	110				

Sample ID **LLCCV1**	SampType: **CCV2**	TestCode: **6010_WPGE**	Units: **ug/L**	Prep Date:	RunNo: **109304**
Client ID: **ZZZZZZ**	Batch ID: **R109304**	TestNo: **EPA 6010B**		Analysis Date: **7/7/2016**	SeqNo: **2366312**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Iron	16.572	20	20.00	0	82.9	70	130				

Sample ID **CCV2**	SampType: **CCV**	TestCode: **6010_WPGE**	Units: **ug/L**	Prep Date:	RunNo: **109304**
Client ID: **CCV**	Batch ID: **R109304**	TestNo: **EPA 6010B**		Analysis Date: **7/7/2016**	SeqNo: **2366326**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Iron	9999.685	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
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: ARCADIS U.S., Inc. - California
Work Order: N020228
Project: PG&E Topock - RMP, RC000753.0801

ANALYTICAL QC SUMMARY REPORT

TestCode: 6010_WPGEPPB

Sample ID **CCV3**	SampType: **CCV**	TestCode: **6010_WPGE**	Units: **ug/L**	Prep Date:	RunNo: **109304**
Client ID: **CCV**	Batch ID: **R109304**	TestNo: **EPA 6010B**		Analysis Date: **7/7/2016**	SeqNo: **2366338**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Iron	10009.330	20	10000	0	100	90	110				

Sample ID **CCV4**	SampType: **CCV**	TestCode: **6010_WPGE**	Units: **ug/L**	Prep Date:	RunNo: **109304**
Client ID: **CCV**	Batch ID: **R109304**	TestNo: **EPA 6010B**		Analysis Date: **7/7/2016**	SeqNo: **2366350**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Iron	10001.815	20	10000	0	100	90	110				

Sample ID **CCV5**	SampType: **CCV**	TestCode: **6010_WPGE**	Units: **ug/L**	Prep Date:	RunNo: **109304**
Client ID: **CCV**	Batch ID: **R109304**	TestNo: **EPA 6010B**		Analysis Date: **7/8/2016**	SeqNo: **2366361**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Iron	9930.313	20	10000	0	99.3	90	110				

Sample ID **CCV6**	SampType: **CCV**	TestCode: **6010_WPGE**	Units: **ug/L**	Prep Date:	RunNo: **109304**
Client ID: **CCV**	Batch ID: **R109304**	TestNo: **EPA 6010B**		Analysis Date: **7/8/2016**	SeqNo: **2366365**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Iron	9978.808	20	10000	0	99.8	90	110				

Sample ID **LLCCV2**	SampType: **CCV2**	TestCode: **6010_WPGE**	Units: **ug/L**	Prep Date:	RunNo: **109304**
Client ID: **ZZZZZZ**	Batch ID: **R109304**	TestNo: **EPA 6010B**		Analysis Date: **7/8/2016**	SeqNo: **2366367**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Iron	15.302	20	20.00	0	76.5	70	130				

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

CLIENT: ARCADIS U.S., Inc. - California
Work Order: N020228
Project: PG&E Topock - RMP, RC000753.0801

ANALYTICAL QC SUMMARY REPORT

TestCode: 6010_WPGEPPB

Sample ID **ICB**	SampType: **ICB**	TestCode: **6010_WPGE**	Units: **ug/L**	Prep Date:	RunNo: **109304**
Client ID: **ICB**	Batch ID: **R109304**	TestNo: **EPA 6010B**		Analysis Date: **7/7/2016**	SeqNo: **2366296**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Iron	-4.458174	20									

Sample ID **CCB1**	SampType: **CCB**	TestCode: **6010_WPGE**	Units: **ug/L**	Prep Date:	RunNo: **109304**
Client ID: **CCB**	Batch ID: **R109304**	TestNo: **EPA 6010B**		Analysis Date: **7/7/2016**	SeqNo: **2366311**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Iron	-4.030642	20									

Sample ID **CCB2**	SampType: **CCB**	TestCode: **6010_WPGE**	Units: **ug/L**	Prep Date:	RunNo: **109304**
Client ID: **CCB**	Batch ID: **R109304**	TestNo: **EPA 6010B**		Analysis Date: **7/7/2016**	SeqNo: **2366327**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Iron	-2.864066	20									

Sample ID **CCB3**	SampType: **CCB**	TestCode: **6010_WPGE**	Units: **ug/L**	Prep Date:	RunNo: **109304**
Client ID: **CCB**	Batch ID: **R109304**	TestNo: **EPA 6010B**		Analysis Date: **7/7/2016**	SeqNo: **2366339**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Iron	-3.766532	20									

Sample ID **CCB4**	SampType: **CCB**	TestCode: **6010_WPGE**	Units: **ug/L**	Prep Date:	RunNo: **109304**
Client ID: **CCB**	Batch ID: **R109304**	TestNo: **EPA 6010B**		Analysis Date: **7/7/2016**	SeqNo: **2366351**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Iron	-4.206	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
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: ARCADIS U.S., Inc. - California
Work Order: N020228
Project: PG&E Topock - RMP, RC000753.0801

ANALYTICAL QC SUMMARY REPORT

TestCode: 6010_WPGEPPB

Sample ID **CCB5**	SampType: **CCB**	TestCode: **6010_WPGE**	Units: **ug/L**	Prep Date:	RunNo: **109304**
Client ID: **CCB**	Batch ID: **R109304**	TestNo: **EPA 6010B**		Analysis Date: **7/8/2016**	SeqNo: **2366362**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Iron	-4.311633	20									

Sample ID **CCB6**	SampType: **CCB**	TestCode: **6010_WPGE**	Units: **ug/L**	Prep Date:	RunNo: **109304**
Client ID: **CCB**	Batch ID: **R109304**	TestNo: **EPA 6010B**		Analysis Date: **7/8/2016**	SeqNo: **2366366**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Iron	-4.520805	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

SUMMARY OF INSTRUMENT CHECK (ICSA & ICSAB)

CLIENT: ARCADIS U.S., Inc. - California
Work Order: N020228
Project: PG&E Topock - RMP, RC000753.0801

ANALYTICAL QC SUMMARY REPORT

TestCode: 6010_WPGEPPB

Sample ID **ICSA1** SampType: **ICSA** TestCode: **6010_WPGE** Units: **ug/L** Prep Date: RunNo: **109304**
Client ID: **ICSA** Batch ID: **R109304** TestNo: **EPA 6010B** Analysis Date: **7/7/2016** SeqNo: **2366298**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aluminum	467319.059	50	500000	0	93.5	80	120				
Calcium	462926.629	500	500000	0	92.6	80	120				
Iron	175248.057	20	200000	0	87.6	80	120				
Magnesium	455421.970	100	500000	0	91.1	80	120				

Sample ID **ICSAB1** SampType: **ICSAB** TestCode: **6010_WPGE** Units: **ug/L** Prep Date: RunNo: **109304**
Client ID: **ICSAB** Batch ID: **R109304** TestNo: **EPA 6010B** Analysis Date: **7/7/2016** SeqNo: **2366299**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aluminum	562621.992	50	500000	0	113	80	120				
Calcium	554241.296	500	500000	0	111	80	120				
Iron	179190.495	20	200000	0	89.6	80	120				
Magnesium	508927.673	100	500000	0	102	80	120				

Sample ID **ICSA2** SampType: **ICSA** TestCode: **6010_WPGE** Units: **ug/L** Prep Date: RunNo: **109304**
Client ID: **ICSA** Batch ID: **R109304** TestNo: **EPA 6010B** Analysis Date: **7/7/2016** SeqNo: **2366314**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aluminum	467660.383	50	500000	0	93.5	80	120				
Calcium	456608.626	500	500000	0	91.3	80	120				
Iron	175899.317	20	200000	0	87.9	80	120				
Magnesium	452782.302	100	500000	0	90.6	80	120				

Sample ID **ICSAB2** SampType: **ICSAB** TestCode: **6010_WPGE** Units: **ug/L** Prep Date: RunNo: **109304**
Client ID: **ICSAB** Batch ID: **R109304** TestNo: **EPA 6010B** Analysis Date: **7/7/2016** SeqNo: **2366315**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aluminum	561980.116	50	500000	0	112	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: N020228
Project: PG&E Topock - RMP, RC000753.0801

ANALYTICAL QC SUMMARY REPORT

TestCode: 6010_WPGEPPB

Sample ID **ICSAB2**	SampType: **ICSAB**	TestCode: **6010_WPGE**	Units: **ug/L**	Prep Date:	RunNo: **109304**
Client ID: **ICSAB**	Batch ID: **R109304**	TestNo: **EPA 6010B**		Analysis Date: **7/7/2016**	SeqNo: **2366315**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Calcium	551276.661	500	500000	0	110	80	120				
Iron	178257.777	20	200000	0	89.1	80	120				
Magnesium	503689.641	100	500000	0	101	80	120				

Sample ID **ICSA3**	SampType: **ICSA**	TestCode: **6010_WPGE**	Units: **ug/L**	Prep Date:	RunNo: **109304**
Client ID: **ICSA**	Batch ID: **R109304**	TestNo: **EPA 6010B**		Analysis Date: **7/8/2016**	SeqNo: **2366368**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aluminum	468505.831	50	500000	0	93.7	80	120				
Calcium	462759.709	500	500000	0	92.6	80	120				
Iron	172591.371	20	200000	0	86.3	80	120				
Magnesium	457144.547	100	500000	0	91.4	80	120				

Sample ID **ICSAB3**	SampType: **ICSAB**	TestCode: **6010_WPGE**	Units: **ug/L**	Prep Date:	RunNo: **109304**
Client ID: **ICSAB**	Batch ID: **R109304**	TestNo: **EPA 6010B**		Analysis Date: **7/8/2016**	SeqNo: **2366369**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aluminum	579879.659	50	500000	0	116	80	120				
Calcium	568756.169	500	500000	0	114	80	120				
Iron	177771.655	20	200000	0	88.9	80	120				
Magnesium	514774.780	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
DO	Surrogate Diluted Out		Calculations are based on raw values		

INTERNAL STANDARD SUMMARY

INTERNAL STANDARD: 160707C

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	99.95	65-125	PASS
Standard2	ICAL	1	1.0079	100.79	65-125	PASS
Standard3	ICAL	1	1.0037	100.37	65-125	PASS
Standard4	ICAL	1	1	99.67	65-125	PASS
Standard5	ICAL	1	1.0024	100.24	65-125	PASS
Standard6	ICAL	1	0.97	97.48	65-125	PASS
Standard7	ICAL	1	0.95	95.16	65-125	PASS
ICV	ICV	1	0.97	96.66	65-125	PASS
ICB	ICB	1	0.98	98.5	65-125	PASS
LLICV	CCV1	1	0.98	98.41	65-125	PASS
ICSA1	ICSA	1	0.97	96.91	65-125	PASS
ICSAB1	ICSAB	1	0.81	80.71	65-125	PASS
CCV1	CCV	1	0.99	98.63	65-125	PASS
CCB1	CCB	1	1.025	102.51	65-125	PASS
LLCCV1	CCV2	1	1.021	102.08	65-125	PASS
ICSA2	ICSA	1	0.94	93.82	65-125	PASS
ICSA2	ICSA	1	0.94	94.24	65-125	PASS
ICSAB2	ICSAB	1	0.79	79.35	65-125	PASS
MB-58932	MBLK	1	1.017	101.73	65-125	PASS
LCS-58932	LCS	1	1.014	101.35	65-125	PASS
N020228-002C	SAMP	1	0.97	97.027	65-125	PASS
N020228-002C	SAMP	5	0.94	94.17	65-125	PASS
N020228-002C-PS	PS	1	0.95	95.19	65-125	PASS
N020228-002C-MS	MS	1	0.97	96.62	65-125	PASS
N020228-002C-MSD	MSD	1	0.98	97.55	65-125	PASS
N020228-003C	SAMP	1	0.99	98.61	65-125	PASS
N020228-004C	SAMP	1	0.97	96.98	65-125	PASS
N020228-005C	SAMP	1	0.96	95.88	65-125	PASS
CCV2	CCV	1	0.92	91.51	65-125	PASS
CCB2	CCB	1	0.95	95.17	65-125	PASS
N020228-006C	SAMP	1	1.001	100.1	65-125	PASS
N020228-007C	SAMP	1	1.025	102.46	65-125	PASS
N020228-008C	SAMP	1	1.01	101.03	65-125	PASS
N020228-009C	SAMP	1	1.049	104.94	65-125	PASS
N020228-010C	SAMP	1	1.046	104.6	65-125	PASS
N020228-011C	SAMP	1	1.059	105.94	65-125	PASS
N020228-012C	SAMP	1	1.016	101.6	65-125	PASS
N020228-012C-MS	MS	1	1.019	101.93	65-125	PASS
N020228-013C	SAMP	1	1.045	104.54	65-125	PASS
CCV3	CCV	1	1.014	101.45	65-125	PASS

INTERNAL STANDARD: 160707C

Instrument ID: ICP-02

Sample Name	Type	DF	Yttrium, 1.0 mg/L			
			Reported Conc	%REC	Criteria	Comment
CCB3	CCB	1	1.052	105.19	65-125	PASS
CCV4	CCV	1	1.023	102.33	65-125	PASS
CCB4	CCB	1	1.047	104.73	65-125	PASS
CCV5	CCV	1	1.091	109.11	65-125	PASS
CCB5	CCB	1	1.11	111.35	65-125	PASS
CCV6	CCV	1	1.054	105.43	65-125	PASS
CCB6	CCB	1	1.099	109.88	65-125	PASS
LLCCV2	CCV2	1	1.096	109.59	65-125	PASS
ICSA3	ICSA	1	1.088	108.8	65-125	PASS
ICSAB3	ICSAB	1	0.92	91.92	65-125	PASS

SERIAL DILUTION/
POST DIGESTION SPIKE

ASSET Laboratories

ICP-Metals in Water

Dilution Test Summary

Work Order No.: N020228
Test Method: EPA 6010B
Analysis Date: 7/7/2016

Matrix: Groundwater
Batch No.: 58932

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
N020228-002C DT 5X	Iron	ug/L	86.55716	NA	84.83124	2.03%	10

Note: NA - Not applicable

CLIENT: ARCADIS U.S., Inc. - California
Work Order: N020228
Project: PG&E Topock - RMP, RC000753.0801

ANALYTICAL QC SUMMARY REPORT

TestCode: 6010_WPGEPPB

Sample ID	**N020228-002C-PS**	SampType: **PS**	TestCode: **6010_WPGE**	Units: **ug/L**	Prep Date:	RunNo: **109304**
Client ID:	**ZZZZZZ**	Batch ID: **58932**	TestNo: **EPA 6010B**	**EPA 3010A**	Analysis Date: **7/7/2016**	SeqNo: **2366320**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Iron	175.296	20	100.0	84.83	90.5	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
DO	Surrogate Diluted Out		Calculations are based on raw values		

MDL STUDY

METHOD DETECTION LIMIT 2016

Method Name: **Metals by ICP**
Method Number: EPA 200.7/ 6010
Analysis Date(s): 4/1/2016, 4/4/2016
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	0.0021	0.0020	0.0020	0.0020	0.0019	0.0020	0.0020	0.00125	0.00005062	**0.00016**	**0.0025**
Al	237.312	0.0272	0.0288	0.0288	0.0267	0.0269	0.0277	0.0276	0.025	0.00085451	**0.00269**	**0.050**
As	188.983	0.0054	0.0049	0.0037	0.0044	0.0060	0.0041	0.0048	0.005	0.00075065	**0.00236**	**0.010**
B	249.679	0.0735	0.0561	0.0463	0.0445	0.0396	0.0464	0.0398	0.05	0.01193786	**0.03752**	**0.10**
Ba	233.529	0.0007	0.0007	0.0006	0.0006	0.0006	0.0007	0.0007	0.000625	0.00003047	**0.00010**	**0.0025**
Be	313.104	0.0007	0.0006	0.0006	0.0006	0.0006	0.0006	0.0007	0.0005	0.00004386	**0.00014**	**0.0010**
Ca	227.546	0.0967	0.1086	0.0893	0.0864	0.0826	0.0978	0.0988	0.1	0.00880307	**0.02767**	**0.20**
Cd	214.437	0.0006	0.0006	0.0007	0.0006	0.0007	0.0006	0.0006	0.000313	0.00003910	**0.00012**	**0.0025**
Co	228.614	0.0011	0.0011	0.0010	0.0010	0.0009	0.0010	0.0011	0.00125	0.00005473	**0.00017**	**0.0025**
Cr	267.719	0.0004	0.0003	0.0004	0.0004	0.0004	0.0003	0.0004	0.0005	0.00004860	**0.00015**	**0.0010**
Cu	324.753	0.0013	0.0015	0.0015	0.0022	0.0022	0.0016	0.0015	0.0025	0.00034907	**0.00110**	**0.0050**
Fe	273.953	0.0115	0.0117	0.0112	0.0102	0.0105	0.0114	0.0114	0.01	0.00057502	**0.00181**	**0.020**
Mg	279.079	0.0227	0.0231	0.0204	0.0225	0.0221	0.0222	0.0250	0.025	0.00138863	**0.00436**	**0.10**
Mn	257.607	0.0013	0.0013	0.0013	0.0012	0.0012	0.0012	0.0012	0.00125	0.00004429	**0.00014**	**0.010**
Mo	202.03	0.0031	0.0032	0.0031	0.0030	0.0026	0.0029	0.0029	0.0025	0.00018274	**0.00057**	**0.0050**
Ni	231.604	0.0019	0.0020	0.0020	0.0022	0.0022	0.0021	0.0021	0.0025	0.00012429	**0.00039**	**0.0050**
Pb	220.351	0.0049	0.0049	0.0048	0.0044	0.0048	0.0048	0.0050	0.005	0.00018831	**0.00059**	**0.010**
Sb	206.836	0.0035	0.0038	0.0020	0.0034	0.0033	0.0032	0.0046	0.005	0.00076686	**0.00241**	**0.010**
Se	196.025	0.0017	0.0033	0.0025	0.0025	0.0015	0.0034	0.0025	0.005	0.00070697	**0.00222**	**0.010**
Sn	189.927	0.0051	0.0048	0.0052	0.0051	0.0044	0.0045	0.0050	0.005	0.00031282	**0.00098**	**0.010**
Ti	334.943	0.0011	0.0011	0.0011	0.0010	0.0011	0.0010	0.0010	0.00125	0.00005159	**0.00016**	**0.010**
Tl	190.794	0.0067	0.0060	0.0064	0.0047	0.0062	0.0067	0.0062	0.0075	0.00070505	**0.00222**	**0.015**
V	292.404	0.0007	0.0007	0.0007	0.0006	0.0006	0.0007	0.0007	0.00125	0.00006264	**0.00020**	**0.0025**
Zn	206.201	0.0024	0.0026	0.0024	0.0024	0.0024	0.0024	0.0033	0.0025	0.00034911	**0.00110**	**0.010**

EPA 6020
Dissolved

Metals Technical Batch Review Checklist (ARCUS02)

ASSET LABORATORIES - LAS VEGAS

FIRST LEVEL REVIEW:

QC Batch Number: 58934
ASSET #: N020228

Instrument ID: ICPMS-02
Analyst: CEI
Date Analyzed: 7/7/2016

Method:

[ ] EPA 6010B / 200.7
[ ] EPA 7470A / 7471A/245.1
[X] 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					
Interference Check						
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					
Continuing Calibration						
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 ICVand CCV analysis.	X					
11. Do all calibration blanks (ICB and CCBs) meet criteria? (< PQL)	X					
12 Is low level check twice during 8 hr period or at end within ± 30% of expected value? (ICP/ICPMS only)	X					
Sample Information						
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			
QC Items						
22. IS are within control limits (70-125% for ICPMS).	X					
23. Method blank values are below the PQL .	X					
24. LCS compounds within control limits.	X					
25. MS/MSD, RPD's are within control limits	X					
Raw Data and Miscellaneous Information						
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					
Preliminary Report						
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 As in N020230-011B PS failed. However LCS & DT passed criteria.
Dilution was necessary for Se in N020229-001B/MS due to failing Internal Standard. Analyte was reported at 5X which passed IS 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 7/21/2016 Date: _____

2nd Level Reviewer _____ Date: 7/21/2016

SAMPLE CALCULATION

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:

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 **N020228-002B** , the concentration in ug/L is calculated as follows:

Arsenic , ug/L = 2.32078 * 1 * (25/25)

Arsenic , ug/L = 2.32078

Reporting results in two significant figures,

Arsenic , ug/L = 2.3

% RSD SUMMARY

PERCENT RSD SUMMARY: 160707B

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	0.14	0.26	15	PASS	0.1	6.72	15	PASS
Std2-0.5/5 ppb	ICAL	1	0.51	1.13	15	PASS	0.53	1.14	15	PASS
Std3-5/50 ppb	ICAL	1	5.24	0.9	15	PASS	5.18	2.64	15	PASS
Std4-10/100 ppb	ICAL	1	10.42	0.72	15	PASS	10.35	0.87	15	PASS
Std5-20/200 ppb	ICAL	1	20.76	0.48	15	PASS	20.58	0.77	15	PASS
Std6-40/400 ppb	ICAL	1	41.38	0.35	15	PASS	40.88	1.24	15	PASS
Std7-100/1000 ppb	ICAL	1	100.6	0.16	15	PASS	101.21	0.24	15	PASS
Std8-200/2000 ppb	ICAL	1	199.32	0.56	15	PASS	199.14	0.72	15	PASS
ICV	ICV	1	100.31	0.16	15	PASS	10.039	0.63	15	PASS
ICB	ICB	1	<0.000	N/A	15	<PQL	<0.000	N/A	15	<PQL
LLICV	CCV1	1	1.094	1.57	20	PASS	1.085	3.11	20	PASS
ICSA1	ICSA	1	<0.000	N/A	15	<PQL	0.21	4.1	15	PASS
ICSAB1	ICSAB	1	19.6	0.77	15	PASS	20.71	1.28	15	PASS
LLICV	CCV1	1	1.11	1.068	20	PASS	1.1	1.12	20	PASS
CCV1	CCV	1	20.53	0.3	15	PASS	20.66	1.0067	15	PASS
CCB1	CCB	1	<0.000	N/A	15	<PQL	<0.000	N/A	15	<PQL
CCV2	CCV	1	20.41	0.59	15	PASS	21.05	0.99	15	PASS
CCB2	CCB	1	<0.000	N/A	15	<PQL	<0.000	N/A	15	<PQL
CCV3	CCV	1	20.23	0.44	15	PASS	20.96	1.19	15	PASS
CCB3	CCB	1	0.0024	254.93	15	<PQL	0.00052	1077.4	15	<PQL
MB-58934	MBLK	1	<0.000	N/A	15	<PQL	<0.000	N/A	15	<PQL
LCS-58934	LCS	1	98.84	1.17	15	PASS	10.23	1.16	15	PASS
N020230-011B	SAMP	1	27.76	0.41	15	PASS	5.03	0.7	15	PASS
CCV4	CCV	1	20.42	0.43	15	PASS	20.81	1.39	15	PASS
CCB4	CCB	1	0.0061	18.14	15	<PQL	<0.000	N/A	15	<PQL
LLCCV1	CCV2	1	1.11	1.31	20	PASS	1.12	2.86	20	PASS
ICSA2	ICSA	1	<0.000	N/A	15	<PQL	0.22	3.66	15	PASS
ICSAB2	ICSAB	1	20.057	0.42	15	PASS	20.76	1.42	15	PASS
N020230-011B	SAMP	5	5.24	0.52	15	PASS	1.052	2.24	15	PASS
N020230-011B-PS	PS	1	125.42	0.12	15	PASS	14.25	0.45	15	PASS
N020230-011B-MS	MS	1	126.47	0.45	15	PASS	14.38	0.1	15	PASS
N020230-011B-MSD	MSD	1	126.46	0.46	15	PASS	14.39	0.9	15	PASS
N020230-012B	SAMP	1	18.56	0.84	15	PASS	5.46	0.89	15	PASS
N020228-002B	SAMP	1	130.13	0.27	15	PASS	0.032	25.64	15	<PQL
N020228-003B	SAMP	1	136.73	0.73	15	PASS	0.025	3.35	15	PASS
N020228-004B	SAMP	1	128.41	0.44	15	PASS	0.018	28.66	15	<PQL
N020228-005B	SAMP	1	127.93	0.22	15	PASS	0.012	41.94	15	<PQL
N020228-006B	SAMP	1	131.57	0.55	15	PASS	0.015	9.85	15	PASS
CCV5	CCV	1	20.71	0.37	15	PASS	20.68	0.48	15	PASS
CCB5	CCB	1	0.0041	95.85	15	<PQL	<0.000	N/A	15	<PQL

PERCENT RSD SUMMARY: 160707B

Instrument ID: ICPMS-02

Sample Name	Type	DF	137 Ba [3]				52 Cr [2]			
			Conc. [ppb]	RSD	Criteria	Comment	Conc. [ppb]	RSD	Criteria	Comment
N020228-007B	SAMP	1	127.38	1.093	15	PASS	0.0061	66.14	15	<PQL
N020228-008B	SAMP	1	128.94	0.13	15	PASS	0.0033	69.9	15	<PQL
N020228-009B	SAMP	1	132.55	0.42	15	PASS	0.0073	88.3	15	<PQL
N020228-010B	SAMP	1	138.81	0.53	15	PASS	<0.000	N/A	15	<PQL
N020228-011B	SAMP	1	140.14	0.48	15	PASS	0.038	136.91	15	<PQL
N020228-012B	SAMP	1	126.88	0.91	15	PASS	0.027	12.96	15	PASS
N020228-013B	SAMP	1	128.83	0.54	15	PASS	0.031	33.33	15	<PQL
N020229-001B	SAMP	1	23.85	0.51	15	PASS	0.27	3.68	15	PASS
N020229-001B-MS	MS	1	120.48	0.32	15	PASS	9.65	0.99	15	PASS
N020229-002B	SAMP	1	30.24	0.22	15	PASS	587.13	0.52	15	PASS
CCV6	CCV	1	20.83	0.69	15	PASS	21.21	0.87	15	PASS
CCB6	CCB	1	0.0051	51.7	15	<PQL	0.016	39.15	15	<PQL
N020229-003B	SAMP	1	34.76	0.25	15	PASS	56.52	0.88	15	PASS
N020230-011B	SAMP	25	0.99	0.94	15	PASS	0.21	3.62	15	PASS
N020230-011B-PS	PS	5	26.1	0.54	15	PASS	3.18	1.21	15	PASS
N020230-011B-MS	MS	5	26.59	0.33	15	PASS	3.21	0.59	15	PASS
N020230-011B-MSD	MSD	5	26.65	0.17	15	PASS	3.2	1.95	15	PASS
N020229-001B	SAMP	5	4.85	1.28	15	PASS	0.048	25.36	15	<PQL
N020229-001B-MS	MS	5	25.64	0.26	15	PASS	2.062	2.51	15	PASS
N020229-002B	SAMP	5	6.27	0.87	15	PASS	129.019	0.96	15	PASS
N020229-003B	SAMP	5	7.21	0.22	15	PASS	12.27	0.73	15	PASS
N020229-003B	SAMP	25	1.42	0.77	15	PASS	2.55	0.51	15	PASS
~~CCV8~~ CCV7	CCV	1	20.81	0.47	15	PASS	20.88	0.36	15	PASS
~~CCB8~~ CCB7	CCB	1	0.0016	184.66	15	<PQL	<0.000	N/A	15	<PQL
LLCCV2	CCV2	1	1.11	1.15	20	PASS	1.13	1.0071	20	PASS
ICSA3	ICSA	1	<0.000	N/A	15	<PQL	0.2	7.27	15	PASS
ICSAB3	ICSAB	1	20.27	0.53	15	PASS	20.87	1.067	15	PASS

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PERCENT RSD SUMMARY: 160707B

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	0.11	3.51	15	PASS	0.1	11.71	15	PASS
Std2-0.5/5 ppb	ICAL	1	0.52	2.53	15	PASS	0.49	1.61	15	PASS
Std3-5/50 ppb	ICAL	1	5.14	0.63	15	PASS	4.93	0.32	15	PASS
Std4-10/100 ppb	ICAL	1	10.23	1.15	15	PASS	10.13	0.5	15	PASS
Std5-20/200 ppb	ICAL	1	20.46	0.37	15	PASS	19.94	0.32	15	PASS
Std6-40/400 ppb	ICAL	1	40.41	1.46	15	PASS	39.67	0.88	15	PASS
Std7-100/1000 ppb	ICAL	1	100.99	0.63	15	PASS	100.082	0.31	15	PASS
Std8-200/2000 ppb	ICAL	1	199.36	1.15	15	PASS	200.026	0.25	15	PASS
ICV	ICV	1	98.21	0.68	15	PASS	10	0.91	15	PASS
ICB	ICB	1	<0.000	N/A	15	<PQL	0.0037	147.068	15	<PQL
LLICV	CCV1	1	0.63	4.22	20	PASS	0.11	12.19	20	PASS
ICSA1	ICSA	1	<0.000	N/A	15	<PQL	0.00017	2774.85	15	<PQL
ICSAB1	ICSAB	1	17.79	1.16	15	PASS	20.37	0.77	15	PASS
LLICV	CCV1	1	0.56	2.93	20	PASS	0.12	14.023	20	PASS
CCV1	CCV	1	20.61	0.72	15	PASS	19.86	1.12	15	PASS
CCB1	CCB	1	<0.000	N/A	15	<PQL	0.012	53.93	15	<PQL
CCV2	CCV	1	20.72	0.7	15	PASS	19.83	0.36	15	PASS
CCB2	CCB	1	<0.000	N/A	15	<PQL	0.014	59.92	15	<PQL
CCV3	CCV	1	20.67	1.65	15	PASS	19.67	0.96	15	PASS
CCB3	CCB	1	<0.000	N/A	15	<PQL	0.011	62.13	15	<PQL
MB-58934	MBLK	1	<0.000	N/A	15	<PQL	0.013	45.48	15	<PQL
LCS-58934	LCS	1	100.33	0.84	15	PASS	9.76	0.38	15	PASS
N020230-011B	SAMP	1	0.4	6.31	15	PASS	38.16	0.36	15	PASS
CCV4	CCV	1	20.69	1.22	15	PASS	19.74	0.4	15	PASS
CCB4	CCB	1	<0.000	N/A	15	<PQL	0.0074	89.94	15	<PQL
LLCCV1	CCV2	1	0.56	4.28	20	PASS	0.11	6.33	20	PASS
ICSA2	ICSA	1	<0.000	N/A	15	<PQL	0.0027	359.98	15	<PQL
ICSAB2	ICSAB	1	17.91	1.87	15	PASS	20.25	0.57	15	PASS
N020230-011B	SAMP	5	0.051	20.13	15	<PQL	8.018	0.24	15	PASS
N020230-011B-PS	PS	1	93.77	0.54	15	PASS	46.053	0.43	15	PASS
N020230-011B-MS	MS	1	94.58	0.18	15	PASS	46.39	0.16	15	PASS
N020230-011B-MSD	MSD	1	94.49	0.61	15	PASS	46.24	0.66	15	PASS
N020230-012B	SAMP	1	0.71	3.06	15	PASS	87.076	0.098	15	PASS
N020228-002B	SAMP	1	1.8	2.43	15	PASS	2.32	1.21	15	PASS
N020228-003B	SAMP	1	2.29	2.19	15	PASS	2.47	1.01	15	PASS
N020228-004B	SAMP	1	0.34	9.028	15	PASS	2.26	0.79	15	PASS
N020228-005B	SAMP	1	0.6	4.22	15	PASS	2.27	2.43	15	PASS
N020228-006B	SAMP	1	9.13	1.054	15	PASS	2.41	1.61	15	PASS
CCV5	CCV	1	20.52	0.43	15	PASS	19.96	0.21	15	PASS
CCB5	CCB	1	<0.000	N/A	15	<PQL	0.0004	1586.3	15	<PQL

PERCENT RSD SUMMARY: 160707B

Instrument ID: ICPMS-02

Sample Name	Type	DF	55 Mn [2]				75 As [2]			
			Conc. [ppb]	RSD	Criteria	Comment	Conc. [ppb]	RSD	Criteria	Comment
N020228-007B	SAMP	1	0.58	3.56	15	PASS	2.18	0.71	15	PASS
N020228-008B	SAMP	1	0.059	24.046	15	<PQL	2.28	1.65	15	PASS
N020228-009B	SAMP	1	0.37	7.025	15	PASS	2.4	3.12	15	PASS
N020228-010B	SAMP	1	124.18	0.48	15	PASS	3.1	1.94	15	PASS
N020228-011B	SAMP	1	133.92	0.33	15	PASS	3.24	2.048	15	PASS
N020228-012B	SAMP	1	1.57	1.95	15	PASS	2.25	1.018	15	PASS
N020228-013B	SAMP	1	1.063	2.29	15	PASS	2.3	1.22	15	PASS
N020229-001B	SAMP	1	186.0033	0.67	15	PASS	2.79	2.58	15	PASS
N020229-001B-MS	MS	1	271.11	1.069	15	PASS	12.43	0.98	15	PASS
N020229-002B	SAMP	1	11.82	0.34	15	PASS	3.12	1.058	15	PASS
CCV6	CCV	1	20.41	1.22	15	PASS	19.74	1.097	15	PASS
CCB6	CCB	1	<0.000	N/A	15	<PQL	0.004	93.22	15	<PQL
N020229-003B	SAMP	1	52.3	1.31	15	PASS	2.47	1.48	15	PASS
N020230-011B	SAMP	25	<0.000	N/A	15	<PQL	1.59	0.43	15	PASS
N020230-011B-PS	PS	5	20.38	0.54	15	PASS	9.83	1.019	15	PASS
N020230-011B-MS	MS	5	20.7	1.39	15	PASS	9.91	1.6	15	PASS
N020230-011B-MSD	MSD	5	20.81	0.34	15	PASS	9.98	0.86	15	PASS
N020229-001B	SAMP	5	41.47	1.35	15	PASS	0.57	2.58	15	PASS
N020229-001B-MS	MS	5	60.89	0.66	15	PASS	2.63	1.89	15	PASS
N020229-002B	SAMP	5	2.59	1.69	15	PASS	0.66	3.045	15	PASS
N020229-003B	SAMP	5	11.5	0.91	15	PASS	0.51	2.75	15	PASS
N020229-003B	SAMP	25	2.37	0.63	15	PASS	0.098	19.43	15	<PQL
CCV8	CCV	1	20.6	0.55	15	PASS	19.65	0.64	15	PASS
CCB8	CCB	1	<0.000	N/A	15	<PQL	<0.000	N/A	15	<PQL
LLCCV2	CCV2	1	0.55	2.82	20	PASS	0.097	9.95	20	PASS
ICSA3	ICSA	1	<0.000	N/A	15	<PQL	<0.000	N/A	15	<PQL
ICSAB3	ICSAB	1	17.99	1	15	PASS	20.43	0.66	15	PASS

PERCENT RSD SUMMARY: 160707B

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	0.093	7.36	15	PASS	0.1	2.58	15	PASS
Std2-0.5/5 ppb	ICAL	1	0.46	4.83	15	PASS	0.51	3.63	15	PASS
Std3-5/50 ppb	ICAL	1	5.0049	2.72	15	PASS	5.051	1.79	15	PASS
Std4-10/100 ppb	ICAL	1	9.84	1.95	15	PASS	10.066	0.28	15	PASS
Std5-20/200 ppb	ICAL	1	20.016	1.87	15	PASS	20.16	0.43	15	PASS
Std6-40/400 ppb	ICAL	1	40.27	1.12	15	PASS	40.83	1.22	15	PASS
Std7-100/1000 ppb	ICAL	1	101.46	0.91	15	PASS	99.43	0.57	15	PASS
Std8-200/2000 ppb	ICAL	1	199.22	0.46	15	PASS	200.099	0.68	15	PASS
ICV	ICV	1	10.18	4.41	15	PASS	10.35	0.64	15	PASS
ICB	ICB	1	0.011	14.36	15	PASS	0.11	7.15	15	PASS
LLICV	CCV1	1	0.6	6.84	20	PASS	0.56	5.66	20	PASS
ICSA1	ICSA	1	0.026	29.48	15	<PQL	0.061	4.76	15	PASS
ICSAB1	ICSAB	1	19.25	0.95	15	PASS	23.81	1.13	15	PASS
LLICV	CCV1	1	0.52	11.38	20	PASS	0.58	1.43	20	PASS
CCV1	CCV	1	20.39	0.6	15	PASS	20.19	0.56	15	PASS
CCB1	CCB	1	0.0042	110.79	15	<PQL	0.036	9.57	15	PASS
CCV2	CCV	1	20.31	1.24	15	PASS	20.12	0.8	15	PASS
CCB2	CCB	1	0.0044	150.22	15	<PQL	0.043	8.82	15	PASS
CCV3	CCV	1	20.78	1.17	15	PASS	20.22	1.3	15	PASS
CCB3	CCB	1	0.0082	23.63	15	<PQL	0.058	6.23	15	PASS
MB-58934	MBLK	1	0.0025	134.18	15	<PQL	0.019	10.99	15	PASS
LCS-58934	LCS	1	10.13	2.47	15	PASS	9.86	0.31	15	PASS
N020230-011B	SAMP	1	0.26	11.73	15	PASS	9.85	1.8	15	PASS
CCV4	CCV	1	20.35	1.41	15	PASS	20.15	0.78	15	PASS
CCB4	CCB	1	0.0024	0.13	15	PASS	0.04	6.15	15	PASS
LLCCV1	CCV2	1	0.53	2.44	20	PASS	0.54	2.2	20	PASS
ICSA2	ICSA	1	0.026	34.64	15	<PQL	0.036	17.13	15	<PQL
ICSAB2	ICSAB	1	19.44	1.44	15	PASS	23.8	0.38	15	PASS
N020230-011B	SAMP	5	0.05	11.49	15	PASS	1.91	0.82	15	PASS
N020230-011B-PS	PS	1	8.78	2.34	15	PASS	20.52	0.28	15	PASS
N020230-011B-MS	MS	1	8.98	4.62	15	PASS	20.59	0.78	15	PASS
N020230-011B-MSD	MSD	1	9.016	1.46	15	PASS	20.43	0.8	15	PASS
N020230-012B	SAMP	1	0.43	12.045	15	PASS	17.12	1.19	15	PASS
N020228-002B	SAMP	1	1.52	3.59	15	PASS	5.42	1.72	15	PASS
N020228-003B	SAMP	1	1.68	6.1	15	PASS	5.68	1.26	15	PASS
N020228-004B	SAMP	1	1.68	9.0091	15	PASS	5.38	1.038	15	PASS
N020228-005B	SAMP	1	1.61	8.49	15	PASS	5.34	0.54	15	PASS
N020228-006B	SAMP	1	1.55	8.21	15	PASS	5.44	1.63	15	PASS
CCV5	CCV	1	20.6	0.87	15	PASS	20.31	0.4	15	PASS
CCB5	CCB	1	0.0063	73.57	15	<PQL	0.038	6.18	15	PASS

PERCENT RSD SUMMARY: 160707B

Instrument ID: ICPMS-02

Sample Name	Type	DF	78 Se [1]				95 Mo [2]			
			Conc. [ppb]	RSD	Criteria	Comment	Conc. [ppb]	RSD	Criteria	Comment
N020228-007B	SAMP	1	1.57	3.25	15	PASS	5.14	0.68	15	PASS
N020228-008B	SAMP	1	1.51	1.73	15	PASS	5.34	0.055	15	PASS
N020228-009B	SAMP	1	1.54	8.32	15	PASS	5.5	1.085	15	PASS
N020228-010B	SAMP	1	1.38	5.24	15	PASS	5.5	0.77	15	PASS
N020228-011B	SAMP	1	1.25	9.049	15	PASS	5.6	0.1	15	PASS
N020228-012B	SAMP	1	1.6	2.38	15	PASS	5.24	1.58	15	PASS
N020228-013B	SAMP	1	1.53	6.15	15	PASS	5.33	1.47	15	PASS
N020229-001B	SAMP	1	0.037	52.94	15	<PQL	15.88	1.049	15	PASS
N020229-001B-MS	MS	1	9.25	1.88	15	PASS	27.59	0.44	15	PASS
N020229-002B	SAMP	1	4.02	3.98	15	PASS	24.83	0.58	15	PASS
CCV6	CCV	1	20.94	2.98	15	PASS	20.23	0.88	15	PASS
CCB6	CCB	1	0.0067	74.45	15	<PQL	0.045	19.11	15	<PQL
N020229-003B	SAMP	1	0.74	3.78	15	PASS	13.88	1.047	15	PASS
N020230-011B	SAMP	25	0.016	20.68	15	<PQL	0.38	3.38	15	PASS
N020230-011B-PS	PS	5	2.21	2.41	15	PASS	3.97	0.5	15	PASS
N020230-011B-MS	MS	5	2.17	2.051	15	PASS	4.024	0.26	15	PASS
N020230-011B-MSD	MSD	5	2.18	4.68	15	PASS	4.0049	0.24	15	PASS
N020229-001B	SAMP	5	0.013	61.39	15	<PQL	3.021	2.39	15	PASS
N020229-001B-MS	MS	5	2	2.41	15	PASS	5.27	1.087	15	PASS
N020229-002B	SAMP	5	0.88	11.071	15	PASS	4.72	1.027	15	PASS
N020229-003B	SAMP	5	0.17	24.29	15	<PQL	2.64	0.66	15	PASS
N020229-003B	SAMP	25	0.045	23.48	15	<PQL	0.51	1.52	15	PASS
~~CCV8~~ CCV7	CCV	1	20.69	0.35	15	PASS	20.34	0.97	15	PASS
~~CCB6~~ CCB7	CCB	1	0.0057	58.14	15	<PQL	0.034	10.65	15	PASS
LLCCV2	CCV2	1	0.59	7.49	20	PASS	0.54	1.94	20	PASS
ICSA3	ICSA	1	0.026	44.049	15	<PQL	0.035	23.72	15	<PQL
ICSAB3	ICSAB	1	19.65	0.69	15	PASS	23.68	0.31	15	PASS

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ANALYSIS RUN LOG

INJECTION LOG: 160707B

Instrument ID: ICPMS-02

Data File	Sample Name	Type	DF	Acq. Date-Time
B0707001.D	RINSE	RINSE	1	07/07/16 8:14 PM
B0707002.D	Cal Blank	IBLK	1	07/07/16 8:20 PM
B0707003.D	Std1-0.1/1 ppb	ICAL	1	07/07/16 8:26 PM
B0707004.D	Std2-0.5/5 ppb	ICAL	1	07/07/16 8:31 PM
B0707005.D	Std3-5/50 ppb	ICAL	1	07/07/16 8:37 PM
B0707006.D	Std4-10/100 ppb	ICAL	1	07/07/16 8:42 PM
B0707007.D	Std5-20/200 ppb	ICAL	1	07/07/16 8:48 PM
B0707008.D	Std6-40/400 ppb	ICAL	1	07/07/16 8:53 PM
B0707009.D	Std7-100/1000 ppb	ICAL	1	07/07/16 8:59 PM
B0707010.D	Std8-200/2000 ppb	ICAL	1	07/07/16 9:04 PM
B0707011.D	ICV	ICV	1	07/07/16 9:10 PM
B0707012.D	ICB	ICB	1	07/07/16 9:15 PM
B0707013.D	LLICV	CCV1	1	07/07/16 9:20 PM
B0707014.D	ICSA1	ICSA	1	07/07/16 9:26 PM
B0707015.D	ICSAB1	ICSAB	1	07/07/16 9:32 PM
B0707016.D	LLICV	CCV1	1	07/07/16 9:37 PM
B0707017.D	MB-58933	MBLK	1	07/07/16 9:43 PM
B0707018.D	LCS-58933	LCS	1	07/07/16 9:48 PM
B0707019.D	N020231-001B	SAMP	1	07/07/16 9:54 PM
B0707020.D	N020231-001B	SAMP	5	07/07/16 9:59 PM
B0707021.D	N020231-001B-PS	PS	1	07/07/16 10:05 PM
B0707022.D	N020231-001B-MS	MS	1	07/07/16 10:11 PM
B0707023.D	N020231-001B-MSD	MSD	1	07/07/16 10:16 PM
B0707024.D	N020231-002B	SAMP	1	07/07/16 10:22 PM
B0707025.D	N020231-003B	SAMP	1	07/07/16 10:27 PM
B0707026.D	N020231-004B	SAMP	1	07/07/16 10:33 PM
B0707027.D	CCV1	CCV	1	07/07/16 10:38 PM
B0707028.D	CCB1	CCB	1	07/07/16 10:44 PM
B0707029.D	MB-58933	MBLK	1	07/07/16 10:49 PM
B0707030.D	LCS-58933	LCS	1	07/07/16 10:55 PM
B0707031.D	N020231-001B	SAMP	1	07/07/16 11:00 PM
B0707032.D	N020231-001B	SAMP	5	07/07/16 11:06 PM
B0707033.D	N020231-001B-PS	PS	1	07/07/16 11:11 PM
B0707034.D	N020231-001B-MS	MS	1	07/07/16 11:17 PM
B0707035.D	N020231-001B-MSD	MSD	1	07/07/16 11:23 PM
B0707036.D	N020231-002B	SAMP	1	07/07/16 11:28 PM
B0707037.D	N020231-003B	SAMP	1	07/07/16 11:34 PM
B0707038.D	N020231-004B	SAMP	1	07/07/16 11:39 PM
B0707039.D	CCV2	CCV	1	07/07/16 11:45 PM
B0707040.D	CCB2	CCB	1	07/07/16 11:50 PM
B0707041.D	N020231-005B	SAMP	1	07/07/16 11:56 PM
B0707042.D	N020231-006B	SAMP	1	07/08/16 12:01 AM

INJECTION LOG: 160707B

Instrument ID: ICPMS-02

Data File	Sample Name	Type	DF	Acq. Date-Time
B0707043.D	N020231-007B	SAMP	1	07/08/16 12:07 AM
B0707044.D	N020231-008B	SAMP	1	07/08/16 12:12 AM
B0707045.D	N020231-009B	SAMP	1	07/08/16 12:18 AM
B0707046.D	N020231-010B	SAMP	1	07/08/16 12:24 AM
B0707047.D	N020231-011B	SAMP	1	07/08/16 12:29 AM
B0707048.D	N020231-011B-MS	MS	1	07/08/16 12:35 AM
B0707049.D	N020230-001B	SAMP	1	07/08/16 12:40 AM
B0707050.D	N020230-002B	SAMP	1	07/08/16 12:46 AM
B0707051.D	CCV3	CCV	1	07/08/16 12:51 AM
B0707052.D	CCB3	CCB	1	07/08/16 12:57 AM
B0707053.D	N020230-003B	SAMP	1	07/08/16 1:02 AM
B0707054.D	N020230-004B	SAMP	1	07/08/16 1:08 AM
B0707055.D	N020230-006B	SAMP	1	07/08/16 1:13 AM
B0707056.D	N020230-007B	SAMP	1	07/08/16 1:19 AM
B0707057.D	N020230-008B	SAMP	1	07/08/16 1:24 AM
B0707058.D	N020230-009B	SAMP	1	07/08/16 1:30 AM
B0707059.D	N020230-010B	SAMP	1	07/08/16 1:36 AM
B0707060.D	MB-58934	MBLK	1	07/08/16 1:41 AM
B0707061.D	LCS-58934	LCS	1	07/08/16 1:47 AM
B0707062.D	N020230-011B	SAMP	1	07/08/16 1:52 AM
B0707063.D	CCV4	CCV	1	07/08/16 1:58 AM
B0707064.D	CCB4	CCB	1	07/08/16 2:03 AM
B0707065.D	LLCCV1	CCV2	1	07/08/16 2:09 AM
B0707066.D	ICSA2	ICSA	1	07/08/16 2:14 AM
B0707067.D	ICSAB2	ICSAB	1	07/08/16 2:20 AM
B0707068.D	N020230-011B	SAMP	5	07/08/16 2:25 AM
B0707069.D	N020230-011B-PS	PS	1	07/08/16 2:31 AM
B0707070.D	N020230-011B-MS	MS	1	07/08/16 2:36 AM
B0707071.D	N020230-011B-MSD	MSD	1	07/08/16 2:42 AM
B0707072.D	N020230-012B	SAMP	1	07/08/16 2:48 AM
B0707073.D	N020228-002B	SAMP	1	07/08/16 2:53 AM
B0707074.D	N020228-003B	SAMP	1	07/08/16 2:59 AM
B0707075.D	N020228-004B	SAMP	1	07/08/16 3:04 AM
B0707076.D	N020228-005B	SAMP	1	07/08/16 3:10 AM
B0707077.D	N020228-006B	SAMP	1	07/08/16 3:15 AM
B0707078.D	CCV5	CCV	1	07/08/16 3:21 AM
B0707079.D	CCB5	CCB	1	07/08/16 3:27 AM
B0707080.D	N020228-007B	SAMP	1	07/08/16 3:32 AM
B0707081.D	N020228-008B	SAMP	1	07/08/16 3:38 AM
B0707082.D	N020228-009B	SAMP	1	07/08/16 3:43 AM
B0707083.D	N020228-010B	SAMP	1	07/08/16 3:49 AM
B0707084.D	N020228-011B	SAMP	1	07/08/16 3:54 AM

INJECTION LOG: 160707B

Instrument ID: ICPMS-02

Data File	Sample Name	Type	DF	Acq. Date-Time
B0707085.D	N020228-012B	SAMP	1	07/08/16 4:00 AM
B0707086.D	N020228-013B	SAMP	1	07/08/16 4:05 AM
B0707087.D	N020229-001B	SAMP	1	07/08/16 4:11 AM
B0707088.D	N020229-001B-MS	MS	1	07/08/16 4:16 AM
B0707089.D	N020229-002B	SAMP	1	07/08/16 4:22 AM
B0707090.D	CCV6	CCV	1	07/08/16 4:28 AM
B0707091.D	CCB6	CCB	1	07/08/16 4:33 AM
B0707092.D	N020229-003B	SAMP	1	07/08/16 4:39 AM
B0707093.D	N020230-011B	SAMP	25	07/08/16 4:44 AM
B0707094.D	N020230-011B-PS	PS	5	07/08/16 4:50 AM
B0707095.D	N020230-011B-MS	MS	5	07/08/16 4:55 AM
B0707096.D	N020230-011B-MSD	MSD	5	07/08/16 5:01 AM
B0707097.D	N020229-001B	SAMP	5	07/08/16 5:06 AM
B0707098.D	N020229-001B-MS	MS	5	07/08/16 5:12 AM
B0707099.D	N020229-002B	SAMP	5	07/08/16 5:18 AM
B0707100.D	N020229-003B	SAMP	5	07/08/16 5:23 AM
B0707101.D	N020229-003B	SAMP	25	07/08/16 5:29 AM
B0707102.D	~~CCV8~~ CCV7	CCV	1	07/08/16 5:34 AM
B0707103.D	~~CCB8~~ CCB7	CCB	1	07/08/16 5:40 AM
B0707104.D	LLCCV2	CCV2	1	07/08/16 5:45 AM
B0707105.D	ICSA3	ICSA	1	07/08/16 5:51 AM
B0707106.D	ICSAB3	ICSAB	1	07/08/16 5:56 AM
B0707107.D	RINSE	RINSE	1	07/08/16 6:02 AM
B0707108.D	RINSE	RINSE	1	07/08/16 6:07 AM

7/21/2016

SAMPLE PREPARATION LOG

ASSET Laboratories

PREP BATCH REPORT

Prep Start Date: **7/7/2016 2:30:00 P**
Prep End Date: **7/7/2016 7:00:00 P**
Prep Batch **58934** Prep Code: **3010_W_MSDI**

Reviewed/ Date: 7/21/2016
Initials/ Date: 7/21/2016
Technician **Claire Ignacio**

Prep Factor Units	Temp. (°C):	Location:
mL / mL	**94.6**	**02-22**

Sample ID	Matrix	pH	SampAmt	3 Replicates	Sol Added	Sol Recov	Fin Vol	factor	Clean Up Code	TURB Check
LCS-58934	Aqueous		25	☐	0	0	25	1.000		
MB-58934	Aqueous		25	☐	0	0	25	1.000		
N020228-002B	Groundwater	<2	25	☐	0	0	25	1.000		
N020228-003B	Groundwater	<2	25	☐	0	0	25	1.000		
N020228-004B	Groundwater	<2	25	☐	0	0	25	1.000		
N020228-005B	Groundwater	<2	25	☐	0	0	25	1.000		
N020228-006B	Groundwater	<2	25	☐	0	0	25	1.000		
N020228-007B	Groundwater	<2	25	☐	0	0	25	1.000		
N020228-008B	Groundwater	<2	25	☐	0	0	25	1.000		
N020228-009B	Groundwater	<2	25	☐	0	0	25	1.000		
N020228-010B	Groundwater	<2	25	☐	0	0	25	1.000		
N020228-011B	Groundwater	<2	25	☐	0	0	25	1.000		
N020228-012B	Groundwater	<2	25	☐	0	0	25	1.000		
N020228-013B	Groundwater	<2	25	☐	0	0	25	1.000		

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

Number	Reagent Name
8441	HYDROCHLORIC ACID
8442	NITRIC ACID

Spk ID	Spike Name	SampType	AmtAdd
2MWST-160201	ICV/MS/MSD/LCS/LCSD Solution B		0.25
2MWST-160606	ICV/MS/MSD/LCS/LCSD Solution A		0.25
2MWST-160606	ICV/MS/MSD/LCS/LCSD Solution C		0.25
2MWST-160606	ICV/MS/MSD/LCS/LCSD Solution D		0.25

ASSET Laboratories

PREP BATCH REPORT

Prep Start Date: **7/7/2016 2:30:00 P**
Prep End Date: **7/7/2016 7:00:00 P**
Prep Batch **58934** Prep Code: **3010_W_MSDI**

Reviewed/ Date: 7/21/2016
Initials/ Date: 7/21/2016
Technician **Claire Ignacio**

Prep Factor Units	Temp. (°C):	Location:
mL / mL	**94.6**	**02-22**

Sample ID	Matrix	pH	SampAmt	3 Replicates	Sol Added	Sol Recov	Fin Vol	factor	Clean Up Code	TURB Check
N020229-001B	Groundwater	<2	25	☐	0	0	25	1.000		
N020229-001B-MS	Groundwater	<2	25	☐	0	0	25	1.000		
N020229-002B	Groundwater	<2	25	☐	0	0	25	1.000		
N020229-003B	Groundwater	<2	25	☐	0	0	25	1.000		
N020230-011B	Groundwater	<2	25	☐	0	0	25	1.000		
N020230-011B-MS	Groundwater	<2	25	☐	0	0	25	1.000		
N020230-011B-MS	Groundwater	<2	25	☐	0	0	25	1.000		
N020230-012B	Groundwater	<2	25	☐	0	0	25	1.000		

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

Number	Reagent Name
8441	HYDROCHLORIC ACID
8442	NITRIC ACID

Spk ID	Spike Name	SampType	AmtAdd
2MWST-160201	ICV/MS/MSD/LCS/LCSD Solution B		0.25
2MWST-160606	ICV/MS/MSD/LCS/LCSD Solution A		0.25
2MWST-160606	ICV/MS/MSD/LCS/LCSD Solution C		0.25
2MWST-160606	ICV/MS/MSD/LCS/LCSD Solution D		0.25

INSTRUMENT TUNING CHECK

QC Tune Report

Data File: C:\ICPMH\1\7500\QCTUNE.D
Date Acquired: 7 Jul 2016 08:57:08 am
Operator:
Misc Info:
Vial Number: 0
Current Method: C:\ICPMH\1\METHODS\TuneCHK.m

Minimum Response(CPS)

Element		Actual	Required	Flag
9	Be	247487.00	0.00	
24	Mg	993266.00	0.00	
25	Mg	132225.00	0.00	
26	Mg	157331.00	0.00	
59	Co	1755290.00	0.00	
115	In	2662140.00	0.00	
206	Pb	684810.00	0.00	
207	Pb	596858.00	0.00	
208	Pb	1463320.00	0.00	

RSD (%)

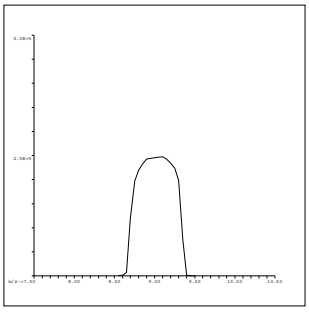
Element		Actual	Required	Flag
9	Be	0.42	5.00	
24	Mg	0.53	5.00	
25	Mg	0.34	5.00	
26	Mg	0.38	5.00	
59	Co	1.68	5.00	
115	In	0.42	5.00	
206	Pb	0.54	5.00	
207	Pb	0.75	5.00	
208	Pb	1.16	5.00	

Ion Ratio

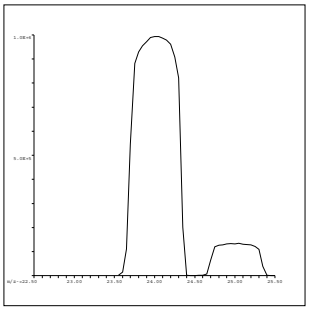
Element		Actual	Required	Flag
9	Be			
24	Mg			
25	Mg			
26	Mg			
59	Co			
115	In			
206	Pb			
207	Pb			
208	Pb			

Maximum Bkg. Count(CPS)

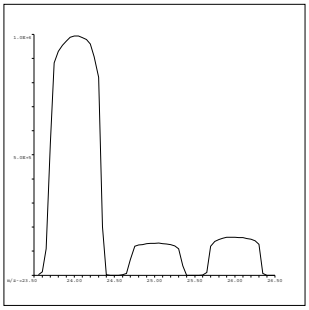
Element	Actual	Required	Flag



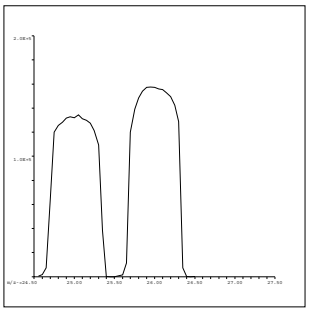
9 Be
Mass Calib.
Actual: 9.05
Required: 8.90-9.10
Flag:
Peak Width
Actual: 0.65
Required: 0.75
Flag:



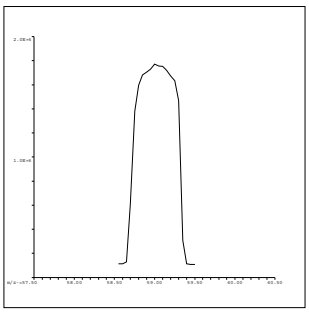
24 Mg
Mass Calib.
Actual: 24.05
Required: 23.90-24.10
Flag:
Peak Width
Actual: 0.70
Required: 0.75
Flag:



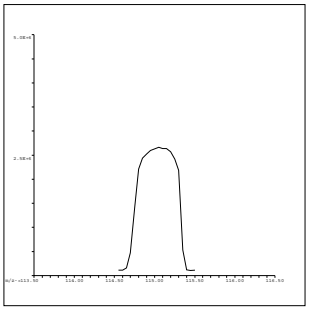
25 Mg
Mass Calib.
Actual: 25.00
Required: 24.90-25.10
Flag:
Peak Width
Actual: 0.70
Required: 0.75
Flag:



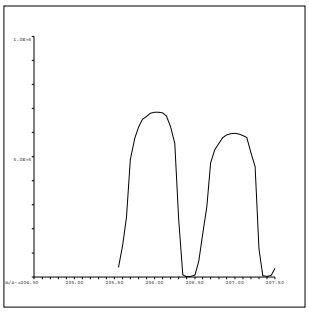
26 Mg
Mass Calib.
Actual: 26.00
Required: 25.90-26.10
Flag:
Peak Width
Actual: 0.65
Required: 0.75
Flag:



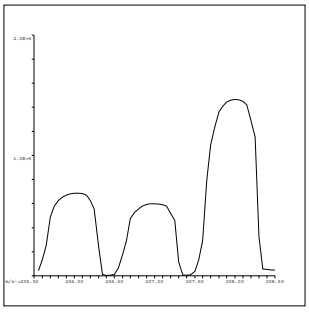
59 Co
Mass Calib.
Actual: 59.05
Required: 58.90-59.10
Flag:
Peak Width
Actual: 0.65
Required: 0.75
Flag:



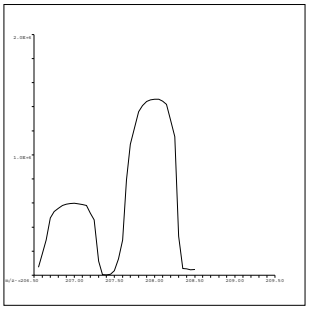
115 In
Mass Calib.
Actual: 115.05
Required: 114.90-115.10
Flag:
Peak Width
Actual: 0.65
Required: 0.75
Flag:



206 Pb
Mass Calib.
Actual: 206.05
Required: 205.90-206.10
Flag:
Peak Width
Actual: 0.70
Required: 0.75
Flag:



207 Pb
Mass Calib.
Actual: 207.00
Required: 206.90-207.10
Flag:
Peak Width
Actual: 0.75
Required: 0.75
Flag:



208 Pb
Mass Calib.
Actual: 208.00
Required: 207.90-208.10
Flag:
Peak Width
Actual: 0.70
Required: 0.75
Flag:

QC Tune Result:Pass

INITIAL CALIBRATION DATA SUMMARY

INITIAL CALIBRATION SUMMARY: 160707B

Instrument ID: ICPMS-02

Analyte	Data File	B0707002.D	B0707003.D	B0707004.D	B0707005.D	B0707006.D	B0707007.D	B0707008.D	B0707009.D	B0707010.D	
	Acq. Date-Time	07/07/2016 08:20 PM	07/07/2016 08:26 PM	07/07/2016 08:31 PM	07/07/2016 08:37 PM	07/07/2016 08:42 PM	07/07/2016 08:48 PM	07/07/2016 08:53 PM	07/07/2016 08:59 PM	07/07/2016 09:04 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	R
45 Sc (ISTD) [2]	CPS	318490.6		325036.4	320907.4	321311.2	319065.2	322668.5	317505.2	316770.7	
55 Mn [2]	CPS	594.5		7567.8	69168.6	137185.2	271852.5	542520.2	1333232.7	2625330.5	1.0000
52 Cr [2]	CPS	1176.6		14153	126646.6	252270.6	497170.1	997374.5	2428099.8	4765367.2	1.0000
72 Ge (ISTD) [1]	CPS	292976.9		294746.9	292049.3	288225.6	287182	287813.5	282596.7	278702.5	
78 Se [1]	CPS	1.1		587.8	6291.5	12203.9	24736.4	49877.8	123382.6	238913.8	1.0000
72 Ge (ISTD) [2]	CPS	248995.2	259085	254748.4	250510.3	248940.2	246318.9	246794.6	242663.8	239558.8	
75 As [2]	CPS	56.9	366.7	1500.1	14387.8	29343.5	57093	113747.8	282080	556498.2	1.0000
103 Rh (ISTD) [2]	CPS	6266238		6427112.5	6327854.7	6371835.9	6292842	6280402.3	6205673.7	6136853.7	
95 Mo [2]	CPS	134.5		7884.5	75644.4	151663.2	299803.5	605975.2	1457871.9	2901194.4	1.0000
159 Tb (ISTD) [3]	CPS	18280523.6		18658753.5	18560354.3	18549327.8	18535475.6	18888509	18777060.8	18966483.5	
137 Ba [3]	CPS	1956.7		18391.9	168685.6	333108.6	661401	1341526.9	3239444.5	6481191.1	1.0000

Standard Code
ICAL: 2MSST-151207C
ICAL: 2MSST-151207D
ICAL: 2MWST-160606G
IS Mix: 2MWST-160606A

Calibration Acceptance Criteria: > 0.995 Correlation

INITIAL CALIBRATION AND CONTINUING CALIBRATION VERIFICATION SUMMARY

CLIENT: ARCADIS U.S., Inc. - California
Work Order: N020228
Project: PG&E Topock - RMP, RC000753.0801

ANALYTICAL QC SUMMARY REPORT

TestCode: 6020_DIS

Sample ID: **ICV** SampType: **ICV** TestCode: **6020_DIS** Units: **µg/L** Prep Date: RunNo: **109344**
Client ID: **ICV** Batch ID: **R109344** TestNo: **EPA 6020** Analysis Date: **7/7/2016** SeqNo: **2367739**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	9.999	0.10	10.00	0	100	90	110				
Barium	100.312	1.0	100.0	0	100	90	110				
Manganese	98.212	0.50	100.0	0	98.2	90	110				
Molybdenum	10.352	0.50	10.00	0	104	90	110				
Selenium	10.183	0.50	10.00	0	102	90	110				

Sample ID: **LLICV** SampType: **CCV1** TestCode: **6020_DIS** Units: **µg/L** Prep Date: RunNo: **109344**
Client ID: **ZZZZZZ** Batch ID: **R109344** TestNo: **EPA 6020** Analysis Date: **7/7/2016** SeqNo: **2367744**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	0.117	0.10	0.1000	0	117	80	120				
Barium	1.108	1.0	1.000	0	111	80	120				
Manganese	0.561	0.50	0.5000	0	112	80	120				
Molybdenum	0.579	0.50	0.5000	0	116	80	120				
Selenium	0.524	0.50	0.5000	0	105	80	120				

Sample ID: **CCV1** SampType: **CCV** TestCode: **6020_DIS** Units: **µg/L** Prep Date: RunNo: **109344**
Client ID: **CCV** Batch ID: **R109344** TestNo: **EPA 6020** Analysis Date: **7/7/2016** SeqNo: **2367755**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	19.862	0.10	20.00	0	99.3	90	110				
Barium	20.527	1.0	20.00	0	103	90	110				
Manganese	20.607	0.50	20.00	0	103	90	110				
Molybdenum	20.187	0.50	20.00	0	101	90	110				
Selenium	20.393	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

CLIENT: ARCADIS U.S., Inc. - California
Work Order: N020228
Project: PG&E Topock - RMP, RC000753.0801

ANALYTICAL QC SUMMARY REPORT

TestCode: 6020_DIS

Sample ID: **CCV2** SampType: **CCV** TestCode: **6020_DIS** Units: **µg/L** Prep Date: RunNo: **109344**
Client ID: **CCV** Batch ID: **R109344** TestNo: **EPA 6020** Analysis Date: **7/7/2016** SeqNo: **2367767**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	19.832	0.10	20.00	0	99.2	90	110				
Barium	20.414	1.0	20.00	0	102	90	110				
Manganese	20.723	0.50	20.00	0	104	90	110				
Molybdenum	20.123	0.50	20.00	0	101	90	110				
Selenium	20.305	0.50	20.00	0	102	90	110				

Sample ID: **CCV3** SampType: **CCV** TestCode: **6020_DIS** Units: **µg/L** Prep Date: RunNo: **109344**
Client ID: **CCV** Batch ID: **R109344** TestNo: **EPA 6020** Analysis Date: **7/8/2016** SeqNo: **2367779**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	19.673	0.10	20.00	0	98.4	90	110				
Barium	20.233	1.0	20.00	0	101	90	110				
Manganese	20.671	0.50	20.00	0	103	90	110				
Molybdenum	20.215	0.50	20.00	0	101	90	110				
Selenium	20.784	0.50	20.00	0	104	90	110				

Sample ID: **CCV4** SampType: **CCV** TestCode: **6020_DIS** Units: **µg/L** Prep Date: RunNo: **109344**
Client ID: **CCV** Batch ID: **R109344** TestNo: **EPA 6020** Analysis Date: **7/8/2016** SeqNo: **2367791**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	19.743	0.10	20.00	0	98.7	90	110				
Barium	20.421	1.0	20.00	0	102	90	110				
Manganese	20.691	0.50	20.00	0	103	90	110				
Molybdenum	20.151	0.50	20.00	0	101	90	110				
Selenium	20.351	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

CLIENT: ARCADIS U.S., Inc. - California
Work Order: N020228
Project: PG&E Topock - RMP, RC000753.0801

ANALYTICAL QC SUMMARY REPORT

TestCode: 6020_DIS

Sample ID: **LLCCV1** SampType: **CCV2** TestCode: **6020_DIS** Units: **µg/L** Prep Date: RunNo: **109344**
Client ID: **ZZZZZZ** Batch ID: **R109344** TestNo: **EPA 6020** Analysis Date: **7/8/2016** SeqNo: **2367793**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	0.109	0.10	0.1000	0	109	70	130				
Barium	1.110	1.0	1.000	0	111	70	130				
Manganese	0.560	0.50	0.5000	0	112	70	130				
Molybdenum	0.539	0.50	0.5000	0	108	70	130				
Selenium	0.530	0.50	0.5000	0	106	70	130				

Sample ID: **CCV5** SampType: **CCV** TestCode: **6020_DIS** Units: **µg/L** Prep Date: RunNo: **109344**
Client ID: **CCV** Batch ID: **R109344** TestNo: **EPA 6020** Analysis Date: **7/8/2016** SeqNo: **2367806**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	19.964	0.10	20.00	0	99.8	90	110				
Barium	20.711	1.0	20.00	0	104	90	110				
Manganese	20.524	0.50	20.00	0	103	90	110				
Molybdenum	20.306	0.50	20.00	0	102	90	110				
Selenium	20.604	0.50	20.00	0	103	90	110				

Sample ID: **CCV6** SampType: **CCV** TestCode: **6020_DIS** Units: **µg/L** Prep Date: RunNo: **109344**
Client ID: **CCV** Batch ID: **R109344** TestNo: **EPA 6020** Analysis Date: **7/8/2016** SeqNo: **2367818**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	19.742	0.10	20.00	0	98.7	90	110				
Barium	20.832	1.0	20.00	0	104	90	110				
Manganese	20.411	0.50	20.00	0	102	90	110				
Molybdenum	20.227	0.50	20.00	0	101	90	110				
Selenium	20.940	0.50	20.00	0	105	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: N020228
Project: PG&E Topock - RMP, RC000753.0801

ANALYTICAL QC SUMMARY REPORT

TestCode: 6020_DIS

Sample ID: **CCV7**	SampType: **CCV**	TestCode: **6020_DIS**	Units: **µg/L**	Prep Date:	RunNo: **109344**
Client ID: **CCV**	Batch ID: **R109344**	TestNo: **EPA 6020**		Analysis Date: **7/8/2016**	SeqNo: **2367830**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	19.654	0.10	20.00	0	98.3	90	110				
Barium	20.814	1.0	20.00	0	104	90	110				
Manganese	20.603	0.50	20.00	0	103	90	110				
Molybdenum	20.342	0.50	20.00	0	102	90	110				
Selenium	20.695	0.50	20.00	0	103	90	110				

Sample ID: **LLCCV2**	SampType: **CCV2**	TestCode: **6020_DIS**	Units: **µg/L**	Prep Date:	RunNo: **109344**
Client ID: **ZZZZZZ**	Batch ID: **R109344**	TestNo: **EPA 6020**		Analysis Date: **7/8/2016**	SeqNo: **2367832**

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	97.0	70	130				
Barium	1.105	1.0	1.000	0	111	70	130				
Manganese	0.555	0.50	0.5000	0	111	70	130				
Molybdenum	0.542	0.50	0.5000	0	108	70	130				
Selenium	0.587	0.50	0.5000	0	117	70	130				

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis 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: N020228
Project: PG&E Topock - RMP, RC000753.0801

ANALYTICAL QC SUMMARY REPORT

TestCode: 6020DIS_CrPGE

Sample ID: **ICV**	SampType: **ICV**	TestCode: **6020DIS_CrP**	Units: **µg/L**	Prep Date:	RunNo: **109332**
Client ID: **ICV**	Batch ID: **R109332**	TestNo: **EPA 6020**		Analysis Date: **7/7/2016**	SeqNo: **2367164**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium	10.039	1.0	10.00	0	100	90	110				

Sample ID: **LLICV**	SampType: **CCV1**	TestCode: **6020DIS_CrP**	Units: **µg/L**	Prep Date:	RunNo: **109332**
Client ID: **ZZZZZZ**	Batch ID: **R109332**	TestNo: **EPA 6020**		Analysis Date: **7/7/2016**	SeqNo: **2367169**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium	1.104	1.0	1.000	0	110	80	120				

Sample ID: **CCV1**	SampType: **CCV**	TestCode: **6020DIS_CrP**	Units: **µg/L**	Prep Date:	RunNo: **109332**
Client ID: **CCV**	Batch ID: **R109332**	TestNo: **EPA 6020**		Analysis Date: **7/7/2016**	SeqNo: **2367180**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium	20.656	1.0	20.00	0	103	90	110				

Sample ID: **CCV2**	SampType: **CCV**	TestCode: **6020DIS_CrP**	Units: **µg/L**	Prep Date:	RunNo: **109332**
Client ID: **CCV**	Batch ID: **R109332**	TestNo: **EPA 6020**		Analysis Date: **7/7/2016**	SeqNo: **2367192**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium	21.050	1.0	20.00	0	105	90	110				

Sample ID: **CCV3**	SampType: **CCV**	TestCode: **6020DIS_CrP**	Units: **µg/L**	Prep Date:	RunNo: **109332**
Client ID: **CCV**	Batch ID: **R109332**	TestNo: **EPA 6020**		Analysis Date: **7/8/2016**	SeqNo: **2367204**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium	20.964	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
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: ARCADIS U.S., Inc. - California
Work Order: N020228
Project: PG&E Topock - RMP, RC000753.0801

ANALYTICAL QC SUMMARY REPORT

TestCode: 6020DIS_CrPGE

Sample ID: **CCV4**	SampType: **CCV**	TestCode: **6020DIS_CrP**	Units: **µg/L**	Prep Date:	RunNo: **109332**
Client ID: **CCV**	Batch ID: **R109332**	TestNo: **EPA 6020**		Analysis Date: **7/8/2016**	SeqNo: **2367216**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium	20.808	1.0	20.00	0	104	90	110				

Sample ID: **LLCCV1**	SampType: **CCV2**	TestCode: **6020DIS_CrP**	Units: **µg/L**	Prep Date:	RunNo: **109332**
Client ID: **ZZZZZZ**	Batch ID: **R109332**	TestNo: **EPA 6020**		Analysis Date: **7/8/2016**	SeqNo: **2367218**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium	1.117	1.0	1.000	0	112	70	130				

Sample ID: **CCV5**	SampType: **CCV**	TestCode: **6020DIS_CrP**	Units: **µg/L**	Prep Date:	RunNo: **109332**
Client ID: **CCV**	Batch ID: **R109332**	TestNo: **EPA 6020**		Analysis Date: **7/8/2016**	SeqNo: **2367710**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium	20.682	1.0	20.00	0	103	90	110				

Sample ID: **CCV6**	SampType: **CCV**	TestCode: **6020DIS_CrP**	Units: **µg/L**	Prep Date:	RunNo: **109332**
Client ID: **CCV**	Batch ID: **R109332**	TestNo: **EPA 6020**		Analysis Date: **7/8/2016**	SeqNo: **2367722**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium	21.213	1.0	20.00	0	106	90	110				

Sample ID: **CCV7**	SampType: **CCV**	TestCode: **6020DIS_CrP**	Units: **µg/L**	Prep Date:	RunNo: **109332**
Client ID: **CCV**	Batch ID: **R109332**	TestNo: **EPA 6020**		Analysis Date: **7/8/2016**	SeqNo: **2367734**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium	20.876	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: N020228
Project: PG&E Topock - RMP, RC000753.0801

ANALYTICAL QC SUMMARY REPORT

TestCode: 6020DIS_CrPGE

Sample ID: **LLCCV2**	SampType: **CCV2**	TestCode: **6020DIS_CrP**	Units: **µg/L**	Prep Date:	RunNo: **109332**
Client ID: **ZZZZZZ**	Batch ID: **R109332**	TestNo: **EPA 6020**		Analysis Date: **7/8/2016**	SeqNo: **2367736**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium	1.133	1.0	1.000	0	113	70	130				

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis 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

CLIENT: ARCADIS U.S., Inc. - California
Work Order: N020228
Project: PG&E Topock - RMP, RC000753.0801

ANALYTICAL QC SUMMARY REPORT

TestCode: 6020_DIS

Sample ID: **ICB**	SampType: **ICB**	TestCode: **6020_DIS**	Units: **µg/L**	Prep Date:	RunNo: **109344**
Client ID: **ICB**	Batch ID: **R109344**	TestNo: **EPA 6020**		Analysis Date: **7/7/2016**	SeqNo: **2367740**

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	0.109	0.50									
Selenium	ND	0.50									

Sample ID: **CCB1**	SampType: **CCB**	TestCode: **6020_DIS**	Units: **µg/L**	Prep Date:	RunNo: **109344**
Client ID: **CCB**	Batch ID: **R109344**	TestNo: **EPA 6020**		Analysis Date: **7/7/2016**	SeqNo: **2367756**

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									
Selenium	ND	0.50									

Sample ID: **CCB2**	SampType: **CCB**	TestCode: **6020_DIS**	Units: **µg/L**	Prep Date:	RunNo: **109344**
Client ID: **CCB**	Batch ID: **R109344**	TestNo: **EPA 6020**		Analysis Date: **7/7/2016**	SeqNo: **2367768**

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	0.043	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
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: ARCADIS U.S., Inc. - California
Work Order: N020228
Project: PG&E Topock - RMP, RC000753.0801

ANALYTICAL QC SUMMARY REPORT

TestCode: 6020_DIS

Sample ID: **CCB3**	SampType: **CCB**	TestCode: **6020_DIS**	Units: **µg/L**	Prep Date:	RunNo: **109344**
Client ID: **CCB**	Batch ID: **R109344**	TestNo: **EPA 6020**		Analysis Date: **7/8/2016**	SeqNo: **2367780**

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	0.058	0.50									
Selenium	ND	0.50									

Sample ID: **CCB4**	SampType: **CCB**	TestCode: **6020_DIS**	Units: **µg/L**	Prep Date:	RunNo: **109344**
Client ID: **CCB**	Batch ID: **R109344**	TestNo: **EPA 6020**		Analysis Date: **7/8/2016**	SeqNo: **2367792**

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	0.040	0.50									
Selenium	ND	0.50									

Sample ID: **CCB5**	SampType: **CCB**	TestCode: **6020_DIS**	Units: **µg/L**	Prep Date:	RunNo: **109344**
Client ID: **CCB**	Batch ID: **R109344**	TestNo: **EPA 6020**		Analysis Date: **7/8/2016**	SeqNo: **2367807**

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									
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
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: ARCADIS U.S., Inc. - California
Work Order: N020228
Project: PG&E Topock - RMP, RC000753.0801

ANALYTICAL QC SUMMARY REPORT

TestCode: 6020_DIS

Sample ID: **CCB6**	SampType: **CCB**	TestCode: **6020_DIS**	Units: **µg/L**	Prep Date:	RunNo: **109344**
Client ID: **CCB**	Batch ID: **R109344**	TestNo: **EPA 6020**		Analysis Date: **7/8/2016**	SeqNo: **2367819**

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	0.045	0.50									
Selenium	ND	0.50									

Sample ID: **CCB7**	SampType: **CCB**	TestCode: **6020_DIS**	Units: **µg/L**	Prep Date:	RunNo: **109344**
Client ID: **CCB**	Batch ID: **R109344**	TestNo: **EPA 6020**		Analysis Date: **7/8/2016**	SeqNo: **2367831**

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									
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
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: ARCADIS U.S., Inc. - California
Work Order: N020228
Project: PG&E Topock - RMP, RC000753.0801

ANALYTICAL QC SUMMARY REPORT

TestCode: 6020DIS_CrPGE

Sample ID: **ICB**	SampType: **ICB**	TestCode: **6020DIS_CrP**	Units: **µg/L**	Prep Date:	RunNo: **109332**
Client ID: **ICB**	Batch ID: **R109332**	TestNo: **EPA 6020**		Analysis Date: **7/7/2016**	SeqNo: **2367165**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium	ND	1.0									

Sample ID: **CCB1**	SampType: **CCB**	TestCode: **6020DIS_CrP**	Units: **µg/L**	Prep Date:	RunNo: **109332**
Client ID: **CCB**	Batch ID: **R109332**	TestNo: **EPA 6020**		Analysis Date: **7/7/2016**	SeqNo: **2367181**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium	ND	1.0									

Sample ID: **CCB2**	SampType: **CCB**	TestCode: **6020DIS_CrP**	Units: **µg/L**	Prep Date:	RunNo: **109332**
Client ID: **CCB**	Batch ID: **R109332**	TestNo: **EPA 6020**		Analysis Date: **7/7/2016**	SeqNo: **2367193**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium	ND	1.0									

Sample ID: **CCB3**	SampType: **CCB**	TestCode: **6020DIS_CrP**	Units: **µg/L**	Prep Date:	RunNo: **109332**
Client ID: **CCB**	Batch ID: **R109332**	TestNo: **EPA 6020**		Analysis Date: **7/8/2016**	SeqNo: **2367205**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium	ND	1.0									

Sample ID: **CCB4**	SampType: **CCB**	TestCode: **6020DIS_CrP**	Units: **µg/L**	Prep Date:	RunNo: **109332**
Client ID: **CCB**	Batch ID: **R109332**	TestNo: **EPA 6020**		Analysis Date: **7/8/2016**	SeqNo: **2367217**

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
- 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: N020228
Project: PG&E Topock - RMP, RC000753.0801

ANALYTICAL QC SUMMARY REPORT

TestCode: 6020DIS_CrPGE

Sample ID: **CCB5**	SampType: **CCB**	TestCode: **6020DIS_CrP**	Units: **µg/L**	Prep Date:	RunNo: **109332**
Client ID: **CCB**	Batch ID: **R109332**	TestNo: **EPA 6020**		Analysis Date: **7/8/2016**	SeqNo: **2367711**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium	ND	1.0									

Sample ID: **CCB6**	SampType: **CCB**	TestCode: **6020DIS_CrP**	Units: **µg/L**	Prep Date:	RunNo: **109332**
Client ID: **CCB**	Batch ID: **R109332**	TestNo: **EPA 6020**		Analysis Date: **7/8/2016**	SeqNo: **2367723**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium	ND	1.0									

Sample ID: **CCB7**	SampType: **CCB**	TestCode: **6020DIS_CrP**	Units: **µg/L**	Prep Date:	RunNo: **109332**
Client ID: **CCB**	Batch ID: **R109332**	TestNo: **EPA 6020**		Analysis Date: **7/8/2016**	SeqNo: **2367735**

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)

CLIENT: ARCADIS U.S., Inc. - California
Work Order: N020228
Project: PG&E Topock - RMP, RC000753.0801

ANALYTICAL QC SUMMARY REPORT

TestCode: 6020_DIS

Sample ID **ICSA1**	SampType: **ICSA**	TestCode: **6020_DIS**	Units: **µg/L**	Prep Date:	RunNo: **109344**
Client ID: **ICSA**	Batch ID: **R109344**	TestNo: **EPA 6020**		Analysis Date: **7/7/2016**	SeqNo: **2367742**

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	0.061	0.50									
Selenium	ND	0.50									

Sample ID **ICSAB1**	SampType: **ICSAB**	TestCode: **6020_DIS**	Units: **µg/L**	Prep Date:	RunNo: **109344**
Client ID: **ICSAB**	Batch ID: **R109344**	TestNo: **EPA 6020**		Analysis Date: **7/7/2016**	SeqNo: **2367743**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	20.372	0.10	20.00	0	102	80	120				
Barium	19.601	1.0	20.00	0	98.0	80	120				
Manganese	17.790	0.50	20.00	0	88.9	80	120				
Molybdenum	23.812	0.50	20.00	0	119	80	120				
Selenium	19.254	0.50	20.00	0	96.3	80	120				

Sample ID **ICSA2**	SampType: **ICSA**	TestCode: **6020_DIS**	Units: **µg/L**	Prep Date:	RunNo: **109344**
Client ID: **ICSA**	Batch ID: **R109344**	TestNo: **EPA 6020**		Analysis Date: **7/8/2016**	SeqNo: **2367794**

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									
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
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: ARCADIS U.S., Inc. - California
Work Order: N020228
Project: PG&E Topock - RMP, RC000753.0801

ANALYTICAL QC SUMMARY REPORT

TestCode: 6020_DIS

Sample ID	ICSAB2	SampType:	ICSAB	TestCode:	6020_DIS	Units:	µg/L	Prep Date:		RunNo:	109344
Client ID:	ICSAB	Batch ID:	R109344	TestNo:	EPA 6020			Analysis Date:	7/8/2016	SeqNo:	2367795

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	20.251	0.10	20.00	0	101	80	120				
Barium	20.057	1.0	20.00	0	100	80	120				
Manganese	17.913	0.50	20.00	0	89.6	80	120				
Molybdenum	23.800	0.50	20.00	0	119	80	120				
Selenium	19.438	0.50	20.00	0	97.2	80	120				

Sample ID	ICSA3	SampType:	ICSA	TestCode:	6020_DIS	Units:	µg/L	Prep Date:		RunNo:	109344
Client ID:	ICSA	Batch ID:	R109344	TestNo:	EPA 6020			Analysis Date:	7/8/2016	SeqNo:	2367833

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									
Selenium	ND	0.50									

Sample ID	ICSAB3	SampType:	ICSAB	TestCode:	6020_DIS	Units:	µg/L	Prep Date:		RunNo:	109344
Client ID:	ICSAB	Batch ID:	R109344	TestNo:	EPA 6020			Analysis Date:	7/8/2016	SeqNo:	2367834

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	20.425	0.10	20.00	0	102	80	120				
Barium	20.272	1.0	20.00	0	101	80	120				
Manganese	17.989	0.50	20.00	0	89.9	80	120				
Molybdenum	23.681	0.50	20.00	0	118	80	120				
Selenium	19.650	0.50	20.00	0	98.3	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: N020228
Project: PG&E Topock - RMP, RC000753.0801

ANALYTICAL QC SUMMARY REPORT

TestCode: 6020DIS_CrPGE

Sample ID **ICSA1**	SampType: **ICSA**	TestCode: **6020DIS_CrP**	Units: **µg/L**	Prep Date:	RunNo: **109332**
Client ID: **ICSA**	Batch ID: **R109332**	TestNo: **EPA 6020**		Analysis Date: **7/7/2016**	SeqNo: **2367167**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium	0.212	1.0									

Sample ID **ICSAB1**	SampType: **ICSAB**	TestCode: **6020DIS_CrP**	Units: **µg/L**	Prep Date:	RunNo: **109332**
Client ID: **ICSAB**	Batch ID: **R109332**	TestNo: **EPA 6020**		Analysis Date: **7/7/2016**	SeqNo: **2367168**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium	20.713	1.0	20.00	0	104	80	120				

Sample ID **ICSA2**	SampType: **ICSA**	TestCode: **6020DIS_CrP**	Units: **µg/L**	Prep Date:	RunNo: **109332**
Client ID: **ICSA**	Batch ID: **R109332**	TestNo: **EPA 6020**		Analysis Date: **7/8/2016**	SeqNo: **2367219**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium	0.220	1.0									

Sample ID **ICSAB2**	SampType: **ICSAB**	TestCode: **6020DIS_CrP**	Units: **µg/L**	Prep Date:	RunNo: **109332**
Client ID: **ICSAB**	Batch ID: **R109332**	TestNo: **EPA 6020**		Analysis Date: **7/8/2016**	SeqNo: **2367220**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium	20.763	1.0	20.00	0	104	80	120				

Sample ID **ICSA3**	SampType: **ICSA**	TestCode: **6020DIS_CrP**	Units: **µg/L**	Prep Date:	RunNo: **109332**
Client ID: **ICSA**	Batch ID: **R109332**	TestNo: **EPA 6020**		Analysis Date: **7/8/2016**	SeqNo: **2367737**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium	0.205	1.0									

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: N020228
Project: PG&E Topock - RMP, RC000753.0801

ANALYTICAL QC SUMMARY REPORT

TestCode: 6020DIS_CrPGE

Sample ID **ICSAB3**	SampType: **ICSAB**	TestCode: **6020DIS_CrP**	Units: **µg/L**	Prep Date:	RunNo: **109332**
Client ID: **ICSAB**	Batch ID: **R109332**	TestNo: **EPA 6020**		Analysis Date: **7/8/2016**	SeqNo: **2367738**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium	20.866	1.0	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
DO	Surrogate Diluted Out		Calculations are based on raw values		

INTERNAL STANDARD SUMMARY

INTERNAL STANDARD: 160707B

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	18280523.6	18280523.6	100	PASS	70-125	318490.6	318490.6	100	PASS	70-125
Std1-0.1/1 ppb	ICAL	1	19061570.7	18280523.6	104.27	PASS	70-125	335169.2	318490.6	105.24	PASS	70-125
Std2-0.5/5 ppb	ICAL	1	18658753.5	18280523.6	102.07	PASS	70-125	325036.4	318490.6	102.06	PASS	70-125
Std3-5/50 ppb	ICAL	1	18560354.3	18280523.6	101.53	PASS	70-125	320907.4	318490.6	100.76	PASS	70-125
Std4-10/100 ppb	ICAL	1	18549327.8	18280523.6	101.47	PASS	70-125	321311.2	318490.6	100.89	PASS	70-125
Std5-20/200 ppb	ICAL	1	18535475.6	18280523.6	101.39	PASS	70-125	319065.2	318490.6	100.18	PASS	70-125
Std6-40/400 ppb	ICAL	1	18888509	18280523.6	103.33	PASS	70-125	322668.5	318490.6	101.31	PASS	70-125
Std7-100/1000 ppb	ICAL	1	18777060.8	18280523.6	102.72	PASS	70-125	317505.2	318490.6	99.69	PASS	70-125
Std8-200/2000 ppb	ICAL	1	18966483.5	18280523.6	103.75	PASS	70-125	316770.7	318490.6	99.46	PASS	70-125
ICV	ICV	1	18356125.4	18280523.6	100.41	PASS	70-125	306499.9	318490.6	96.24	PASS	70-125
ICB	ICB	1	18485946.7	18280523.6	101.12	PASS	70-125	308036	318490.6	96.72	PASS	70-125
LLICV	CCV1	1	14888832.6	18280523.6	81.45	PASS	70-125	234241.4	318490.6	73.55	PASS	70-125
ICSA1	ICSA	1	17417299	18280523.6	95.28	PASS	70-125	317692.5	318490.6	99.75	PASS	70-125
ICSAB1	ICSAB	1	16754272.1	18280523.6	91.65	PASS	70-125	330565.6	318490.6	103.79	PASS	70-125
LLICV	CCV1	1	18575509.4	18280523.6	101.61	PASS	70-125	337419.5	318490.6	105.94	PASS	70-125
CCV1	CCV	1	18309812.2	18280523.6	100.16	PASS	70-125	293809.7	318490.6	92.25	PASS	70-125
CCB1	CCB	1	17857197.5	18280523.6	97.68	PASS	70-125	282915.2	318490.6	88.83	PASS	70-125
CCV2	CCV	1	18481550.8	18280523.6	101.1	PASS	70-125	286193.5	318490.6	89.86	PASS	70-125
CCB2	CCB	1	18014101.4	18280523.6	98.54	PASS	70-125	276125.6	318490.6	86.7	PASS	70-125
CCV3	CCV	1	18572289.7	18280523.6	101.6	PASS	70-125	270189.6	318490.6	84.83	PASS	70-125
CCB3	CCB	1	17892576.1	18280523.6	97.88	PASS	70-125	259612.8	318490.6	81.51	PASS	70-125
MB-58934	MBLK	1	17618953.8	18280523.6	96.38	PASS	70-125	253034.8	318490.6	79.45	PASS	70-125
LCS-58934	LCS	1	17521687.7	18280523.6	95.85	PASS	70-125	255774.2	318490.6	80.31	PASS	70-125
N020230-011B	SAMP	1	17486418.1	18280523.6	95.66	PASS	70-125	270944.2	318490.6	85.071	PASS	70-125
CCV4	CCV	1	18300356.1	18280523.6	100.11	PASS	70-125	268839.5	318490.6	84.41	PASS	70-125
CCB4	CCB	1	17682765.7	18280523.6	96.73	PASS	70-125	259361.7	318490.6	81.43	PASS	70-125
LLCCV1	CCV2	1	17265901	18280523.6	94.45	PASS	70-125	255580.8	318490.6	80.25	PASS	70-125
ICSA2	ICSA	1	16981702.9	18280523.6	92.9	PASS	70-125	285068.2	318490.6	89.51	PASS	70-125
ICSAB2	ICSAB	1	16366830.3	18280523.6	89.53	PASS	70-125	305575.1	318490.6	95.94	PASS	70-125
N020230-011B	SAMP	5	17973873.9	18280523.6	98.32	PASS	70-125	300216.1	318490.6	94.26	PASS	70-125
N020230-011B-PS	PS	1	18346732.1	18280523.6	100.36	PASS	70-125	309196.3	318490.6	97.082	PASS	70-125
N020230-011B-MS	MS	1	18582914.9	18280523.6	101.65	PASS	70-125	306239.5	318490.6	96.15	PASS	70-125
N020230-011B-MSD	MSD	1	18567282.6	18280523.6	101.57	PASS	70-125	303938.6	318490.6	95.43	PASS	70-125
N020230-012B	SAMP	1	18151824.7	18280523.6	99.3	PASS	70-125	295702.6	318490.6	92.85	PASS	70-125
N020228-002B	SAMP	1	17733255.9	18280523.6	97.006	PASS	70-125	287312.4	318490.6	90.21	PASS	70-125
N020228-003B	SAMP	1	17702415.4	18280523.6	96.84	PASS	70-125	286878.1	318490.6	90.074	PASS	70-125
N020228-004B	SAMP	1	17851315.3	18280523.6	97.65	PASS	70-125	290705.1	318490.6	91.28	PASS	70-125
N020228-005B	SAMP	1	17670831.3	18280523.6	96.66	PASS	70-125	282623.9	318490.6	88.74	PASS	70-125
N020228-006B	SAMP	1	17258666	18280523.6	94.41	PASS	70-125	277030.4	318490.6	86.98	PASS	70-125
CCV5	CCV	1	18592553.3	18280523.6	101.71	PASS	70-125	288333.5	318490.6	90.53	PASS	70-125
CCB5	CCB	1	18194126.4	18280523.6	99.53	PASS	70-125	280800.9	318490.6	88.17	PASS	70-125

INTERNAL STANDARD: 160707B

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
N020228-007B	SAMP	1	17379265.4	18280523.6	95.07	PASS	70-125	277086.2	318490.6	87	PASS	70-125
N020228-008B	SAMP	1	17134660.7	18280523.6	93.73	PASS	70-125	273245	318490.6	85.79	PASS	70-125
N020228-009B	SAMP	1	17219594	18280523.6	94.2	PASS	70-125	276738.6	318490.6	86.89	PASS	70-125
N020228-010B	SAMP	1	17669622.7	18280523.6	96.66	PASS	70-125	284756.2	318490.6	89.41	PASS	70-125
N020228-011B	SAMP	1	18169006.5	18280523.6	99.39	PASS	70-125	290647.4	318490.6	91.26	PASS	70-125
N020228-012B	SAMP	1	17852883.5	18280523.6	97.66	PASS	70-125	285610.8	318490.6	89.68	PASS	70-125
N020228-013B	SAMP	1	17715992.9	18280523.6	96.91	PASS	70-125	285716.4	318490.6	89.71	PASS	70-125
N020229-001B	SAMP	1	16418676.1	18280523.6	89.82	PASS	70-125	295168.1	318490.6	92.68	PASS	70-125
N020229-001B-MS	MS	1	16450503.4	18280523.6	89.99	PASS	70-125	292391.5	318490.6	91.81	PASS	70-125
N020229-002B	SAMP	1	14526012.8	18280523.6	79.46	PASS	70-125	274627.6	318490.6	86.23	PASS	70-125
CCV6	CCV	1	19375593.2	18280523.6	105.99	PASS	70-125	297362.6	318490.6	93.37	PASS	70-125
CCB6	CCB	1	18753260.1	18280523.6	102.59	PASS	70-125	283236.5	318490.6	88.93	PASS	70-125
N020229-003B	SAMP	1	15050942.1	18280523.6	82.33	PASS	70-125	273992.3	318490.6	86.028	PASS	70-125
N020230-011B	SAMP	25	18441120.7	18280523.6	100.88	PASS	70-125	275358.7	318490.6	86.46	PASS	70-125
N020230-011B-PS	PS	5	18145778.5	18280523.6	99.26	PASS	70-125	265920.5	318490.6	83.49	PASS	70-125
N020230-011B-MS	MS	5	18021039.2	18280523.6	98.58	PASS	70-125	259749	318490.6	81.56	PASS	70-125
N020230-011B-MSD	MSD	5	17801803.8	18280523.6	97.38	PASS	70-125	256473.6	318490.6	80.53	PASS	70-125
N020229-001B	SAMP	5	17216015.2	18280523.6	94.18	PASS	70-125	255532.6	318490.6	80.23	PASS	70-125
N020229-001B-MS	MS	5	17361822.5	18280523.6	94.97	PASS	70-125	263101.6	318490.6	82.61	PASS	70-125
N020229-002B	SAMP	5	17168662.2	18280523.6	93.92	PASS	70-125	273424	318490.6	85.85	PASS	70-125
N020229-003B	SAMP	5	17182875.4	18280523.6	94	PASS	70-125	269682.2	318490.6	84.68	PASS	70-125
N020229-003B	SAMP	25	17677385.6	18280523.6	96.7	PASS	70-125	268529.8	318490.6	84.31	PASS	70-125
~~CCV8~~ CCV7	CCV	1	18061923.3	18280523.6	98.8	PASS	70-125	274159.8	318490.6	86.081	PASS	70-125
~~CCB8~~ CCB7	CCB	1	17740708.5	18280523.6	97.047	PASS	70-125	263818	318490.6	82.83	PASS	70-125
LLCCV2	CCV2	1	17199923.8	18280523.6	94.089	PASS	70-125	252084.2	318490.6	79.15	PASS	70-125
ICSA3	ICSA	1	17071620.3	18280523.6	93.39	PASS	70-125	284101.9	318490.6	89.2	PASS	70-125
ICSAB3	ICSAB	1	16325854.8	18280523.6	89.31	PASS	70-125	292780.2	318490.6	91.93	PASS	70-125

7/21/2016

INTERNAL STANDARD: 160707B

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	248995.2	248995.2	100	PASS	70-125	292976.9	292976.9	100	PASS	70-125
Std1-0.1/1 ppb	ICAL	1	259085	248995.2	104.05	PASS	70-125	301833.3	292976.9	103.02	PASS	70-125
Std2-0.5/5 ppb	ICAL	1	254748.4	248995.2	102.31	PASS	70-125	294746.9	292976.9	100.6	PASS	70-125
Std3-5/50 ppb	ICAL	1	250510.3	248995.2	100.61	PASS	70-125	292049.3	292976.9	99.68	PASS	70-125
Std4-10/100 ppb	ICAL	1	248940.2	248995.2	99.98	PASS	70-125	288225.6	292976.9	98.38	PASS	70-125
Std5-20/200 ppb	ICAL	1	246318.9	248995.2	98.93	PASS	70-125	287182	292976.9	98.022	PASS	70-125
Std6-40/400 ppb	ICAL	1	246794.6	248995.2	99.12	PASS	70-125	287813.5	292976.9	98.24	PASS	70-125
Std7-100/1000 ppb	ICAL	1	242663.8	248995.2	97.46	PASS	70-125	282596.7	292976.9	96.46	PASS	70-125
Std8-200/2000 ppb	ICAL	1	239558.8	248995.2	96.21	PASS	70-125	278702.5	292976.9	95.13	PASS	70-125
ICV	ICV	1	235994.4	248995.2	94.78	PASS	70-125	268689.9	292976.9	91.71	PASS	70-125
ICB	ICB	1	241554.8	248995.2	97.012	PASS	70-125	274672.6	292976.9	93.75	PASS	70-125
LLICV	CCV1	1	184452	248995.2	74.079	PASS	70-125	214155	292976.9	73.096	PASS	70-125
ICSA1	ICSA	1	229207.8	248995.2	92.053	PASS	70-125	244368.7	292976.9	83.41	PASS	70-125
ICSAB1	ICSAB	1	233468.1	248995.2	93.76	PASS	70-125	253855.5	292976.9	86.65	PASS	70-125
LLICV	CCV1	1	259002.4	248995.2	104.02	PASS	70-125	301453.9	292976.9	102.89	PASS	70-125
CCV1	CCV	1	231730.4	248995.2	93.066	PASS	70-125	259507.6	292976.9	88.58	PASS	70-125
CCB1	CCB	1	226351.7	248995.2	90.91	PASS	70-125	253655.5	292976.9	86.58	PASS	70-125
CCV2	CCV	1	227097.6	248995.2	91.21	PASS	70-125	250453	292976.9	85.49	PASS	70-125
CCB2	CCB	1	220282.3	248995.2	88.47	PASS	70-125	243181.8	292976.9	83.004	PASS	70-125
CCV3	CCV	1	216930.4	248995.2	87.12	PASS	70-125	233077.6	292976.9	79.55	PASS	70-125
CCB3	CCB	1	212076.4	248995.2	85.17	PASS	70-125	226747.2	292976.9	77.39	PASS	70-125
MB-58934	MBLK	1	208166.5	248995.2	83.6	PASS	70-125	224903.4	292976.9	76.76	PASS	70-125
LCS-58934	LCS	1	205658.8	248995.2	82.6	PASS	70-125	225022	292976.9	76.81	PASS	70-125
N020230-011B	SAMP	1	210476.6	248995.2	84.53	PASS	70-125	223104	292976.9	76.15	PASS	70-125
CCV4	CCV	1	218031.3	248995.2	87.56	PASS	70-125	236381.4	292976.9	80.68	PASS	70-125
CCB4	CCB	1	212363.8	248995.2	85.29	PASS	70-125	234014.8	292976.9	79.87	PASS	70-125
LLCCV1	CCV2	1	208896	248995.2	83.9	PASS	70-125	229044.2	292976.9	78.18	PASS	70-125
ICSA2	ICSA	1	211977.7	248995.2	85.13	PASS	70-125	215435.2	292976.9	73.53	PASS	70-125
ICSAB2	ICSAB	1	220354	248995.2	88.5	PASS	70-125	235497.5	292976.9	80.38	PASS	70-125
N020230-011B	SAMP	5	235120.5	248995.2	94.43	PASS	70-125	270245.6	292976.9	92.24	PASS	70-125
N020230-011B-PS	PS	1	232796.5	248995.2	93.49	PASS	70-125	258180	292976.9	88.12	PASS	70-125
N020230-011B-MS	MS	1	229969.6	248995.2	92.36	PASS	70-125	251914.5	292976.9	85.98	PASS	70-125
N020230-011B-MSD	MSD	1	230738.4	248995.2	92.67	PASS	70-125	245958.4	292976.9	83.95	PASS	70-125
N020230-012B	SAMP	1	227954.4	248995.2	91.55	PASS	70-125	248875.5	292976.9	84.95	PASS	70-125
N020228-002B	SAMP	1	217594.6	248995.2	87.39	PASS	70-125	238247.1	292976.9	81.32	PASS	70-125
N020228-003B	SAMP	1	216102.3	248995.2	86.79	PASS	70-125	234840.9	292976.9	80.16	PASS	70-125
N020228-004B	SAMP	1	218873.5	248995.2	87.9	PASS	70-125	236010.9	292976.9	80.56	PASS	70-125
N020228-005B	SAMP	1	213780.2	248995.2	85.86	PASS	70-125	229773	292976.9	78.43	PASS	70-125
N020228-006B	SAMP	1	209802	248995.2	84.26	PASS	70-125	223517.4	292976.9	76.29	PASS	70-125
CCV5	CCV	1	227914.8	248995.2	91.53	PASS	70-125	251043.4	292976.9	85.69	PASS	70-125
CCB5	CCB	1	226617.1	248995.2	91.013	PASS	70-125	249062.3	292976.9	85.011	PASS	70-125

INTERNAL STANDARD: 160707B

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
N020228-007B	SAMP	1	208983.1	248995.2	83.93	PASS	70-125	223078.4	292976.9	76.14	PASS	70-125
N020228-008B	SAMP	1	207682.6	248995.2	83.41	PASS	70-125	222857.8	292976.9	76.067	PASS	70-125
N020228-009B	SAMP	1	209167.9	248995.2	84.005	PASS	70-125	223870.9	292976.9	76.41	PASS	70-125
N020228-010B	SAMP	1	213500.9	248995.2	85.74	PASS	70-125	227058.8	292976.9	77.5	PASS	70-125
N020228-011B	SAMP	1	218067.6	248995.2	87.58	PASS	70-125	231110	292976.9	78.88	PASS	70-125
N020228-012B	SAMP	1	216338.2	248995.2	86.88	PASS	70-125	229765.2	292976.9	78.42	PASS	70-125
N020228-013B	SAMP	1	214476.3	248995.2	86.14	PASS	70-125	228690.3	292976.9	78.057	PASS	70-125
N020229-001B	SAMP	1	205868.4	248995.2	82.68	PASS	70-125	203691.3	292976.9	69.52	NR!	70-125
N020229-001B-MS	MS	1	203810	248995.2	81.85	PASS	70-125	204596.8	292976.9	69.83	NR!	70-125
N020229-002B	SAMP	1	182568.3	248995.2	73.32	PASS	70-125	175591.4	292976.9	59.93	NR!	70-125
CCV6	CCV	1	236070.7	248995.2	94.81	PASS	70-125	246148.8	292976.9	84.016	PASS	70-125
CCB6	CCB	1	227698	248995.2	91.45	PASS	70-125	237885.8	292976.9	81.2	PASS	70-125
N020229-003B	SAMP	1	186530	248995.2	74.91	PASS	70-125	178751.7	292976.9	61.012	NR!	70-125
N020230-011B	SAMP	25	221883.7	248995.2	89.11	PASS	70-125	236371.6	292976.9	80.68	PASS	70-125
N020230-011B-PS	PS	5	213168.1	248995.2	85.61	PASS	70-125	228117.8	292976.9	77.86	PASS	70-125
N020230-011B-MS	MS	5	209175.6	248995.2	84.008	PASS	70-125	220971.1	292976.9	75.42	PASS	70-125
N020230-011B-MSD	MSD	5	207201.4	248995.2	83.22	PASS	70-125	221321.2	292976.9	75.54	PASS	70-125
N020229-001B	SAMP	5	198363.6	248995.2	79.67	PASS	70-125	211201	292976.9	72.088	PASS	70-125
N020229-001B-MS	MS	5	202532.8	248995.2	81.34	PASS	70-125	215437.2	292976.9	73.53	PASS	70-125
N020229-002B	SAMP	5	203704.8	248995.2	81.81	PASS	70-125	208783.9	292976.9	71.26	PASS	70-125
N020229-003B	SAMP	5	204344.4	248995.2	82.068	PASS	70-125	210458.8	292976.9	71.83	PASS	70-125
N020229-003B	SAMP	25	213538.1	248995.2	85.76	PASS	70-125	230396.9	292976.9	78.64	PASS	70-125
~~CCV8~~ CCV7	CCV	1	217735.5	248995.2	87.45	PASS	70-125	239325.4	292976.9	81.69	PASS	70-125
~~CCB8~~ CCB7	CCB	1	213866.4	248995.2	85.89	PASS	70-125	236927.9	292976.9	80.87	PASS	70-125
LLCCV2	CCV2	1	206260.7	248995.2	82.84	PASS	70-125	229142.7	292976.9	78.21	PASS	70-125
ICSA3	ICSA	1	208006.8	248995.2	83.54	PASS	70-125	209528.7	292976.9	71.52	PASS	70-125
ICSAB3	ICSAB	1	211785	248995.2	85.056	PASS	70-125	223358.3	292976.9	76.24	PASS	70-125


7/21/2016

INTERNAL STANDARD: 160707B

Instrument ID: ICPMS-02

Sample Name	Type	DF	103 Rh (ISTD) [2]				
			CPS	REF	%REC	Comment	Criteria
Cal Blank	IBLK	1	6266238	6266238	100	PASS	70-125
Std1-0.1/1 ppb	ICAL	1	6563932.2	6266238	104.75	PASS	70-125
Std2-0.5/5 ppb	ICAL	1	6427112.5	6266238	102.57	PASS	70-125
Std3-5/50 ppb	ICAL	1	6327854.7	6266238	100.98	PASS	70-125
Std4-10/100 ppb	ICAL	1	6371835.9	6266238	101.69	PASS	70-125
Std5-20/200 ppb	ICAL	1	6292842	6266238	100.42	PASS	70-125
Std6-40/400 ppb	ICAL	1	6280402.3	6266238	100.23	PASS	70-125
Std7-100/1000 ppb	ICAL	1	6205673.7	6266238	99.033	PASS	70-125
Std8-200/2000 ppb	ICAL	1	6136853.7	6266238	97.94	PASS	70-125
ICV	ICV	1	6050999.3	6266238	96.57	PASS	70-125
ICB	ICB	1	6226723.9	6266238	99.37	PASS	70-125
LLICV	CCV1	1	4767346.6	6266238	76.08	PASS	70-125
ICSA1	ICSA	1	5327168.1	6266238	85.014	PASS	70-125
ICSAB1	ICSAB	1	5390054.5	6266238	86.017	PASS	70-125
LLICV	CCV1	1	6567868.2	6266238	104.81	PASS	70-125
CCV1	CCV	1	5986524.1	6266238	95.54	PASS	70-125
CCB1	CCB	1	5806163.7	6266238	92.66	PASS	70-125
CCV2	CCV	1	5956311	6266238	95.054	PASS	70-125
CCB2	CCB	1	5784164.2	6266238	92.31	PASS	70-125
CCV3	CCV	1	5732115.6	6266238	91.48	PASS	70-125
CCB3	CCB	1	5570155.8	6266238	88.89	PASS	70-125
MB-58934	MBLK	1	5456533.3	6266238	87.078	PASS	70-125
LCS-58934	LCS	1	5440877.7	6266238	86.83	PASS	70-125
N020230-011B	SAMP	1	5088698.7	6266238	81.21	PASS	70-125
CCV4	CCV	1	5668419.8	6266238	90.46	PASS	70-125
CCB4	CCB	1	5537242.6	6266238	88.37	PASS	70-125
LLCCV1	CCV2	1	5408621	6266238	86.31	PASS	70-125
ICSA2	ICSA	1	4944508.2	6266238	78.91	PASS	70-125
ICSAB2	ICSAB	1	5055913.5	6266238	80.68	PASS	70-125
N020230-011B	SAMP	5	5794502.1	6266238	92.47	PASS	70-125
N020230-011B-PS	PS	1	5517841.2	6266238	88.057	PASS	70-125
N020230-011B-MS	MS	1	5511948.8	6266238	87.96	PASS	70-125
N020230-011B-MSD	MSD	1	5503197.7	6266238	87.82	PASS	70-125
N020230-012B	SAMP	1	5310854.8	6266238	84.75	PASS	70-125
N020228-002B	SAMP	1	5136101.9	6266238	81.96	PASS	70-125
N020228-003B	SAMP	1	5127193.9	6266238	81.82	PASS	70-125
N020228-004B	SAMP	1	5180442.2	6266238	82.67	PASS	70-125
N020228-005B	SAMP	1	5097717.3	6266238	81.35	PASS	70-125
N020228-006B	SAMP	1	5030667.5	6266238	80.28	PASS	70-125
CCV5	CCV	1	5902977.2	6266238	94.2	PASS	70-125
CCB5	CCB	1	5817343.3	6266238	92.84	PASS	70-125

INTERNAL STANDARD: 160707B

Instrument ID: ICPMS-02

Sample Name	Type	DF	103 Rh (ISTD) [2]				
			CPS	REF	%REC	Comment	Criteria
N020228-007B	SAMP	1	4992737.4	6266238	79.68	PASS	70-125
N020228-008B	SAMP	1	4936831.4	6266238	78.78	PASS	70-125
N020228-009B	SAMP	1	4988463.3	6266238	79.61	PASS	70-125
N020228-010B	SAMP	1	5099589	6266238	81.38	PASS	70-125
N020228-011B	SAMP	1	5219612.5	6266238	83.3	PASS	70-125
N020228-012B	SAMP	1	5170445.9	6266238	82.51	PASS	70-125
N020228-013B	SAMP	1	5124633.9	6266238	81.78	PASS	70-125
N020229-001B	SAMP	1	4645370.5	6266238	74.13	PASS	70-125
N020229-001B-MS	MS	1	4663280.7	6266238	74.42	PASS	70-125
N020229-002B	SAMP	1	4106532.9	6266238	65.53	NR!	70-125
CCV6	CCV	1	6163688.8	6266238	98.36	PASS	70-125
CCB6	CCB	1	5931252.5	6266238	94.65	PASS	70-125
N020229-003B	SAMP	1	4230025.7	6266238	67.51	NR!	70-125
N020230-011B	SAMP	25	5798127.8	6266238	92.53	PASS	70-125
N020230-011B-PS	PS	5	5458922.9	6266238	87.12	PASS	70-125
N020230-011B-MS	MS	5	5379804.1	6266238	85.85	PASS	70-125
N020230-011B-MSD	MSD	5	5295627.6	6266238	84.51	PASS	70-125
N020229-001B	SAMP	5	4858978.2	6266238	77.54	PASS	70-125
N020229-001B-MS	MS	5	4947241.8	6266238	78.95	PASS	70-125
N020229-002B	SAMP	5	4882088.9	6266238	77.91	PASS	70-125
N020229-003B	SAMP	5	4891501.2	6266238	78.061	PASS	70-125
N020229-003B	SAMP	25	5310245	6266238	84.74	PASS	70-125
~~CCV8~~ CCV7	CCV	1	5674249.2	6266238	90.55	PASS	70-125
~~CCB8~~ CCB7	CCB	1	5548555.3	6266238	88.55	PASS	70-125
LLCCV2	CCV2	1	5340164.9	6266238	85.22	PASS	70-125
ICSA3	ICSA	1	4850842.8	6266238	77.41	PASS	70-125
ICSAB3	ICSAB	1	4932846.9	6266238	78.72	PASS	70-125



7/21/2016

SERIAL DILUTION/
POST DIGESTION SPIKE

ASSET Laboratories

ICP-MS-Metals in Water

Dilution Test Summary

Work Order No.: N020228
Test Method: EPA 6020
Analysis Date: 7/7/2016

Matrix: Groundwater
Batch No.: 58934

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

Comments:

Analyzed By: Mary Claire Ignacio

Dilution test is not applicable to Cr, Mn, Mo & Se. The calculated concentration is <25RL.

Sample ID	Analyte	Units	Calc Val	OQual	SAMPRefVal	%DIFF	%DIFFlimit
N020230-011B DT 5X	Arsenic	ug/L	40.08941	PASS	38.1642	5.04%	10
N020230-011B DT 5X	Barium	ug/L	26.18932	PASS	27.76294	5.67%	10
N020230-011B DT 5X	Chromium	ug/L	5.260964	NA	5.029992	4.59%	10
N020230-011B DT 5X	Manganese	ug/L	0	NA	0.400374	100.00%	10
N020230-011B DT 5X	Molybdenum	ug/L	9.573983	NA	9.84684	2.77%	10
N020230-011B DT 5X	Selenium	ug/L	0.248745	NA	0.256009	2.84%	10

Note: NA - Not applicable

CLIENT: ARCADIS U.S., Inc. - California
Work Order: N020228
Project: PG&E Topock - RMP, RC000753.0801

ANALYTICAL QC SUMMARY REPORT

TestCode: 6020_DIS

Sample ID	**N020230-011B-PS**	SampType: **PS**	TestCode: **6020_DIS**	Units: **µg/L**	Prep Date:	RunNo: **109344**
Client ID:	**ZZZZZZ**	Batch ID: **58934**	TestNo: **EPA 6020**	**EPA 3010A**	Analysis Date: **7/8/2016**	SeqNo: **2367797**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	46.053	0.10	10.00	38.16	78.9	80	120				S
Barium	125.418	1.0	100.0	27.76	97.7	80	120				
Manganese	93.770	0.50	100.0	0.4004	93.4	80	120				
Molybdenum	20.519	0.50	10.00	9.847	107	80	120				
Selenium	8.780	0.50	10.00	0.2560	85.2	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
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: ARCADIS U.S., Inc. - California
Work Order: N020228
Project: PG&E Topock - RMP, RC000753.0801

ANALYTICAL QC SUMMARY REPORT

TestCode: 6020DIS_CrPGE

Sample ID	N020230-011B-PS	SampType:	PS	TestCode:	6020DIS_CrP	Units:	µg/L	Prep Date:		RunNo:	109332
Client ID:	ZZZZZZ	Batch ID:	58934	TestNo:	EPA 6020	EPA 3010A		Analysis Date:	7/8/2016	SeqNo:	2367222

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium	14.245	1.0	10.00	5.030	92.2	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
DO	Surrogate Diluted Out		Calculations are based on raw values		

MDL STUDY

METHOD DETECTION LIMIT 2016

Method Detection Limit
Analytical Method: EPA 6020 / 200.8
Digestion Method: EPA 3010A
Date of Analysis: 4/5/2016,4/6/2016
Digestion Date: 4/1/2016
Instrument Name: ICPMS2
Analysts: MEI

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

ACCEPTANCE CRITERIA: MDL<SPIKE<10XMDL

Analyte	AMT SPIKED, ppb	1	2	3	4	5	6	7	SD	MDL	MDL*10	LOD	ACTUAL LOD	PQL	ACTUAL PQL	% REC
ANTIMONY	0.100	0.091	0.078	0.067	0.089	0.069	0.088	0.087	0.0100	0.0313	0.3133	0.3000	0.187	0.50	0.515	103
ARSENIC	0.050	0.054	0.045	0.064	0.053	0.047	0.051	0.039	0.0079	0.0248	0.2485	0.3000	0.049	0.10	0.103	103
BARIUM	0.100	0.199	0.158	0.159	0.206	0.167	0.196	0.207	0.0222	0.0699	0.6986	0.3000	0.403	1.00	1.245	125
BERYLLIUM	0.100	0.090	0.089	0.072	0.104	0.077	0.103	0.107	0.0137	0.0430	0.4304	0.3000	0.185	0.50	0.524	105
CADMIUM	0.100	0.105	0.093	0.089	0.122	0.093	0.121	0.122	0.0151	0.0473	0.4734	0.3000	0.174	0.50	0.501	100
CHROMIUM	0.100	0.088	0.096	0.092	0.093	0.085	0.100	0.102	0.0061	0.0192	0.1925	0.3000	0.321	1.00	0.973	97
COBALT	0.100	0.102	0.088	0.084	0.096	0.085	0.104	0.100	0.0084	0.0263	0.2630	0.3000	0.163	0.50	0.475	95
COPPER	0.500	0.789	0.565	0.564	0.559	0.574	0.563	0.596	0.0836	0.2626	2.6262	0.3000	0.328	1.00	1.062	106
IRON	1.000	0.685	0.581	0.566	1.123	0.578	0.843	1.075	0.2394	0.7517	7.5170	0.3000	0.605	10.00	11.338	113
LEAD	0.100	0.108	0.098	0.088	0.116	0.089	0.113	0.112	0.0117	0.0367	0.3670	0.3000	0.343	1.00	1.018	102
MANGANESE	0.100	0.162	0.122	0.123	0.160	0.133	0.156	0.154	0.0177	0.0554	0.5543	0.3000	0.193	0.50	0.605	121
MOLYBDENUM	0.100	0.100	0.095	0.079	0.109	0.080	0.098	0.109	0.0123	0.0385	0.3853	0.3000	0.247	0.50	0.660	132
NICKEL	0.100	0.126	0.095	0.090	0.119	0.105	0.110	0.106	0.0126	0.0395	0.3954	0.3000	0.341	1.00	1.002	100
SELENIUM	0.100	0.113	0.104	0.091	0.104	0.092	0.110	0.110	0.0088	0.0276	0.2760	0.3000	0.170	0.50	0.502	100
SILVER	0.100	0.028	0.065	0.071	0.079	0.076	0.079	0.082	0.0188	0.0590	0.5899	0.3000	0.247	1.00	1.029	103
THALLIUM	0.100	0.084	0.076	0.067	0.091	0.070	0.088	0.087	0.0094	0.0296	0.2961	0.3000	0.186	0.50	0.549	110
URANIUM	0.100	0.099	0.090	0.082	0.104	0.083	0.105	0.106	0.0104	0.0327	0.3272	0.3000	0.181	0.50	0.533	107
VANADIUM	0.100	0.126	0.111	0.110	0.126	0.116	0.123	0.122	0.0068	0.0213	0.2133	0.3000	0.221	1.00	0.873	87
ZINC	0.500	0.930	0.695	0.905	0.781	0.765	0.744	0.810	0.0853	0.2678	2.6780	0.3000	3.286	10.00	10.085	101

ARCADIS

Project: PG&E Topock - PMP
Project No.: RC000753.801A

ASSET Laboratories Work Order:
N020229

ANALYTICAL and QC RESULTS
SAMPLE RECEIVING ITEMS

PRIVILEGED AND CONFIDENTIAL

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July 26, 2016

Dan Bush
ARCADIS U.S., Inc. - California
1410 Rocky Ridge Dr #330
Roseville, CA 95661

TEL: (916) 786-3302
FAX:

CA-ELAP No.: 2676
NV Cert. No.: NV-00922

Workorder No.: N020229

RE: PG&E Topock - PMP, RC000753.801A

Attention: Dan Bush

Enclosed are the results for sample(s) received on July 06, 2016 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 Ribucan for

Puri Romualdo
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.

CLIENT: ARCADIS U.S., Inc. - California
Project: PG&E Topock - PMP, RC000753.801A
Lab Order: N020229

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 6010B_Dissolved:

Matrix Spike (MS) and Matrix Spike Duplicate (MSD) are outside recovery criteria for Sodium on QC samples N020229-001B-MS2 and N020229-001B-MSD2 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) is outside recovery criteria for Calcium on QC sample N020228-011B-MS1 possibly due to matrix interference. The associated Laboratory Control Sample (LCS) recovery was acceptable.

ASSET LABORATORIES
ANALYTICAL SUPPORT SERVICES FOR ENVIRONMENTAL TECHNOLOGIES
CALIFORNIA
11060 Artesia Blvd., Ste C, Cerritos, CA 90703
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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

Date: *26-Jul-16*

CLIENT: ARCADIS U.S., Inc. - California
Project: PG&E Topock - PMP, RC000753.801A
Lab Order: N020229
Contract No:

Work Order Sample Summary

Lab Sample ID	Client Sample ID	Matrix	Collection Date	Date Received	Date Reported
N020229-001A	PE-01-0716	Groundwater	7/6/2016 1:55:00 PM	7/6/2016	7/26/2016
N020229-001B	PE-01-0716	Groundwater	7/6/2016 1:55:00 PM	7/6/2016	7/26/2016
N020229-001C	PE-01-0716	Groundwater	7/6/2016 1:55:00 PM	7/6/2016	7/26/2016
N020229-001D	PE-01-0716	Groundwater	7/6/2016 1:55:00 PM	7/6/2016	7/26/2016
N020229-002A	TW-03D-0716	Groundwater	7/6/2016 1:36:00 PM	7/6/2016	7/26/2016
N020229-002B	TW-03D-0716	Groundwater	7/6/2016 1:36:00 PM	7/6/2016	7/26/2016
N020229-002C	TW-03D-0716	Groundwater	7/6/2016 1:36:00 PM	7/6/2016	7/26/2016
N020229-002D	TW-03D-0716	Groundwater	7/6/2016 1:36:00 PM	7/6/2016	7/26/2016
N020229-003A	TW-02D-0716	Groundwater	7/6/2016 2:06:00 PM	7/6/2016	7/26/2016
N020229-003B	TW-02D-0716	Groundwater	7/6/2016 2:06:00 PM	7/6/2016	7/26/2016
N020229-003C	TW-02D-0716	Groundwater	7/6/2016 2:06:00 PM	7/6/2016	7/26/2016
N020229-003D	TW-02D-0716	Groundwater	7/6/2016 2:06:00 PM	7/6/2016	7/26/2016

ASSET LABORATORIES
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"Serving Clients with Passion and Professionalism"

CLIENT: ARCADIS U.S., Inc. - California
Lab Order: N020229
Project: PG&E Topock - PMP, RC000753.801A
Lab ID: N020229-001

Client Sample ID: PE-01-0716
Collection Date: 7/6/2016 1:55:00 PM
Matrix: GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
SPECIFIC CONDUCTANCE							
			EPA 120.1				
RunID: **WETCHEM_160707A**	QC Batch: **R109287**			PrepDate			Analyst: **LR**
Specific Conductance	4100	0.10	0.10		umhos/cm	1	7/7/2016 09:30 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

CLIENT:	ARCADIS U.S., Inc. - California	**Client Sample ID:**	TW-03D-0716
Lab Order:	N020229	**Collection Date:**	7/6/2016 1:36:00 PM
Project:	PG&E Topock - PMP, RC000753.801A	**Matrix:**	GROUNDWATER
Lab ID:	N020229-002		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
SPECIFIC CONDUCTANCE							
			EPA 120.1				
RunID: **WETCHEM_160707A**	QC Batch: **R109287**			PrepDate			Analyst: **LR**
Specific Conductance	7800	0.10	0.10		umhos/cm	1	7/7/2016 09:30 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

CLIENT: ARCADIS U.S., Inc. - California
Lab Order: N020229
Project: PG&E Topock - PMP, RC000753.801A
Lab ID: N020229-003

Client Sample ID: TW-02D-0716
Collection Date: 7/6/2016 2:06:00 PM
Matrix: GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
SPECIFIC CONDUCTANCE							
			EPA 120.1				
RunID: **WETCHEM_160707A**	QC Batch: **R109287**			PrepDate			Analyst: **LR**
Specific Conductance	6200	0.10	0.10		umhos/cm	1	7/7/2016 09:30 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

CLIENT: ARCADIS U.S., Inc. - California
Work Order: N020229
Project: PG&E Topock - PMP, RC000753.801A

ANALYTICAL QC SUMMARY REPORT

TestCode: 120.1_WPGE

Sample ID **N020228-002DDUP**	SampType: **DUP**	TestCode: **120.1_WPGE**	Units: **umhos/cm**	Prep Date:	RunNo: **109287**
Client ID: **ZZZZZZ**	Batch ID: **R109287**	TestNo: **EPA 120.1**		Analysis Date: **7/7/2016**	SeqNo: **2364836**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Specific Conductance	961.000	0.10						965.0	0.415	10	

Sample ID **N020229-001CDUP**	SampType: **DUP**	TestCode: **120.1_WPGE**	Units: **umhos/cm**	Prep Date:	RunNo: **109287**
Client ID: **ZZZZZZ**	Batch ID: **R109287**	TestNo: **EPA 120.1**		Analysis Date: **7/7/2016**	SeqNo: **2364850**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Specific Conductance	4040.000	0.10						4070	0.740	10	

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis 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	**Client Sample ID:**	PE-01-0716
Lab Order:	N020229	**Collection Date:**	7/6/2016 1:55:00 PM
Project:	PG&E Topock - PMP, RC000753.801A	**Matrix:**	GROUNDWATER
Lab ID:	N020229-001		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
TOTAL FILTERABLE RESIDUE							
			SM2540C				
RunID: **WETCHEM_160707F**	QC Batch: **58937**				PrepDate	**7/7/2016**	Analyst: **LR**
Total Dissolved Solids (Residue, Filterable)	2400	33	33		mg/L	1	7/7/2016 01:40 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

CLIENT:	ARCADIS U.S., Inc. - California	**Client Sample ID:**	TW-03D-0716
Lab Order:	N020229	**Collection Date:**	7/6/2016 1:36:00 PM
Project:	PG&E Topock - PMP, RC000753.801A	**Matrix:**	GROUNDWATER
Lab ID:	N020229-002		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
TOTAL FILTERABLE RESIDUE							
			SM2540C				
RunID: **WETCHEM_160707F**	QC Batch: **58937**			PrepDate	**7/7/2016**		Analyst: **LR**
Total Dissolved Solids (Residue, Filterable)	4500	50	50		mg/L	1	7/7/2016 01:40 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

CLIENT:	ARCADIS U.S., Inc. - California	**Client Sample ID:**	TW-02D-0716
Lab Order:	N020229	**Collection Date:**	7/6/2016 2:06:00 PM
Project:	PG&E Topock - PMP, RC000753.801A	**Matrix:**	GROUNDWATER
Lab ID:	N020229-003		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
TOTAL FILTERABLE RESIDUE							
			SM2540C				
RunID: **WETCHEM_160707F**	QC Batch: **58937**				PrepDate	**7/7/2016**	Analyst: **LR**
Total Dissolved Solids (Residue, Filterable)	3400	50	50		mg/L	1	7/7/2016 01:40 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

CLIENT: ARCADIS U.S., Inc. - California
Work Order: N020229
Project: PG&E Topock - PMP, RC000753.801A

ANALYTICAL QC SUMMARY REPORT

TestCode: 160.1_2540C_W

Sample ID **LCS-58937**	SampType: **LCS**	TestCode: **160.1_2540C**	Units: **mg/L**	Prep Date: **7/7/2016**	RunNo: **109315**
Client ID: **LCSW**	Batch ID: **58937**	TestNo: **SM2540C**		Analysis Date: **7/7/2016**	SeqNo: **2366594**

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 **MBLK-58937**	SampType: **MBLK**	TestCode: **160.1_2540C**	Units: **mg/L**	Prep Date: **7/7/2016**	RunNo: **109315**
Client ID: **PBW**	Batch ID: **58937**	TestNo: **SM2540C**		Analysis Date: **7/7/2016**	SeqNo: **2366595**

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 **N020229-002CDUP**	SampType: **DUP**	TestCode: **160.1_2540C**	Units: **mg/L**	Prep Date: **7/7/2016**	RunNo: **109315**
Client ID: **ZZZZZZ**	Batch ID: **58937**	TestNo: **SM2540C**		Analysis Date: **7/7/2016**	SeqNo: **2366598**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	4310.000	50						4475	3.76	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
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: ARCADIS U.S., Inc. - California
Lab Order: N020229
Project: PG&E Topock - PMP, RC000753.801A
Lab ID: N020229-001

Client Sample ID: PE-01-0716
Collection Date: 7/6/2016 1:55:00 PM
Matrix: GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
HEXAVALENT CHROMIUM BY IC							
			EPA 218.6				
RunID: **IC7_160707A**	QC Batch: **R109313**			PrepDate			Analyst: **QBM**
Hexavalent Chromium	ND	0.066	0.20		µg/L	1	7/7/2016 07:40 PM
DISSOLVED METALS BY ICP-MS							
	EPA 3010A		**EPA 6020**				
RunID: **ICP7_160707F**	QC Batch: **58934**			PrepDate	**7/7/2016**		Analyst: **CEI**
Chromium	ND	0.019	1.0		µg/L	1	7/8/2016 04:11 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

CLIENT: ARCADIS U.S., Inc. - California
Lab Order: N020229
Project: PG&E Topock - PMP, RC000753.801A
Lab ID: N020229-002

Client Sample ID: TW-03D-0716
Collection Date: 7/6/2016 1:36:00 PM
Matrix: GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
HEXAVALENT CHROMIUM							
			SM 3500-CR B				
RunID: **WETCHEM_160714F**	QC Batch: **R109528**			PrepDate			Analyst: **QBM**
Chromium, Hexavalent	610	2.8	20		µg/L	2	7/14/2016
DISSOLVED METALS BY ICP-MS							
	EPA 3010A		**EPA 6020**				
RunID: **ICP7_160707F**	QC Batch: **58934**			PrepDate	**7/7/2016**		Analyst: **CEI**
Chromium	650	0.096	5.0		µg/L	5	7/8/2016 05:18 AM

Qualifiers:

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

CLIENT: ARCADIS U.S., Inc. - California
Lab Order: N020229
Project: PG&E Topock - PMP, RC000753.801A
Lab ID: N020229-003

Client Sample ID: TW-02D-0716
Collection Date: 7/6/2016 2:06:00 PM
Matrix: GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
HEXAVALENT CHROMIUM							
			SM 3500-CR B				
RunID: **WETCHEM_160714F** QC Batch: **R109528**				PrepDate			Analyst: **QBM**
Chromium, Hexavalent	52	1.4	10		µg/L	1	7/14/2016
DISSOLVED METALS BY ICP-MS							
			EPA 3010A	**EPA 6020**			
RunID: **ICP7_160707F** QC Batch: **58934**				PrepDate	**7/7/2016**		Analyst: **CEI**
Chromium	57	0.019	1.0		µg/L	1	7/8/2016 04:39 AM

Qualifiers:

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

CLIENT: ARCADIS U.S., Inc. - California
Work Order: N020229
Project: PG&E Topock - PMP, RC000753.801A

ANALYTICAL QC SUMMARY REPORT

TestCode: 218.6_WPGE

Sample ID	MB-R109313	SampType:	MBLK	TestCode:	218.6_WPGE	Units:	µg/L	Prep Date:		RunNo:	109313		
Client ID:	PBW	Batch ID:	R109313	TestNo:	EPA 218.6			Analysis Date:	7/7/2016	SeqNo:	2366529		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual		
Hexavalent Chromium	ND	0.20											

Sample ID	LCS-R109313	SampType:	LCS	TestCode:	218.6_WPGE	Units:	µg/L	Prep Date:		RunNo:	109313		
Client ID:	LCSW	Batch ID:	R109313	TestNo:	EPA 218.6			Analysis Date:	7/7/2016	SeqNo:	2366530		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual		
Hexavalent Chromium	5.029	0.20	5.000	0	101	90	110						

Sample ID	N020228-001ADUP	SampType:	DUP	TestCode:	218.6_WPGE	Units:	µg/L	Prep Date:		RunNo:	109313		
Client ID:	ZZZZZZ	Batch ID:	R109313	TestNo:	EPA 218.6			Analysis Date:	7/7/2016	SeqNo:	2366532		
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	N020228-001AMS	SampType:	MS	TestCode:	218.6_WPGE	Units:	µg/L	Prep Date:		RunNo:	109313		
Client ID:	ZZZZZZ	Batch ID:	R109313	TestNo:	EPA 218.6			Analysis Date:	7/7/2016	SeqNo:	2366533		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual		
Hexavalent Chromium	1.044	0.20	1.000	0	104	90	110						

Sample ID	N020228-002AMS	SampType:	MS	TestCode:	218.6_WPGE	Units:	µg/L	Prep Date:		RunNo:	109313		
Client ID:	ZZZZZZ	Batch ID:	R109313	TestNo:	EPA 218.6			Analysis Date:	7/7/2016	SeqNo:	2366535		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual		
Hexavalent Chromium	1.061	0.20	1.000	0.09110	97.0	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
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: ARCADIS U.S., Inc. - California
Work Order: N020229
Project: PG&E Topock - PMP, RC000753.801A

ANALYTICAL QC SUMMARY REPORT

TestCode: 218.6_WPGE

Sample ID **N020228-002AMSD** SampType: **MSD** TestCode: **218.6_WPGE** Units: **µg/L** Prep Date: RunNo: **109313**
Client ID: **ZZZZZZ** Batch ID: **R109313** TestNo: **EPA 218.6** Analysis Date: **7/7/2016** SeqNo: **2366536**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	1.082	0.20	1.000	0.09110	99.1	90	110	1.061	2.02	20	

Sample ID **N020228-003AMS** SampType: **MS** TestCode: **218.6_WPGE** Units: **µg/L** Prep Date: RunNo: **109313**
Client ID: **ZZZZZZ** Batch ID: **R109313** TestNo: **EPA 218.6** Analysis Date: **7/7/2016** SeqNo: **2366538**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	1.089	0.20	1.000	0.09800	99.1	90	110				

Sample ID **N020228-004AMS** SampType: **MS** TestCode: **218.6_WPGE** Units: **µg/L** Prep Date: RunNo: **109313**
Client ID: **ZZZZZZ** Batch ID: **R109313** TestNo: **EPA 218.6** Analysis Date: **7/7/2016** SeqNo: **2366542**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	1.075	0.20	1.000	0.09210	98.3	90	110				

Sample ID **N020228-006AMS** SampType: **MS** TestCode: **218.6_WPGE** Units: **µg/L** Prep Date: RunNo: **109313**
Client ID: **ZZZZZZ** Batch ID: **R109313** TestNo: **EPA 218.6** Analysis Date: **7/7/2016** SeqNo: **2366545**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	1.073	0.20	1.000	0.09440	97.8	90	110				

Sample ID **N020228-007AMS** SampType: **MS** TestCode: **218.6_WPGE** Units: **µg/L** Prep Date: RunNo: **109313**
Client ID: **ZZZZZZ** Batch ID: **R109313** TestNo: **EPA 218.6** Analysis Date: **7/7/2016** SeqNo: **2366547**

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	0.09500	101	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: N020229
Project: PG&E Topock - PMP, RC000753.801A

ANALYTICAL QC SUMMARY REPORT

TestCode: 218.6_WPGE

Sample ID **N020228-008AMS**	SampType: **MS**	TestCode: **218.6_WPGE**	Units: **µg/L**	Prep Date:	RunNo: **109313**
Client ID: **ZZZZZZ**	Batch ID: **R109313**	TestNo: **EPA 218.6**		Analysis Date: **7/7/2016**	SeqNo: **2366549**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	1.061	0.20	1.000	0.08060	98.0	90	110				

Sample ID **N020228-005AMS**	SampType: **MS**	TestCode: **218.6_WPGE**	Units: **µg/L**	Prep Date:	RunNo: **109313**
Client ID: **ZZZZZZ**	Batch ID: **R109313**	TestNo: **EPA 218.6**		Analysis Date: **7/7/2016**	SeqNo: **2366552**

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	0.09390	99.2	90	110				

Sample ID **N020228-009AMS**	SampType: **MS**	TestCode: **218.6_WPGE**	Units: **µg/L**	Prep Date:	RunNo: **109313**
Client ID: **ZZZZZZ**	Batch ID: **R109313**	TestNo: **EPA 218.6**		Analysis Date: **7/7/2016**	SeqNo: **2366554**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	1.081	0.20	1.000	0.08080	100	90	110				

Sample ID **N020228-010AMS**	SampType: **MS**	TestCode: **218.6_WPGE**	Units: **µg/L**	Prep Date:	RunNo: **109313**
Client ID: **ZZZZZZ**	Batch ID: **R109313**	TestNo: **EPA 218.6**		Analysis Date: **7/7/2016**	SeqNo: **2366556**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	1.113	0.20	1.000	0.1008	101	90	110				

Sample ID **N020228-011AMS**	SampType: **MS**	TestCode: **218.6_WPGE**	Units: **µg/L**	Prep Date:	RunNo: **109313**
Client ID: **ZZZZZZ**	Batch ID: **R109313**	TestNo: **EPA 218.6**		Analysis Date: **7/7/2016**	SeqNo: **2366558**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	1.098	0.20	1.000	0.1110	98.7	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: N020229
Project: PG&E Topock - PMP, RC000753.801A

ANALYTICAL QC SUMMARY REPORT

TestCode: 218.6_WPGE

Sample ID **N020228-012AMS**	SampType: **MS**	TestCode: **218.6_WPGE**	Units: **µg/L**	Prep Date:	RunNo: **109313**
Client ID: **ZZZZZZ**	Batch ID: **R109313**	TestNo: **EPA 218.6**		Analysis Date: **7/7/2016**	SeqNo: **2366560**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	1.073	0.20	1.000	0.1025	97.1	90	110				

Sample ID **N020228-013AMS**	SampType: **MS**	TestCode: **218.6_WPGE**	Units: **µg/L**	Prep Date:	RunNo: **109313**
Client ID: **ZZZZZZ**	Batch ID: **R109313**	TestNo: **EPA 218.6**		Analysis Date: **7/7/2016**	SeqNo: **2366564**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	1.108	0.20	1.000	0.09220	102	90	110				

Sample ID **N020229-001AMS**	SampType: **MS**	TestCode: **218.6_WPGE**	Units: **µg/L**	Prep Date:	RunNo: **109313**
Client ID: **ZZZZZZ**	Batch ID: **R109313**	TestNo: **EPA 218.6**		Analysis Date: **7/7/2016**	SeqNo: **2366574**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	1.238	0.20	1.000	0.1928	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
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: ARCADIS U.S., Inc. - California
Work Order: N020229
Project: PG&E Topock - PMP, RC000753.801A

ANALYTICAL QC SUMMARY REPORT

TestCode: 3500_CrBPGE

Sample ID	LCS-R109528	SampType:	LCS	TestCode:	3500_CrBPG	Units:	µg/L	Prep Date:		RunNo:	109528
Client ID:	LCSW	Batch ID:	R109528	TestNo:	SM 3500-Cr B			Analysis Date:	7/14/2016	SeqNo:	2377580

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium, Hexavalent	100.948	10	100.0	0	101	85	115				

Sample ID	MB-R109528	SampType:	MBLK	TestCode:	3500_CrBPG	Units:	µg/L	Prep Date:		RunNo:	109528
Client ID:	PBW	Batch ID:	R109528	TestNo:	SM 3500-Cr B			Analysis Date:	7/14/2016	SeqNo:	2377581

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium, Hexavalent	ND	10									

Sample ID	N020229-003AMS	SampType:	MS	TestCode:	3500_CrBPG	Units:	µg/L	Prep Date:		RunNo:	109528
Client ID:	ZZZZZZ	Batch ID:	R109528	TestNo:	SM 3500-Cr B			Analysis Date:	7/14/2016	SeqNo:	2377584

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium, Hexavalent	154.398	10	100.0	52.36	102	85	115				

Sample ID	N020229-003AMSD	SampType:	MSD	TestCode:	3500_CrBPG	Units:	µg/L	Prep Date:		RunNo:	109528
Client ID:	ZZZZZZ	Batch ID:	R109528	TestNo:	SM 3500-Cr B			Analysis Date:	7/14/2016	SeqNo:	2377585

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium, Hexavalent	156.923	10	100.0	52.36	105	85	115	154.4	1.62	20	

Sample ID	N020229-002ADUP	SampType:	DUP	TestCode:	3500_CrBPG	Units:	µg/L	Prep Date:		RunNo:	109528
Client ID:	ZZZZZZ	Batch ID:	R109528	TestNo:	SM 3500-Cr B			Analysis Date:	7/14/2016	SeqNo:	2377588

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium, Hexavalent	611.022	20						610.9	0.0170	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

CLIENT: ARCADIS U.S., Inc. - California
Work Order: N020229
Project: PG&E Topock - PMP, RC000753.801A

ANALYTICAL QC SUMMARY REPORT

TestCode: 6020DIS_CrPGE

Sample ID **MB-58934**	SampType: **MBLK**	TestCode: **6020DIS_CrP**	Units: **µg/L**	Prep Date: **7/7/2016**	RunNo: **109332**
Client ID: **PBW**	Batch ID: **58934**	TestNo: **EPA 6020**	**EPA 3010A**	Analysis Date: **7/8/2016**	SeqNo: **2367213**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium	ND	1.0									

Sample ID **LCS-58934**	SampType: **LCS**	TestCode: **6020DIS_CrP**	Units: **µg/L**	Prep Date: **7/7/2016**	RunNo: **109332**
Client ID: **LCSW**	Batch ID: **58934**	TestNo: **EPA 6020**	**EPA 3010A**	Analysis Date: **7/8/2016**	SeqNo: **2367214**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium	10.225	1.0	10.00	0	102	85	115				

Sample ID **N020230-011B-MS**	SampType: **MS**	TestCode: **6020DIS_CrP**	Units: **µg/L**	Prep Date: **7/7/2016**	RunNo: **109332**
Client ID: **ZZZZZZ**	Batch ID: **58934**	TestNo: **EPA 6020**	**EPA 3010A**	Analysis Date: **7/8/2016**	SeqNo: **2367223**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium	14.380	1.0	10.00	5.030	93.5	75	125				

Sample ID **N020230-011B-MSD**	SampType: **MSD**	TestCode: **6020DIS_CrP**	Units: **µg/L**	Prep Date: **7/7/2016**	RunNo: **109332**
Client ID: **ZZZZZZ**	Batch ID: **58934**	TestNo: **EPA 6020**	**EPA 3010A**	Analysis Date: **7/8/2016**	SeqNo: **2367224**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium	14.391	1.0	10.00	5.030	93.6	75	125	14.38	0.0817	20	

Sample ID **N020229-001B-MS**	SampType: **MS**	TestCode: **6020DIS_CrP**	Units: **µg/L**	Prep Date: **7/7/2016**	RunNo: **109332**
Client ID: **ZZZZZZ**	Batch ID: **58934**	TestNo: **EPA 6020**	**EPA 3010A**	Analysis Date: **7/8/2016**	SeqNo: **2367720**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium	9.653	1.0	10.00	0.2712	93.8	75	125				

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	**Client Sample ID:**	PE-01-0716
Lab Order:	N020229	**Collection Date:**	7/6/2016 1:55:00 PM
Project:	PG&E Topock - PMP, RC000753.801A	**Matrix:**	GROUNDWATER
Lab ID:	N020229-001		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
ALKALINITY, SPECIATED							
			SM 2320 B				
RunID: **WETCHEM_160708E**	QC Batch: **R109327**			PrepDate			Analyst: **LR**
Alkalinity, Total (As CaCO3)	220	1.2	5.0		mg/L	1	7/8/2016 03:35 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

CLIENT:	ARCADIS U.S., Inc. - California	**Client Sample ID:**	TW-03D-0716
Lab Order:	N020229	**Collection Date:**	7/6/2016 1:36:00 PM
Project:	PG&E Topock - PMP, RC000753.801A	**Matrix:**	GROUNDWATER
Lab ID:	N020229-002		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
ALKALINITY, SPECIATED							
			SM 2320 B				
RunID: **WETCHEM_160708E**	QC Batch: **R109327**			PrepDate			Analyst: **LR**
Alkalinity, Total (As CaCO3)	130	1.2	5.0		mg/L	1	7/8/2016 03:35 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

CLIENT:	ARCADIS U.S., Inc. - California	**Client Sample ID:**	TW-02D-0716
Lab Order:	N020229	**Collection Date:**	7/6/2016 2:06:00 PM
Project:	PG&E Topock - PMP, RC000753.801A	**Matrix:**	GROUNDWATER
Lab ID:	N020229-003		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
ALKALINITY, SPECIATED							
			SM 2320 B				
RunID: **WETCHEM_160708E**	QC Batch: **R109327**			PrepDate			Analyst: **LR**
Alkalinity, Total (As CaCO3)	160	1.2	5.0		mg/L	1	7/8/2016 03:35 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

CLIENT: ARCADIS U.S., Inc. - California
Work Order: N020229
Project: PG&E Topock - PMP, RC000753.801A

ANALYTICAL QC SUMMARY REPORT

TestCode: 2320_W_SP

Sample ID **LCS-R109327**	SampType: **LCS**	TestCode: **2320_W_SP**	Units: **mg/L**	Prep Date:	RunNo: **109327**
Client ID: **LCSW**	Batch ID: **R109327**	TestNo: **SM 2320 B**		Analysis Date: **7/8/2016**	SeqNo: **2366812**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Alkalinity, Total (As CaCO3)	96.398	5.0	100.0	0	96.4	85	115				

Sample ID **MB-R109327**	SampType: **MBLK**	TestCode: **2320_W_SP**	Units: **mg/L**	Prep Date:	RunNo: **109327**
Client ID: **PBW**	Batch ID: **R109327**	TestNo: **SM 2320 B**		Analysis Date: **7/8/2016**	SeqNo: **2366813**

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 **N020229-001CDUP**	SampType: **DUP**	TestCode: **2320_W_SP**	Units: **mg/L**	Prep Date:	RunNo: **109327**
Client ID: **ZZZZZZ**	Batch ID: **R109327**	TestNo: **SM 2320 B**		Analysis Date: **7/8/2016**	SeqNo: **2366815**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Alkalinity, Total (As CaCO3)	222.458	5.0						224.6	0.948	30	

Sample ID **N020229-002CMS**	SampType: **MS**	TestCode: **2320_W_SP**	Units: **mg/L**	Prep Date:	RunNo: **109327**
Client ID: **ZZZZZZ**	Batch ID: **R109327**	TestNo: **SM 2320 B**		Analysis Date: **7/8/2016**	SeqNo: **2366817**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Alkalinity, Total (As CaCO3)	226.695	5.0	100.0	132.4	94.3	75	125				

Sample ID **N020229-002CMSD**	SampType: **MSD**	TestCode: **2320_W_SP**	Units: **mg/L**	Prep Date:	RunNo: **109327**
Client ID: **ZZZZZZ**	Batch ID: **R109327**	TestNo: **SM 2320 B**		Analysis Date: **7/8/2016**	SeqNo: **2366818**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Alkalinity, Total (As CaCO3)	230.932	5.0	100.0	132.4	98.5	75	125	226.7	1.85	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

CLIENT: ARCADIS U.S., Inc. - California
Lab Order: N020229
Project: PG&E Topock - PMP, RC000753.801A
Lab ID: N020229-001

Client Sample ID: PE-01-0716
Collection Date: 7/6/2016 1:55:00 PM
Matrix: GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
ANIONS BY ION CHROMATOGRAPHY							
EPA 300.0							
RunID: **IC2_160707A** QC Batch: **R109301** PrepDate							Analyst: **QBM**
Chloride	990	3.9	100		mg/L	200	7/7/2016 05:45 PM
ANIONS BY ION CHROMATOGRAPHY							
EPA 300.0							
RunID: **IC2_160707A** QC Batch: **R109301** PrepDate							Analyst: **QBM**
Sulfate	360	3.3	25		mg/L	50	7/7/2016 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

CLIENT: ARCADIS U.S., Inc. - California
Lab Order: N020229
Project: PG&E Topock - PMP, RC000753.801A
Lab ID: N020229-002

Client Sample ID: TW-03D-0716
Collection Date: 7/6/2016 1:36:00 PM
Matrix: GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
ANIONS BY ION CHROMATOGRAPHY							
			EPA 300.0				
RunID: **IC2_160707A**	QC Batch: **R109301**			PrepDate			Analyst: **QBM**
Chloride	2100	9.7	250		mg/L	500	7/7/2016 06:16 PM
ANIONS BY ION CHROMATOGRAPHY							
			EPA 300.0				
RunID: **IC2_160707A**	QC Batch: **R109301**			PrepDate			Analyst: **QBM**
Sulfate	480	6.6	50		mg/L	100	7/7/2016 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

CLIENT: ARCADIS U.S., Inc. - California
Lab Order: N020229
Project: PG&E Topock - PMP, RC000753.801A
Lab ID: N020229-003

Client Sample ID: TW-02D-0716
Collection Date: 7/6/2016 2:06:00 PM
Matrix: GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
ANIONS BY ION CHROMATOGRAPHY							
			EPA 300.0				
RunID: **IC2_160707A**	QC Batch: **R109301**			PrepDate			Analyst: **QBM**
Chloride	1700	9.7	250		mg/L	500	7/7/2016 06:32 PM
ANIONS BY ION CHROMATOGRAPHY							
			EPA 300.0				
RunID: **IC2_160707A**	QC Batch: **R109301**			PrepDate			Analyst: **QBM**
Sulfate	380	6.6	50		mg/L	100	7/7/2016 04:42 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

CLIENT: ARCADIS U.S., Inc. - California
Work Order: N020229
Project: PG&E Topock - PMP, RC000753.801A

ANALYTICAL QC SUMMARY REPORT

TestCode: 300_W_CLPGE

Sample ID **MB-R109301_CL**	SampType: **MBLK**	TestCode: **300_W_CLP**	Units: **mg/L**	Prep Date:	RunNo: **109301**
Client ID: **PBW**	Batch ID: **R109301**	TestNo: **EPA 300.0**		Analysis Date: **7/7/2016**	SeqNo: **2365481**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride	ND	0.50									

Sample ID **LCS-R109301_CL**	SampType: **LCS**	TestCode: **300_W_CLP**	Units: **mg/L**	Prep Date:	RunNo: **109301**
Client ID: **LCSW**	Batch ID: **R109301**	TestNo: **EPA 300.0**		Analysis Date: **7/7/2016**	SeqNo: **2365482**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride	2.508	0.50	2.500	0	100	90	110				

Sample ID **N020229-001CDUP**	SampType: **DUP**	TestCode: **300_W_CLP**	Units: **mg/L**	Prep Date:	RunNo: **109301**
Client ID: **ZZZZZZ**	Batch ID: **R109301**	TestNo: **EPA 300.0**		Analysis Date: **7/7/2016**	SeqNo: **2365490**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride	965.200	100						993.2	2.86	20	

Sample ID **N020229-003CMS**	SampType: **MS**	TestCode: **300_W_CLP**	Units: **mg/L**	Prep Date:	RunNo: **109301**
Client ID: **ZZZZZZ**	Batch ID: **R109301**	TestNo: **EPA 300.0**		Analysis Date: **7/7/2016**	SeqNo: **2365493**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride	2885.500	250	1250	1674	97.0	80	120				

Sample ID **N020229-003CMSD**	SampType: **MSD**	TestCode: **300_W_CLP**	Units: **mg/L**	Prep Date:	RunNo: **109301**
Client ID: **ZZZZZZ**	Batch ID: **R109301**	TestNo: **EPA 300.0**		Analysis Date: **7/7/2016**	SeqNo: **2365494**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride	2936.500	250	1250	1674	101	80	120	2886	1.75	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

CLIENT: ARCADIS U.S., Inc. - California
Work Order: N020229
Project: PG&E Topock - PMP, RC000753.801A

ANALYTICAL QC SUMMARY REPORT

TestCode: 300_W_SO4PGE

Sample ID	MB-R109301_SO4	SampType:	MBLK	TestCode:	300_W_SO4P	Units:	mg/L	Prep Date:		RunNo:	109301
Client ID:	PBW	Batch ID:	R109301	TestNo:	EPA 300.0			Analysis Date:	7/7/2016	SeqNo:	2365451

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Sulfate	ND	0.50									

Sample ID	LCS-R109301_SO4	SampType:	LCS	TestCode:	300_W_SO4P	Units:	mg/L	Prep Date:		RunNo:	109301
Client ID:	LCSW	Batch ID:	R109301	TestNo:	EPA 300.0			Analysis Date:	7/7/2016	SeqNo:	2365452

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Sulfate	4.862	0.50	5.000	0	97.2	90	110				

Sample ID	N020232-001CDUP	SampType:	DUP	TestCode:	300_W_SO4P	Units:	mg/L	Prep Date:		RunNo:	109301
Client ID:	ZZZZZZ	Batch ID:	R109301	TestNo:	EPA 300.0			Analysis Date:	7/7/2016	SeqNo:	2365456

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Sulfate	138.040	10						138.6	0.376	20	

Sample ID	N020232-002CMS	SampType:	MS	TestCode:	300_W_SO4P	Units:	mg/L	Prep Date:		RunNo:	109301
Client ID:	ZZZZZZ	Batch ID:	R109301	TestNo:	EPA 300.0			Analysis Date:	7/7/2016	SeqNo:	2365458

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Sulfate	220.780	10	100.0	117.0	104	80	120				

Sample ID	N020232-002CMSD	SampType:	MSD	TestCode:	300_W_SO4P	Units:	mg/L	Prep Date:		RunNo:	109301
Client ID:	ZZZZZZ	Batch ID:	R109301	TestNo:	EPA 300.0			Analysis Date:	7/7/2016	SeqNo:	2365459

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Sulfate	217.080	10	100.0	117.0	100	80	120	220.8	1.69	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

CLIENT:	ARCADIS U.S., Inc. - California	**Client Sample ID:**	PE-01-0716
Lab Order:	N020229	**Collection Date:**	7/6/2016 1:55:00 PM
Project:	PG&E Topock - PMP, RC000753.801A	**Matrix:**	GROUNDWATER
Lab ID:	N020229-001		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
NITRATE/NITRITE-N BY CADMIUM REDUCTION							
			SM4500-NO3F				
RunID: **WETCHEM_160711F**	QC Batch: **R109368**		PrepDate				Analyst: **RB**
Nitrate/Nitrite as N	ND	0.022	0.050		mg/L	1	7/11/2016

Qualifiers:

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

CLIENT:	ARCADIS U.S., Inc. - California	**Client Sample ID:**	TW-03D-0716
Lab Order:	N020229	**Collection Date:**	7/6/2016 1:36:00 PM
Project:	PG&E Topock - PMP, RC000753.801A	**Matrix:**	GROUNDWATER
Lab ID:	N020229-002		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
NITRATE/NITRITE-N BY CADMIUM REDUCTION							
			SM4500-NO3F				
RunID: **WETCHEM_160711F**	QC Batch: **R109368**		PrepDate				Analyst: **RB**
Nitrate/Nitrite as N	2.9	0.11	0.25		mg/L	5	7/11/2016

Qualifiers:

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

CLIENT: ARCADIS U.S., Inc. - California
Lab Order: N020229
Project: PG&E Topock - PMP, RC000753.801A
Lab ID: N020229-003

Client Sample ID: TW-02D-0716
Collection Date: 7/6/2016 2:06:00 PM
Matrix: GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
NITRATE/NITRITE-N BY CADMIUM REDUCTION							
			SM4500-NO3F				
RunID: **WETCHEM_160711F**	QC Batch: **R109368**		PrepDate				Analyst: **RB**
Nitrate/Nitrite as N	1.4	0.022	0.050		mg/L	1	7/11/2016

Qualifiers:

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

CLIENT: ARCADIS U.S., Inc. - California
Work Order: N020229
Project: PG&E Topock - PMP, RC000753.801A

ANALYTICAL QC SUMMARY REPORT

TestCode: 4500N03F_W

Sample ID	MB-R109368	SampType:	MBLK	TestCode:	4500N03F_W	Units:	mg/L	Prep Date:		RunNo:	109368
Client ID:	PBW	Batch ID:	R109368	TestNo:	SM4500-NO3			Analysis Date:	7/11/2016	SeqNo:	2369507

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-R109368	SampType:	LCS	TestCode:	4500N03F_W	Units:	mg/L	Prep Date:		RunNo:	109368
Client ID:	LCSW	Batch ID:	R109368	TestNo:	SM4500-NO3			Analysis Date:	7/11/2016	SeqNo:	2369508

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrate/Nitrite as N	0.493	0.050	0.5000	0	98.6	85	115				

Sample ID	N020223-001DDUP	SampType:	DUP	TestCode:	4500N03F_W	Units:	mg/L	Prep Date:		RunNo:	109368
Client ID:	ZZZZZZ	Batch ID:	R109368	TestNo:	SM4500-NO3			Analysis Date:	7/11/2016	SeqNo:	2369510

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrate/Nitrite as N	3.010	0.25						2.858	5.16	20	

Sample ID	N020223-001DMS	SampType:	MS	TestCode:	4500N03F_W	Units:	mg/L	Prep Date:		RunNo:	109368
Client ID:	ZZZZZZ	Batch ID:	R109368	TestNo:	SM4500-NO3			Analysis Date:	7/11/2016	SeqNo:	2369511

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrate/Nitrite as N	5.712	0.25	2.500	2.858	114	75	125				

Sample ID	N020223-001DMSD	SampType:	MSD	TestCode:	4500N03F_W	Units:	mg/L	Prep Date:		RunNo:	109368
Client ID:	ZZZZZZ	Batch ID:	R109368	TestNo:	SM4500-NO3			Analysis Date:	7/11/2016	SeqNo:	2369512

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrate/Nitrite as N	5.677	0.25	2.500	2.858	113	75	125	5.712	0.623	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

CLIENT: ARCADIS U.S., Inc. - California
Lab Order: N020229
Project: PG&E Topock - PMP, RC000753.801A
Lab ID: N020229-001

Client Sample ID: PE-01-0716
Collection Date: 7/6/2016 1:55:00 PM
Matrix: GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
DISSOLVED METALS BY ICP							
	EPA 3010A			**EPA 6010B**			
RunID: **ICP2_160707D**	QC Batch: **58931**			PrepDate	**7/7/2016**	Analyst: **CEI**	
Calcium	180000	28	500		ug/L	1	7/8/2016 12:33 AM
Iron	ND	1.8	20		ug/L	1	7/8/2016 12:33 AM
Magnesium	39000	4.4	100		ug/L	1	7/8/2016 12:33 AM
Sodium	690000	580	25000		ug/L	50	7/25/2016 09:39 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

CLIENT: ARCADIS U.S., Inc. - California
Lab Order: N020229
Project: PG&E Topock - PMP, RC000753.801A
Lab ID: N020229-002

Client Sample ID: TW-03D-0716
Collection Date: 7/6/2016 1:36:00 PM
Matrix: GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
DISSOLVED METALS BY ICP							
	EPA 3010A			**EPA 6010B**			
RunID: **ICP2_160707D**	QC Batch: **58931**				PrepDate	**7/7/2016**	Analyst: **CEI**
Calcium	230000	28	500		ug/L	1	7/8/2016 12:50 AM
Iron	ND	1.8	20		ug/L	1	7/8/2016 12:50 AM
Magnesium	27000	4.4	100		ug/L	1	7/8/2016 12:50 AM
Sodium	1500000	580	25000		ug/L	50	7/25/2016 09:42 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

CLIENT: ARCADIS U.S., Inc. - California
Lab Order: N020229
Project: PG&E Topock - PMP, RC000753.801A
Lab ID: N020229-003

Client Sample ID: TW-02D-0716
Collection Date: 7/6/2016 2:06:00 PM
Matrix: GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
DISSOLVED METALS BY ICP							
	EPA 3010A			**EPA 6010B**			
RunID: **ICP2_160707D**	QC Batch: **58931**			PrepDate	**7/7/2016**	Analyst: **CEI**	
Calcium	180000	28	500		ug/L	1	7/8/2016 12:57 AM
Iron	54	1.8	20		ug/L	1	7/8/2016 12:57 AM
Magnesium	31000	4.4	100		ug/L	1	7/8/2016 12:57 AM
Sodium	1300000	580	25000		ug/L	50	7/25/2016 09:45 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

CLIENT: ARCADIS U.S., Inc. - California
Work Order: N020229
Project: PG&E Topock - PMP, RC000753.801A

ANALYTICAL QC SUMMARY REPORT

TestCode: 6010_WDPGEPPB

Sample ID **MB-58931**	SampType: **MBLK**	TestCode: **6010_WDPG**	Units: **ug/L**	Prep Date: **7/7/2016**	RunNo: **109304**
Client ID: **PBW**	Batch ID: **58931**	TestNo: **EPA 6010B**	**EPA 3010A**	Analysis Date: **7/7/2016**	SeqNo: **2366413**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Calcium	39.686	500									
Iron	ND	20									
Magnesium	ND	100									

Sample ID **LCS1-58931**	SampType: **LCS**	TestCode: **6010_WDPG**	Units: **ug/L**	Prep Date: **7/7/2016**	RunNo: **109304**
Client ID: **LCSW**	Batch ID: **58931**	TestNo: **EPA 6010B**	**EPA 3010A**	Analysis Date: **7/7/2016**	SeqNo: **2366416**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Calcium	9199.643	500	10000	0	92.0	85	115				
Iron	92.140	20	100.0	0	92.1	85	115				
Magnesium	9847.048	100	10000	0	98.5	85	115				

Sample ID **N020221-004B-MS1**	SampType: **MS**	TestCode: **6010_WDPG**	Units: **ug/L**	Prep Date: **7/7/2016**	RunNo: **109304**
Client ID: **ZZZZZZ**	Batch ID: **58931**	TestNo: **EPA 6010B**	**EPA 3010A**	Analysis Date: **7/7/2016**	SeqNo: **2366420**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Calcium	42254.831	500	10000	32840	94.1	75	125				
Iron	94.044	20	100.0	4.278	89.8	75	125				
Magnesium	14569.336	100	10000	4675	98.9	75	125				

Sample ID **N020221-004B-MSD**	SampType: **MSD**	TestCode: **6010_WDPG**	Units: **ug/L**	Prep Date: **7/7/2016**	RunNo: **109304**
Client ID: **ZZZZZZ**	Batch ID: **58931**	TestNo: **EPA 6010B**	**EPA 3010A**	Analysis Date: **7/7/2016**	SeqNo: **2366421**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Calcium	43318.807	500	10000	32840	105	75	125	42250	2.49	20	
Iron	94.079	20	100.0	4.278	89.8	75	125	94.04	0.0380	20	
Magnesium	14728.676	100	10000	4675	101	75	125	14570	1.09	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
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: ARCADIS U.S., Inc. - California
Work Order: N020229
Project: PG&E Topock - PMP, RC000753.801A

ANALYTICAL QC SUMMARY REPORT

TestCode: 6010_WDPGEPPB

Sample ID **N020228-011B-MS1** SampType: **MS** TestCode: **6010_WDPG** Units: **ug/L** Prep Date: **7/7/2016** RunNo: **109304**
Client ID: **ZZZZZZ** Batch ID: **58931** TestNo: **EPA 6010B** **EPA 3010A** Analysis Date: **7/8/2016** SeqNo: **2366433**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Calcium	86116.866	500	10000	79830	62.9	75	125				S
Iron	120.441	20	100.0	22.61	97.8	75	125				
Magnesium	35413.476	100	10000	26120	92.9	75	125				

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: N020229
Project: PG&E Topock - PMP, RC000753.801A

ANALYTICAL QC SUMMARY REPORT

TestCode: 6010_WDPGEPPB

Sample ID	MB-59161	SampType:	MBLK	TestCode:	6010_WDPG	Units:	ug/L	Prep Date:	7/25/2016	RunNo:	109634
Client ID:	PBW	Batch ID:	59161	TestNo:	EPA 6010B	EPA 3010A		Analysis Date:	7/25/2016	SeqNo:	2383520

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Sodium	15.539	500									

Sample ID	LCS2-59161	SampType:	LCS	TestCode:	6010_WDPG	Units:	ug/L	Prep Date:	7/25/2016	RunNo:	109634
Client ID:	LCSW	Batch ID:	59161	TestNo:	EPA 6010B	EPA 3010A		Analysis Date:	7/25/2016	SeqNo:	2383521

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Sodium	20812.607	500	20000	0	104	85	115				

Sample ID	N020229-001B-MS2	SampType:	MS	TestCode:	6010_WDPG	Units:	ug/L	Prep Date:	7/25/2016	RunNo:	109634
Client ID:	ZZZZZZ	Batch ID:	59161	TestNo:	EPA 6010B	EPA 3010A		Analysis Date:	7/25/2016	SeqNo:	2383527

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Sodium	730721.067	25000	20000	687600	216	75	125				S

Sample ID	N020229-001B-MSD	SampType:	MSD	TestCode:	6010_WDPG	Units:	ug/L	Prep Date:	7/25/2016	RunNo:	109634
Client ID:	ZZZZZZ	Batch ID:	59161	TestNo:	EPA 6010B	EPA 3010A		Analysis Date:	7/25/2016	SeqNo:	2383528

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Sodium	741052.647	25000	20000	687600	267	75	125	730700	1.40	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
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT:	ARCADIS U.S., Inc. - California	**Client Sample ID:**	PE-01-0716
Lab Order:	N020229	**Collection Date:**	7/6/2016 1:55:00 PM
Project:	PG&E Topock - PMP, RC000753.801A	**Matrix:**	GROUNDWATER
Lab ID:	N020229-001		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
DISSOLVED METALS BY ICP-MS							
	EPA 3010A			**EPA 6020**			
RunID: **ICP7_160707G**	QC Batch: **58934**			PrepDate	**7/7/2016**		Analyst: **CEI**
Manganese	210	0.28	2.5		µg/L	5	7/8/2016 05:06 AM

Qualifiers:

B	Analyte detected in the associated Method Blank
H	Holding times for preparation or analysis exceeded
S	Spike/Surrogate outside of limits due to 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 RESULTS

Print Date: *26-Jul-16*

CLIENT:	ARCADIS U.S., Inc. - California	**Client Sample ID:**	TW-03D-0716
Lab Order:	N020229	**Collection Date:**	7/6/2016 1:36:00 PM
Project:	PG&E Topock - PMP, RC000753.801A	**Matrix:**	GROUNDWATER
Lab ID:	N020229-002		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
DISSOLVED METALS BY ICP-MS							
	EPA 3010A			**EPA 6020**			
RunID: **ICP7_160707G**	QC Batch: **58934**			PrepDate	**7/7/2016**		Analyst: **CEI**
Manganese	12	0.056	0.50		µg/L	1	7/8/2016 04:22 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

CLIENT:	ARCADIS U.S., Inc. - California	**Client Sample ID:**	TW-02D-0716
Lab Order:	N020229	**Collection Date:**	7/6/2016 2:06:00 PM
Project:	PG&E Topock - PMP, RC000753.801A	**Matrix:**	GROUNDWATER
Lab ID:	N020229-003		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
DISSOLVED METALS BY ICP-MS							
EPA 3010A			**EPA 6020**				
RunID: **ICP7_160707G**	QC Batch: **58934**			PrepDate	**7/7/2016**		Analyst: **CEI**
Manganese	52	0.056	0.50		µg/L	1	7/8/2016 04:39 AM

Qualifiers:

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

CLIENT: ARCADIS U.S., Inc. - California
Work Order: N020229
Project: PG&E Topock - PMP, RC000753.801A

ANALYTICAL QC SUMMARY REPORT

TestCode: 6020_DIS

Sample ID **MB-58934**	SampType: **MBLK**	TestCode: **6020_DIS**	Units: **µg/L**	Prep Date: **7/7/2016**	RunNo: **109344**
Client ID: **PBW**	Batch ID: **58934**	TestNo: **EPA 6020**	**EPA 3010A**	Analysis Date: **7/8/2016**	SeqNo: **2367788**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Manganese	ND	0.50									

Sample ID **LCS-58934**	SampType: **LCS**	TestCode: **6020_DIS**	Units: **µg/L**	Prep Date: **7/7/2016**	RunNo: **109344**
Client ID: **LCSW**	Batch ID: **58934**	TestNo: **EPA 6020**	**EPA 3010A**	Analysis Date: **7/8/2016**	SeqNo: **2367789**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Manganese	100.328	0.50	100.0	0	100	85	115				

Sample ID **N020230-011B-MS**	SampType: **MS**	TestCode: **6020_DIS**	Units: **µg/L**	Prep Date: **7/7/2016**	RunNo: **109344**
Client ID: **ZZZZZZ**	Batch ID: **58934**	TestNo: **EPA 6020**	**EPA 3010A**	Analysis Date: **7/8/2016**	SeqNo: **2367798**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Manganese	94.578	0.50	100.0	0.4004	94.2	75	125				

Sample ID **N020230-011B-MSD**	SampType: **MSD**	TestCode: **6020_DIS**	Units: **µg/L**	Prep Date: **7/7/2016**	RunNo: **109344**
Client ID: **ZZZZZZ**	Batch ID: **58934**	TestNo: **EPA 6020**	**EPA 3010A**	Analysis Date: **7/8/2016**	SeqNo: **2367799**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Manganese	94.493	0.50	100.0	0.4004	94.1	75	125	94.58	0.0896	20	

Sample ID **N020229-001B-MS**	SampType: **MS**	TestCode: **6020_DIS**	Units: **µg/L**	Prep Date: **7/7/2016**	RunNo: **109344**
Client ID: **ZZZZZZ**	Batch ID: **58934**	TestNo: **EPA 6020**	**EPA 3010A**	Analysis Date: **7/8/2016**	SeqNo: **2367826**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Manganese	304.434	2.5	100.0	207.3	97.1	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
DO	Surrogate Diluted Out		Calculations are based on raw values		

SAMPLE RECEIVING ITEMS

ASSET LABORATORIES
ANALYTICAL SUPPORT SERVICES FOR ENVIRONMENTAL TECHNOLOGIES

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

CHAIN OF CUSTODY RECORD

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: [illegible]	Address	Geotracker		RWQCB	✓	1. Chilled
Phone: 916-786-3302 Fax:	Address: 1410 Rocky Ridge Dr # 330 Roseville, CA 95661	Email to: mbloes@nivox.com	Labspec		CalTrans		2. Headspace
Submitted By: Jason Mahr		P.O.#	Others	✓	LEVEL III		3. Container Intact
Title: Project Manager	Phone: 916-786-3302 Fax:	Phone: 949-727-1400, ext 200 Fax:	Specify: RWQCB		LEVEL IV		4. Seal Present
Signature: Date: 6/7/16	Sampled By: [signature]		Global ID:		Regulatory		5. IR number
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				Specify State:		6. Method of Cooling: ICE
Project Name: PG&E Topock - PMP	Signature: [signature] Date: 6-7-16	Matrix: Ground x, Sediment; Potable, Soil; NPDES, Other Solid; Surface					Sample Temp: 3.3, 2.8, 2.1, 3.4 DL
Project Number: RC000753.801A							Courier: ASSET
							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	Cr(VI) FF (SM3500-CrB) (NH4)2, SO4, NH4, OH	Dissolved metals (SW6020A) FF, HNO3, 500 mL poly Cr	Dissolved metals (SW6010B/SW6020A dis) FF, HNO3 Ca, Mg, Mn, Fe, Na	Dissolved metals (SW6010B/SW6020A dis) FF, HNO3 As, Mn, Fe, Se, Mo, Ba	Total metals (SW6010B), HNO3 Fe	Anions (E300.0), 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	PRESERVATION	Remarks
						250 mL poly	250 mL poly	500 mL poly	500 mL poly	500 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	N020229- 01	PE-01-0716	7/6/2016	1355		X		X	X			X	X	X	X	X		X	E	4	P	BN	
2	- 02	TW-03D-0716	7/6/2016	1336			X	X	X			X	X	X	X	X		X	E	4	P	BN	
3	- 03	TW-02D-0716	7/6/2016	1406			X	X	X			X	X	X	X	X		X	E	4	P	BN	
4																							
5																							
6																							
7																							
8																							
9																							
10																							

Relinquished by (Signature and Printed Name):	Date/Time:	Relinquished by (Signature and Printed Name):	Date/Time:
[signature]	7/6/16 1545	[signature]	7/6/16 @1530
[signature]	7/6/16 @1751	[signature]	7/6/16 @1751

Turn Around Time (TAT)

- [ ] A = < 24 Hrs or Same Day TAT
- [ ] B = Next Workday
- [ ] C = 2 Workdays
- [ ] D = 3 Workdays
- [x] 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 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=HNO_3	S=H_2SO_4	C=4°C	T=Tube	V=VOA	P=Pint
Z=Zn(AC)$_2$	O=NaOH	T=$Na_2S_2O_3$		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

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:	7/6/2016	Workorder:	N020229
Rep sample Temp (Deg C):	3.3/2.8/2.1/3.4	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 ☑	No ☐	Not Present ☐
2. Custody seals intact, signed, dated on shippping container/cooler?	Yes ☐	No ☐	Not Present ☑
3. Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
4. Chain of custody present?	Yes ☑	No ☐	
5. Sampler's name present in COC?	Yes ☑	No ☐	
6. Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
7. Chain of custody agrees with sample labels?	Yes ☑	No ☐	
8. Samples in proper container/bottle?	Yes ☑	No ☐	
9. Sample containers intact?	Yes ☑	No ☐	
10. Sufficient sample volume for indicated test?	Yes ☑	No ☐	
11. All samples received within holding time?	Yes ☐	No ☑	
12. Temperature of rep sample or Temp Blank within acceptable limit?	Yes ☑	No ☐	NA ☐
13. Water - VOA vials have zero headspace?	Yes ☐	No ☐	NA ☑
14. Water - pH acceptable upon receipt? Example: pH > 12 for (CN,S); pH<2 for Metals	Yes ☑	No ☐	NA ☐
15. Did the bottle labels indicate correct preservatives used?	Yes ☑	No ☐	NA ☐
16. Were there Non-Conformance issues at login?	Yes ☑	No ☐	NA ☐
Was Client notified?	Yes ☐	No ☐	NA ☑

Comments: Samples for pH were past holding time upon receipt.

For:

Checklist Completed By: MBC 7/8/2016

Reviewed By: 7/13/2016

SampleControlLV

From: Marlon B. Cartin <marlon@assetlaboratories.com>
Sent: Thursday, July 07, 2016 11:03 AM
To: 'Maurel, Sean'
Cc: 'Madsen, Laura'; 'Bush, Dan'; 'Sample Control LV'; 'Yoandra Rodriguez'; nancy@assetlaboratories.com; 'Hanah Glodoviza'
Subject: RE: Topock - Sample Log-in QC

Hi Sean,

Will do.

SamCon – Please process.

Thanks,

Marlon B. Cartin
Project Manager
Nevada: 3151 W. Post Road, Las Vegas, NV 89118
P: 702.307.2659 Ext. 410 | F: 702.307.2691 | M: 702.439.0421

From: Maurel, Sean [mailto:Sean.Maurel@arcadis.com]
Sent: Thursday, July 07, 2016 10:31 AM
To: 'Marlon B. Cartin'
Cc: Madsen, Laura; Bush, Dan
Subject: Topock - Sample Log-in QC

Hello Marlon,

I just finished review of the sample log-ins from 7-6-16 and identified a few corrections to be made.

SDG N020229:
Remove pH by SM4500-H+B from the following samples

- PE-01-0716
- TW-03D-0716
- TW-02D-0716

SDG N020228:
Sample ID “R-63-Q316” should be changed to “R63-Q316”.

Please let me know if you have any questions.

Thank you!

Sean Maurel, EIT | Environmental Engineer 1 | sean.maurel@arcadis.com
Arcadis | Arcadis U.S., Inc.
2999 Oak Road, Suite 300 CA | 94597 | USA
M. + 1 925 330 8741

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ASSET Laboratories

WORK ORDER Summary

08-Jul-16

WorkOrder: N020229

Client ID: ARCUS02

Project: PG&E Topock - PMP, RC000753.0801 **QC Level:** Level IV **Date Received:** 7/6/2016

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
N020229-001A	PE-01-0716	7/6/2016 1:55:00 PM	7/20/2016	Groundwater	EPA 218.6	Hexavalent Chromium by IC	☐	☐	☐	WW
N020229-001B			7/20/2016		EPA 3010A	AQPREP TOTAL METALS: ICP, FLAA	☐	☐	☐	WW
			7/20/2016		EPA 3010A	AQPREP TOTAL METALS: ICP, FLAA	☐	☐	☐	WW
			7/20/2016		EPA 6010B	DISSOLVED METALS BY ICP	☐	☐	☐	WW
			7/20/2016		EPA 6020	DISSOLVED METALS BY ICP-MS	☐	☐	☐	WW
			7/20/2016		EPA 6020	DISSOLVED METALS BY ICP-MS	☐	☐	☐	WW
N020229-001C			7/20/2016		EPA 120.1	SPECIFIC CONDUCTANCE	☐	☐	☐	LR
			7/20/2016		SM4500-H+B	pH	☑	☐	☐	LR
			7/20/2016		SM2540C	TOTAL FILTERABLE RESIDUE	☐	☐	☐	LR
			7/20/2016			Total Dissolved Solids Prep	☐	☐	☐	LR
			7/20/2016		SM 2320 B	ALKALINITY, SPECIATED	☐	☐	☐	LR
			7/20/2016		EPA 300.0	ANIONS BY ION CHROMATOGRAPHY	☐	☐	☐	LR
			7/20/2016		EPA 300.0	ANIONS BY ION CHROMATOGRAPHY	☐	☐	☐	LR
			7/20/2016		SM 1030F1	Cation-Anion Balance Calculation	☐	☐	☐	LR
N020229-001D			7/20/2016		SM4500-NO3F	NITRATE/NITRITE-N BY CADMIUM REDUCTION	☐	☐	☐	WW
N020229-002A	TW-03D-0716	7/6/2016 1:36:00 PM	7/20/2016		SM 3500-Cr B	HEXAVALENT CHROMIUM	☐	☐	☐	WW
N020229-002B			7/20/2016		EPA 3010A	AQPREP TOTAL METALS: ICP, FLAA	☐	☐	☐	WW
			7/20/2016		EPA 3010A	AQPREP TOTAL METALS: ICP, FLAA	☐	☐	☐	WW
			7/20/2016		EPA 6010B	DISSOLVED METALS BY ICP	☐	☐	☐	WW
			7/20/2016		EPA 6020	DISSOLVED METALS BY ICP-MS	☐	☐	☐	WW
			7/20/2016		EPA 6020	DISSOLVED METALS BY ICP-MS	☐	☐	☐	WW
N020229-002C			7/20/2016		EPA 120.1	SPECIFIC CONDUCTANCE	☐	☐	☐	LR

WORK ORDER Summary

08-Jul-16

WorkOrder: N020229

Client ID: ARCUS02

Project: PG&E Topock - PMP, RC000753.0801 **QC Level:** Level IV **Date Received:** 7/6/2016

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
N020229-002C	TW-03D-0716	7/6/2016 1:36:00 PM	7/20/2016	Groundwater	SM4500-H+B	pH	☑	☐	☐	LR
			7/20/2016		SM2540C	TOTAL FILTERABLE RESIDUE	☐	☐	☐	LR
			7/20/2016			Total Dissolved Solids Prep	☐	☐	☐	LR
			7/20/2016		SM 2320 B	ALKALINITY, SPECIATED	☐	☐	☐	LR
			7/20/2016		EPA 300.0	ANIONS BY ION CHROMATOGRAPHY	☐	☐	☐	LR
			7/20/2016		EPA 300.0	ANIONS BY ION CHROMATOGRAPHY	☐	☐	☐	LR
			7/20/2016		SM 1030F1	Cation-Anion Balance Calculation	☐	☐	☐	LR
N020229-002D			7/20/2016		SM4500-NO3F	NITRATE/NITRITE-N BY CADMIUM REDUCTION	☐	☐	☐	WW
N020229-003A	TW-02D-716	7/6/2016 2:06:00 PM	7/20/2016		SM 3500-Cr B	HEXAVALENT CHROMIUM	☐	☐	☐	WW
N020229-003B			7/20/2016		EPA 3010A	AQPREP TOTAL METALS: ICP, FLAA	☐	☐	☐	WW
			7/20/2016		EPA 3010A	AQPREP TOTAL METALS: ICP, FLAA	☐	☐	☐	WW
			7/20/2016		EPA 6010B	DISSOLVED METALS BY ICP	☐	☐	☐	WW
			7/20/2016		EPA 6020	DISSOLVED METALS BY ICP-MS	☐	☐	☐	WW
			7/20/2016		EPA 6020	DISSOLVED METALS BY ICP-MS	☐	☐	☐	WW
N020229-003C			7/20/2016		EPA 120.1	SPECIFIC CONDUCTANCE	☐	☐	☐	LR
			7/20/2016		SM4500-H+B	pH	☑	☐	☐	LR
			7/20/2016		SM2540C	TOTAL FILTERABLE RESIDUE	☐	☐	☐	LR
			7/20/2016			Total Dissolved Solids Prep	☐	☐	☐	LR
			7/20/2016		SM 2320 B	ALKALINITY, SPECIATED	☐	☐	☐	LR
			7/20/2016		EPA 300.0	ANIONS BY ION CHROMATOGRAPHY	☐	☐	☐	LR
			7/20/2016		EPA 300.0	ANIONS BY ION CHROMATOGRAPHY	☐	☐	☐	LR
			7/20/2016		SM 1030F1	Cation-Anion Balance Calculation	☐	☐	☐	LR

WORK ORDER Summary

08-Jul-16

WorkOrder: N020229

Client ID: ARCUS02

Project: PG&E Topock - PMP, RC000753.0801 **QC Level:** Level IV **Date Received:** 7/6/2016

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
N020229-003D	TW-02D-716	7/6/2016 2:06:00 PM	7/20/2016	Groundwater	SM4500-NO3F	NITRATE/NITRITE-N BY CADMIUM REDUCTION	☐	☐	☐	WW
N020229-004A	FOLDER		7/20/2016		EDD	RWQCB	☐	☐	☐	LAB
			7/20/2016		Folder	Folder	☐	☐	☐	LAB

List of Analysts

ASSET Laboratories Work Order: **N020229**

NAME	TEST METHOD
Quennie Manimtim	EPA 218.6, SM 3500-Cr B, EPA 300.0
Claire Ignacio	EPA 6010B, EPA 6020
Ryan Balilu	SM 4500-NO3F
Lilia Ramit	EPA 120.1, SM 2320B, SM 2540C

EPA 120.1

Wet Chemistry Technical Batch Review Checklist (ARCUS02)

ASSET LABORATORIES - LAS VEGAS

FIRST LEVEL REVIEW:

QC Batch Number: R109287 **Analyst:** LSR

ASSET #: N020229 **Date Analyzed:** 7/7/2016

Method: EPA 120.1

Initial Calibration	1st Level Review Y	N	N/A	2nd Level Review 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:

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: 7/11/2016

2nd Level Reviewer [signature] Date: 7/21/2016

LOGBOOK DATA, QUANTITATION REPORT and/or SPECTRA

Conductivity Logbook

Date: 7/7/16 930

Analyst: LSR

Standard	Std ID	Reading	Comments
931 µS/cm	CINV - 160111A	9.52 µS/cm @ 21.4°C	% Rec: (90-110%)
1411	160425A	1409 @ 21.5°C	
99885	160425B	10150 @ 21.5°C	
100005	160322B	101600 - @ 21.6°C	

	Sample ID	Matrix	Reading	Comments
1	NO 20228-0020	H2O	965 @ 20.3°C	
2	3D		966 @ 20.4°C	
3	4D		967 @ 20.4°C	
4	5D		959 @ 20.8°C	
5	6D		973 @ 20.5°C	
6	7D		978 @ 20.3°C	
7	8D		977 @ 20.3°C	
8	9D		980 @ 20.3°C	
9	10D		1052 @ 20.4°C	
10	11D		1055 @ 20.7°C	
Dup	2D DUP		961 ~~@ 20.7°C~~	Accept: 10% water, 20% soil
	Std Chk:		@ 20.1°C	% Rec: (90-110%)

LSR

Date:

Analyst: CONT'D

Standard	Std ID	Reading	Comments
1413 µS/cm	CINV - 160111E	1465 µS/cm @ 21.4°C	% Rec: (90-110%)
10000	150909A	10280 @ 21.7°C	
998893	151130A	104100 @ 21.8	

	Sample ID	Matrix	Reading	Comments
1	NO 20228-0120	H2O	980 @ 21.0°C	
2	13D		984 @ 20.9°C	
3	NO 20229-0010		4070 @ 20.7°C	
4	2C		7810 @ 20.7°C	
5	3C		6210 @ 20.9°C	
6	1C DUP		4040 @ 20.2°C	
7				
8				
9	1413 µS/cm	CINV-160111E	1467 @ 21.4°C	
10	10000	150909A	10320 @ 22.0°C	
Dup	998893	151130A	10390 @ 22.0°C	Accept: 10% water, 20% soil
	Std Chk:			% Rec: (90-110%)

Logbook # 5

ESS LABORATORIES

Julia Ramit 7/11/2016

SM 2540C

Wet Chemistry Technical Batch Review Checklist (ARCUS02)

ASSET LABORATORIES - LAS VEGAS

FIRST LEVEL REVIEW:

QC Batch Number: 58937 **Analyst:** LSR

ASSET #: N020229 **Date Analyzed:** 7/7/2016

Method: EPA 160.1 /SM2540C

Initial Calibration	1st Level Review Y	N	N/A	2nd Level Review 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:

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: 7/11/2016

2nd Level Reviewer [signature] Date: 7/21/2016

SAMPLE CALCULATION

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 **N020229-001C,** TDS concentration in mg/L is calculated as follows:

$$\text{TDS, mg/L} = \frac{(60.3830–60.3116)*1000000}{30}$$

= 2380 mg/L

Reporting result in two significant figures,

TDS = 2400 mg/L

Lilia Ramit 7/11/2016

SAMPLE PREPARATION LOG

ASSET Laboratories

PREP BATCH REPORT

Prep Start Date: **7/7/2016 1:40:52 P**
Prep End Date: **7/8/2016 11:50:00 A**
Reviewed/ Date: 7/21/2016
Initials/ Date: Lilia Ramit 7/11/2016
Prep Batch **58937** Prep Code: **160.1_W_PRE** Technician: **Lilia Ramit**
Prep Factor Units: **mL / mL** Temp. (°C): **180**

Sample ID	Matrix	pH	SampAmt	3 Replicates	Sol Added	Sol Recov	Fin Vol	factor	Clean Up Code	TURB Check
LCS-58937	Water		100	☐	0	0	100	1.000		
MB-58937	Water		100	☐	0	0	100	1.000		
N020229-001C	Groundwater		30	☐	0	0	100	3.333		
N020229-002C	Groundwater		20	☐	0	0	100	5.000		
N020229-002C-DU	Groundwater		20	☐	0	0	100	5.000		
N020229-003C	Groundwater		20	☐	0	0	100	5.000		

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

Number	Reagent Name
8395	Glass Fiber Filter, 47mm

Spk ID	Spike Name	SampType	AmtAdd
IWST160601A	1000 ppm NaCl	LCS	100

ASSET Laboratories

PREP BATCH REPORT

Prep Start Date: 7/7/2016 1:40:52 P
Prep End Date:

Reviewed/ Date: 7/21/2016

Initials/ Date: Lilia Ramit 7/11/2016

Prep Batch 58937 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-58937	Water	INSTRUCCION	100	☐	0	0	100	1.000		
MB-58937	Water		100	☐	0	0	100	1.000		
N020229-001C	Groundwater	4 a 5	30	☐	0	0	100	3.333		
N020229-002C	Groundwater	7 a 10	20	☐	0	0	100	5.000		
N020229-002C-DU	Groundwater	1	20	☐	0	0	100	5.000		
N020229-003C	Groundwater	6 a 10	20	☐	0	0	100	5.000		

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

#8295

LOGBOOK DATA, QUANTITATION REPORT and/or SPECTRA

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
7/7/16 42	NO20232-009C	100	54.1457 54.1459	54.2116 54.2130	
AA	9C DUP	100	61.0241 61.0237	61.0885 61.0882	
AD	MB 558937	100	59.5948 59.5945	59.5943 59.5944	
MH	LCS 558937	100	61.7352 61.7349	61.8305 61.8310	
BR	NO20229-001C	30	60.3118 60.3116	60.3832 60.3830	
MM	2C	20	60.6676 60.6673	60.7566 60.7568	
J	2C DUP	20	60.5162 60.5159	60.6018 60.6021	
T	3C	20	60.7757 60.7747	60.8434 60.8437	

Julia Ramit 7/11/2016

TOTAL DISSOLVED SOLIDS, TDS

TDS, mg/L = (A-B) X 10000*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

Date Finished:	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
7/8/2016									
MBLK-58937	100	59.5945	59.5944	-1	1	-1			MBLK
LCS-58937	100	61.7349	61.831	961	1	961			LCS
N020229-001C	30	60.3116	60.383	714	3.33333333	2380	4070	0.585	SAMP
N020229-002C	20	60.6673	60.7568	895	5	4475	7810	0.573	SAMP
N020229-002CDUP	20	60.5159	60.6021	862	5	4310	7810	0.552	DUP
N020229-003C	20	60.7747	60.8437	690	5	3450	6210	0.556	SAMP

Julia Ramit 7/11/2016

EPA 218.6

IC Technical Batch Review Checklist (ARCUS02)

ASSET LABORATORIES - LAS VEGAS

IC ARCUS
REV 2.0
011416

QC Batch Number: R109313
ASSET #: N020229

Instrument ID: IC-07
Analyst: QBM
Date Analyzed: 7/7/2016

Method:

- [ ] EPA 300.0
- [ ] EPA 7199
- [x] 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					
Continuing Calibration						
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					
Sample Information						
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			
QC Items						
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			
Raw Data and Miscellaneous Information						
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					
Preliminary Report						
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 _____ Date: 7/21/2016

2nd Level Reviewer 7/25/2016 Date: _____

SAMPLE CALCULATION

Sample Calculation

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

FORMULA:

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

Cr^{+6}, μg/L = A * DF

where:

A = μg/L, IC Cr^{+6} calculated concentration
DF = dilution factor

For **N020229-001A** concentration in μg/L is calculated as follows:

Cr^{+6}, μg/L = 0.1928 * 1

= 0.1928

Since reporting limit is 0.2 mg/L,

Cr^{+6}, μg/L = ND

7/21/2016

ANALYSIS RUN LOG

INJECTION LOG: 160707A

Instrument ID: IC-07

Sample No	Sample Name	Type	DF	Peak Name	Injection Date/Time	Comments
1	BLANK	BLANK	1	Hexavalent Chromium	07/07/16 10:12 AM	Not Reported
2	iBLANK	iBLANK	1	Hexavalent Chromium	07/07/16 10:23 AM	Not Reported
3	STD-0.2 ppb	ICAL	1	Hexavalent Chromium	07/07/16 10:32 AM	Reported
4	STD-1.0 ppb	ICAL	1	Hexavalent Chromium	07/07/16 10:42 AM	Reported
5	STD-5.0 ppb	ICAL	1	Hexavalent Chromium	07/07/16 10:51 AM	Reported
6	STD-10.0 ppb	ICAL	1	Hexavalent Chromium	07/07/16 11:00 AM	Reported
7	STD-15.0 ppb	ICAL	1	Hexavalent Chromium	07/07/16 11:10 AM	Reported
8	STD-20.0 ppb	ICAL	1	Hexavalent Chromium	07/07/16 11:19 AM	Reported
9	ICV	ICV	1	Hexavalent Chromium	07/07/16 11:29 AM	Reported
10	PQL@0.2ppb	CCV2	1	Hexavalent Chromium	07/07/16 11:38 AM	Reported
11	ICB	ICB	1	Hexavalent Chromium	07/07/16 11:48 AM	Reported
12	MB-109313	MBLK	1	Hexavalent Chromium	07/07/16 11:59 AM	Reported
13	LCS-109313	LCS	1	Hexavalent Chromium	07/07/16 12:09 PM	Reported
14	N020228-001A	SAMP	1	Hexavalent Chromium	07/07/16 12:18 PM	Reported
15	N020228-001ADUP	DUP	1	Hexavalent Chromium	07/07/16 12:28 PM	Reported
16	N020228-001AMS	MS	1	Hexavalent Chromium	07/07/16 12:37 PM	Reported
17	N020228-002A	SAMP	1	Hexavalent Chromium	07/07/16 12:47 PM	Reported
18	N020228-002AMS	MS	1	Hexavalent Chromium	07/07/16 12:56 PM	Reported
19	N020228-002AMSD	MSD	1	Hexavalent Chromium	07/07/16 1:06 PM	Reported
20	N020228-003A	SAMP	1	Hexavalent Chromium	07/07/16 1:15 PM	Reported
21	N020228-003AMS	MS	1	Hexavalent Chromium	07/07/16 1:25 PM	Reported
22	CCV-1	CCV1	1	Hexavalent Chromium	07/07/16 1:34 PM	Reported
23	CCB-1	CCB	1	Hexavalent Chromium	07/07/16 1:44 PM	Reported
24	N020228-004A	SAMP	1	Hexavalent Chromium	07/07/16 1:53 PM	Reported
25	N020228-004AMS	MS	1	Hexavalent Chromium	07/07/16 2:02 PM	Reported
26	N020228-005A	SAMP	1	Hexavalent Chromium	07/07/16 2:12 PM	Reported
27	N020228-005AMS	MS	1	Hexavalent Chromium	07/07/16 2:21 PM	Not Reported
28	N020228-006A	SAMP	1	Hexavalent Chromium	07/07/16 2:31 PM	Reported
29	N020228-006AMS	MS	1	Hexavalent Chromium	07/07/16 2:40 PM	Reported
30	N020228-007A	SAMP	1	Hexavalent Chromium	07/07/16 2:50 PM	Reported
31	N020228-007AMS	MS	1	Hexavalent Chromium	07/07/16 2:59 PM	Reported
32	N020228-008A	SAMP	1	Hexavalent Chromium	07/07/16 3:09 PM	Reported
33	N020228-008AMS	MS	1	Hexavalent Chromium	07/07/16 3:18 PM	Reported
34	CCV-2	CCV	1	Hexavalent Chromium	07/07/16 3:28 PM	Reported
35	CCB-2	CCB	1	Hexavalent Chromium	07/07/16 3:37 PM	Reported
36	N020228-005AMS	MS	1	Hexavalent Chromium	07/07/16 3:47 PM	Reported
37	N020228-009A	SAMP	1	Hexavalent Chromium	07/07/16 3:56 PM	Reported
38	N020228-009AMS	MS	1	Hexavalent Chromium	07/07/16 4:05 PM	Reported
39	N020228-010A	SAMP	1	Hexavalent Chromium	07/07/16 4:15 PM	Reported
40	N020228-010AMS	MS	1	Hexavalent Chromium	07/07/16 4:24 PM	Reported
41	N020228-011A	SAMP	1	Hexavalent Chromium	07/07/16 4:34 PM	Reported
42	N020228-011AMS	MS	1	Hexavalent Chromium	07/07/16 4:44 PM	Reported

7/21/2016

IC-07 QBM 7/10/2016 7:38 PM

INJECTION LOG: 160707A

Instrument ID: IC-07

Sample No	Sample Name	Type	DF	Peak Name	Injection Date/Time	Comments
43	N020228-012A	SAMP	1	Hexavalent Chromium	07/07/16 4:53 PM	Reported
44	N020228-012AMS	MS	1	Hexavalent Chromium	07/07/16 5:02 PM	Reported
45	N020228-013A	SAMP	1	Hexavalent Chromium	07/07/16 5:12 PM	Reported
46	CCV-3	CCV1	1	Hexavalent Chromium	07/07/16 5:24 PM	Reported
47	CCB-3	CCB	1	Hexavalent Chromium	07/07/16 5:33 PM	Reported
48	N020229-001A	SAMP	1	Hexavalent Chromium	07/07/16 5:43 PM	Not Reported
49	N020228-013AMS	MS	1	Hexavalent Chromium	07/07/16 5:52 PM	Not Reported
50	N020228-013AMS	MS	1	Hexavalent Chromium	07/07/16 6:04 PM	Reported
51	N020229-001AMS	MS	1	Hexavalent Chromium	07/07/16 6:15 PM	Not Reported
52	N020230-001A	SAMP	1	Hexavalent Chromium	07/07/16 6:25 PM	Reported
53	N020230-002A	SAMP	1	Hexavalent Chromium	07/07/16 6:34 PM	Reported
54	N020230-003A	SAMP	1	Hexavalent Chromium	07/07/16 6:44 PM	Reported
55	N020230-004A	SAMP	1	Hexavalent Chromium	07/07/16 6:53 PM	Reported
56	N020230-005A	SAMP	1	Hexavalent Chromium	07/07/16 7:03 PM	Reported
57	N020230-006A	SAMP	1	Hexavalent Chromium	07/07/16 7:12 PM	Reported
58	CCV-4	CCV	1	Hexavalent Chromium	07/07/16 7:22 PM	Reported
59	CCB-4	CCB	1	Hexavalent Chromium	07/07/16 7:31 PM	Reported
60	N020229-001A	SAMP	1	Hexavalent Chromium	07/07/16 7:40 PM	Reported
61	N020229-001AMS	MS	1	Hexavalent Chromium	07/07/16 7:50 PM	Reported
62	CCV-5	CCV1	1	Hexavalent Chromium	07/07/16 7:59 PM	Reported
63	CCB-5	CCB	1	Hexavalent Chromium	07/07/16 8:09 PM	Reported

7/21/2016

Injection Log Summary

Sequence Details

Name:	**IC-07_160707B**	*Created On:*	**24/Jul/12 17:17:21**
Directory:	**Instrument Data\IC-7\2016**	*Created By:*	**ics 5000**
Data Vault:	**ChromeleonLocal**	*Updated On:*	**08/Jul/16 09:38:15**
No. of Injections:	**66**	*Updated By:*	**ics 5000**

Injection Details

No.	Injection Name	Position	Volume µL	Type	Level	Inject Time	Status	Comment
1	BLANK	3	1000	Unknown		07/07/2016 10:12	Finished	
2	iBLANK	4	1000	Unknown		07/07/2016 10:23	Finished	INSTRUMENT BLANK
3	STD1-0.2 ppb	5	1000	Calibration Standard	01	07/07/2016 10:32	Finished	0.2 ppb, IWST160401A
4	STD2-1.0 ppb	6	1000	Calibration Standard	02	07/07/2016 10:42	Finished	1.0 ppb, IWST160401A
5	STD3-5.0 ppb	7	1000	Calibration Standard	03	07/07/2016 10:51	Finished	5.0 ppb, IWST160401A
6	STD4-10.0 ppb	8	1000	Calibration Standard	04	07/07/2016 11:00	Finished	10 ppb, IWST160401A
7	STD5-15.0 ppb	9	1000	Calibration Standard	05	07/07/2016 11:10	Finished	15 ppb, IWST160401A
8	STD6-20.0 ppb	10	1000	Calibration Standard	06	07/07/2016 11:19	Finished	20 ppb, IWST160401A
9	ICV,ICV,1,	11	1000	Unknown		07/07/2016 11:29	Finished	ICV @5ppb, IWST-160401B
10	PQL@0.2ppb,CCV2,1	12	1000	Unknown		07/07/2016 11:38	Finished	PQL @ 0.2ppb
11	ICB,ICB,1,	13	1000	Unknown		07/07/2016 11:48	Finished	ICB R160629C
12	MB-H2O,MBLK,1	14	1000	Unknown		07/07/2016 11:59	Finished	MB R160629C
13	LCS-H2O,LCS,1	15	1000	Unknown		07/07/2016 12:09	Finished	LCS, IWST-160401B
14	N020228-001A,SAMP	16	1000	Unknown		07/07/2016 12:18	Finished	SAMP, 10 mL
15	N020228-001ADUP,D	17	1000	Unknown		07/07/2016 12:28	Finished	DUP, 10 mL
16	N020228-001AMS,MS	18	1000	Unknown		07/07/2016 12:37	Finished	MS (1ppb), IWST-160401B, 10
17	N020228-002A,SAMP	19	1000	Unknown		07/07/2016 12:47	Finished	SAMP, 10 mL
18	N020228-002AMS,MS	20	1000	Unknown		07/07/2016 12:56	Finished	MS (1ppb), IWST-160401B, 10
19	N020228-002AMSD,M	21	1000	Unknown		07/07/2016 13:06	Finished	MSD (1ppb), IWST-160401B, 1
20	N020228-003A,SAMP	22	1000	Unknown		07/07/2016 13:15	Finished	SAMP, 10 mL
21	N020228-003AMS,MS	23	1000	Unknown		07/07/2016 13:25	Finished	MS (1ppb), IWST-160401B, 10
22	CCV-1,CCV1,1,	24	1000	Unknown		07/07/2016 13:34	Finished	CCV @10ppb, IWST-160401A
23	CCB-1,CCB,1,	25	1000	Unknown		07/07/2016 13:44	Finished	CCB, R160629C
24	N020228-004A,SAMP	26	1000	Unknown		07/07/2016 13:53	Finished	SAMP, 10 mL
25	N020228-004AMS,MS	27	1000	Unknown		07/07/2016 14:02	Finished	MS (1ppb), IWST-160401B, 10
26	N020228-005A,SAMP	28	1000	Unknown		07/07/2016 14:12	Finished	SAMP, 10 mL
27	N020228-005AMS,MS	29	1000	Unknown		07/07/2016 14:21	Finished	MS (1ppb), IWST-160401B, 10
28	N020228-006A,SAMP	30	1000	Unknown		07/07/2016 14:31	Finished	SAMP, 10 mL
29	N020228-006AMS,MS	31	1000	Unknown		07/07/2016 14:40	Finished	MS (1ppb), IWST-160401B, 10
30	N020228-007A,SAMP	32	1000	Unknown		07/07/2016 14:50	Finished	SAMP, 10 mL
31	N020228-007AMS,MS	33	1000	Unknown		07/07/2016 14:59	Finished	MS (1ppb), IWST-160401B, 10
32	N020228-008A,SAMP	34	1000	Unknown		07/07/2016 15:09	Finished	SAMP, 10 mL
33	N020228-008AMS,MS	35	1000	Unknown		07/07/2016 15:18	Finished	MS (1ppb), IWST-160401B, 10
34	CCV-2,CCV,1,	36	1000	Unknown		07/07/2016 15:28	Finished	CCV @5ppb, IWST-160401A
35	CCB-2,CCB,1,	37	1000	Unknown		07/07/2016 15:37	Finished	CCB R160629C
36	N020228-005AMS,MS	38	1000	Unknown		07/07/2016 15:47	Finished	MS (1ppb), IWST-160401B, 10
37	N020228-009A,SAMP	39	1000	Unknown		07/07/2016 15:56	Finished	SAMP, 10 mL
38	N020228-009AMS,MS	40	1000	Unknown		07/07/2016 16:05	Finished	MS (1ppb), IWST-160401B, 10
39	N020228-010A,SAMP	41	1000	Unknown		07/07/2016 16:15	Finished	SAMP, 10 mL
40	N020228-010AMS,MS	42	1000	Unknown		07/07/2016 16:24	Finished	MS (1ppb), IWST-160401B, 10
41	N020228-011A,SAMP	43	1000	Unknown		07/07/2016 16:34	Finished	SAMP, 10 mL
42	N020228-011AMS,MS	44	1000	Unknown		07/07/2016 16:44	Finished	MS (1ppb), IWST-160401B, 10
43	N020228-012A,SAMP	45	1000	Unknown		07/07/2016 16:53	Finished	SAMP, 10 mL
44	N020228-012AMS,MS	46	1000	Unknown		07/07/2016 17:02	Finished	MS (1ppb), IWST-160401B, 10
45	N020228-013A,SAMP	1	1000	Unknown		07/07/2016 17:12	Finished	SAMP, 10 mL
46	CCV-3,CCV1,1,	2	1000	Unknown		07/07/2016 17:24	Finished	CCV @10ppb, IWST-160401A
47	CCB-3,CCB,1,	3	1000	Unknown		07/07/2016 17:33	Finished	CCB, R160629C
48	N020229-001A,SAMP	4	1000	Unknown		07/07/2016 17:43	Finished	SAMP, 10 mL
49	N020228-013AMS,MS	5	1000	Unknown		07/07/2016 17:52	Finished	MS (1ppb), IWST-160401B, 10
50	N020228-013AMS,MS	5	1000	Unknown		07/07/2016 18:04	Finished	MS (1ppb), IWST-160401B, 10
51	N020229-001AMS,MS	6	1000	Unknown		07/07/2016 18:15	Finished	MS (1ppb), IWST-160401B, 10
52	N020230-001A,SAMP	7	1000	Unknown		07/07/2016 18:25	Finished	SAMP, 10 mL
53	N020230-002A,SAMP	8	1000	Unknown		07/07/2016 18:34	Finished	SAMP, 10 mL
54	N020230-003A,SAMP	9	1000	Unknown		07/07/2016 18:44	Finished	SAMP, 10 mL
55	N020230-004A,SAMP	10	1000	Unknown		07/07/2016 18:53	Finished	SAMP, 10 mL
56	N020230-005A,SAMP	11	1000	Unknown		07/07/2016 19:03	Finished	SAMP, 10 mL
57	N020230-006A,SAMP	12	1000	Unknown		07/07/2016 19:12	Finished	SAMP, 10 mL
58	CCV-4,CCV,1,	13	1000	Unknown		07/07/2016 19:22	Finished	CCV @5ppb, IWST-160401A
59	CCB-4,CCB,1,	14	1000	Unknown		07/07/2016 19:31	Finished	CCB R160622B
60	N020229-001A,SAMP	15	1000	Unknown		07/07/2016 19:40	Finished	SAMP, 10 mL

61	N020229-001AMS,MS	16	1000	Unknown		07/07/2016 19:50	Finished	MS (1ppb), IWST-160401B, 10
62	CCV-5,CCV1,1,	17	1000	Unknown		07/07/2016 19:59	Finished	CCV @10ppb, IWST-160401A
63	CCB-5,CCB,1,	18	1000	Unknown		07/07/2016 20:09	Finished	CCB, R160629C
64	SHUTDOWN	19	1000	Unknown		07/07/2016 20:18	Finished	
65	Eluent: R160630C	20	1000	Unknown		n.a.	Finished	Eluent
66	PCR: R160706C	21	1000	Unknown		n.a.	Finished	Post-Column Reagent

SAMPLE PREPARATION LOG

Hexavalent Chromium Preparation and Runlog

Sample Preparation

Date Prepared: 7/7/16
Time Prepared: 10:30
Prepared By: MG

Slope 95.4%
ph 7 : 7.00 @ 21.0°C
ph 4 : 4.00 @ 20.9°C
ph 10 : 10.06 @ 20.9°C
LCS : 7.06 @ 20.4°C

Reagent ID:
Sulfuric Acid: #8457
Diphenylcarbazide: CINV-160125H
NH4OH + NH4SO4 eluent: R160630C / R160629A
NH4OH + NH4SO4 buffer: R160622B / R160629C

	Sample ID.	pH of sample	pH after treatment	Initial Volume of sample	Final Volume after buffer add'n	Volume of buffer added	Comments
1)	N020232-001A	9.49	–	~250 ml	~250 ml	–	R160622B
2)	002A	9.37	–			–	
3)	003A	9.47	–			–	
4)	004A	9.38	–			–	
5)	005A	9.35	–			–	
6)	006A	9.27	9.30			1drop 6N NaOH4	
7)	007A	9.19	9.33			2drops 6N NaOH4	
8)	008A	9.38	–			–	
9)	009A	9.31	–			–	
10)	N020228-001A	9.61	–				R160629C
11)	-002A	9.63 / 9.6 / 9.61	–				
12)	-003A	9.56 / 9.61 / 9.62	–				
13)	-004A	9.62 / 9.6 / 9.59	–				
14)	-005A	9.6 / 9.63 / 9.61	–				
15)	006A	9.63 / 9.59 / 9.62	–				
	007A	9.44 / 9.54 / 9.54	–				

Sample Preparation

Date Prepared: 7/7/16
Time Prepared: 10:30
Prepared By: Mark

Reagent ID:
Sulfuric Acid: #8457
Diphenylcarbazide: CINV-160125H
NH4OH + NH4SO4 eluent: R160630C / R160708A
NH4OH + NH4SO4 buffer: R160622B / R160629C

	Sample ID.	pH of sample	pH after treatment	Initial Volume of sample	Final Volume after buffer add'n	Volume of buffer added	Comments
1)	N020228 008A	9.55 / 9.54 / 9.55	–	~250 ml	~250 ml	–	R160629C
2)	009A	9.51 / 9.52 / 9.45	–			–	
3)	010 A	9.47 / 9.48 / 9.47	–			–	
4)	011 A	9.48 / 9.49 / 9.47	–			–	
5)	012 A	9.47 / 9.5 / 9.5	–			–	
6)	013 A	9.47 / 9.45 / 9.48	–			–	
7)	N020229-001A	9.26	9.32			1drop 6N NaOH4	
8)	002 A	9.31	–			–	
9)	003 A	9.28	9.33			1drop 6N NaOH	
10)	N020230-001A	9.05	9.32			3drops 6N NaOH	R160622B
11)	002A	9.20	9.33			2drops 6N NaOH	
12)	003A	9.17	9.30			2drops 6N NaOH	
13)	004A	9.15	9.32			2drops 6N NaOH	
14)	005A	9.17	9.30			2drops "	
15)	006A	9.15	9.36			3drops "	
	007A	9.32	–			–	

Logbook No. 10

INITIAL CALIBRATION DATA SUMMARY

(EPA 218.6) - INITIAL CALIBRATION

Instrument ID: IC-07
Date Calibrated: 7/7/2016

Initial Calibration:

Hexavalent Chromium	STD1	STD2	STD3	STD4	STD5	STD6	
COMPOUND, in ug/L	0.2	1	5	10	15	20	R^2
Area,mAU*min	0.0628	0.2582	1.2706	2.5192	3.8249	5.0640	1.0000

	Stock	Working
Standard Concentration:	1,000,000 PPB	1,000 PPB
Standard ID:	ISST150306A	IWST160401A

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.

7/21/2016

INITIAL CALIBRATION AND CONTINUING CALIBRATION VERIFICATION SUMMARY

CLIENT: ARCADIS U.S., Inc. - California
Work Order: N020229
Project: PG&E Topock - PMP, RC000753.0801

ANALYTICAL QC SUMMARY REPORT

TestCode: 218.6_WPGE

Sample ID: **ICV** SampType: **ICV** TestCode: **218.6_WPGE** Units: **µg/L** Prep Date: RunNo: **109313**
Client ID: **ICV** Batch ID: **R109313** TestNo: **EPA 218.6** Analysis Date: **7/7/2016** SeqNo: **2366526**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	5.035	0.20	5.000	0	101	90	110				

Sample ID: **PQL@0.2ppb** SampType: **CCV2** TestCode: **218.6_WPGE** Units: **µg/L** Prep Date: RunNo: **109313**
Client ID: **ZZZZZZ** Batch ID: **R109313** TestNo: **EPA 218.6** Analysis Date: **7/7/2016** SeqNo: **2366527**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	0.228	0.20	0.2000	0	114	80	120				

Sample ID: **CCV-1** SampType: **CCV1** TestCode: **218.6_WPGE** Units: **µg/L** Prep Date: RunNo: **109313**
Client ID: **ZZZZZZ** Batch ID: **R109313** TestNo: **EPA 218.6** Analysis Date: **7/7/2016** SeqNo: **2366539**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	9.971	0.20	10.00	0	99.7	95	105				

Sample ID: **CCV-2** SampType: **CCV** TestCode: **218.6_WPGE** Units: **µg/L** Prep Date: RunNo: **109313**
Client ID: **CCV** Batch ID: **R109313** TestNo: **EPA 218.6** Analysis Date: **7/7/2016** SeqNo: **2366550**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	5.106	0.20	5.000	0	102	95	105				

Sample ID: **CCV-3** SampType: **CCV1** TestCode: **218.6_WPGE** Units: **µg/L** Prep Date: RunNo: **109313**
Client ID: **ZZZZZZ** Batch ID: **R109313** TestNo: **EPA 218.6** Analysis Date: **7/7/2016** SeqNo: **2366562**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	10.014	0.20	10.00	0	100	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: N020229
Project: PG&E Topock - PMP, RC000753.0801

ANALYTICAL QC SUMMARY REPORT

TestCode: 218.6_WPGE

Sample ID: **CCV-4**	SampType: **CCV**	TestCode: **218.6_WPGE**	Units: **µg/L**	Prep Date:	RunNo: **109313**
Client ID: **CCV**	Batch ID: **R109313**	TestNo: **EPA 218.6**		Analysis Date: **7/7/2016**	SeqNo: **2366571**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	5.089	0.20	5.000	0	102	95	105				

Sample ID: **CCV-5**	SampType: **CCV1**	TestCode: **218.6_WPGE**	Units: **µg/L**	Prep Date:	RunNo: **109313**
Client ID: **ZZZZZZ**	Batch ID: **R109313**	TestNo: **EPA 218.6**		Analysis Date: **7/7/2016**	SeqNo: **2366575**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	9.988	0.20	10.00	0	99.9	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

SUMMARY OF INSTRUMENT BLANKS

CLIENT: ARCADIS U.S., Inc. - California
Work Order: N020229
Project: PG&E Topock - PMP, RC000753.0801

ANALYTICAL QC SUMMARY REPORT

TestCode: 218.6_WPGE

Sample ID: **ICB**	SampType: **ICB**	TestCode: **218.6_WPGE**	Units: **µg/L**	Prep Date:	RunNo: **109313**
Client ID: **ICB**	Batch ID: **R109313**	TestNo: **EPA 218.6**		Analysis Date: **7/7/2016**	SeqNo: **2366528**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	ND	0.20									

Sample ID: **CCB-1**	SampType: **CCB**	TestCode: **218.6_WPGE**	Units: **µg/L**	Prep Date:	RunNo: **109313**
Client ID: **CCB**	Batch ID: **R109313**	TestNo: **EPA 218.6**		Analysis Date: **7/7/2016**	SeqNo: **2366540**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	ND	0.20									

Sample ID: **CCB-2**	SampType: **CCB**	TestCode: **218.6_WPGE**	Units: **µg/L**	Prep Date:	RunNo: **109313**
Client ID: **CCB**	Batch ID: **R109313**	TestNo: **EPA 218.6**		Analysis Date: **7/7/2016**	SeqNo: **2366551**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	ND	0.20									

Sample ID: **CCB-3**	SampType: **CCB**	TestCode: **218.6_WPGE**	Units: **µg/L**	Prep Date:	RunNo: **109313**
Client ID: **CCB**	Batch ID: **R109313**	TestNo: **EPA 218.6**		Analysis Date: **7/7/2016**	SeqNo: **2366563**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	ND	0.20									

Sample ID: **CCB-4**	SampType: **CCB**	TestCode: **218.6_WPGE**	Units: **µg/L**	Prep Date:	RunNo: **109313**
Client ID: **CCB**	Batch ID: **R109313**	TestNo: **EPA 218.6**		Analysis Date: **7/7/2016**	SeqNo: **2366572**

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
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: ARCADIS U.S., Inc. - California
Work Order: N020229
Project: PG&E Topock - PMP, RC000753.0801

ANALYTICAL QC SUMMARY REPORT

TestCode: 218.6_WPGE

Sample ID: **CCB-5** SampType: **CCB** TestCode: **218.6_WPGE** Units: **µg/L** Prep Date: RunNo: **109313**
Client ID: **CCB** Batch ID: **R109313** TestNo: **EPA 218.6** Analysis Date: **7/7/2016** SeqNo: **2366576**

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

RETENTION TIME (RT) SUMMARY

Instrument ID: IC-07

Analytical Sequence

Date Analyzed: 7/7/2016

Sample Name	Retention Time	Evaluation
ICV	5.048	
CCV-1	5.048	
CCV-2	5.056	
CCV-3	5.065	
CCV-4	5.056	
CCV-5	5.065	
Average	5.056	
Actual RT Window	4.976 - 5.136	
Applied RT Window	4.856 - 5.256	
MB-109313	N.A.	N.A.
LCS-109313	5.048	PASS
N020228-001A	N.A.	N.A.
N020228-001ADUP	N.A.	N.A.
N020228-001AMS	5.048	PASS
N020228-002A	5.040	PASS
N020228-002AMS	5.048	PASS
N020228-002AMSD	5.048	PASS
N020228-003A	5.048	PASS
N020228-003AMS	5.048	PASS
N020228-004A	5.040	PASS
N020228-004AMS	5.048	PASS
N020228-005A	5.048	PASS
N020228-005AMS	5.040	PASS
N020228-006A	5.040	PASS
N020228-006AMS	5.056	PASS
N020228-007A	5.048	PASS
N020228-007AMS	5.040	PASS
N020228-008A	5.040	PASS
N020228-008AMS	5.048	PASS
N020228-005AMS	5.048	PASS
N020228-009A	5.048	PASS
N020228-009AMS	5.048	PASS

7/21/2016

RETENTION TIME (RT) SUMMARY

Instrument ID: IC-07

Analytical Sequence

Date Analyzed: 7/7/2016

Sample Name	Retention Time	Evaluation
ICV	5.048	
CCV-1	5.048	
CCV-2	5.056	
CCV-3	5.065	
CCV-4	5.056	
CCV-5	5.065	
Average	5.056	
Actual RT Window	4.976 - 5.136	
Applied RT Window	4.856 - 5.256	
N020228-010A	5.065	PASS
N020228-010AMS	5.048	PASS
N020228-011A	5.073	PASS
N020228-011AMS	5.048	PASS
N020228-012A	5.048	PASS
N020228-012AMS	5.048	PASS
N020228-013A	5.048	PASS
N020229-001A	5.006	PASS
N020228-013AMS	5.048	PASS
N020228-013AMS	5.048	PASS
N020229-001AMS	5.006	PASS
N020230-001A	5.048	PASS
N020230-002A	5.048	PASS
N020230-003A	5.056	PASS
N020230-004A	5.056	PASS
N020230-005A	5.065	PASS
N020230-006A	5.023	PASS
N020229-001A	5.006	PASS
N020229-001AMS	5.006	PASS

7/21/2016

MDL STUDY

METHOD DETECTION LIMIT 2016

Method Name: **HEXAVALENT CHROMIUM by Ion Chromatography**
Method Number: EPA 218.6/EPA 7199
Analysis Date(s): 2/12/2016, 2/23/2016, 2/24/2016, 2/25/2016, 3/7/2016, 3/9/2016 & 3/11/2016
Analyst: Ryan Balilu, Jannette Soria

Matrix: **WATER**
Unit: ug/L

Instrument Name: **IC-06**

Acceptance Criteria: MDL < spike < 10X MDL

Datafile:	160212	160223	160224	160225	160307	160309	160311						
Analyte	**#1**	**#2**	**#3**	**#4**	**#5**	**#6**	**#7**	**Spike Conc., mg/L**	**SD**	**$t_{(n-1)}$ value**	**MDL**	**PQL**	**Remarks**
ICAL:													
Hexavalent Chromiu	0.2195	0.2048	0.2167	0.1675	0.2194	0.1811	0.1826	0.20	0.0215	3.143	**0.0675**	**0.20**	OK,meets criteria

Students' **t** Values at 99% CL

#	$t_{(n-1)}$
10	2.821
9	2.896
8	2.998
7	3.143

METHOD DETECTION LIMIT 2016

Method Name: **HEXAVALENT CHROMIUM by Ion Chromatography**
Method Number: EPA 218.6/EPA 7199
Analysis Date(s): 3/16/2016; 3/18/2016; 3/21/2016, 3/22/2016, 3/25/2016 & 3/30/2016
Analyst: Jannette Soria

Matrix: **WATER**
Unit: ug/L

Instrument Name: **IC-07**

Acceptance Criteria: MDL < spike < 10X MDL

Datafile:	160316	160318	160321	160322	160323	160325	160330						
Analyte	**#1**	**#2**	**#3**	**#4**	**#5**	**#6**	**#7**	**Spike Conc., mg/L**	**SD**	**$t_{(n-1)}$ value**	**MDL**	**PQL**	**Remarks**
ICAL:													
Hexavalent Chromiu	0.1906	0.2326	0.2339	0.2002	0.2394	0.2147	0.1920	0.20	0.0208	3.143	**0.0655**	**0.20**	OK,meets criteria

Students' **t** Values at 99% CL

#	$t_{(n-1)}$
10	2.821
9	2.896
8	2.998
7	3.143

RAW DATA

INITIAL CALIBRATION

INJECTION LOG: 160707A

Instrument ID: IC-07

Sample No	Sample Name	Type	DF	Peak Name	Injection Date/Time	Comments
1	BLANK	BLANK	1	Hexavalent Chromium	07/07/16 10:12 AM	Not Reported
2	iBLANK	iBLANK	1	Hexavalent Chromium	07/07/16 10:23 AM	Not Reported
3	STD-0.2 ppb	ICAL	1	Hexavalent Chromium	07/07/16 10:32 AM	Reported
4	STD-1.0 ppb	ICAL	1	Hexavalent Chromium	07/07/16 10:42 AM	Reported
5	STD-5.0 ppb	ICAL	1	Hexavalent Chromium	07/07/16 10:51 AM	Reported
6	STD-10.0 ppb	ICAL	1	Hexavalent Chromium	07/07/16 11:00 AM	Reported
7	STD-15.0 ppb	ICAL	1	Hexavalent Chromium	07/07/16 11:10 AM	Reported
8	STD-20.0 ppb	ICAL	1	Hexavalent Chromium	07/07/16 11:19 AM	Reported
9	ICV	ICV	1	Hexavalent Chromium	07/07/16 11:29 AM	Reported
10	PQL@0.2ppb	CCV2	1	Hexavalent Chromium	07/07/16 11:38 AM	Reported
11	ICB	ICB	1	Hexavalent Chromium	07/07/16 11:48 AM	Reported
12	MB-109313	MBLK	1	Hexavalent Chromium	07/07/16 11:59 AM	Reported
13	LCS-109313	LCS	1	Hexavalent Chromium	07/07/16 12:09 PM	Reported
14	N020228-001A	SAMP	1	Hexavalent Chromium	07/07/16 12:18 PM	Reported
15	N020228-001ADUP	DUP	1	Hexavalent Chromium	07/07/16 12:28 PM	Reported
16	N020228-001AMS	MS	1	Hexavalent Chromium	07/07/16 12:37 PM	Reported
17	N020228-002A	SAMP	1	Hexavalent Chromium	07/07/16 12:47 PM	Reported
18	N020228-002AMS	MS	1	Hexavalent Chromium	07/07/16 12:56 PM	Reported
19	N020228-002AMSD	MSD	1	Hexavalent Chromium	07/07/16 1:06 PM	Reported
20	N020228-003A	SAMP	1	Hexavalent Chromium	07/07/16 1:15 PM	Reported
21	N020228-003AMS	MS	1	Hexavalent Chromium	07/07/16 1:25 PM	Reported
22	CCV-1	CCV1	1	Hexavalent Chromium	07/07/16 1:34 PM	Reported
23	CCB-1	CCB	1	Hexavalent Chromium	07/07/16 1:44 PM	Reported
24	N020228-004A	SAMP	1	Hexavalent Chromium	07/07/16 1:53 PM	Reported
25	N020228-004AMS	MS	1	Hexavalent Chromium	07/07/16 2:02 PM	Reported
26	N020228-005A	SAMP	1	Hexavalent Chromium	07/07/16 2:12 PM	Reported
27	N020228-005AMS	MS	1	Hexavalent Chromium	07/07/16 2:21 PM	Not Reported
28	N020228-006A	SAMP	1	Hexavalent Chromium	07/07/16 2:31 PM	Reported
29	N020228-006AMS	MS	1	Hexavalent Chromium	07/07/16 2:40 PM	Reported
30	N020228-007A	SAMP	1	Hexavalent Chromium	07/07/16 2:50 PM	Reported
31	N020228-007AMS	MS	1	Hexavalent Chromium	07/07/16 2:59 PM	Reported
32	N020228-008A	SAMP	1	Hexavalent Chromium	07/07/16 3:09 PM	Reported
33	N020228-008AMS	MS	1	Hexavalent Chromium	07/07/16 3:18 PM	Reported
34	CCV-2	CCV	1	Hexavalent Chromium	07/07/16 3:28 PM	Reported
35	CCB-2	CCB	1	Hexavalent Chromium	07/07/16 3:37 PM	Reported
36	N020228-005AMS	MS	1	Hexavalent Chromium	07/07/16 3:47 PM	Reported
37	N020228-009A	SAMP	1	Hexavalent Chromium	07/07/16 3:56 PM	Reported
38	N020228-009AMS	MS	1	Hexavalent Chromium	07/07/16 4:05 PM	Reported
39	N020228-010A	SAMP	1	Hexavalent Chromium	07/07/16 4:15 PM	Reported
40	N020228-010AMS	MS	1	Hexavalent Chromium	07/07/16 4:24 PM	Reported
41	N020228-011A	SAMP	1	Hexavalent Chromium	07/07/16 4:34 PM	Reported
42	N020228-011AMS	MS	1	Hexavalent Chromium	07/07/16 4:44 PM	Reported

7/15/2016

7/22/2016

IC-07 QBM 7/10/2016 7:38 PM

INJECTION LOG: 160707A

Instrument ID: IC-07

Sample No	Sample Name	Type	DF	Peak Name	Injection Date/Time	Comments
43	N020228-012A	SAMP	1	Hexavalent Chromium	07/07/16 4:53 PM	Reported
44	N020228-012AMS	MS	1	Hexavalent Chromium	07/07/16 5:02 PM	Reported
45	N020228-013A	SAMP	1	Hexavalent Chromium	07/07/16 5:12 PM	Reported
46	CCV-3	CCV1	1	Hexavalent Chromium	07/07/16 5:24 PM	Reported
47	CCB-3	CCB	1	Hexavalent Chromium	07/07/16 5:33 PM	Reported
48	N020229-001A	SAMP	1	Hexavalent Chromium	07/07/16 5:43 PM	Not Reported
49	N020228-013AMS	MS	1	Hexavalent Chromium	07/07/16 5:52 PM	Not Reported
50	N020228-013AMS	MS	1	Hexavalent Chromium	07/07/16 6:04 PM	Reported
51	N020229-001AMS	MS	1	Hexavalent Chromium	07/07/16 6:15 PM	Not Reported
52	N020230-001A	SAMP	1	Hexavalent Chromium	07/07/16 6:25 PM	Reported
53	N020230-002A	SAMP	1	Hexavalent Chromium	07/07/16 6:34 PM	Reported
54	N020230-003A	SAMP	1	Hexavalent Chromium	07/07/16 6:44 PM	Reported
55	N020230-004A	SAMP	1	Hexavalent Chromium	07/07/16 6:53 PM	Reported
56	N020230-005A	SAMP	1	Hexavalent Chromium	07/07/16 7:03 PM	Reported
57	N020230-006A	SAMP	1	Hexavalent Chromium	07/07/16 7:12 PM	Reported
58	CCV-4	CCV	1	Hexavalent Chromium	07/07/16 7:22 PM	Reported
59	CCB-4	CCB	1	Hexavalent Chromium	07/07/16 7:31 PM	Reported
60	N020229-001A	SAMP	1	Hexavalent Chromium	07/07/16 7:40 PM	Reported
61	N020229-001AMS	MS	1	Hexavalent Chromium	07/07/16 7:50 PM	Reported
62	CCV-5	CCV1	1	Hexavalent Chromium	07/07/16 7:59 PM	Reported
63	CCB-5	CCB	1	Hexavalent Chromium	07/07/16 8:09 PM	Reported

7/15/2016

Injection Log Summary

Sequence Details

Name:	**IC-07_160707B**	*Created On:*	**24/Jul/12 17:17:21**
Directory:	**Instrument Data\IC-7\2016**	*Created By:*	**ics 5000**
Data Vault:	**ChromeleonLocal**	*Updated On:*	**08/Jul/16 09:38:15**
No. of Injections:	**66**	*Updated By:*	**ics 5000**

Injection Details

No.	Injection Name	Position	Volume µL	Type	Level	Inject Time	Status	Comment
1	BLANK	3	1000	Unknown		07/07/2016 10:12	Finished	
2	iBLANK	4	1000	Unknown		07/07/2016 10:23	Finished	INSTRUMENT BLANK
3	STD1-0.2 ppb	5	1000	Calibration Standard	01	07/07/2016 10:32	Finished	0.2 ppb, IWST160401A
4	STD2-1.0 ppb	6	1000	Calibration Standard	02	07/07/2016 10:42	Finished	1.0 ppb, IWST160401A
5	STD3-5.0 ppb	7	1000	Calibration Standard	03	07/07/2016 10:51	Finished	5.0 ppb, IWST160401A
6	STD4-10.0 ppb	8	1000	Calibration Standard	04	07/07/2016 11:00	Finished	10 ppb, IWST160401A
7	STD5-15.0 ppb	9	1000	Calibration Standard	05	07/07/2016 11:10	Finished	15 ppb, IWST160401A
8	STD6-20.0 ppb	10	1000	Calibration Standard	06	07/07/2016 11:19	Finished	20 ppb, IWST160401A
9	ICV,ICV,1,	11	1000	Unknown		07/07/2016 11:29	Finished	ICV @5ppb, IWST-160401B
10	PQL@0.2ppb,CCV2,1	12	1000	Unknown		07/07/2016 11:38	Finished	PQL @ 0.2ppb
11	ICB,ICB,1,	13	1000	Unknown		07/07/2016 11:48	Finished	ICB R160629C
12	MB-H2O,MBLK,1	14	1000	Unknown		07/07/2016 11:59	Finished	MB R160629C
13	LCS-H2O,LCS,1	15	1000	Unknown		07/07/2016 12:09	Finished	LCS, IWST-160401B
14	N020228-001A,SAMP	16	1000	Unknown		07/07/2016 12:18	Finished	SAMP, 10 mL
15	N020228-001ADUP,D	17	1000	Unknown		07/07/2016 12:28	Finished	DUP, 10 mL
16	N020228-001AMS,MS	18	1000	Unknown		07/07/2016 12:37	Finished	MS (1ppb), IWST-160401B, 10
17	N020228-002A,SAMP	19	1000	Unknown		07/07/2016 12:47	Finished	SAMP, 10 mL
18	N020228-002AMS,MS	20	1000	Unknown		07/07/2016 12:56	Finished	MS (1ppb), IWST-160401B, 10
19	N020228-002AMSD,M	21	1000	Unknown		07/07/2016 13:06	Finished	MSD (1ppb), IWST-160401B, 1
20	N020228-003A,SAMP	22	1000	Unknown		07/07/2016 13:15	Finished	SAMP, 10 mL
21	N020228-003AMS,MS	23	1000	Unknown		07/07/2016 13:25	Finished	MS (1ppb), IWST-160401B, 10
22	CCV-1,CCV1,1,	24	1000	Unknown		07/07/2016 13:34	Finished	CCV @10ppb, IWST-160401A
23	CCB-1,CCB,1,	25	1000	Unknown		07/07/2016 13:44	Finished	CCB, R160629C
24	N020228-004A,SAMP	26	1000	Unknown		07/07/2016 13:53	Finished	SAMP, 10 mL
25	N020228-004AMS,MS	27	1000	Unknown		07/07/2016 14:02	Finished	MS (1ppb), IWST-160401B, 10
26	N020228-005A,SAMP	28	1000	Unknown		07/07/2016 14:12	Finished	SAMP, 10 mL
27	N020228-005AMS,MS	29	1000	Unknown		07/07/2016 14:21	Finished	MS (1ppb), IWST-160401B, 10
28	N020228-006A,SAMP	30	1000	Unknown		07/07/2016 14:31	Finished	SAMP, 10 mL
29	N020228-006AMS,MS	31	1000	Unknown		07/07/2016 14:40	Finished	MS (1ppb), IWST-160401B, 10
30	N020228-007A,SAMP	32	1000	Unknown		07/07/2016 14:50	Finished	SAMP, 10 mL
31	N020228-007AMS,MS	33	1000	Unknown		07/07/2016 14:59	Finished	MS (1ppb), IWST-160401B, 10
32	N020228-008A,SAMP	34	1000	Unknown		07/07/2016 15:09	Finished	SAMP, 10 mL
33	N020228-008AMS,MS	35	1000	Unknown		07/07/2016 15:18	Finished	MS (1ppb), IWST-160401B, 10
34	CCV-2,CCV,1,	36	1000	Unknown		07/07/2016 15:28	Finished	CCV @5ppb, IWST-160401A
35	CCB-2,CCB,1,	37	1000	Unknown		07/07/2016 15:37	Finished	CCB R160629C
36	N020228-005AMS,MS	38	1000	Unknown		07/07/2016 15:47	Finished	MS (1ppb), IWST-160401B, 10
37	N020228-009A,SAMP	39	1000	Unknown		07/07/2016 15:56	Finished	SAMP, 10 mL
38	N020228-009AMS,MS	40	1000	Unknown		07/07/2016 16:05	Finished	MS (1ppb), IWST-160401B, 10
39	N020228-010A,SAMP	41	1000	Unknown		07/07/2016 16:15	Finished	SAMP, 10 mL
40	N020228-010AMS,MS	42	1000	Unknown		07/07/2016 16:24	Finished	MS (1ppb), IWST-160401B, 10
41	N020228-011A,SAMP	43	1000	Unknown		07/07/2016 16:34	Finished	SAMP, 10 mL
42	N020228-011AMS,MS	44	1000	Unknown		07/07/2016 16:44	Finished	MS (1ppb), IWST-160401B, 10
43	N020228-012A,SAMP	45	1000	Unknown		07/07/2016 16:53	Finished	SAMP, 10 mL
44	N020228-012AMS,MS	46	1000	Unknown		07/07/2016 17:02	Finished	MS (1ppb), IWST-160401B, 10
45	N020228-013A,SAMP	1	1000	Unknown		07/07/2016 17:12	Finished	SAMP, 10 mL
46	CCV-3,CCV1,1,	2	1000	Unknown		07/07/2016 17:24	Finished	CCV @10ppb, IWST-160401A
47	CCB-3,CCB,1,	3	1000	Unknown		07/07/2016 17:33	Finished	CCB, R160629C
48	N020229-001A,SAMP	4	1000	Unknown		07/07/2016 17:43	Finished	SAMP, 10 mL
49	N020228-013AMS,MS	5	1000	Unknown		07/07/2016 17:52	Finished	MS (1ppb), IWST-160401B, 10
50	N020228-013AMS,MS	5	1000	Unknown		07/07/2016 18:04	Finished	MS (1ppb), IWST-160401B, 10
51	N020229-001AMS,MS	6	1000	Unknown		07/07/2016 18:15	Finished	MS (1ppb), IWST-160401B, 10
52	N020230-001A,SAMP	7	1000	Unknown		07/07/2016 18:25	Finished	SAMP, 10 mL
53	N020230-002A,SAMP	8	1000	Unknown		07/07/2016 18:34	Finished	SAMP, 10 mL
54	N020230-003A,SAMP	9	1000	Unknown		07/07/2016 18:44	Finished	SAMP, 10 mL
55	N020230-004A,SAMP	10	1000	Unknown		07/07/2016 18:53	Finished	SAMP, 10 mL
56	N020230-005A,SAMP	11	1000	Unknown		07/07/2016 19:03	Finished	SAMP, 10 mL
57	N020230-006A,SAMP	12	1000	Unknown		07/07/2016 19:12	Finished	SAMP, 10 mL
58	CCV-4,CCV,1,	13	1000	Unknown		07/07/2016 19:22	Finished	CCV @5ppb, IWST-160401A
59	CCB-4,CCB,1,	14	1000	Unknown		07/07/2016 19:31	Finished	CCB R160622B
60	N020229-001A,SAMP	15	1000	Unknown		07/07/2016 19:40	Finished	SAMP, 10 mL

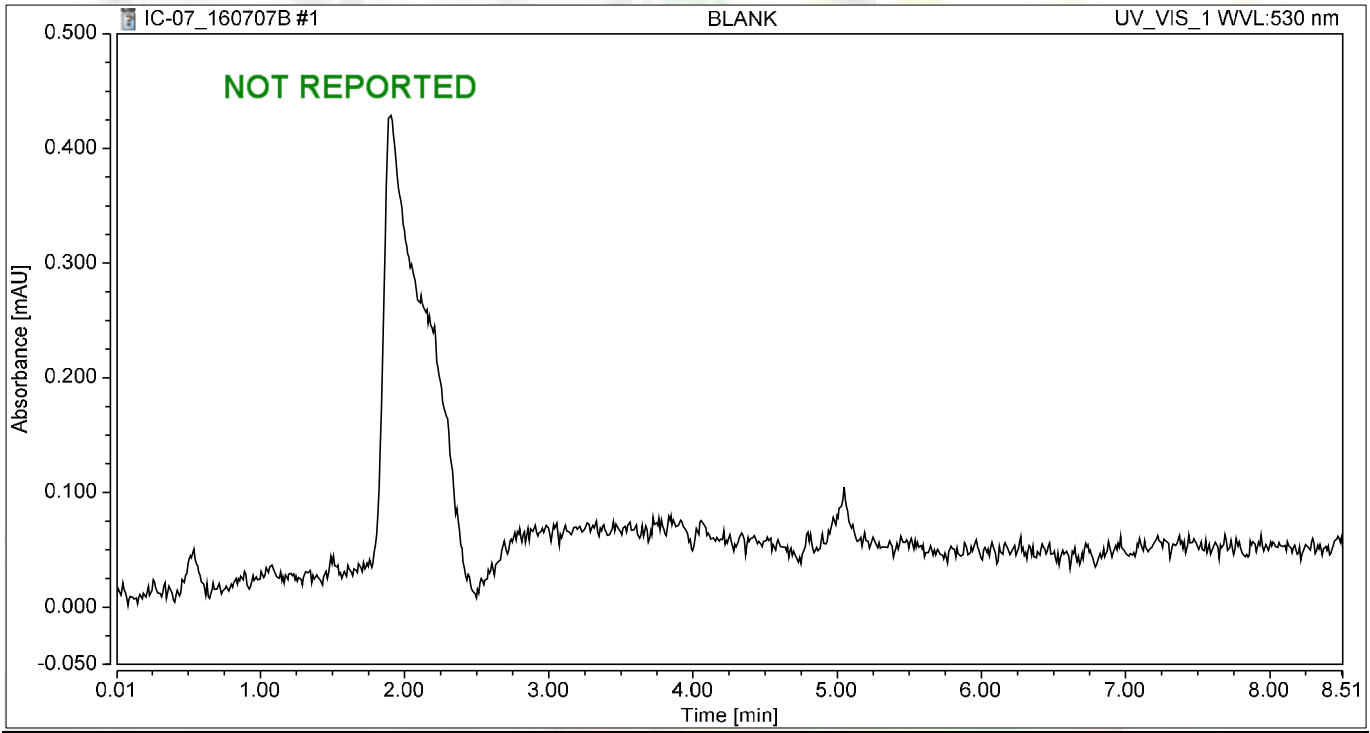
61	N020229-001AMS,MS	16	1000	Unknown		07/07/2016 19:50	Finished	MS (1ppb), IWST-160401B, 10
62	CCV-5,CCV1,1,	17	1000	Unknown		07/07/2016 19:59	Finished	CCV @10ppb, IWST-160401A
63	CCB-5,CCB,1,	18	1000	Unknown		07/07/2016 20:09	Finished	CCB, R160629C
64	SHUTDOWN	19	1000	Unknown		07/07/2016 20:18	Finished	
65	Eluent: R160630C	20	1000	Unknown		n.a.	Finished	Eluent
66	PCR: R160706C	21	1000	Unknown		n.a.	Finished	Post-Column Reagent

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:	**160707_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**07/Jul/16 10:12**	*Sample Weight:*	**1.0000**

Chromatogram



Integration Results

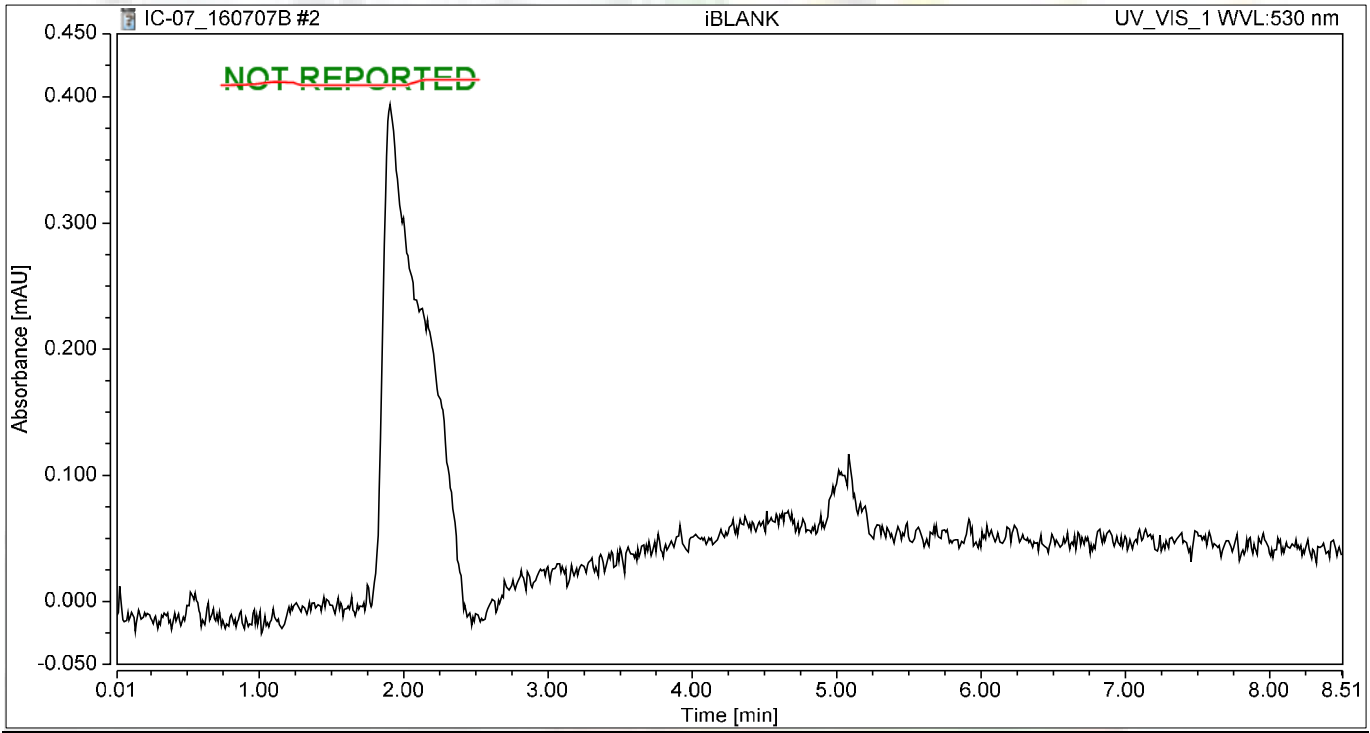
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
n.a.	Hexavalent Chromium	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Total:			**0.000**	**0.000**	**0.00**	**0.00**	

Chromatogram and Results

Injection Details

Injection Name:	**iBLANK**	*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:	**160707_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**07/Jul/16 10:23**	*Sample Weight:*	**1.0000**

Chromatogram



Integration Results

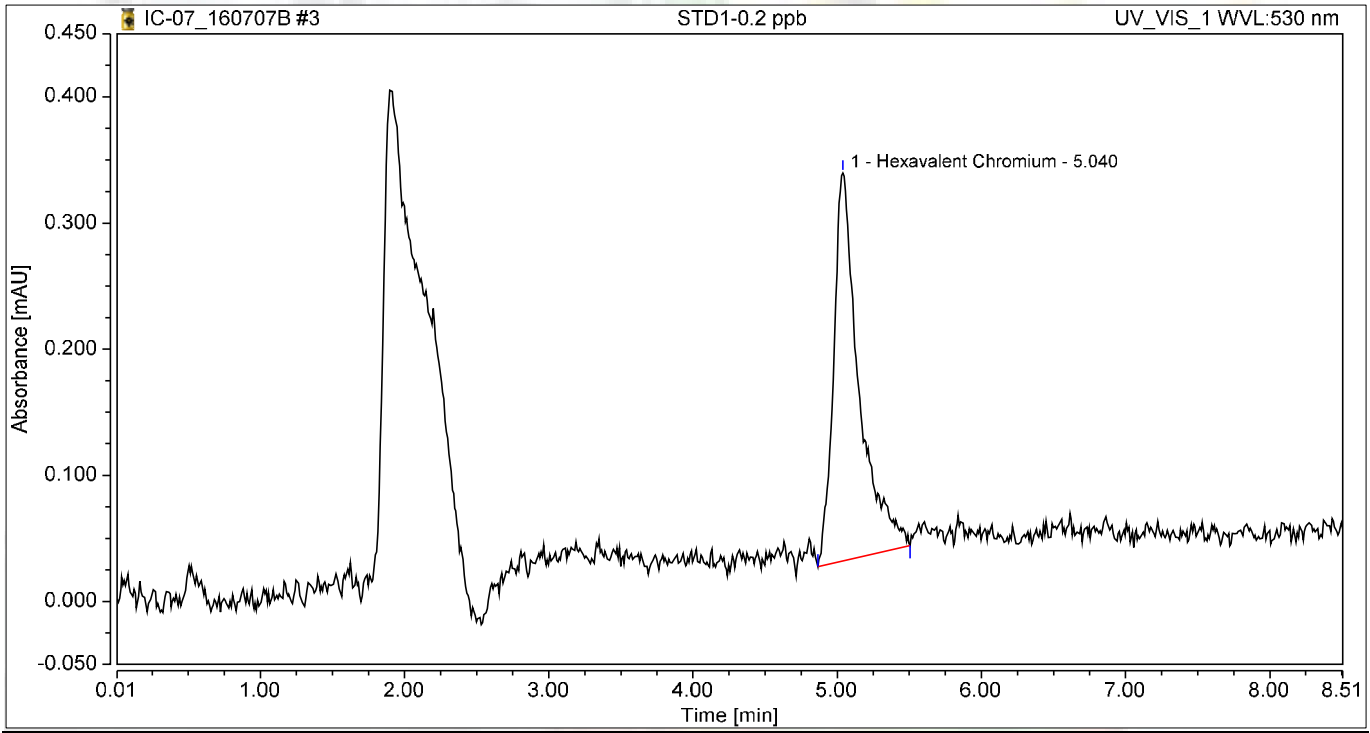
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
n.a.	Hexavalent Chromium	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Total:			**0.000**	**0.000**	**0.00**	**0.00**	

Chromatogram and Results

Injection Details

Injection Name:	**STD1-0.2 ppb**	*Run Time (min):*	**8.50**
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:	**160707_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**07/Jul/16 10:32**	*Sample Weight:*	**1.0000**

Chromatogram



Integration Results

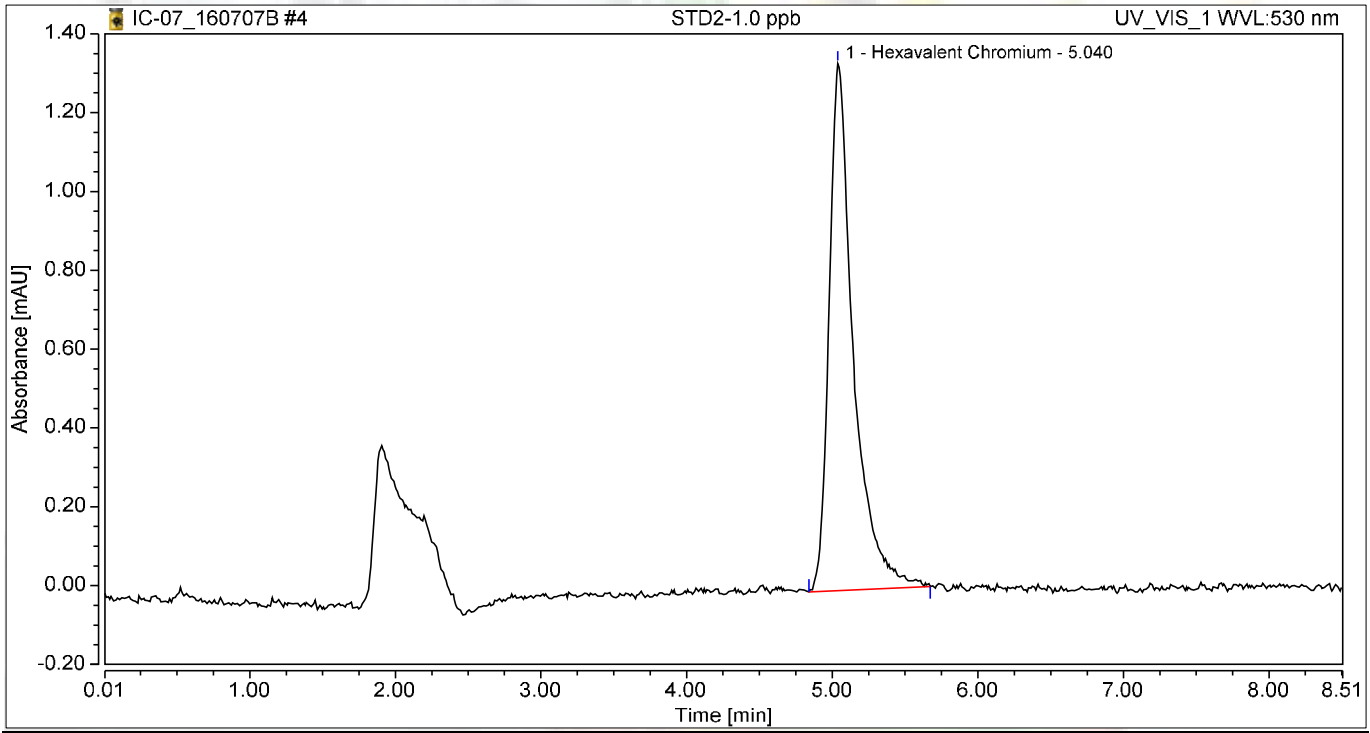
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	5.040	0.063	0.308	100.00	100.00	0.2475
Total:			**0.063**	**0.308**	**100.00**	**100.00**	

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:	**160707_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**07/Jul/16 10:42**	*Sample Weight:*	**1.0000**

Chromatogram



Integration Results

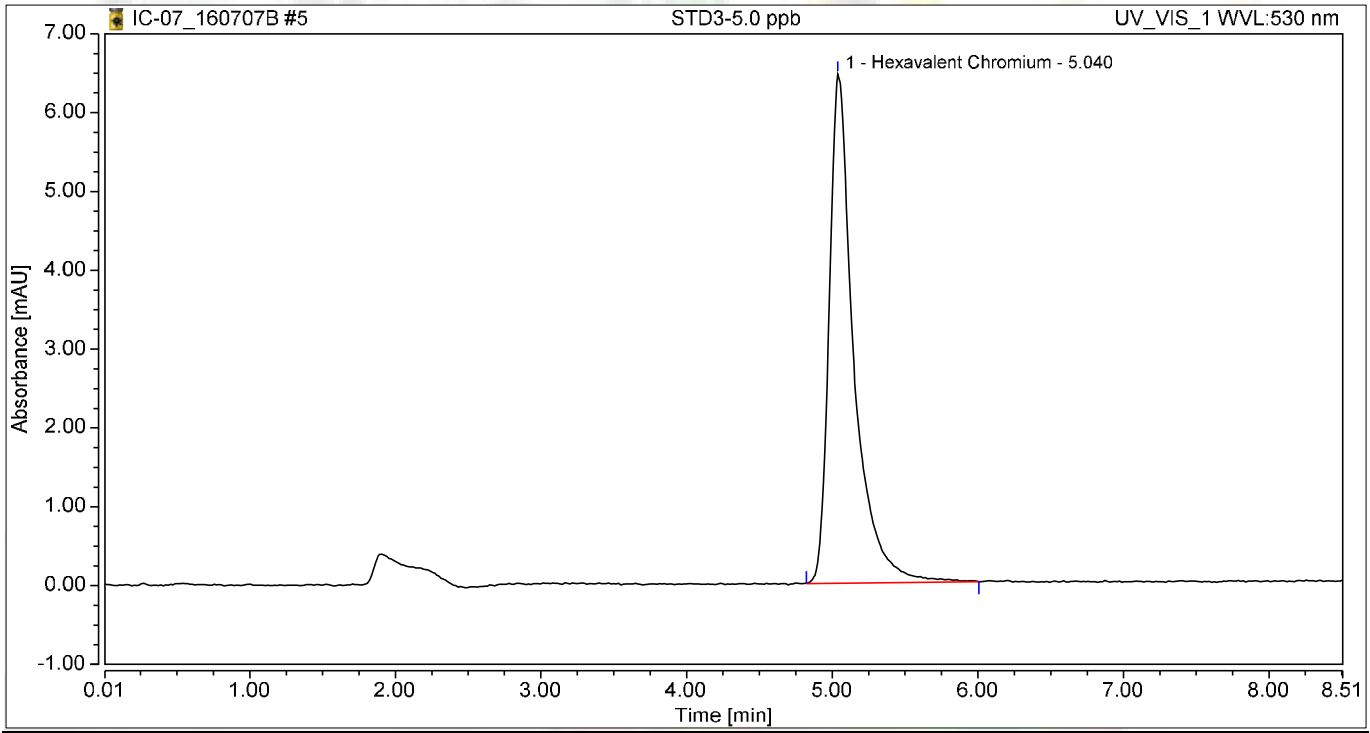
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	5.040	0.258	1.336	100.00	100.00	1.0183
Total:			**0.258**	**1.336**	**100.00**	**100.00**	

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:	**160707_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**07/Jul/16 10:51**	*Sample Weight:*	**1.0000**

Chromatogram



Integration Results

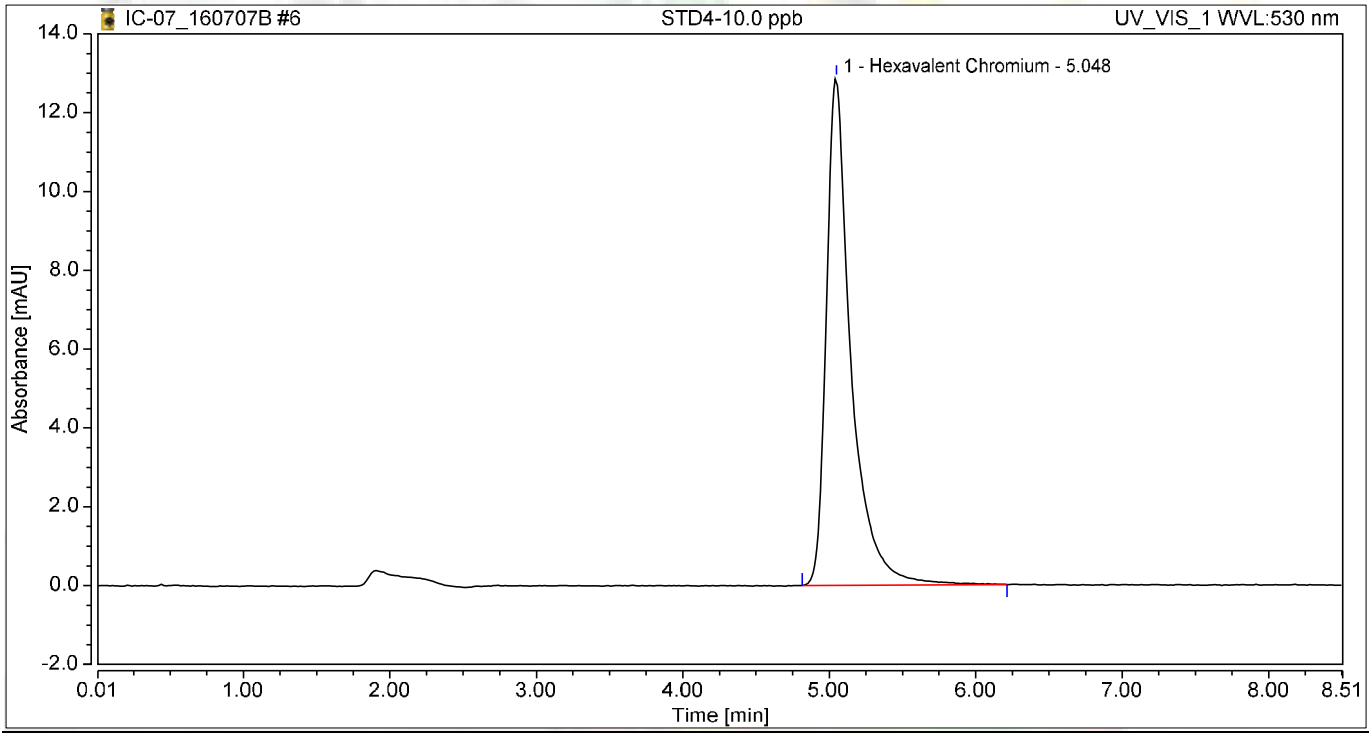
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	5.040	1.271	6.462	100.00	100.00	5.0100
Total:			**1.271**	**6.462**	**100.00**	**100.00**	

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:	**160707_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**07/Jul/16 11:00**	*Sample Weight:*	**1.0000**

Chromatogram



Integration Results

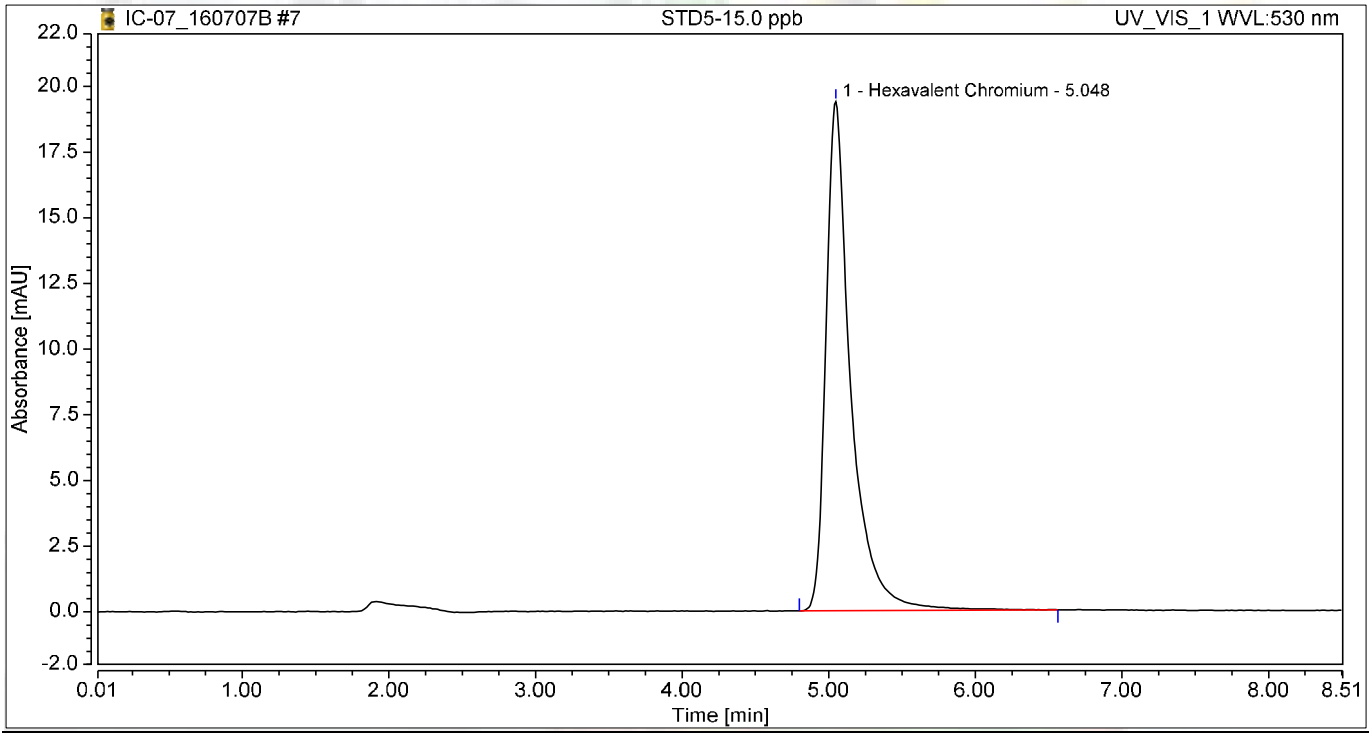
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	5.048	2.519	12.882	100.00	100.00	9.9335
Total:			**2.519**	**12.882**	**100.00**	**100.00**	

Chromatogram and Results

Injection Details

Injection Name:	**STD5-15.0 ppb**	*Run Time (min):*	**8.49**
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:	**160707_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**07/Jul/16 11:10**	*Sample Weight:*	**1.0000**

Chromatogram



Integration Results

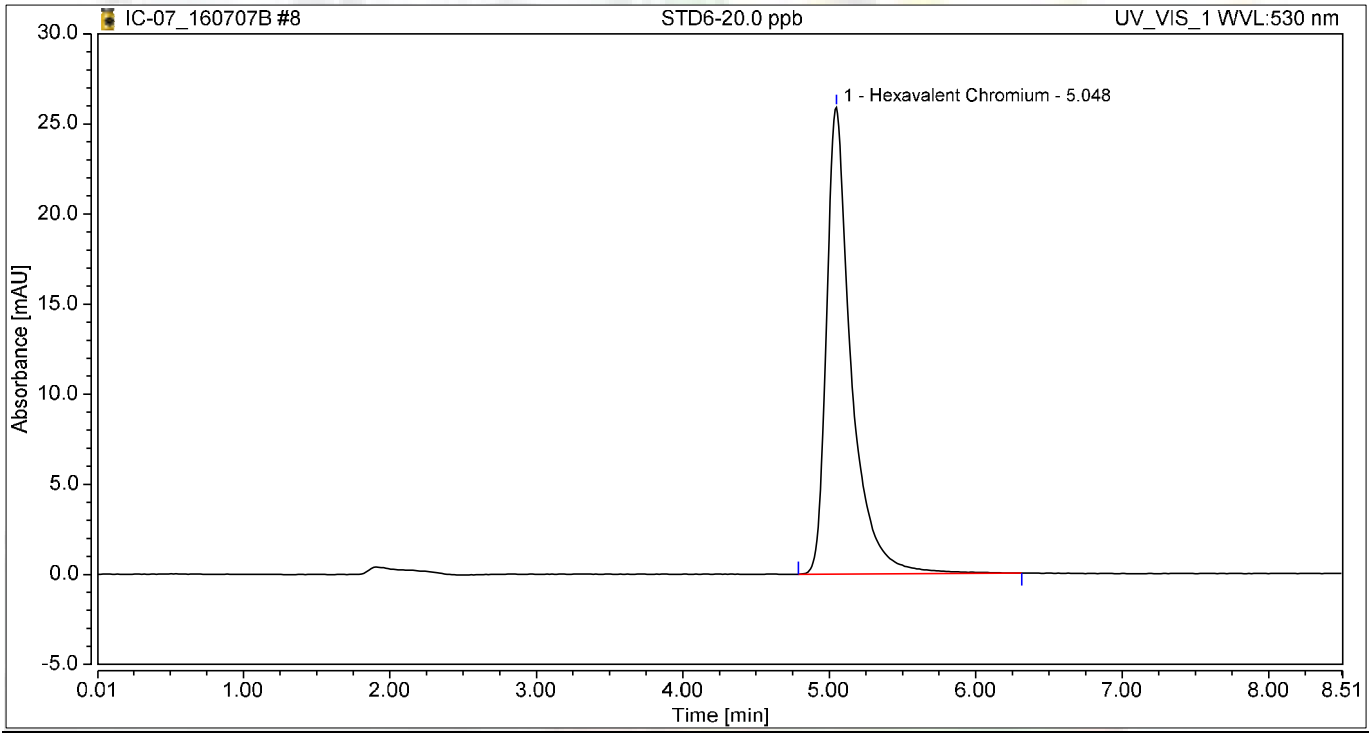
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	5.048	3.825	19.377	100.00	100.00	15.0822
Total:			**3.825**	**19.377**	**100.00**	**100.00**	

Chromatogram and Results

Injection Details

Injection Name:	**STD6-20.0 ppb**	*Run Time (min):*	**8.50**
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:	**160707_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**07/Jul/16 11:19**	*Sample Weight:*	**1.0000**

Chromatogram



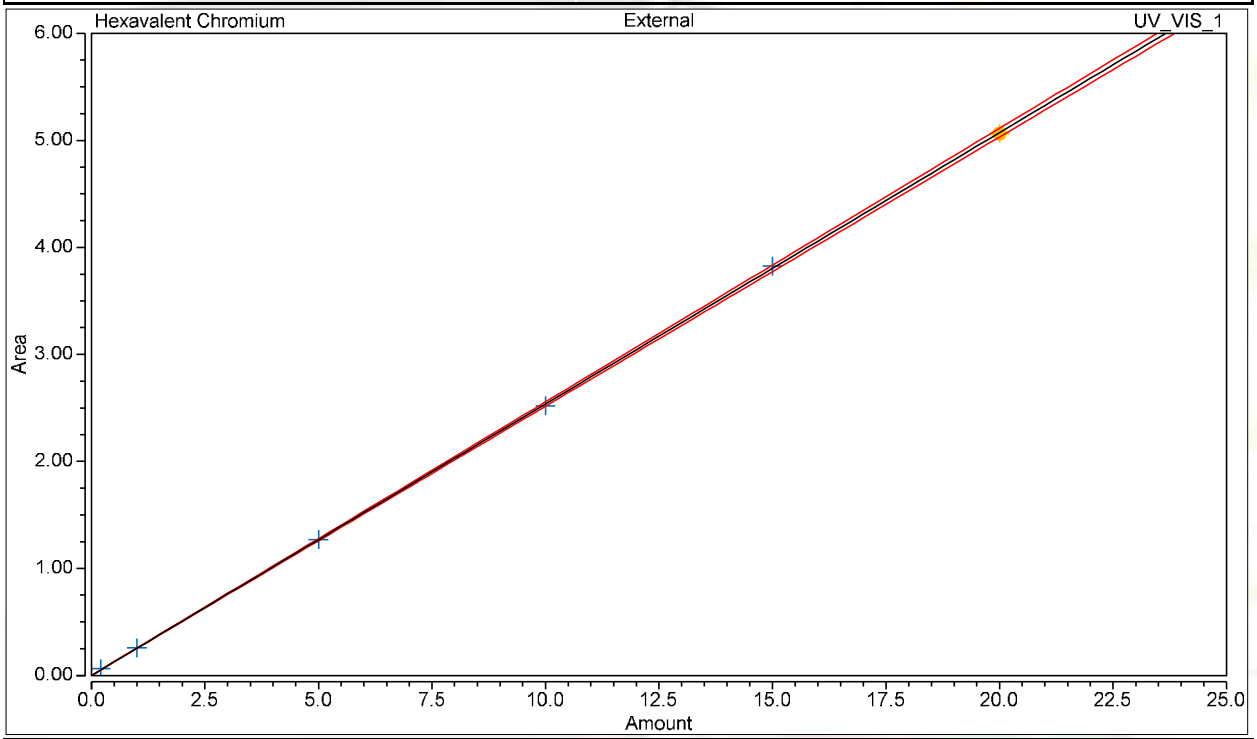
Integration Results

No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	5.048	5.064	25.901	100.00	100.00	19.9677
Total:			**5.064**	**25.901**	**100.00**	**100.00**	

Initial Calibration Summary

Calibration Details	Hexavalent Chromium		
Calibration Type	Lin	*Offset (C0)*	0.0000
Evaluation Type	Area	*Slope (C1)*	0.2536
Number of Calibration Points	6	*Curve (C2)*	0.0000
Number of disabled Calibration Points	0	*R-Square*	0.99995

Calibration Plot Hexavalent Chromium



Calibration Results Hexavalent Chromium

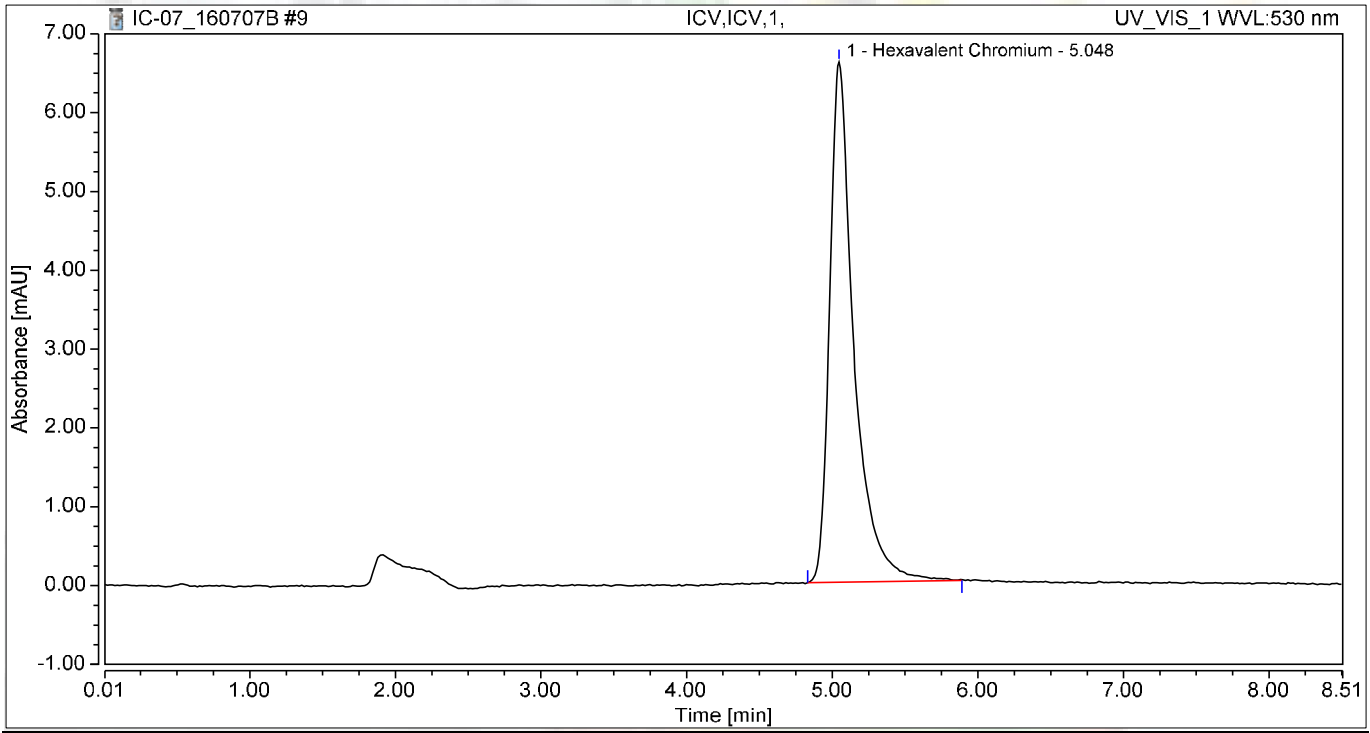
No.	Injection Name	Calibration Level	X Value	Y Value	Area mAU*min	Height mAU
3	STD1-0.2 ppb	01	0.2000	0.0628	0.063	0.308
4	STD2-1.0 ppb	02	1.0000	0.2582	0.258	1.336
5	STD3-5.0 ppb	03	5.0000	1.2706	1.271	6.462
6	STD4-10.0 ppb	04	10.0000	2.5192	2.519	12.882
7	STD5-15.0 ppb	05	15.0000	3.8249	3.825	19.377
8	STD6-20.0 ppb	06	20.0000	5.0640	5.064	25.901

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:	**160707_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**07/Jul/16 11:29**	*Sample Weight:*	**1.0000**

Chromatogram



Integration Results

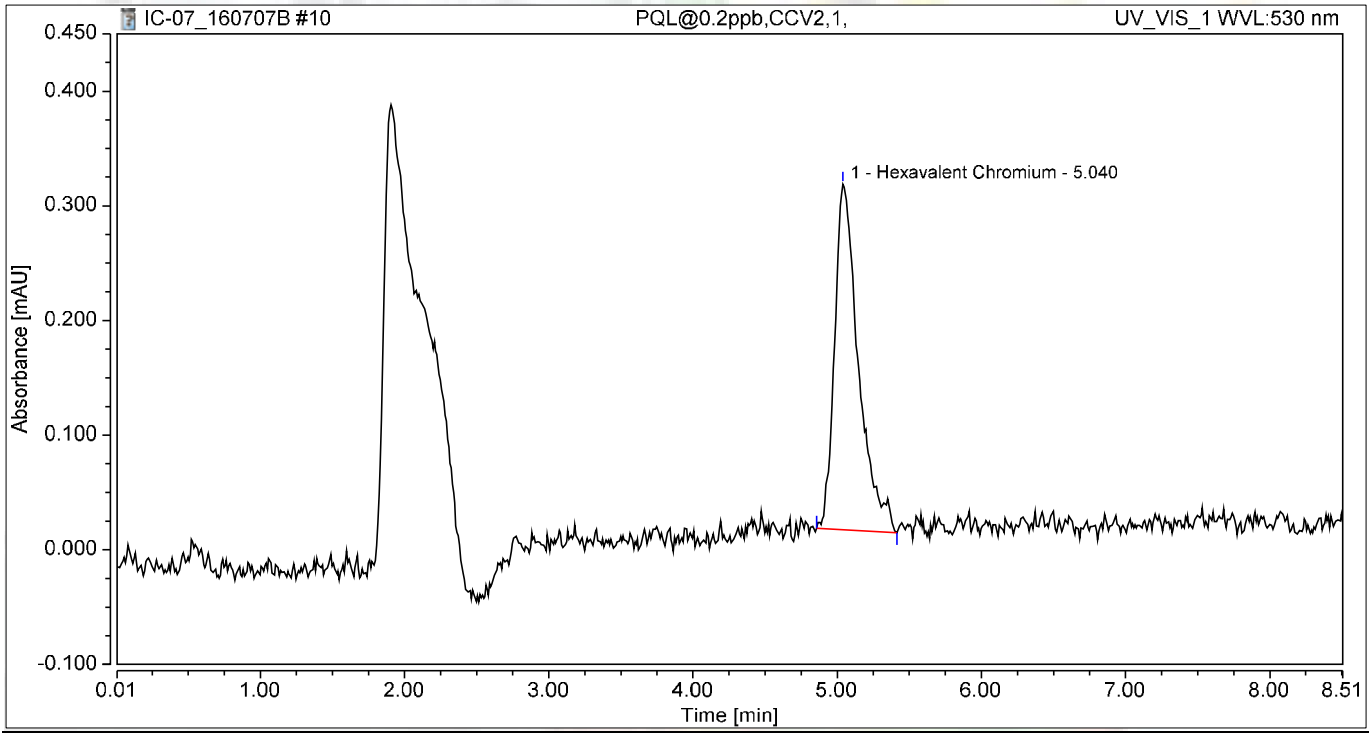
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	5.048	1.277	6.598	100.00	100.00	5.0352
Total:			**1.277**	**6.598**	**100.00**	**100.00**	

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:	**160707_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**07/Jul/16 11:38**	*Sample Weight:*	**1.0000**

Chromatogram



Integration Results

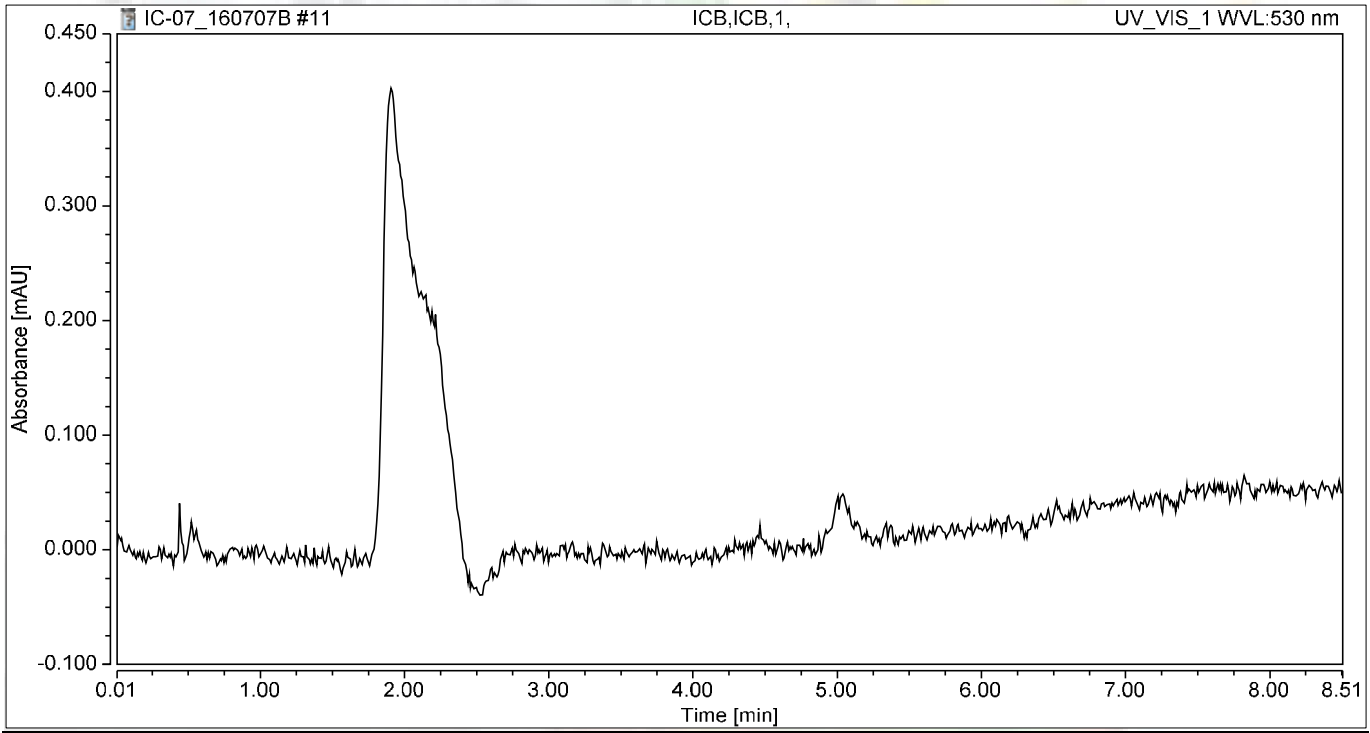
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	5.040	0.058	0.301	100.00	100.00	0.2276
Total:			**0.058**	**0.301**	**100.00**	**100.00**	

Chromatogram and Results

Injection Details

Injection Name:	**ICB,ICB,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:	**160707_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**07/Jul/16 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
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**	

RAW DATA

INJECTION LOG: 160707A

Instrument ID: IC-07

Sample No	Sample Name	Type	DF	Peak Name	Injection Date/Time	Comments
1	BLANK	BLANK	1	Hexavalent Chromium	07/07/16 10:12 AM	Not Reported
2	iBLANK	iBLANK	1	Hexavalent Chromium	07/07/16 10:23 AM	Not Reported
3	STD-0.2 ppb	ICAL	1	Hexavalent Chromium	07/07/16 10:32 AM	Reported
4	STD-1.0 ppb	ICAL	1	Hexavalent Chromium	07/07/16 10:42 AM	Reported
5	STD-5.0 ppb	ICAL	1	Hexavalent Chromium	07/07/16 10:51 AM	Reported
6	STD-10.0 ppb	ICAL	1	Hexavalent Chromium	07/07/16 11:00 AM	Reported
7	STD-15.0 ppb	ICAL	1	Hexavalent Chromium	07/07/16 11:10 AM	Reported
8	STD-20.0 ppb	ICAL	1	Hexavalent Chromium	07/07/16 11:19 AM	Reported
9	ICV	ICV	1	Hexavalent Chromium	07/07/16 11:29 AM	Reported
10	PQL@0.2ppb	CCV2	1	Hexavalent Chromium	07/07/16 11:38 AM	Reported
11	ICB	ICB	1	Hexavalent Chromium	07/07/16 11:48 AM	Reported
12	MB-109313	MBLK	1	Hexavalent Chromium	07/07/16 11:59 AM	Reported
13	LCS-109313	LCS	1	Hexavalent Chromium	07/07/16 12:09 PM	Reported
14	N020228-001A	SAMP	1	Hexavalent Chromium	07/07/16 12:18 PM	Reported
15	N020228-001ADUP	DUP	1	Hexavalent Chromium	07/07/16 12:28 PM	Reported
16	N020228-001AMS	MS	1	Hexavalent Chromium	07/07/16 12:37 PM	Reported
17	N020228-002A	SAMP	1	Hexavalent Chromium	07/07/16 12:47 PM	Reported
18	N020228-002AMS	MS	1	Hexavalent Chromium	07/07/16 12:56 PM	Reported
19	N020228-002AMSD	MSD	1	Hexavalent Chromium	07/07/16 1:06 PM	Reported
20	N020228-003A	SAMP	1	Hexavalent Chromium	07/07/16 1:15 PM	Reported
21	N020228-003AMS	MS	1	Hexavalent Chromium	07/07/16 1:25 PM	Reported
22	CCV-1	CCV1	1	Hexavalent Chromium	07/07/16 1:34 PM	Reported
23	CCB-1	CCB	1	Hexavalent Chromium	07/07/16 1:44 PM	Reported
24	N020228-004A	SAMP	1	Hexavalent Chromium	07/07/16 1:53 PM	Reported
25	N020228-004AMS	MS	1	Hexavalent Chromium	07/07/16 2:02 PM	Reported
26	N020228-005A	SAMP	1	Hexavalent Chromium	07/07/16 2:12 PM	Reported
27	N020228-005AMS	MS	1	Hexavalent Chromium	07/07/16 2:21 PM	Not Reported
28	N020228-006A	SAMP	1	Hexavalent Chromium	07/07/16 2:31 PM	Reported
29	N020228-006AMS	MS	1	Hexavalent Chromium	07/07/16 2:40 PM	Reported
30	N020228-007A	SAMP	1	Hexavalent Chromium	07/07/16 2:50 PM	Reported
31	N020228-007AMS	MS	1	Hexavalent Chromium	07/07/16 2:59 PM	Reported
32	N020228-008A	SAMP	1	Hexavalent Chromium	07/07/16 3:09 PM	Reported
33	N020228-008AMS	MS	1	Hexavalent Chromium	07/07/16 3:18 PM	Reported
34	CCV-2	CCV	1	Hexavalent Chromium	07/07/16 3:28 PM	Reported
35	CCB-2	CCB	1	Hexavalent Chromium	07/07/16 3:37 PM	Reported
36	N020228-005AMS	MS	1	Hexavalent Chromium	07/07/16 3:47 PM	Reported
37	N020228-009A	SAMP	1	Hexavalent Chromium	07/07/16 3:56 PM	Reported
38	N020228-009AMS	MS	1	Hexavalent Chromium	07/07/16 4:05 PM	Reported
39	N020228-010A	SAMP	1	Hexavalent Chromium	07/07/16 4:15 PM	Reported
40	N020228-010AMS	MS	1	Hexavalent Chromium	07/07/16 4:24 PM	Reported
41	N020228-011A	SAMP	1	Hexavalent Chromium	07/07/16 4:34 PM	Reported
42	N020228-011AMS	MS	1	Hexavalent Chromium	07/07/16 4:44 PM	Reported

7/21/2016

INJECTION LOG: 160707A

Instrument ID: IC-07

Sample No	Sample Name	Type	DF	Peak Name	Injection Date/Time	Comments
43	N020228-012A	SAMP	1	Hexavalent Chromium	07/07/16 4:53 PM	Reported
44	N020228-012AMS	MS	1	Hexavalent Chromium	07/07/16 5:02 PM	Reported
45	N020228-013A	SAMP	1	Hexavalent Chromium	07/07/16 5:12 PM	Reported
46	CCV-3	CCV1	1	Hexavalent Chromium	07/07/16 5:24 PM	Reported
47	CCB-3	CCB	1	Hexavalent Chromium	07/07/16 5:33 PM	Reported
48	N020229-001A	SAMP	1	Hexavalent Chromium	07/07/16 5:43 PM	Not Reported
49	N020228-013AMS	MS	1	Hexavalent Chromium	07/07/16 5:52 PM	Not Reported
50	N020228-013AMS	MS	1	Hexavalent Chromium	07/07/16 6:04 PM	Reported
51	N020229-001AMS	MS	1	Hexavalent Chromium	07/07/16 6:15 PM	Not Reported
52	N020230-001A	SAMP	1	Hexavalent Chromium	07/07/16 6:25 PM	Reported
53	N020230-002A	SAMP	1	Hexavalent Chromium	07/07/16 6:34 PM	Reported
54	N020230-003A	SAMP	1	Hexavalent Chromium	07/07/16 6:44 PM	Reported
55	N020230-004A	SAMP	1	Hexavalent Chromium	07/07/16 6:53 PM	Reported
56	N020230-005A	SAMP	1	Hexavalent Chromium	07/07/16 7:03 PM	Reported
57	N020230-006A	SAMP	1	Hexavalent Chromium	07/07/16 7:12 PM	Reported
58	CCV-4	CCV	1	Hexavalent Chromium	07/07/16 7:22 PM	Reported
59	CCB-4	CCB	1	Hexavalent Chromium	07/07/16 7:31 PM	Reported
60	N020229-001A	SAMP	1	Hexavalent Chromium	07/07/16 7:40 PM	Reported
61	N020229-001AMS	MS	1	Hexavalent Chromium	07/07/16 7:50 PM	Reported
62	CCV-5	CCV1	1	Hexavalent Chromium	07/07/16 7:59 PM	Reported
63	CCB-5	CCB	1	Hexavalent Chromium	07/07/16 8:09 PM	Reported

Reviewed by:

7/21/2016

7/21/2016

Injection Log Summary

Sequence Details

Name:	**IC-07_160707B**	*Created On:*	**24/Jul/12 17:17:21**
Directory:	**Instrument Data\IC-7\2016**	*Created By:*	**ics 5000**
Data Vault:	**ChromeleonLocal**	*Updated On:*	**08/Jul/16 09:38:15**
No. of Injections:	**66**	*Updated By:*	**ics 5000**

Injection Details

No.	Injection Name	Position	Volume µL	Type	Level	Inject Time	Status	Comment
1	BLANK	3	1000	Unknown		07/07/2016 10:12	Finished	
2	iBLANK	4	1000	Unknown		07/07/2016 10:23	Finished	INSTRUMENT BLANK
3	STD1-0.2 ppb	5	1000	Calibration Standard	01	07/07/2016 10:32	Finished	0.2 ppb, IWST160401A
4	STD2-1.0 ppb	6	1000	Calibration Standard	02	07/07/2016 10:42	Finished	1.0 ppb, IWST160401A
5	STD3-5.0 ppb	7	1000	Calibration Standard	03	07/07/2016 10:51	Finished	5.0 ppb, IWST160401A
6	STD4-10.0 ppb	8	1000	Calibration Standard	04	07/07/2016 11:00	Finished	10 ppb, IWST160401A
7	STD5-15.0 ppb	9	1000	Calibration Standard	05	07/07/2016 11:10	Finished	15 ppb, IWST160401A
8	STD6-20.0 ppb	10	1000	Calibration Standard	06	07/07/2016 11:19	Finished	20 ppb, IWST160401A
9	ICV,ICV,1,	11	1000	Unknown		07/07/2016 11:29	Finished	ICV @5ppb, IWST-160401B
10	PQL@0.2ppb,CCV2,1	12	1000	Unknown		07/07/2016 11:38	Finished	PQL @ 0.2ppb
11	ICB,ICB,1,	13	1000	Unknown		07/07/2016 11:48	Finished	ICB R160629C
12	MB-H2O,MBLK,1	14	1000	Unknown		07/07/2016 11:59	Finished	MB R160629C
13	LCS-H2O,LCS,1	15	1000	Unknown		07/07/2016 12:09	Finished	LCS, IWST-160401B
14	N020228-001A,SAMP	16	1000	Unknown		07/07/2016 12:18	Finished	SAMP, 10 mL
15	N020228-001ADUP,D	17	1000	Unknown		07/07/2016 12:28	Finished	DUP, 10 mL
16	N020228-001AMS,MS	18	1000	Unknown		07/07/2016 12:37	Finished	MS (1ppb), IWST-160401B, 10
17	N020228-002A,SAMP	19	1000	Unknown		07/07/2016 12:47	Finished	SAMP, 10 mL
18	N020228-002AMS,MS	20	1000	Unknown		07/07/2016 12:56	Finished	MS (1ppb), IWST-160401B, 10
19	N020228-002AMSD,M	21	1000	Unknown		07/07/2016 13:06	Finished	MSD (1ppb), IWST-160401B, 1
20	N020228-003A,SAMP	22	1000	Unknown		07/07/2016 13:15	Finished	SAMP, 10 mL
21	N020228-003AMS,MS	23	1000	Unknown		07/07/2016 13:25	Finished	MS (1ppb), IWST-160401B, 10
22	CCV-1,CCV1,1,	24	1000	Unknown		07/07/2016 13:34	Finished	CCV @10ppb, IWST-160401A
23	CCB-1,CCB,1,	25	1000	Unknown		07/07/2016 13:44	Finished	CCB, R160629C
24	N020228-004A,SAMP	26	1000	Unknown		07/07/2016 13:53	Finished	SAMP, 10 mL
25	N020228-004AMS,MS	27	1000	Unknown		07/07/2016 14:02	Finished	MS (1ppb), IWST-160401B, 10
26	N020228-005A,SAMP	28	1000	Unknown		07/07/2016 14:12	Finished	SAMP, 10 mL
27	N020228-005AMS,MS	29	1000	Unknown		07/07/2016 14:21	Finished	MS (1ppb), IWST-160401B, 10
28	N020228-006A,SAMP	30	1000	Unknown		07/07/2016 14:31	Finished	SAMP, 10 mL
29	N020228-006AMS,MS	31	1000	Unknown		07/07/2016 14:40	Finished	MS (1ppb), IWST-160401B, 10
30	N020228-007A,SAMP	32	1000	Unknown		07/07/2016 14:50	Finished	SAMP, 10 mL
31	N020228-007AMS,MS	33	1000	Unknown		07/07/2016 14:59	Finished	MS (1ppb), IWST-160401B, 10
32	N020228-008A,SAMP	34	1000	Unknown		07/07/2016 15:09	Finished	SAMP, 10 mL
33	N020228-008AMS,MS	35	1000	Unknown		07/07/2016 15:18	Finished	MS (1ppb), IWST-160401B, 10
34	CCV-2,CCV,1,	36	1000	Unknown		07/07/2016 15:28	Finished	CCV @5ppb, IWST-160401A
35	CCB-2,CCB,1,	37	1000	Unknown		07/07/2016 15:37	Finished	CCB R160629C
36	N020228-005AMS,MS	38	1000	Unknown		07/07/2016 15:47	Finished	MS (1ppb), IWST-160401B, 10
37	N020228-009A,SAMP	39	1000	Unknown		07/07/2016 15:56	Finished	SAMP, 10 mL
38	N020228-009AMS,MS	40	1000	Unknown		07/07/2016 16:05	Finished	MS (1ppb), IWST-160401B, 10
39	N020228-010A,SAMP	41	1000	Unknown		07/07/2016 16:15	Finished	SAMP, 10 mL
40	N020228-010AMS,MS	42	1000	Unknown		07/07/2016 16:24	Finished	MS (1ppb), IWST-160401B, 10
41	N020228-011A,SAMP	43	1000	Unknown		07/07/2016 16:34	Finished	SAMP, 10 mL
42	N020228-011AMS,MS	44	1000	Unknown		07/07/2016 16:44	Finished	MS (1ppb), IWST-160401B, 10
43	N020228-012A,SAMP	45	1000	Unknown		07/07/2016 16:53	Finished	SAMP, 10 mL
44	N020228-012AMS,MS	46	1000	Unknown		07/07/2016 17:02	Finished	MS (1ppb), IWST-160401B, 10
45	N020228-013A,SAMP	1	1000	Unknown		07/07/2016 17:12	Finished	SAMP, 10 mL
46	CCV-3,CCV1,1,	2	1000	Unknown		07/07/2016 17:24	Finished	CCV @10ppb, IWST-160401A
47	CCB-3,CCB,1,	3	1000	Unknown		07/07/2016 17:33	Finished	CCB, R160629C
48	N020229-001A,SAMP	4	1000	Unknown		07/07/2016 17:43	Finished	SAMP, 10 mL
49	N020228-013AMS,MS	5	1000	Unknown		07/07/2016 17:52	Finished	MS (1ppb), IWST-160401B, 10
50	N020228-013AMS,MS	5	1000	Unknown		07/07/2016 18:04	Finished	MS (1ppb), IWST-160401B, 10
51	N020229-001AMS,MS	6	1000	Unknown		07/07/2016 18:15	Finished	MS (1ppb), IWST-160401B, 10
52	N020230-001A,SAMP	7	1000	Unknown		07/07/2016 18:25	Finished	SAMP, 10 mL
53	N020230-002A,SAMP	8	1000	Unknown		07/07/2016 18:34	Finished	SAMP, 10 mL
54	N020230-003A,SAMP	9	1000	Unknown		07/07/2016 18:44	Finished	SAMP, 10 mL
55	N020230-004A,SAMP	10	1000	Unknown		07/07/2016 18:53	Finished	SAMP, 10 mL
56	N020230-005A,SAMP	11	1000	Unknown		07/07/2016 19:03	Finished	SAMP, 10 mL
57	N020230-006A,SAMP	12	1000	Unknown		07/07/2016 19:12	Finished	SAMP, 10 mL
58	CCV-4,CCV,1,	13	1000	Unknown		07/07/2016 19:22	Finished	CCV @5ppb, IWST-160401A
59	CCB-4,CCB,1,	14	1000	Unknown		07/07/2016 19:31	Finished	CCB R160622B
60	N020229-001A,SAMP	15	1000	Unknown		07/07/2016 19:40	Finished	SAMP, 10 mL

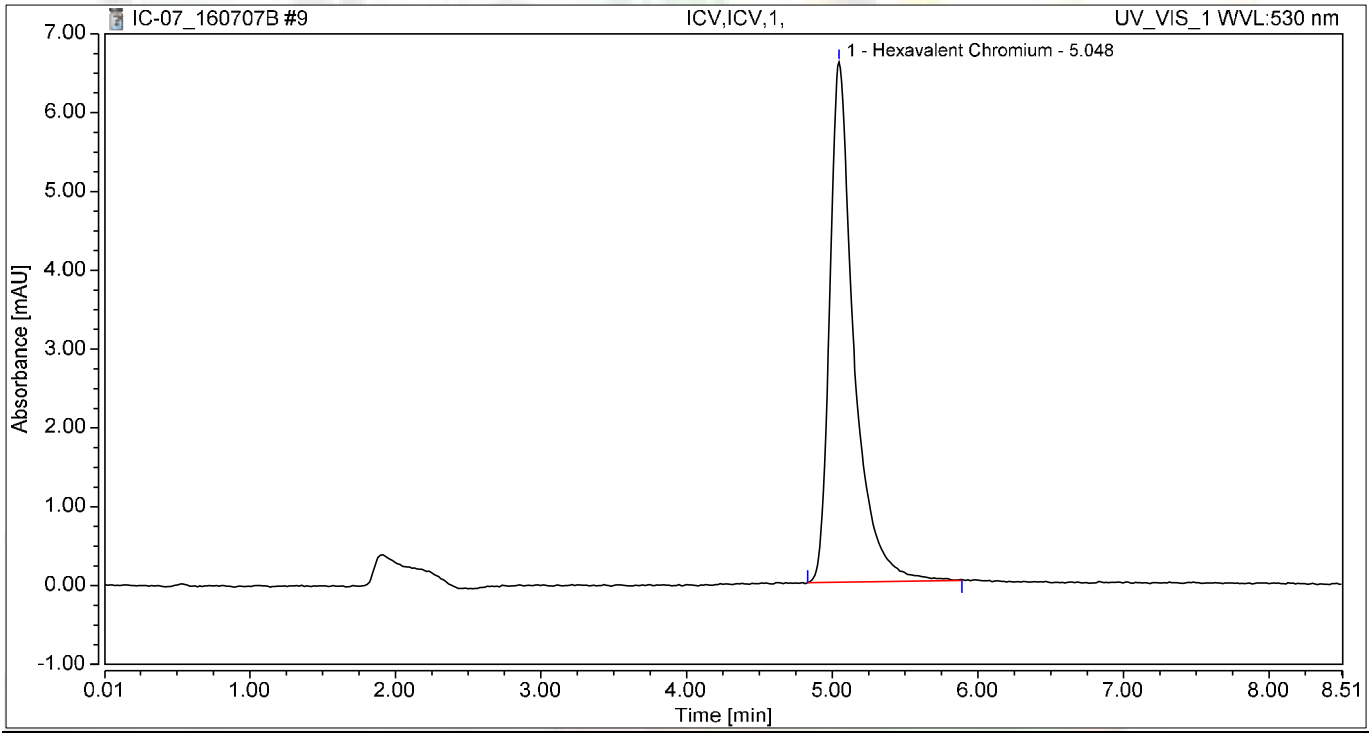
61	N020229-001AMS,MS	16	1000	Unknown		07/07/2016 19:50	Finished	MS (1ppb), IWST-160401B, 10
62	CCV-5,CCV1,1,	17	1000	Unknown		07/07/2016 19:59	Finished	CCV @10ppb, IWST-160401A
63	CCB-5,CCB,1,	18	1000	Unknown		07/07/2016 20:09	Finished	CCB, R160629C
64	SHUTDOWN	19	1000	Unknown		07/07/2016 20:18	Finished	
65	Eluent: R160630C	20	1000	Unknown		n.a.	Finished	Eluent
66	PCR: R160706C	21	1000	Unknown		n.a.	Finished	Post-Column Reagent

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:	**160707_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**07/Jul/16 11:29**	*Sample Weight:*	**1.0000**

Chromatogram



Integration Results

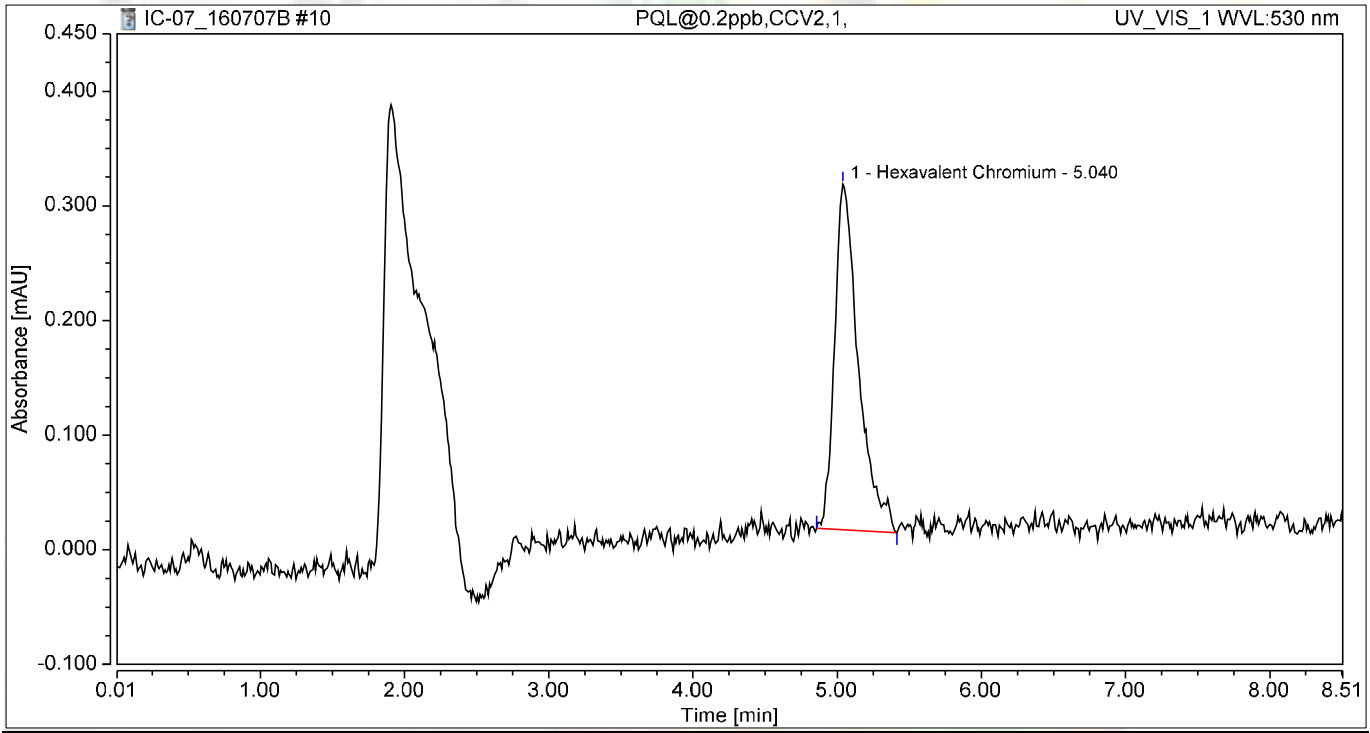
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	5.048	1.277	6.598	100.00	100.00	5.0352
Total:			**1.277**	**6.598**	**100.00**	**100.00**	

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:	**160707_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**07/Jul/16 11:38**	*Sample Weight:*	**1.0000**

Chromatogram



Integration Results

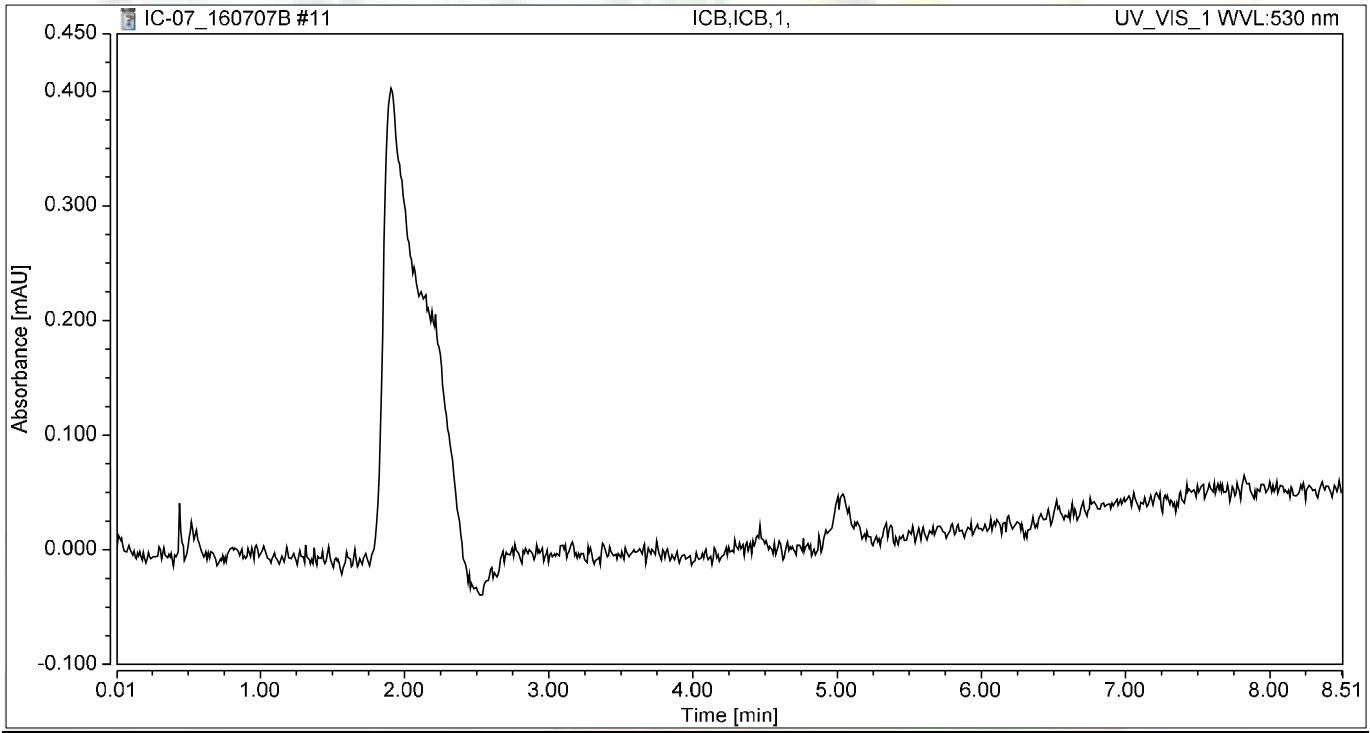
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	5.040	0.058	0.301	100.00	100.00	0.2276
Total:			**0.058**	**0.301**	**100.00**	**100.00**	

Chromatogram and Results

Injection Details

Injection Name:	**ICB,ICB,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:	**160707_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**07/Jul/16 11:48**	*Sample Weight:*	**1.0000**

Chromatogram



Integration Results

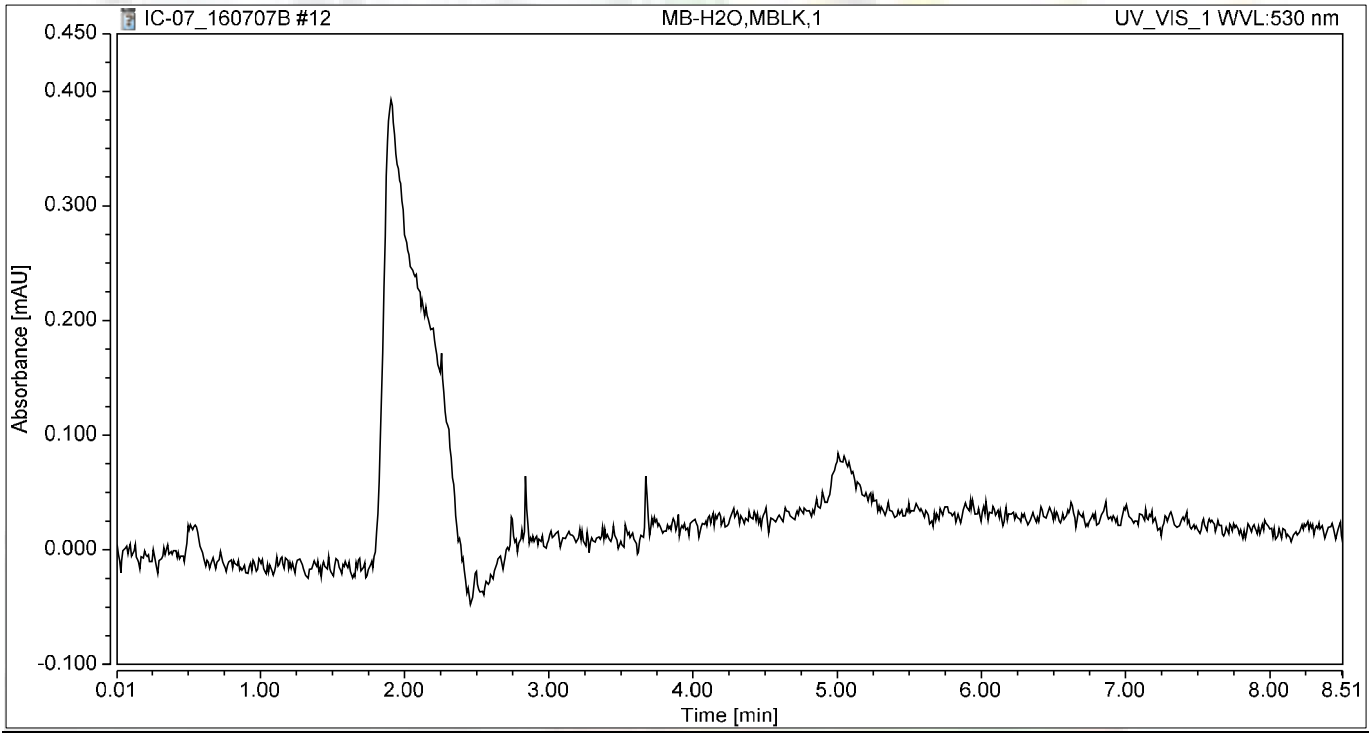
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
n.a.	Hexavalent Chromium	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Total:			**0.000**	**0.000**	**0.00**	**0.00**	

Chromatogram and Results

Injection Details

Injection Name:	**MB-H2O,MBLK,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:	**160707_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**07/Jul/16 11:59**	*Sample Weight:*	**1.0000**

Chromatogram



Integration Results

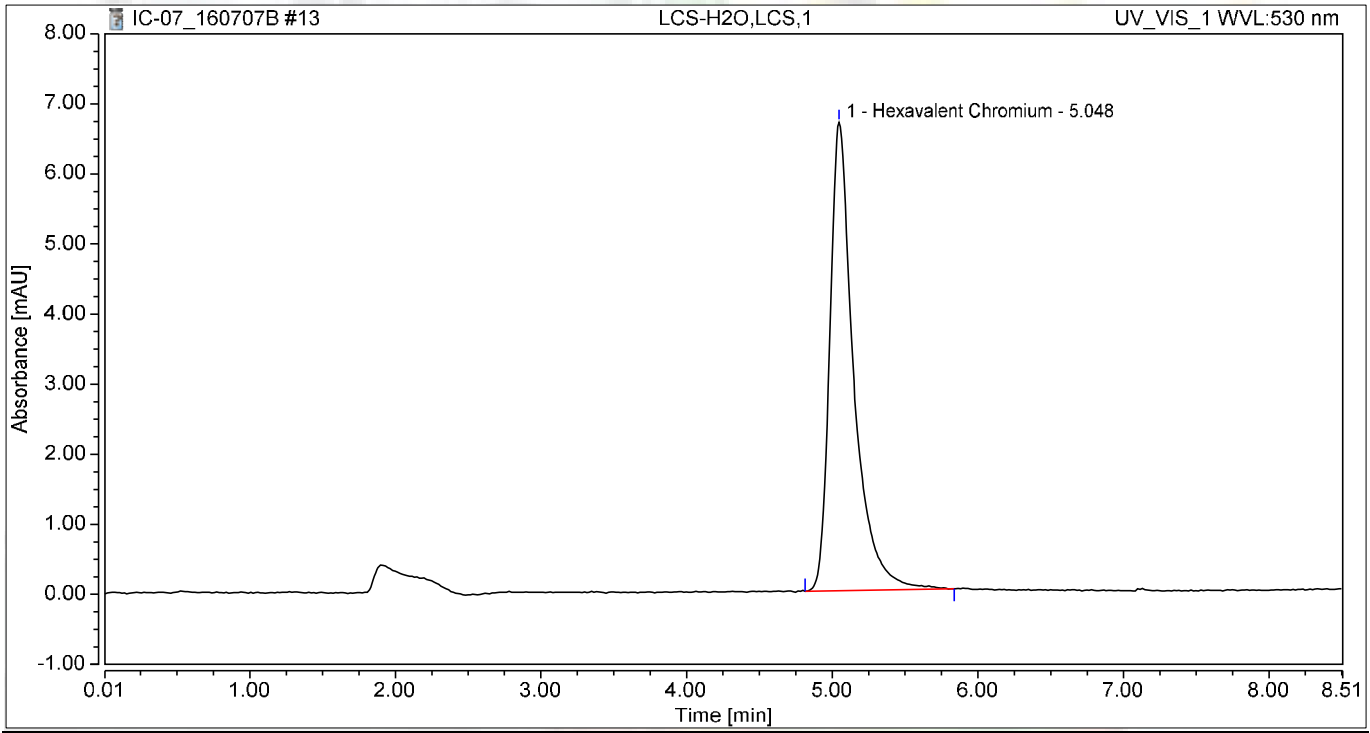
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
n.a.	Hexavalent Chromium	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Total:			**0.000**	**0.000**	**0.00**	**0.00**	

Chromatogram and Results

Injection Details

Injection Name:	**LCS-H2O,LCS,1**	*Run Time (min):*	**8.50**
Vial Number:	**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:	**160707_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**07/Jul/16 12:09**	*Sample Weight:*	**1.0000**

Chromatogram



Integration Results

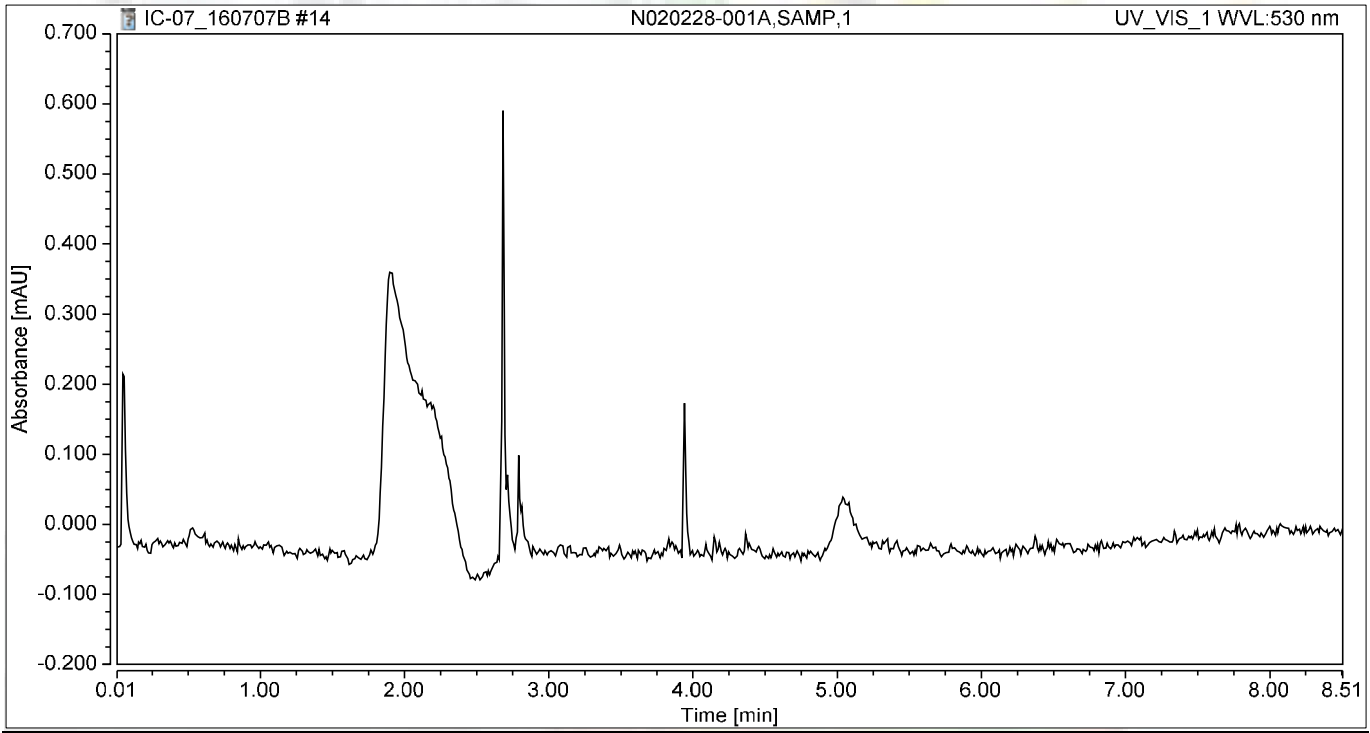
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	5.048	1.275	6.679	100.00	100.00	5.0294
Total:			**1.275**	**6.679**	**100.00**	**100.00**	

Chromatogram and Results

Injection Details

Injection Name:	**N020228-001A,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:	**160707_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**07/Jul/16 12:18**	*Sample Weight:*	**1.0000**

Chromatogram



Integration Results

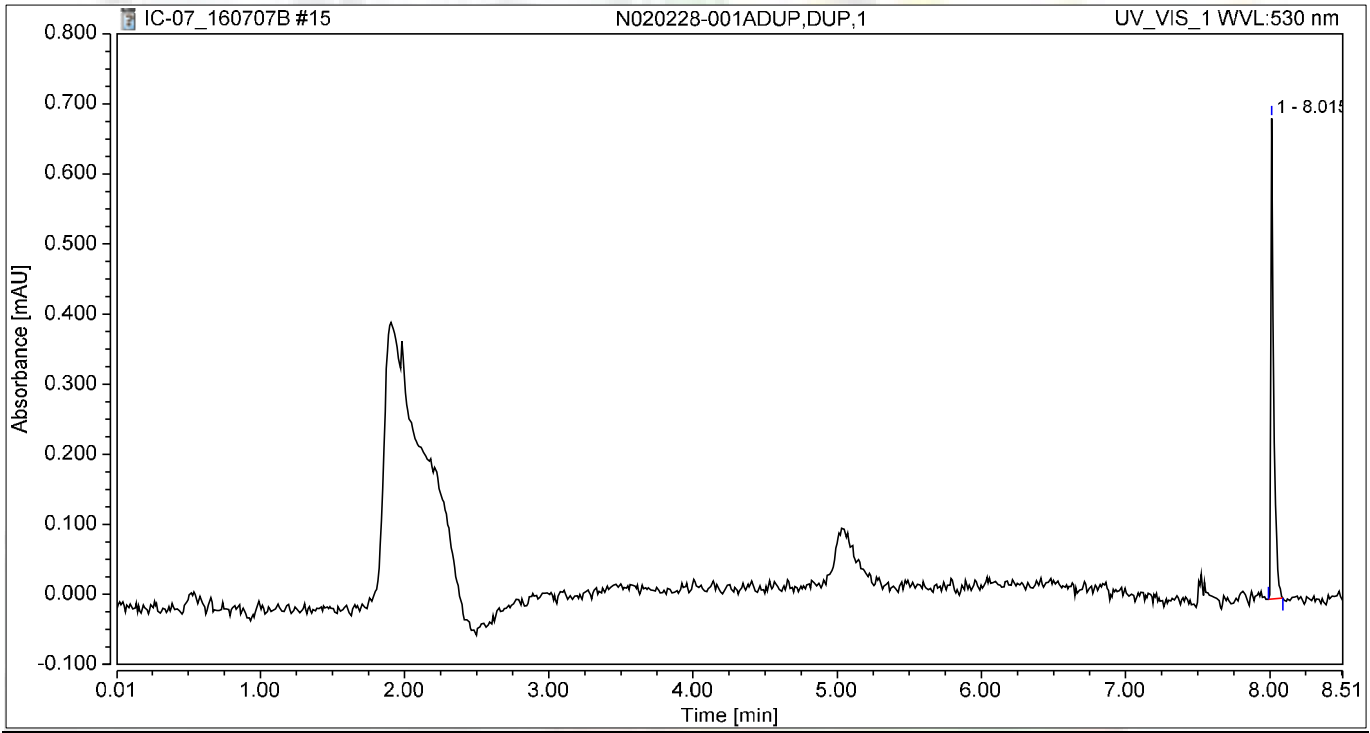
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
n.a.	Hexavalent Chromium	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Total:			**0.000**	**0.000**	**0.00**	**0.00**	

Chromatogram and Results

Injection Details

Injection Name:	**N020228-001ADUP,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:	**160707_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**07/Jul/16 12:28**	*Sample Weight:*	**1.0000**

Chromatogram



Integration Results

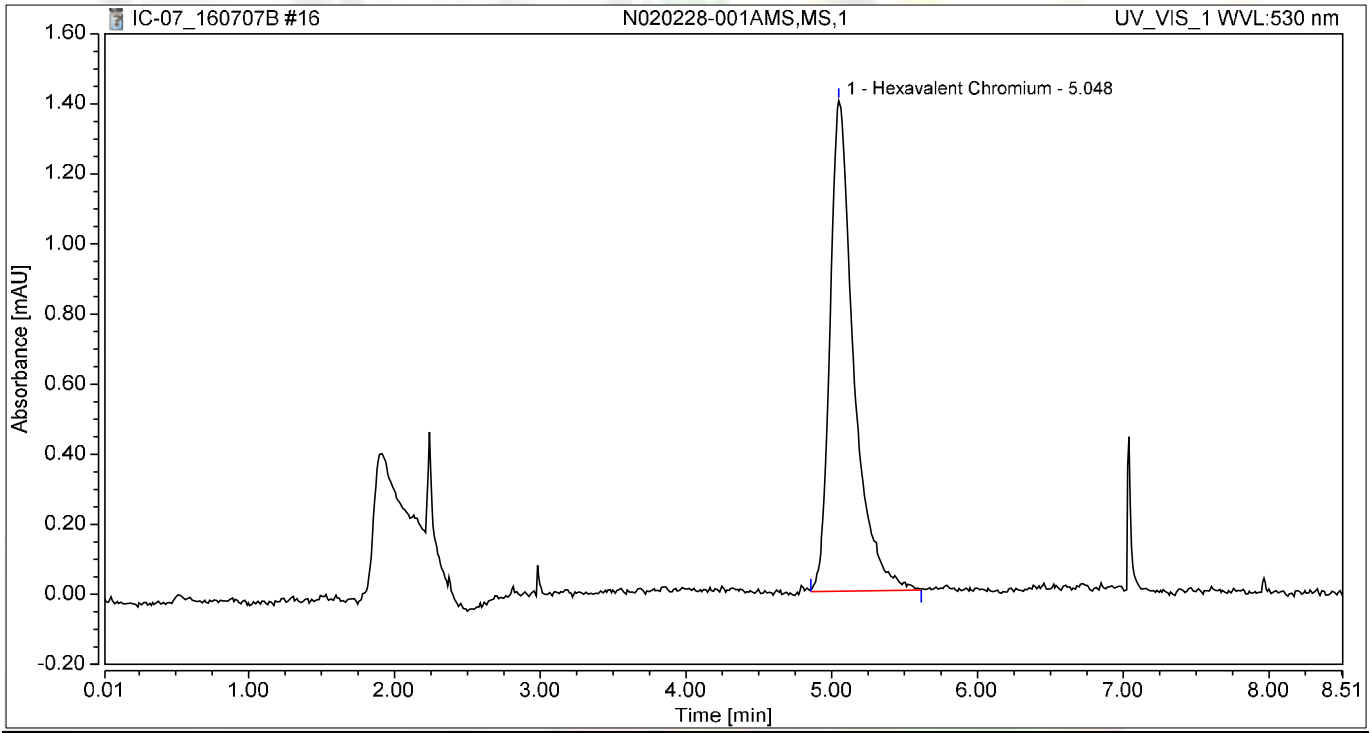
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
n.a.	Hexavalent Chromium	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
1		8.015	0.016	0.686	100.00	100.00	n.a.
Total:			**0.016**	**0.686**	**100.00**	**100.00**	

Chromatogram and Results

Injection Details

Injection Name:	**N020228-001AMS,MS,1**	*Run Time (min):*	**8.49**
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:	**160707_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**07/Jul/16 12:37**	*Sample Weight:*	**1.0000**

Chromatogram



Integration Results

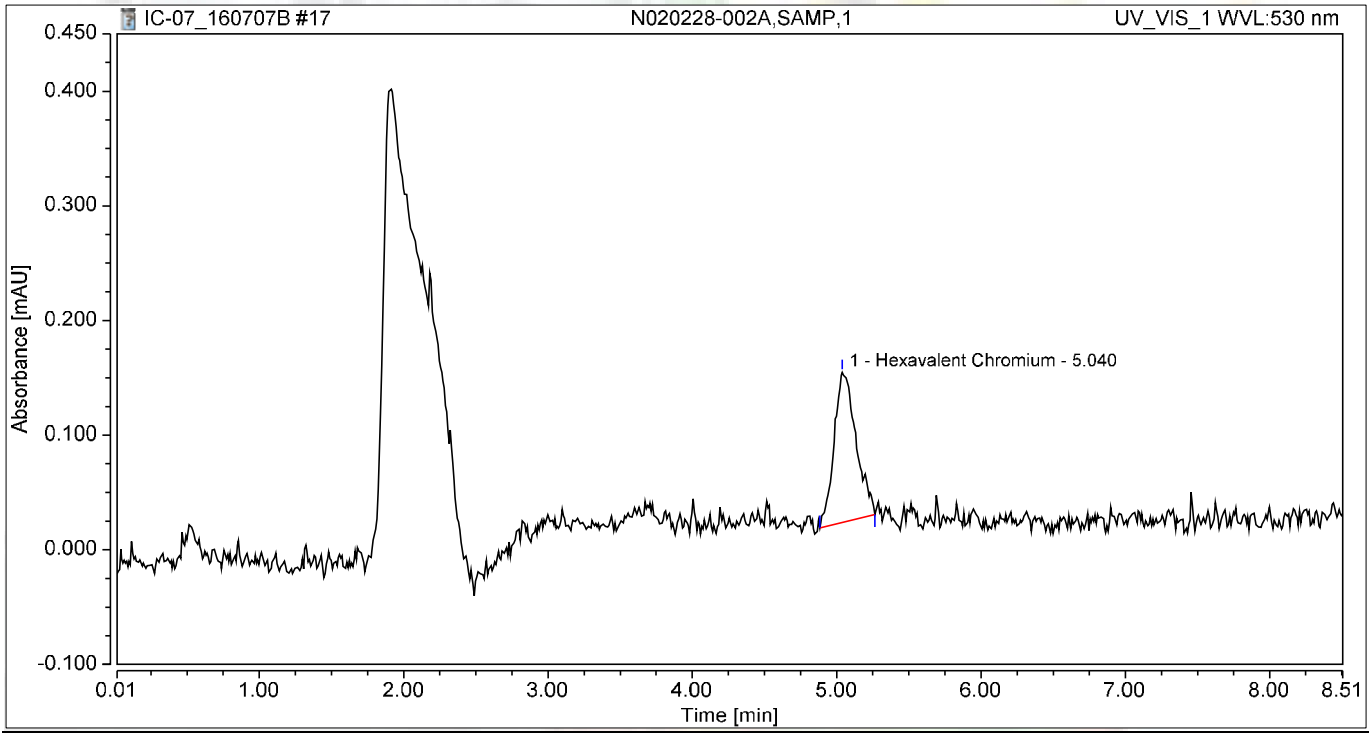
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	5.048	0.265	1.400	100.00	100.00	1.0437
Total:			**0.265**	**1.400**	**100.00**	**100.00**	

Chromatogram and Results

Injection Details

Injection Name:	**N020228-002A,SAMP,1**	*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:	**160707_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**07/Jul/16 12:47**	*Sample Weight:*	**1.0000**

Chromatogram



Integration Results

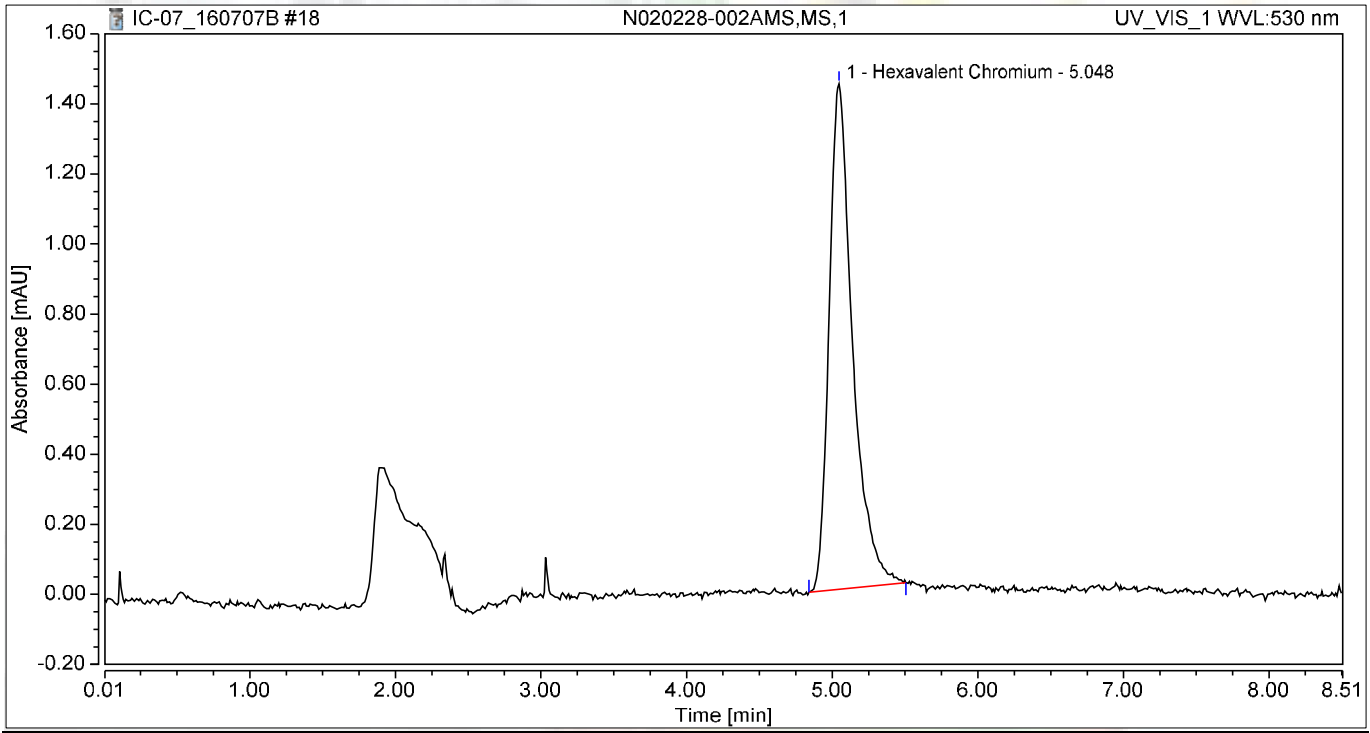
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	5.040	0.023	0.131	100.00	100.00	0.0911
Total:			**0.023**	**0.131**	**100.00**	**100.00**	

Chromatogram and Results

Injection Details

Injection Name:	**N020228-002AMS,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:	**160707_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**07/Jul/16 12:56**	*Sample Weight:*	**1.0000**

Chromatogram



Integration Results

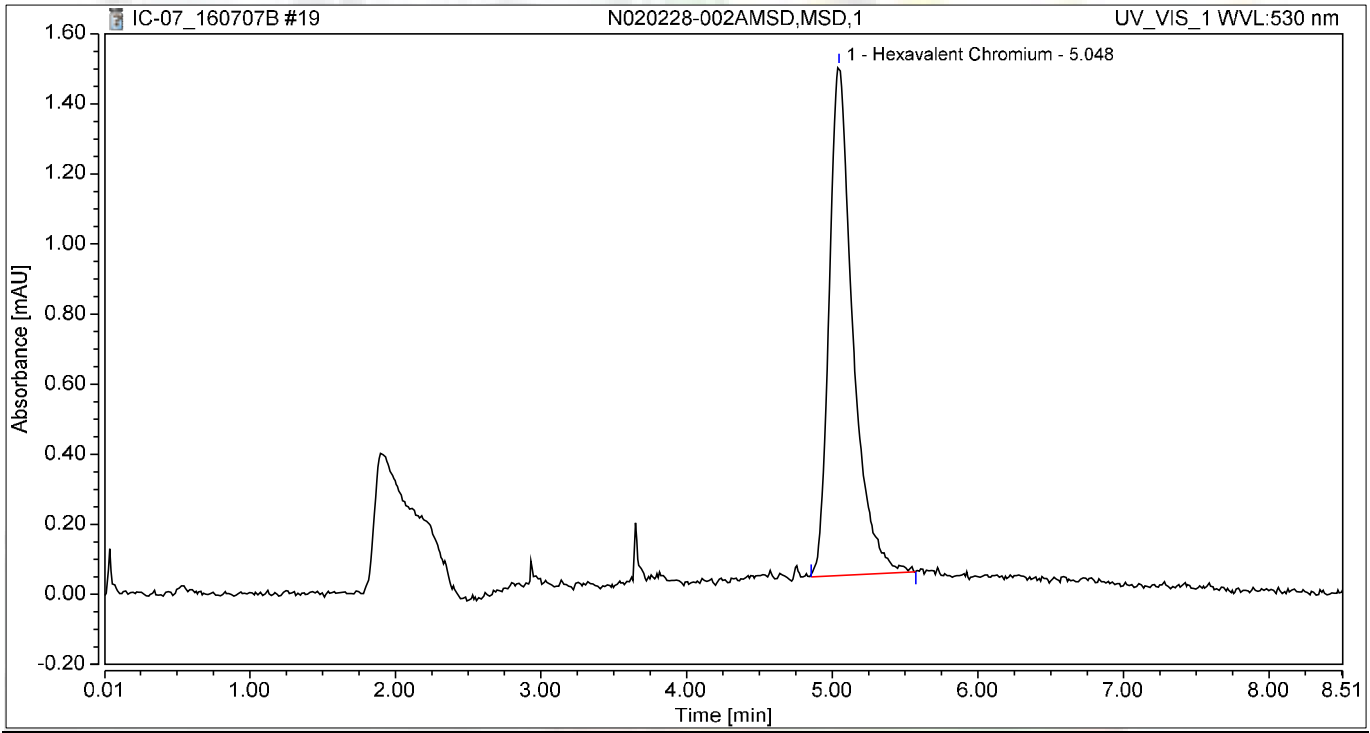
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	5.048	0.269	1.443	100.00	100.00	1.0608
Total:			**0.269**	**1.443**	**100.00**	**100.00**	

Chromatogram and Results

Injection Details

Injection Name:	**N020228-002AMSD,MSD,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:	**160707_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**07/Jul/16 13:06**	*Sample Weight:*	**1.0000**

Chromatogram



Integration Results

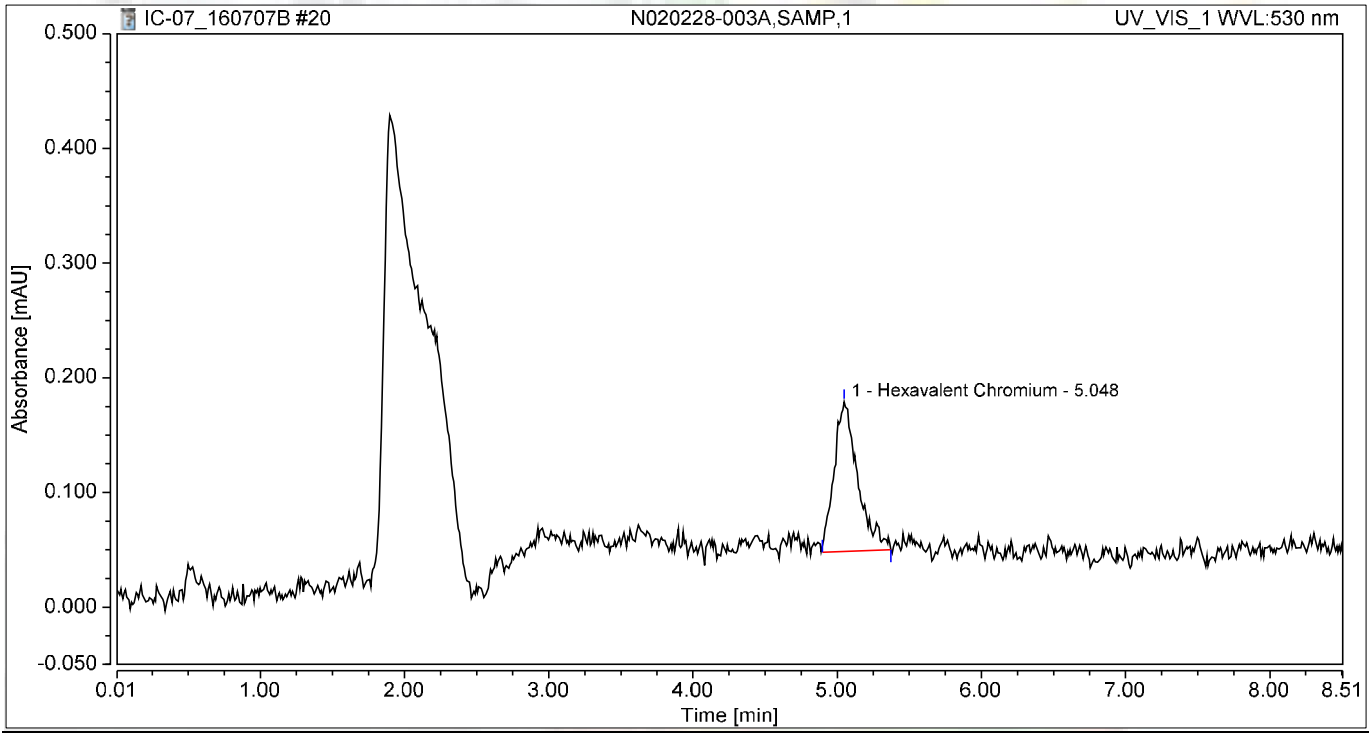
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	5.048	0.275	1.454	100.00	100.00	1.0824
Total:			**0.275**	**1.454**	**100.00**	**100.00**	

Chromatogram and Results

Injection Details

Injection Name:	**N020228-003A,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:	**160707_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**07/Jul/16 13:15**	*Sample Weight:*	**1.0000**

Chromatogram



Integration Results

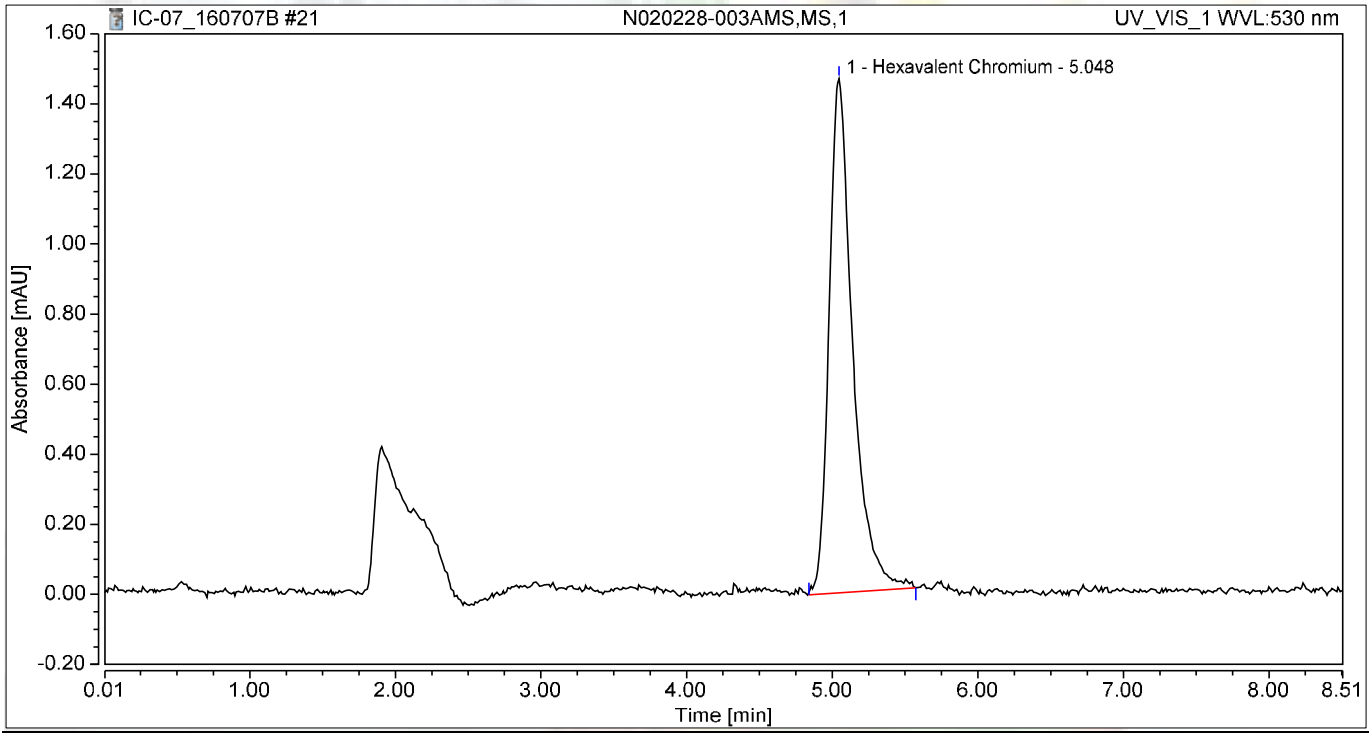
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	5.048	0.025	0.131	100.00	100.00	0.0980
Total:			**0.025**	**0.131**	**100.00**	**100.00**	

Chromatogram and Results

Injection Details

Injection Name:	**N020228-003AMS,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:	**160707_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**07/Jul/16 13:25**	*Sample Weight:*	**1.0000**

Chromatogram



Integration Results

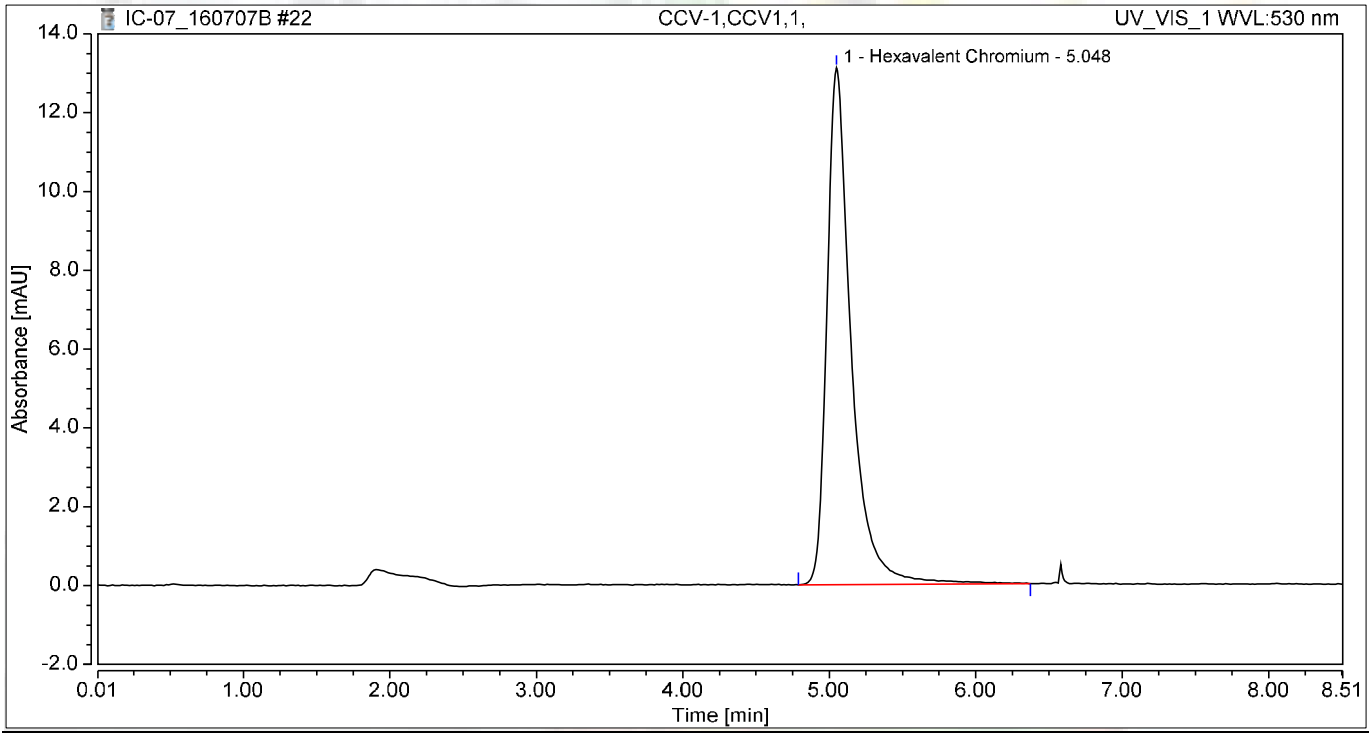
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	5.048	0.276	1.468	100.00	100.00	1.0886
Total:			**0.276**	**1.468**	**100.00**	**100.00**	

Chromatogram and Results

Injection Details

Injection Name:	**CCV-1,CCV1,1,**	*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:	**160707_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**07/Jul/16 13:34**	*Sample Weight:*	**1.0000**

Chromatogram



Integration Results

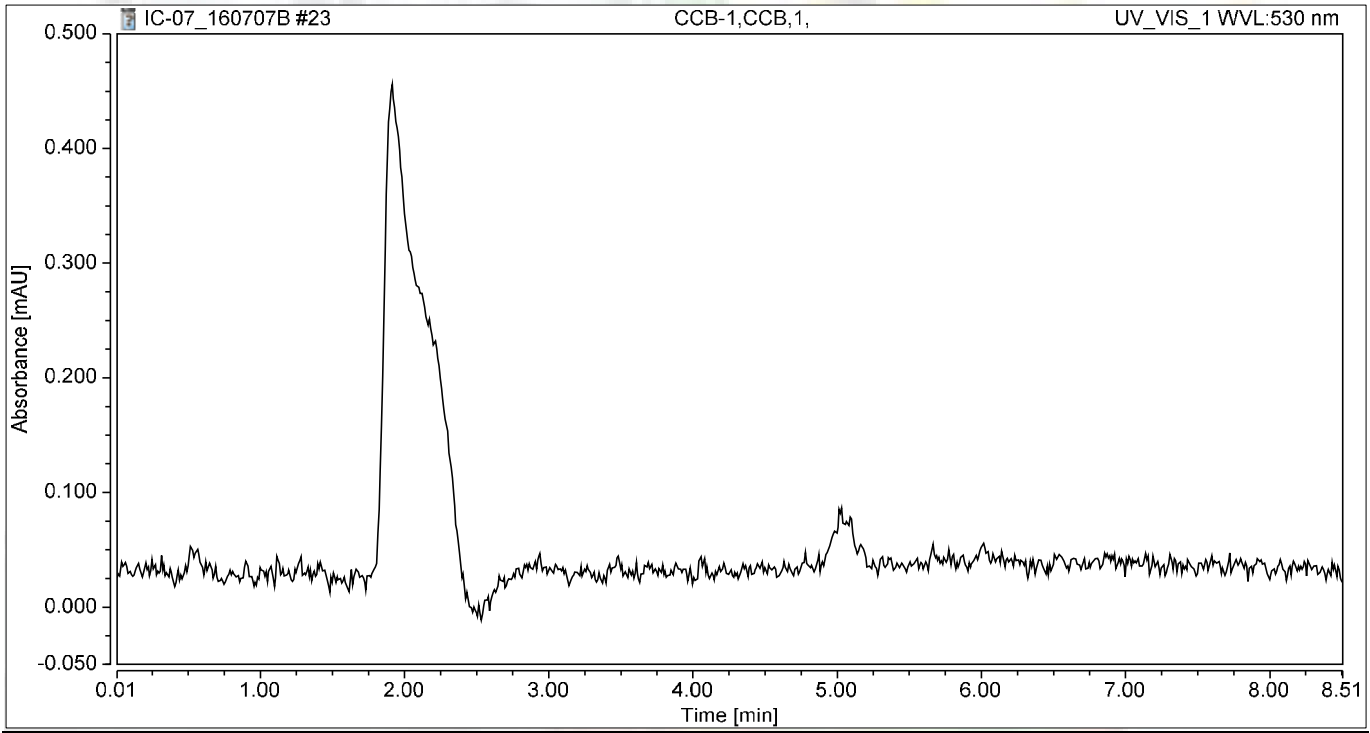
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	5.048	2.529	13.112	100.00	100.00	9.9710
Total:			**2.529**	**13.112**	**100.00**	**100.00**	

Chromatogram and Results

Injection Details

Injection Name:	**CCB-1,CCB,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:	**160707_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**07/Jul/16 13:44**	*Sample Weight:*	**1.0000**

Chromatogram



Integration Results

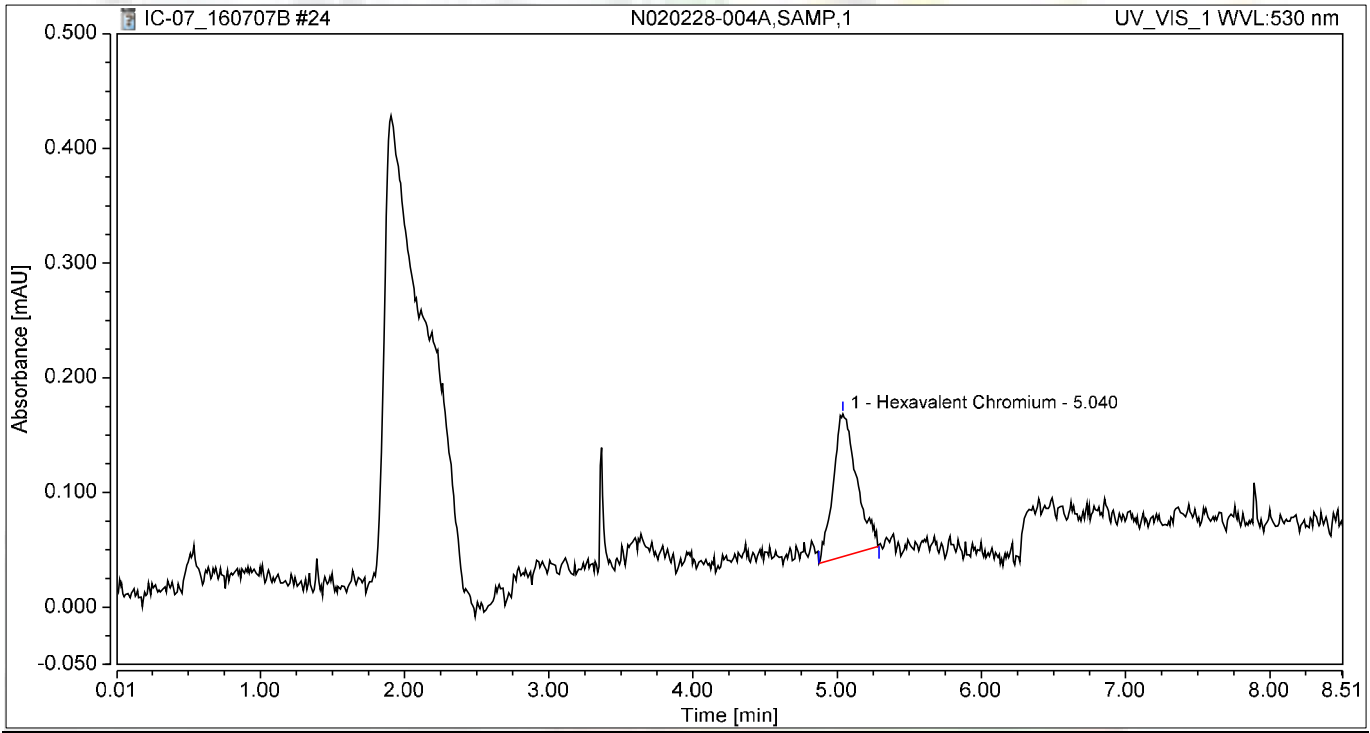
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
n.a.	Hexavalent Chromium	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Total:			**0.000**	**0.000**	**0.00**	**0.00**	

Chromatogram and Results

Injection Details

Injection Name:	**N020228-004A,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:	**160707_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**07/Jul/16 13:53**	*Sample Weight:*	**1.0000**

Chromatogram



Integration Results

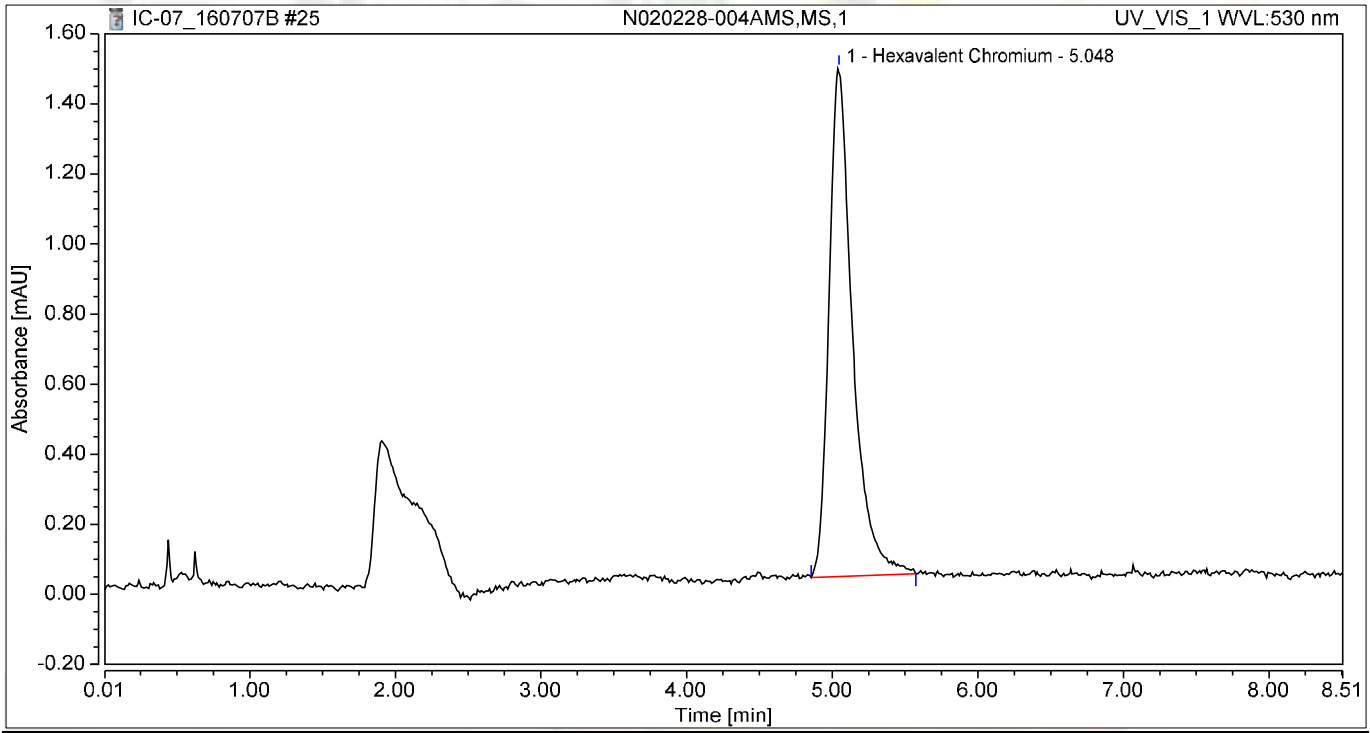
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	5.040	0.023	0.124	100.00	100.00	0.0921
Total:			**0.023**	**0.124**	**100.00**	**100.00**	

Chromatogram and Results

Injection Details

Injection Name:	**N020228-004AMS,MS,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:	**160707_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**07/Jul/16 14:02**	*Sample Weight:*	**1.0000**

Chromatogram



Integration Results

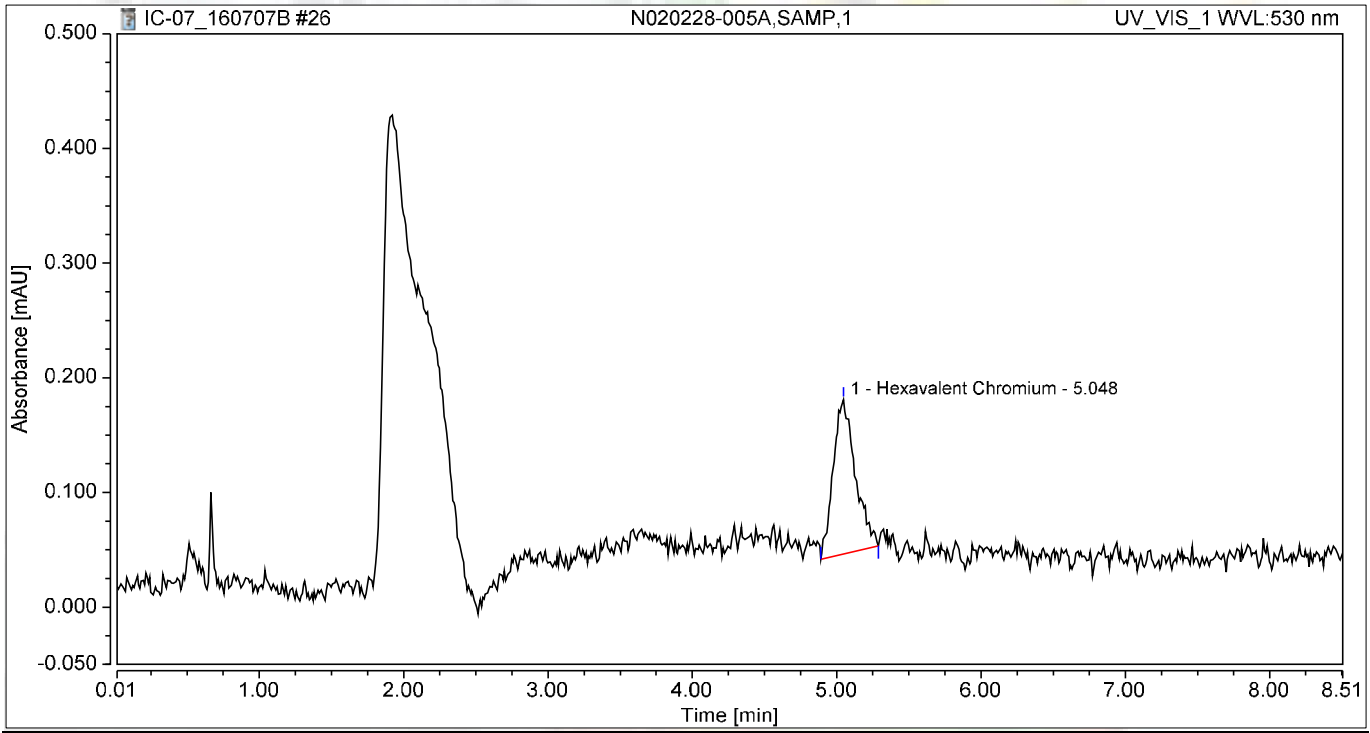
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	5.048	0.273	1.453	100.00	100.00	1.0747
Total:			**0.273**	**1.453**	**100.00**	**100.00**	

Chromatogram and Results

Injection Details

Injection Name:	**N020228-005A,SAMP,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:	**160707_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**07/Jul/16 14:12**	*Sample Weight:*	**1.0000**

Chromatogram



Integration Results

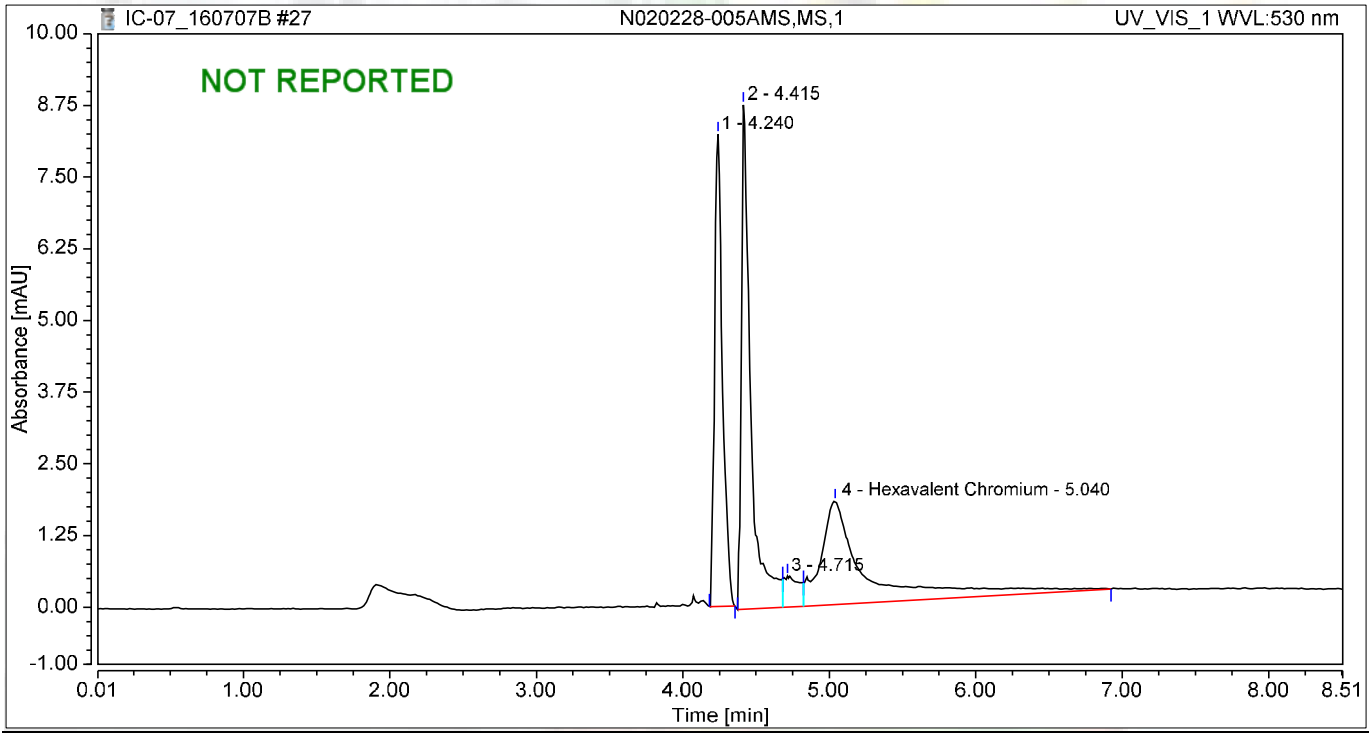
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	5.048	0.024	0.135	100.00	100.00	0.0939
Total:			**0.024**	**0.135**	**100.00**	**100.00**	

Chromatogram and Results

Injection Details

Injection Name:	**N020228-005AMS,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:	**160707_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**07/Jul/16 14:21**	*Sample Weight:*	**1.0000**

Chromatogram



Integration Results

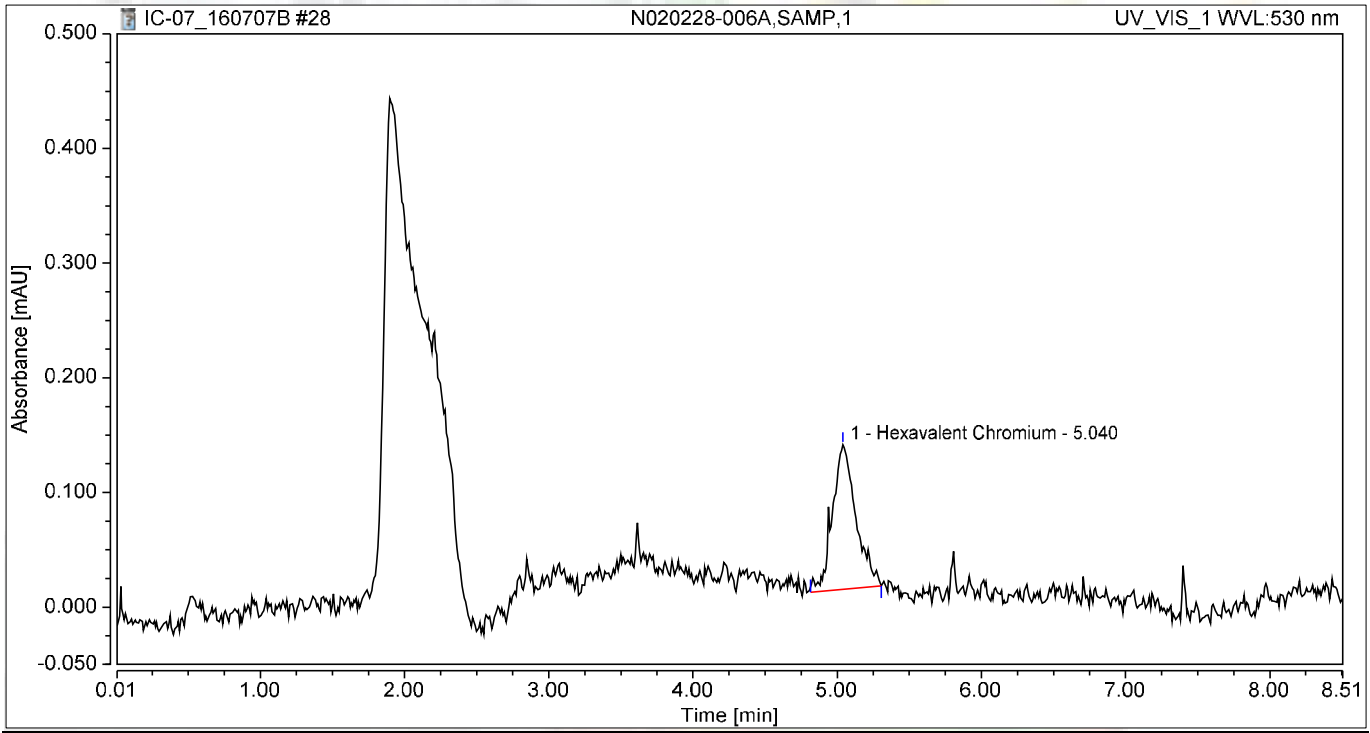
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1		4.240	0.517	8.233	27.44	42.51	n.a.
2		4.415	0.653	8.802	34.72	45.44	n.a.
3		4.715	0.066	0.537	3.49	2.77	n.a.
4	Hexavalent Chromium	5.040	0.646	1.797	34.34	9.28	2.5485
Total:			**1.882**	**19.369**	**100.00**	**100.00**	

Chromatogram and Results

Injection Details

Injection Name:	**N020228-006A,SAMP,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:	**160707_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**07/Jul/16 14:31**	*Sample Weight:*	**1.0000**

Chromatogram



Integration Results

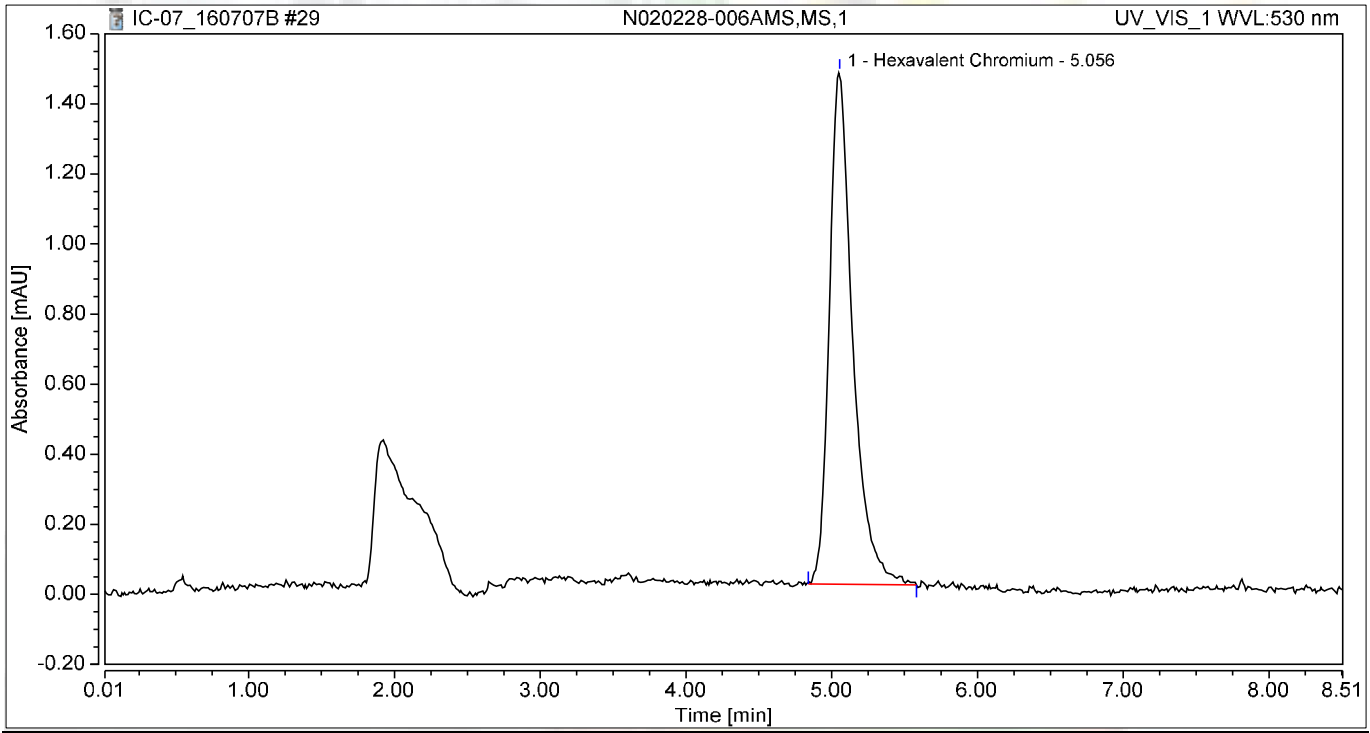
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	5.040	0.024	0.126	100.00	100.00	0.0944
Total:			**0.024**	**0.126**	**100.00**	**100.00**	

Chromatogram and Results

Injection Details

Injection Name:	**N020228-006AMS,MS,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:	**160707_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**07/Jul/16 14:40**	*Sample Weight:*	**1.0000**

Chromatogram



Integration Results

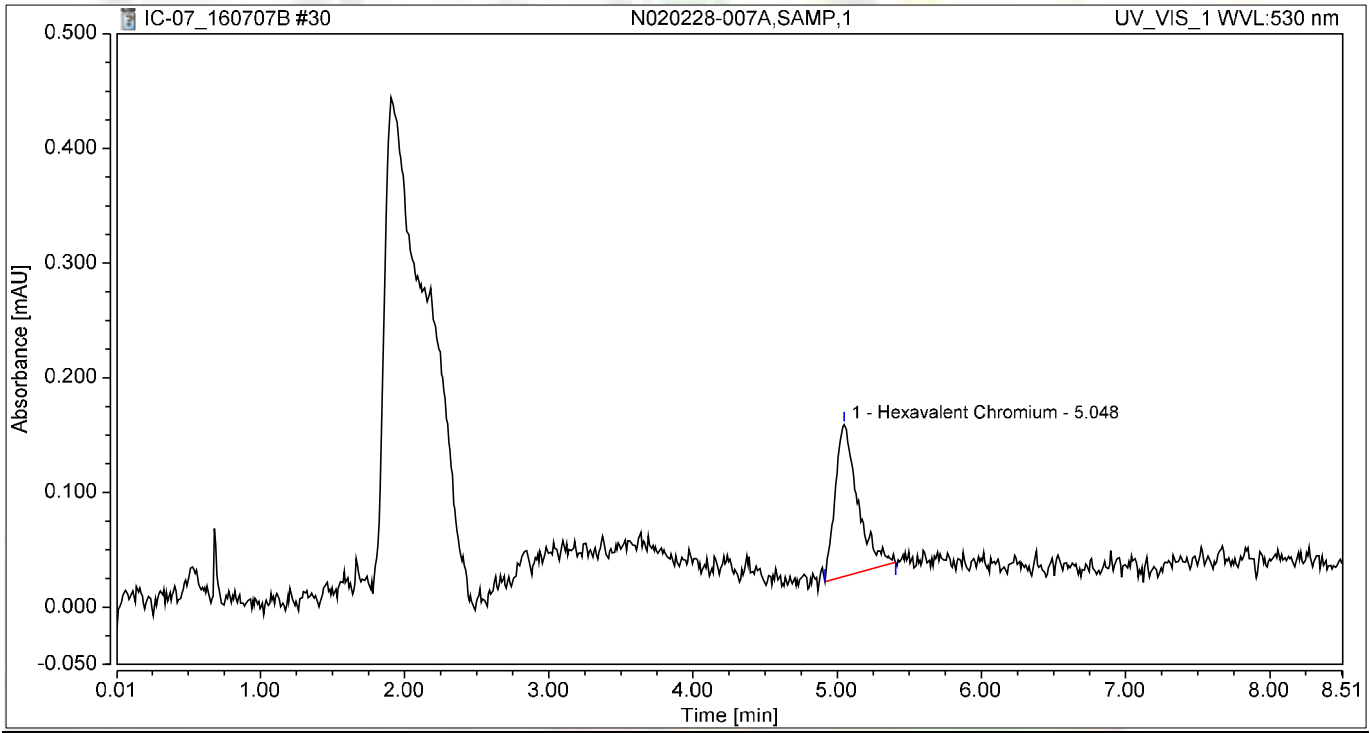
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	5.056	0.272	1.463	100.00	100.00	1.0728
Total:			**0.272**	**1.463**	**100.00**	**100.00**	

Chromatogram and Results

Injection Details

Injection Name:	**N020228-007A,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:	**160707_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**07/Jul/16 14:50**	*Sample Weight:*	**1.0000**

Chromatogram



Integration Results

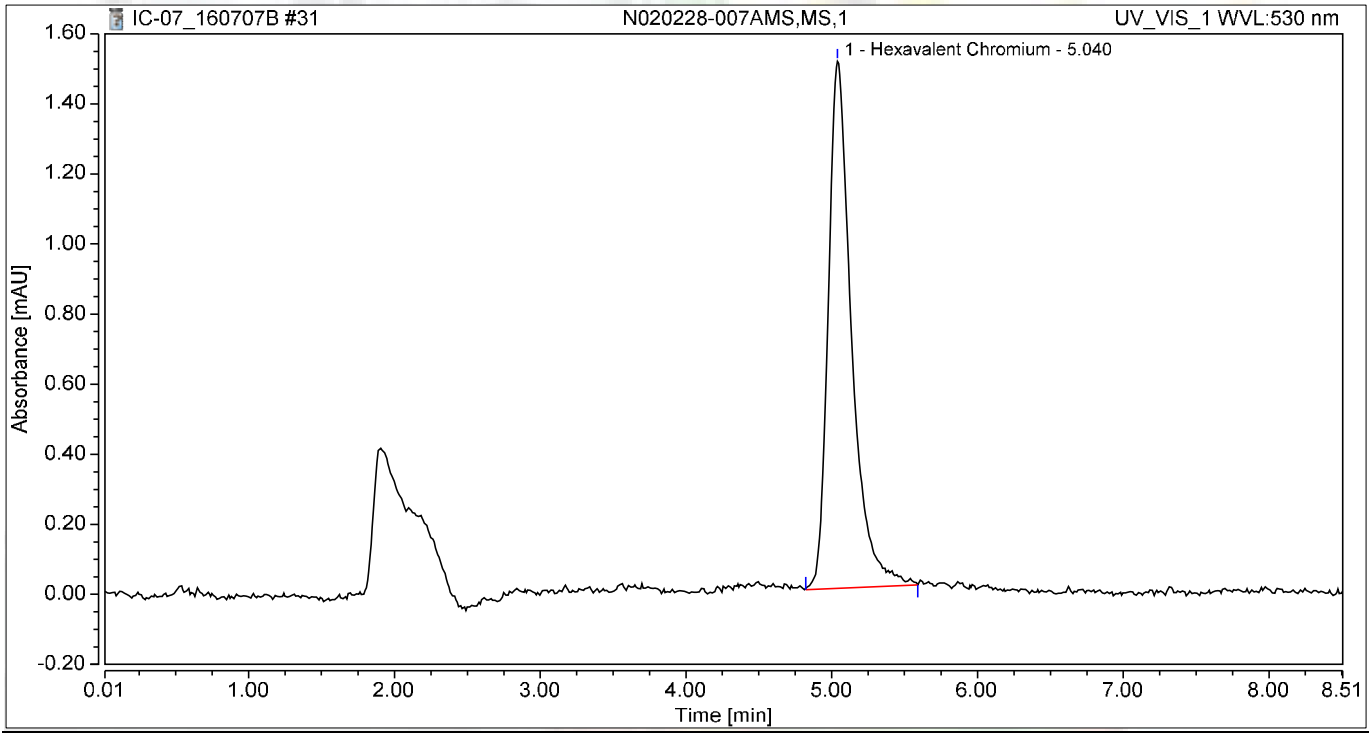
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	5.048	0.024	0.133	100.00	100.00	0.0950
Total:			**0.024**	**0.133**	**100.00**	**100.00**	

Chromatogram and Results

Injection Details

Injection Name:	**N020228-007AMS,MS,1**	*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:	**160707_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**07/Jul/16 14:59**	*Sample Weight:*	**1.0000**

Chromatogram



Integration Results

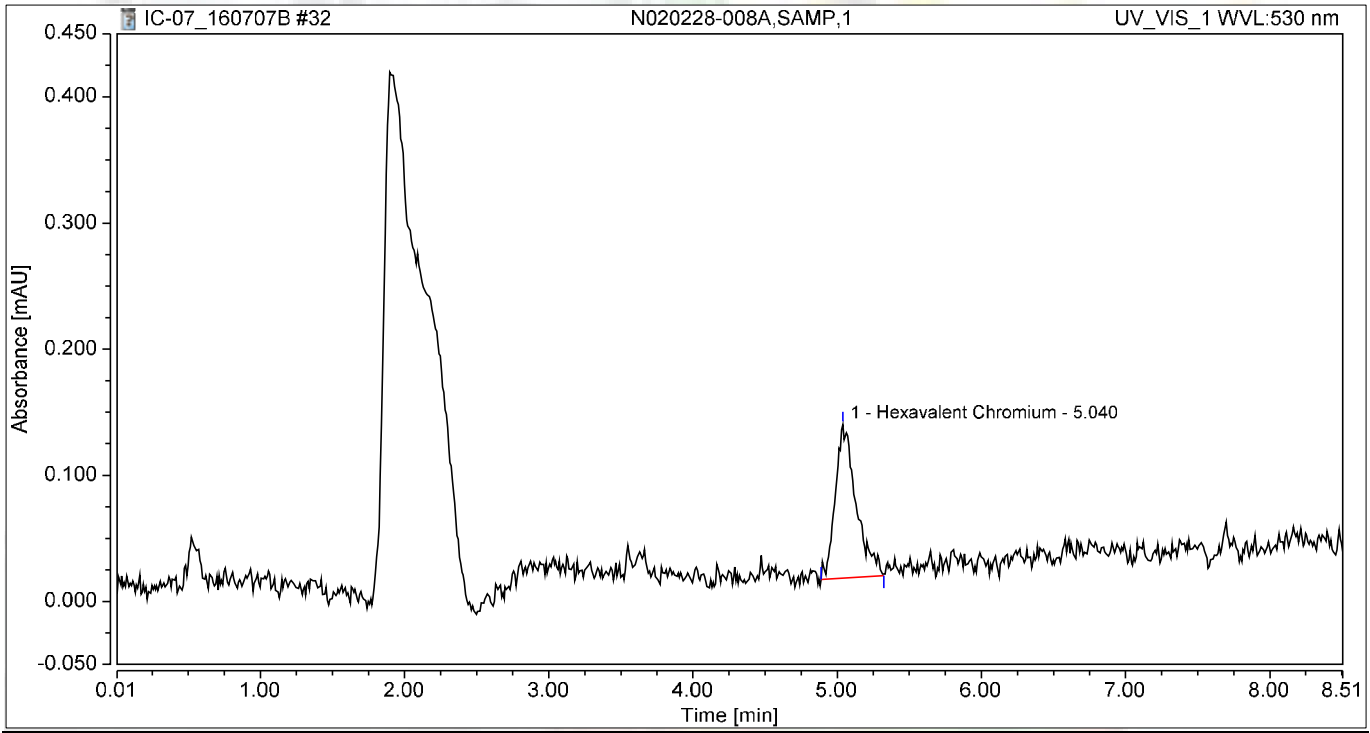
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	5.040	0.280	1.504	100.00	100.00	1.1022
Total:			**0.280**	**1.504**	**100.00**	**100.00**	

Chromatogram and Results

Injection Details

Injection Name:	**N020228-008A,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:	**160707_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**07/Jul/16 15:09**	*Sample Weight:*	**1.0000**

Chromatogram



Integration Results

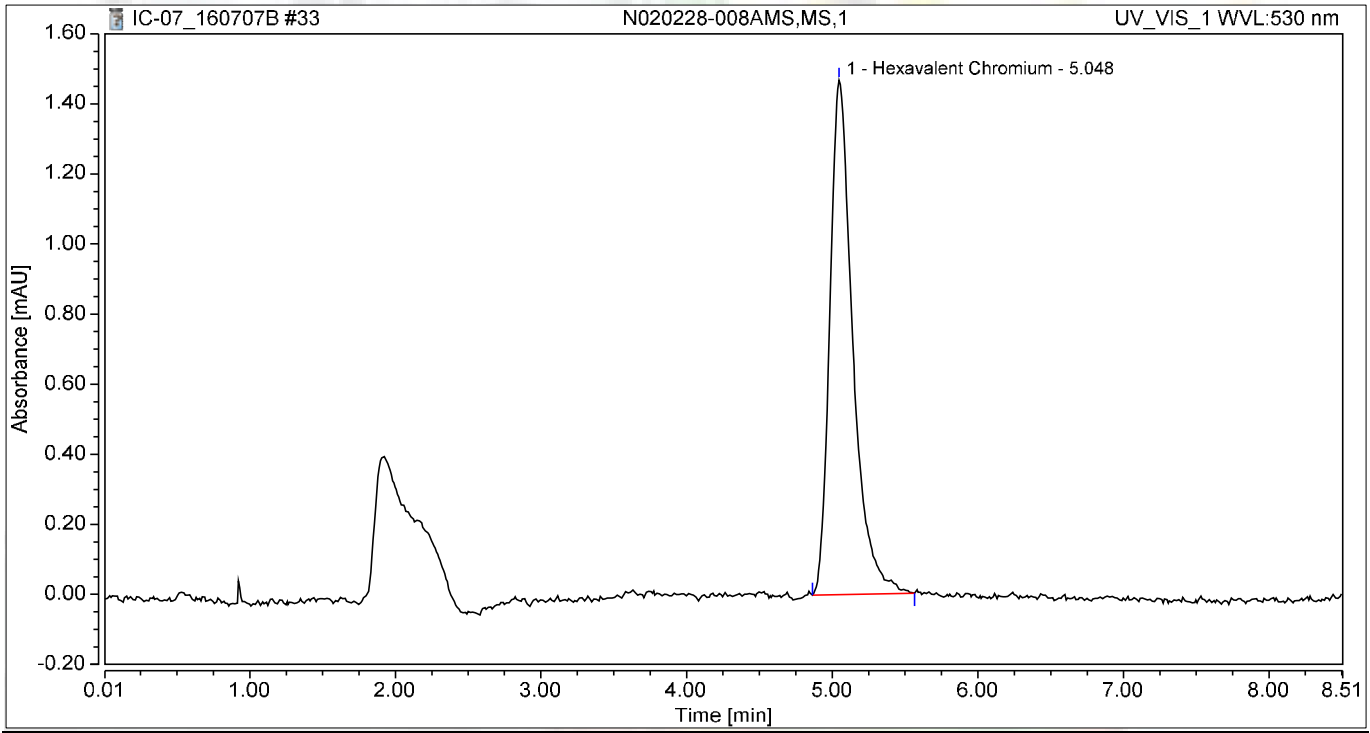
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	5.040	0.020	0.122	100.00	100.00	0.0806
Total:			**0.020**	**0.122**	**100.00**	**100.00**	

Chromatogram and Results

Injection Details

Injection Name:	**N020228-008AMS,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:	**160707_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**07/Jul/16 15:18**	*Sample Weight:*	**1.0000**

Chromatogram



Integration Results

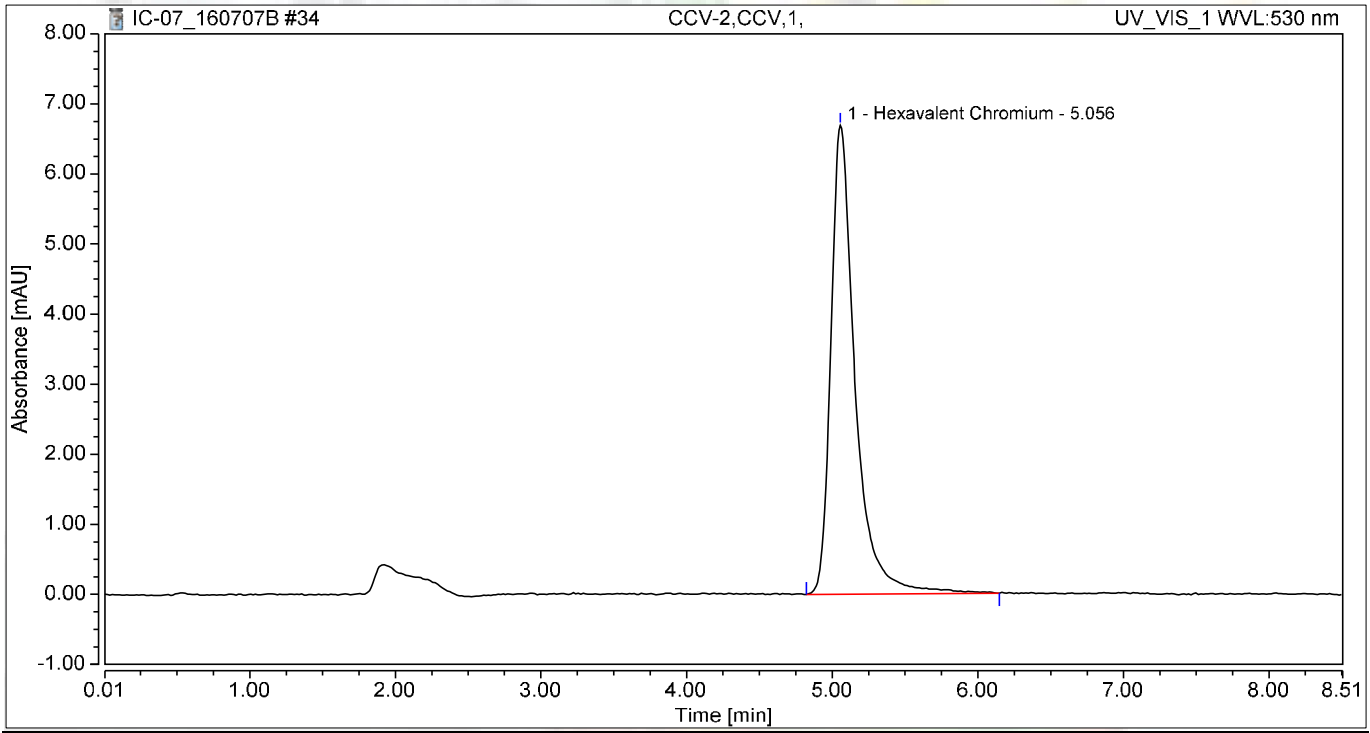
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	5.048	0.269	1.468	100.00	100.00	1.0605
Total:			**0.269**	**1.468**	**100.00**	**100.00**	

Chromatogram and Results

Injection Details

Injection Name:	**CCV-2,CCV,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:	**160707_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**07/Jul/16 15:28**	*Sample Weight:*	**1.0000**

Chromatogram



Integration Results

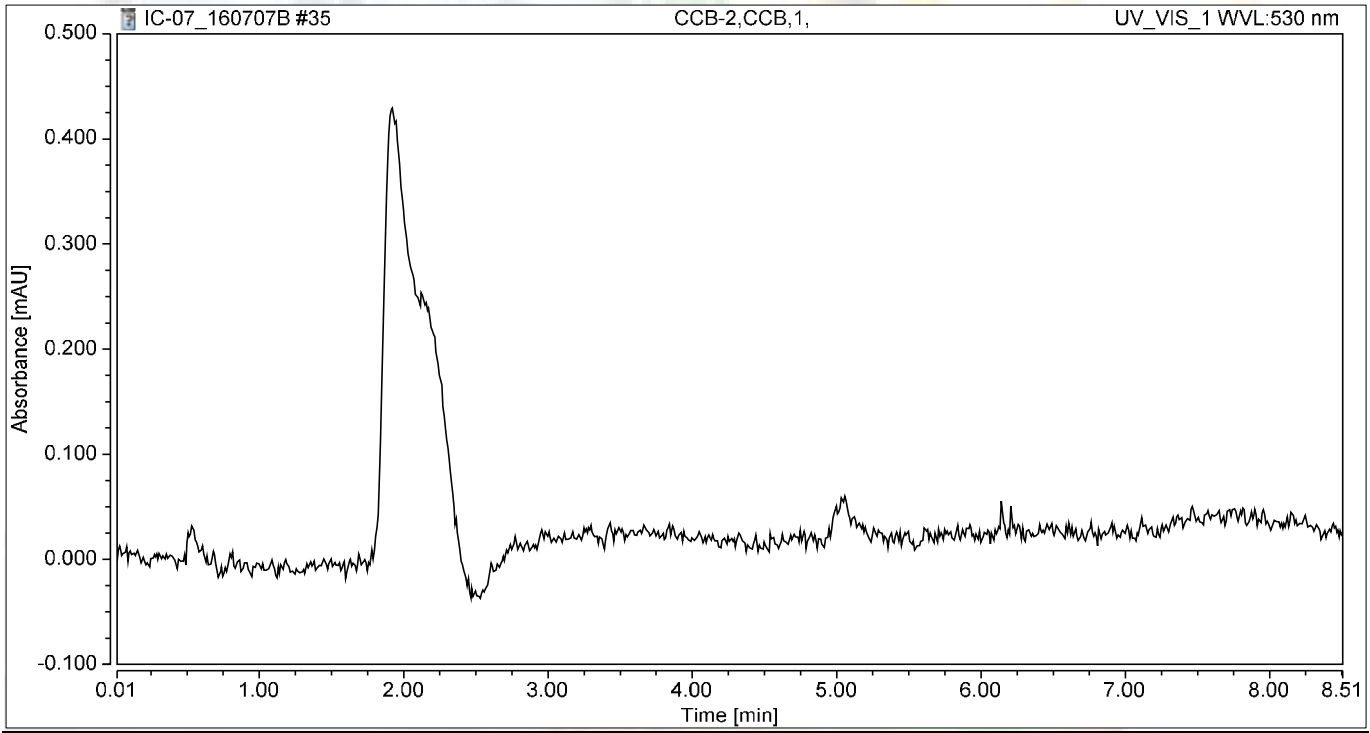
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	5.056	1.295	6.690	100.00	100.00	5.1059
Total:			**1.295**	**6.690**	**100.00**	**100.00**	

Chromatogram and Results

Injection Details

Injection Name:	**CCB-2,CCB,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:	**160707_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**07/Jul/16 15:37**	*Sample Weight:*	**1.0000**

Chromatogram



Integration Results

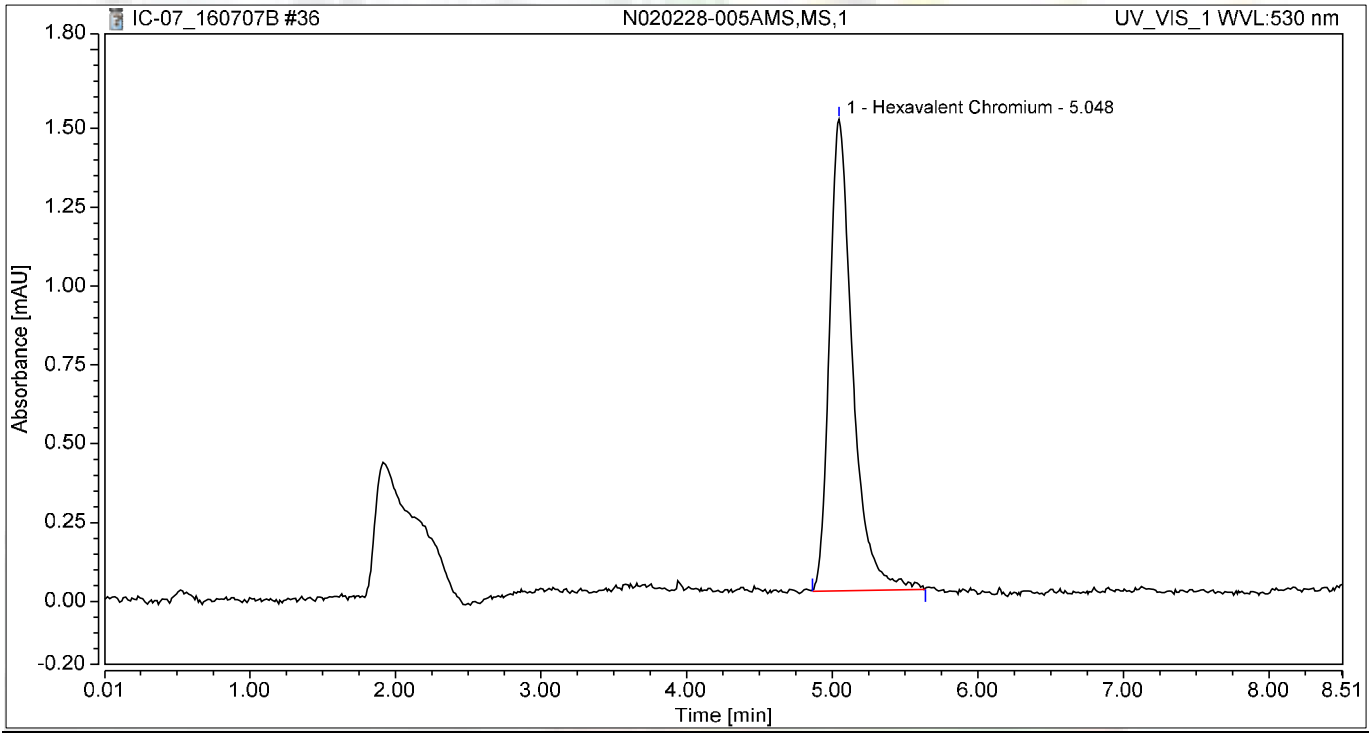
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
n.a.	Hexavalent Chromium	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Total:			**0.000**	**0.000**	**0.00**	**0.00**	

Chromatogram and Results

Injection Details

Injection Name:	**N020228-005AMS,MS,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:	**160707_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**07/Jul/16 15:47**	*Sample Weight:*	**1.0000**

Chromatogram



Integration Results

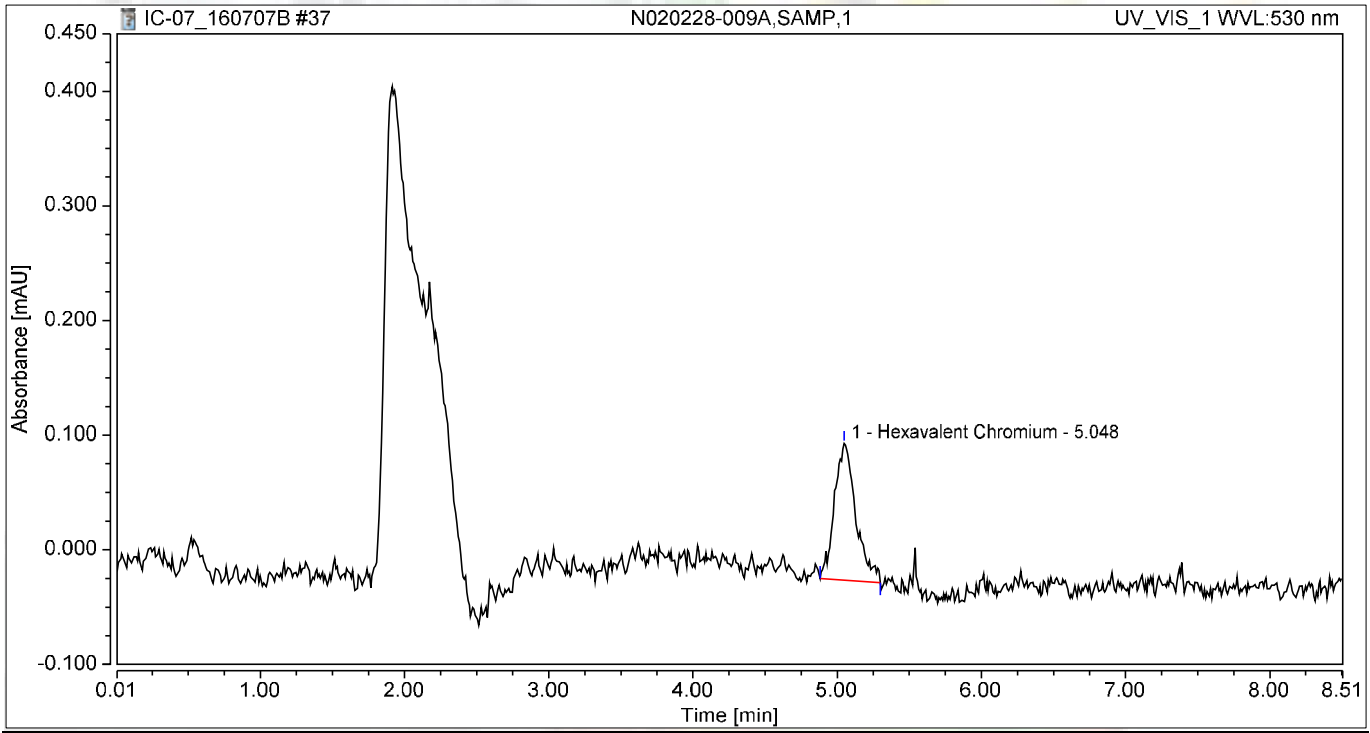
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	5.048	0.275	1.495	100.00	100.00	1.0862
Total:			**0.275**	**1.495**	**100.00**	**100.00**	

Chromatogram and Results

Injection Details

Injection Name:	**N020228-009A,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:	**160707_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**07/Jul/16 15:56**	*Sample Weight:*	**1.0000**

Chromatogram



Integration Results

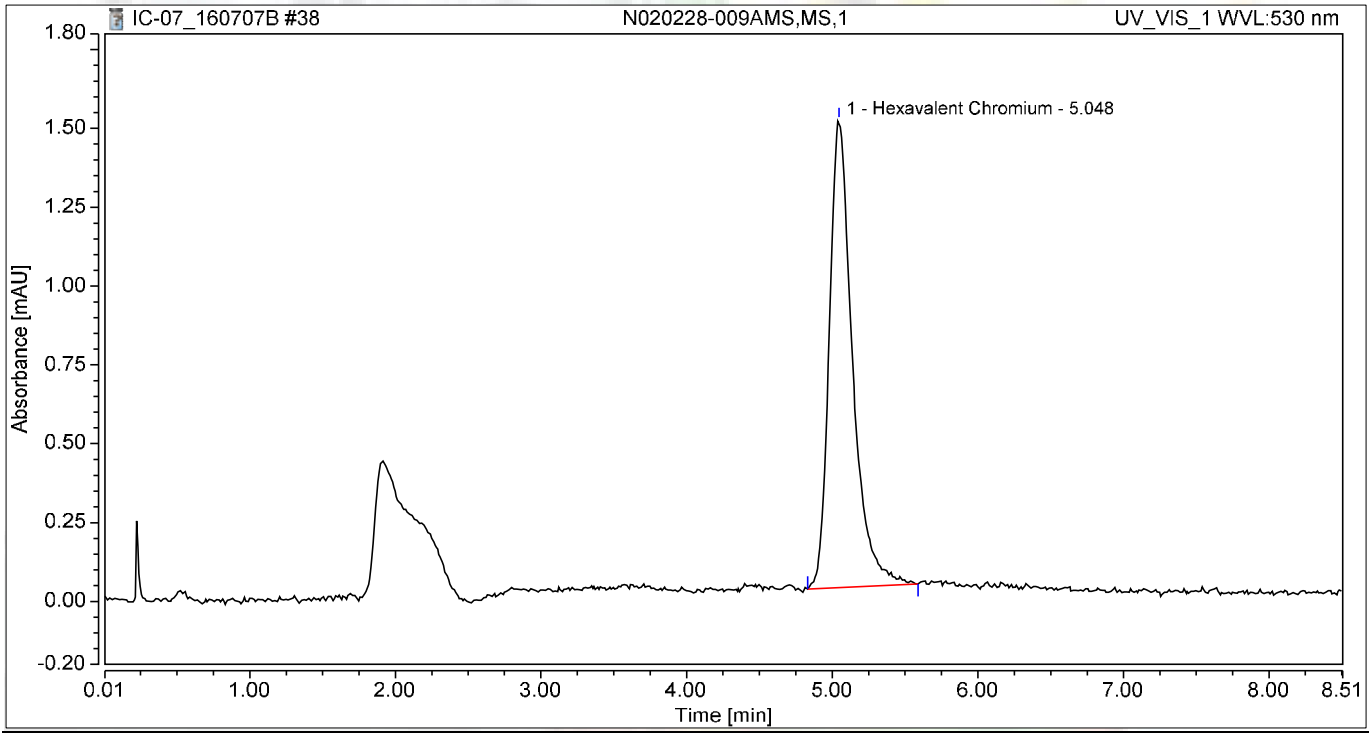
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	5.048	0.020	0.119	100.00	100.00	0.0808
Total:			**0.020**	**0.119**	**100.00**	**100.00**	

Chromatogram and Results

Injection Details

Injection Name:	**N020228-009AMS,MS,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:	**160707_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**07/Jul/16 16:05**	*Sample Weight:*	**1.0000**

Chromatogram



Integration Results

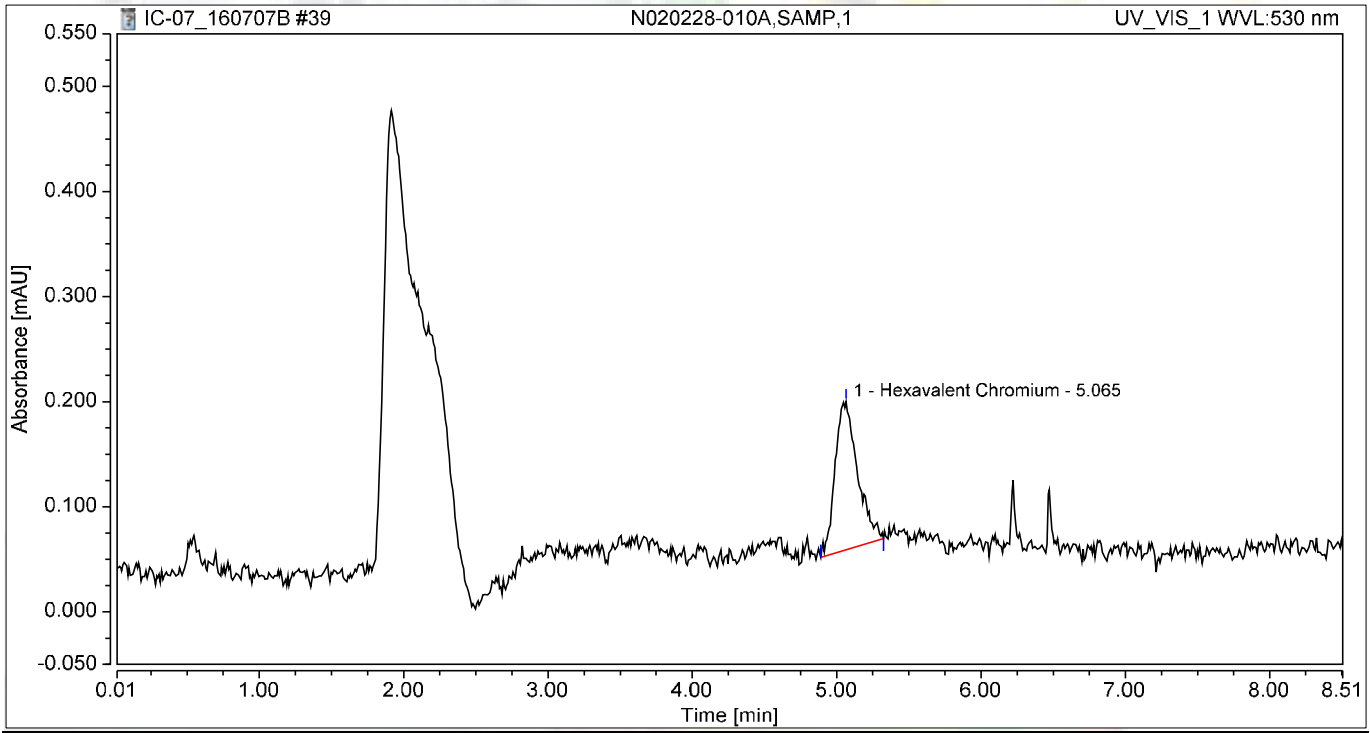
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	5.048	0.274	1.483	100.00	100.00	1.0810
Total:			**0.274**	**1.483**	**100.00**	**100.00**	

Chromatogram and Results

Injection Details

Injection Name:	**N020228-010A,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:	**160707_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**07/Jul/16 16:15**	*Sample Weight:*	**1.0000**

Chromatogram



Integration Results

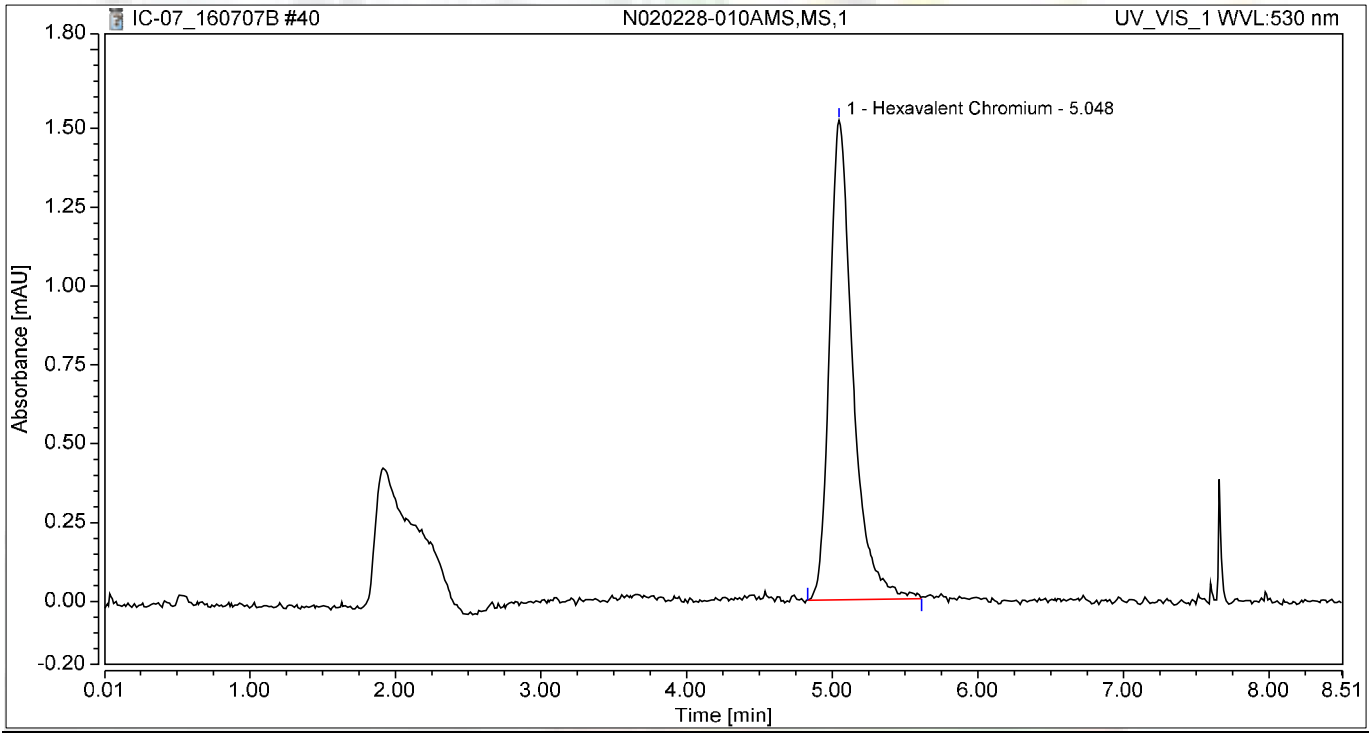
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	5.065	0.026	0.141	100.00	100.00	0.1008
Total:			**0.026**	**0.141**	**100.00**	**100.00**	

Chromatogram and Results

Injection Details

Injection Name:	**N020228-010AMS,MS,1**	*Run Time (min):*	**8.50**
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:	**160707_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**07/Jul/16 16:24**	*Sample Weight:*	**1.0000**

Chromatogram



Integration Results

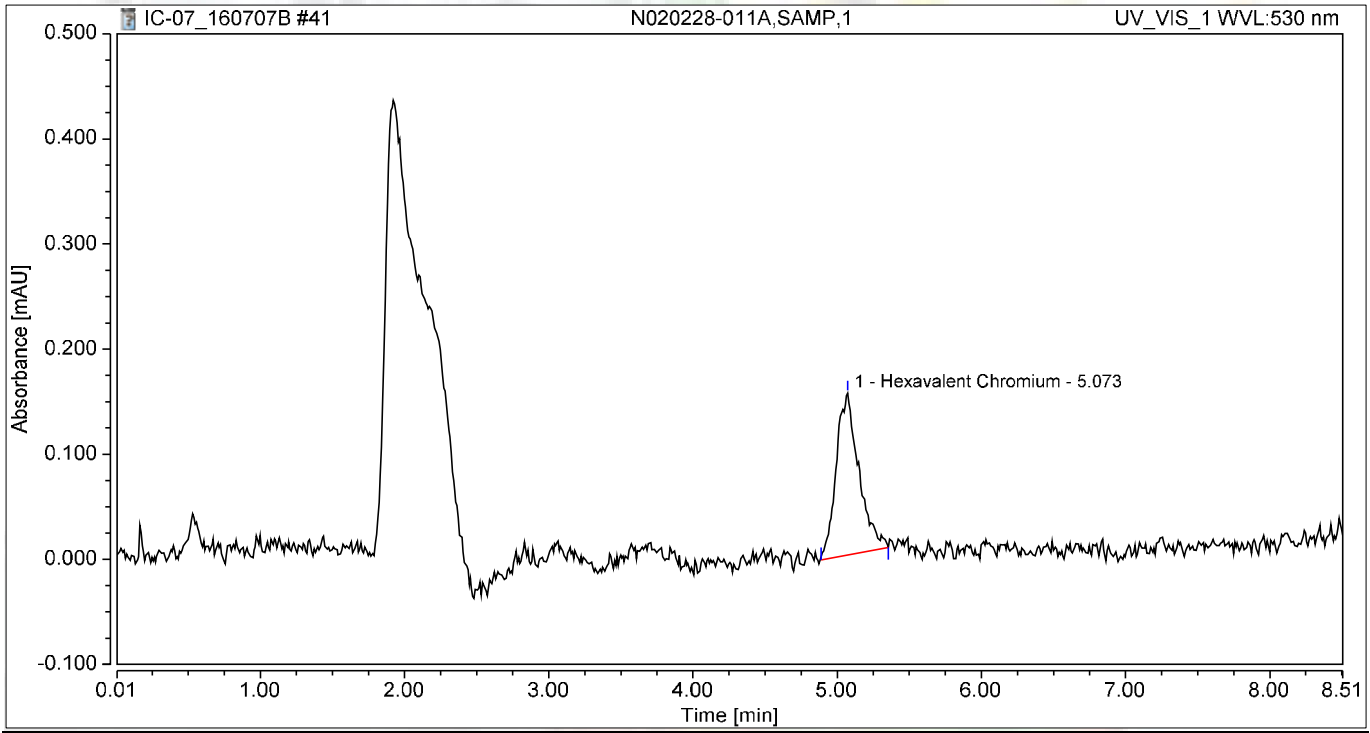
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	5.048	0.282	1.521	100.00	100.00	1.1127
Total:			**0.282**	**1.521**	**100.00**	**100.00**	

Chromatogram and Results

Injection Details

Injection Name:	**N020228-011A,SAMP,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:	**160707_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**07/Jul/16 16:34**	*Sample Weight:*	**1.0000**

Chromatogram



Integration Results

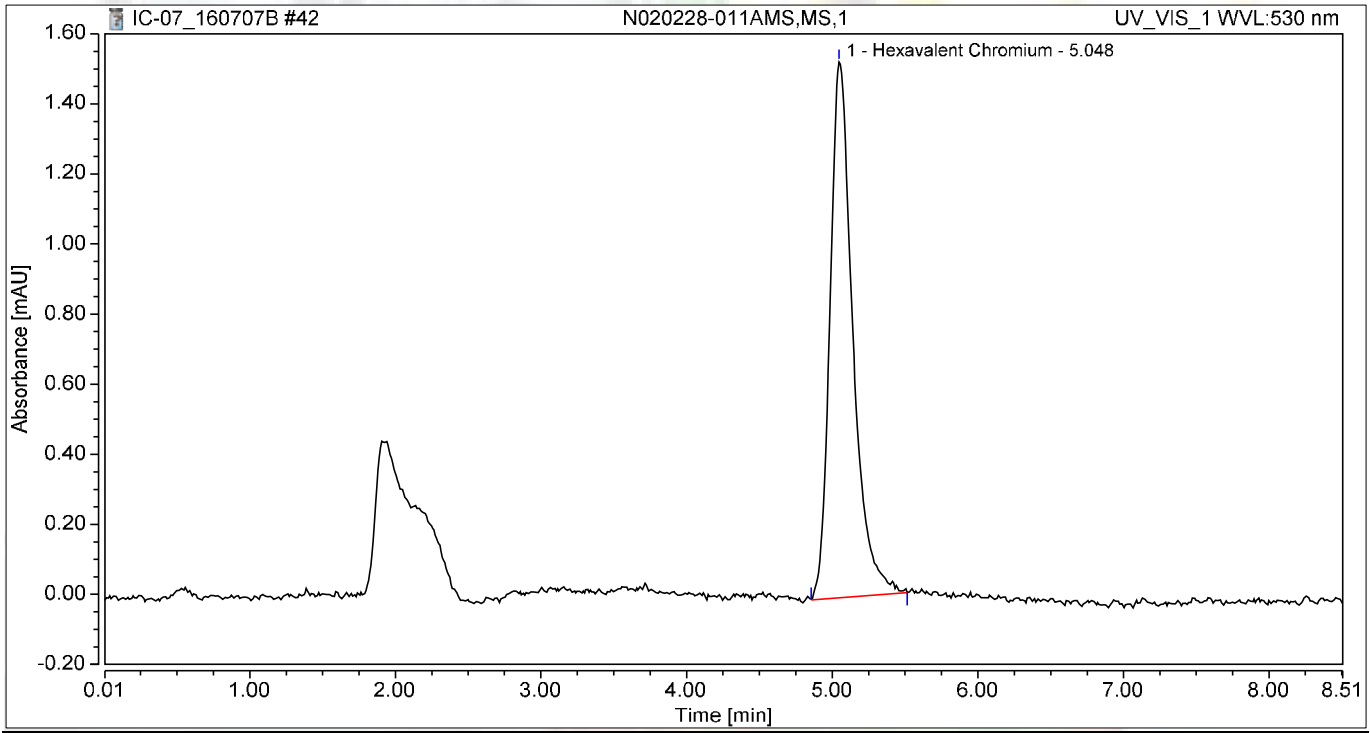
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	5.073	0.028	0.154	100.00	100.00	0.1110
Total:			**0.028**	**0.154**	**100.00**	**100.00**	

Chromatogram and Results

Injection Details

Injection Name:	**N020228-011AMS,MS,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:	**160707_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**07/Jul/16 16:44**	*Sample Weight:*	**1.0000**

Chromatogram



Integration Results

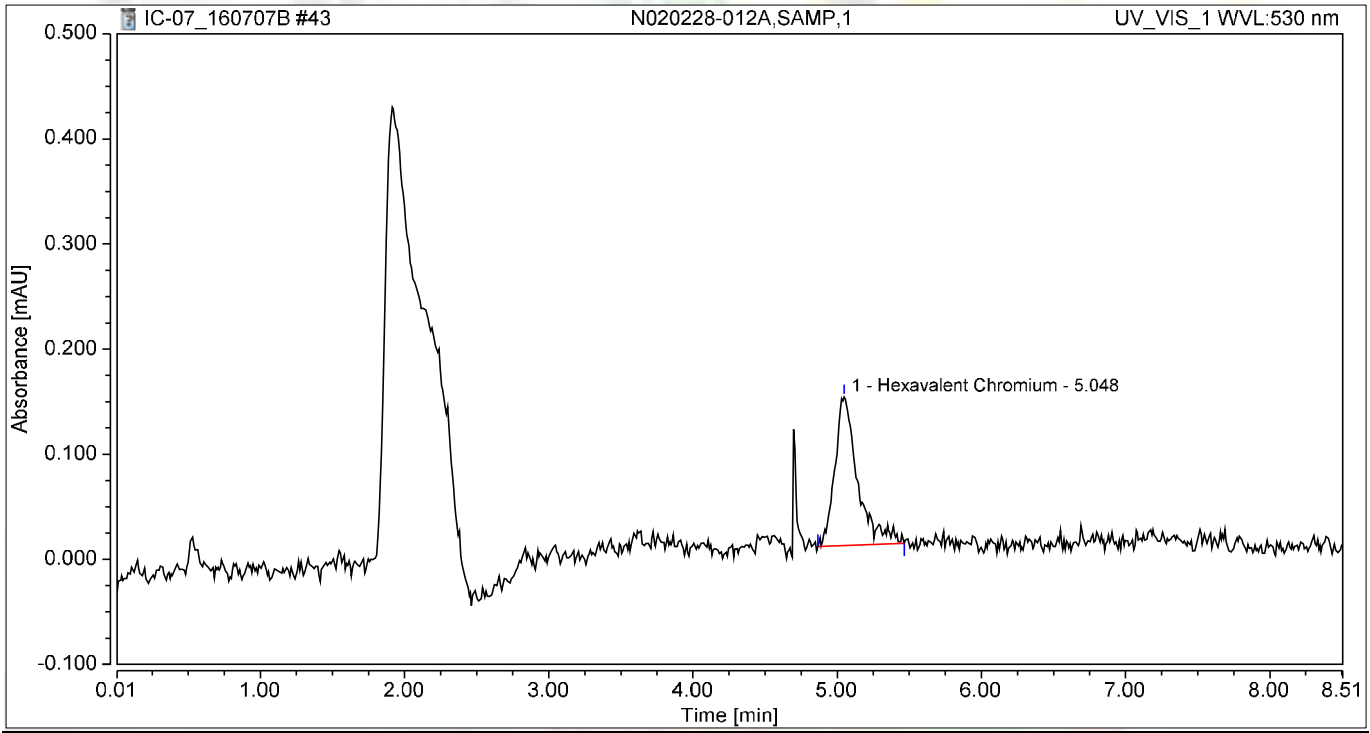
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	5.048	0.278	1.529	100.00	100.00	1.0980
Total:			**0.278**	**1.529**	**100.00**	**100.00**	

Chromatogram and Results

Injection Details

Injection Name:	**N020228-012A,SAMP,1**	*Run Time (min):*	**8.50**
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:	**160707_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**07/Jul/16 16:53**	*Sample Weight:*	**1.0000**

Chromatogram



Integration Results

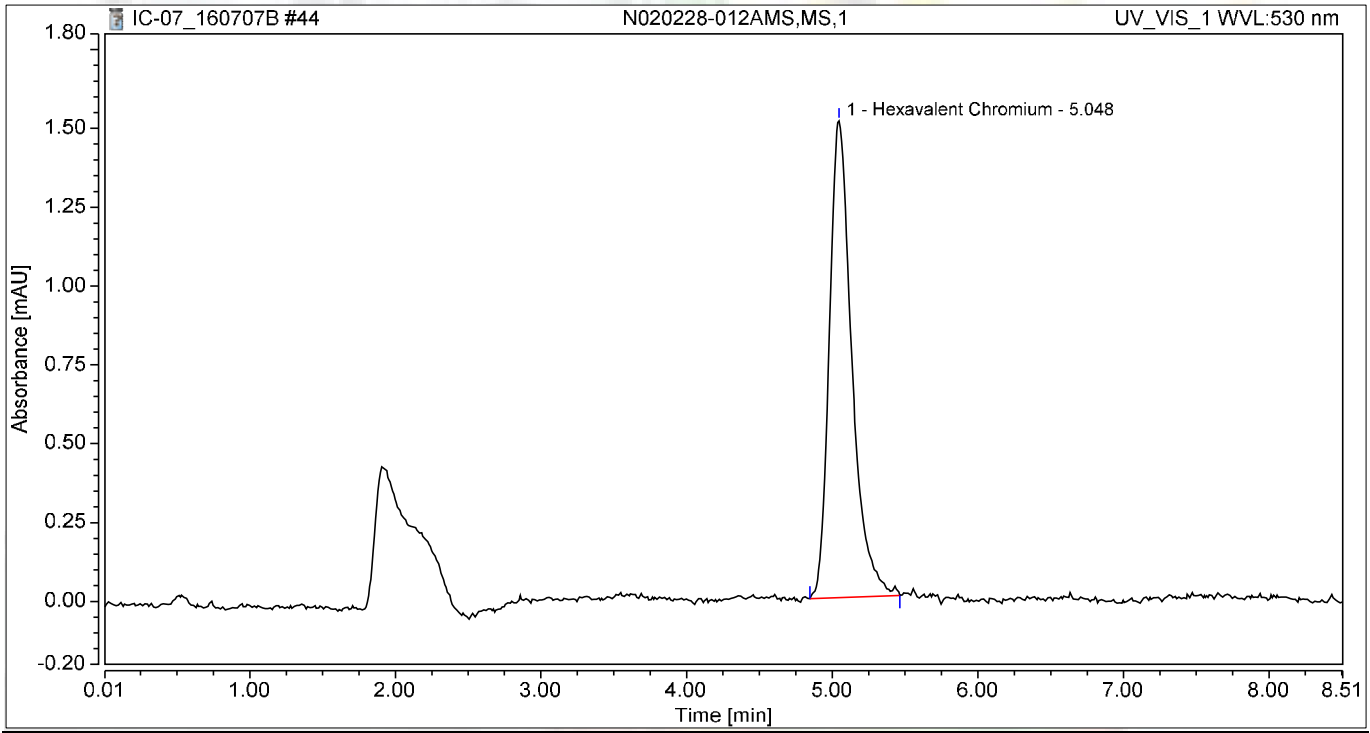
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	5.048	0.026	0.141	100.00	100.00	0.1025
Total:			**0.026**	**0.141**	**100.00**	**100.00**	

Chromatogram and Results

Injection Details

Injection Name:	**N020228-012AMS,MS,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:	**160707_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**07/Jul/16 17:02**	*Sample Weight:*	**1.0000**

Chromatogram



Integration Results

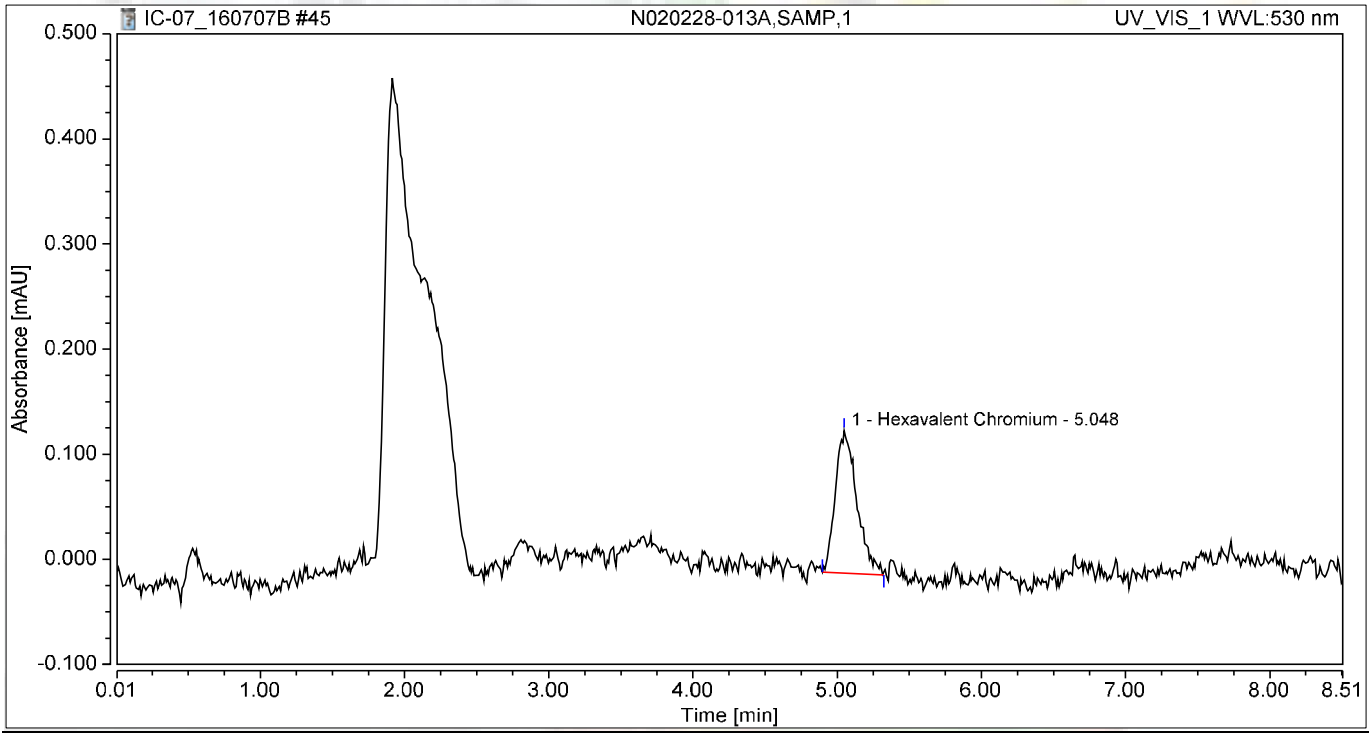
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	5.048	0.272	1.513	100.00	100.00	1.0731
Total:			**0.272**	**1.513**	**100.00**	**100.00**	

Chromatogram and Results

Injection Details

Injection Name:	**N020228-013A,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:	**160707_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**07/Jul/16 17:12**	*Sample Weight:*	**1.0000**

Chromatogram



Integration Results

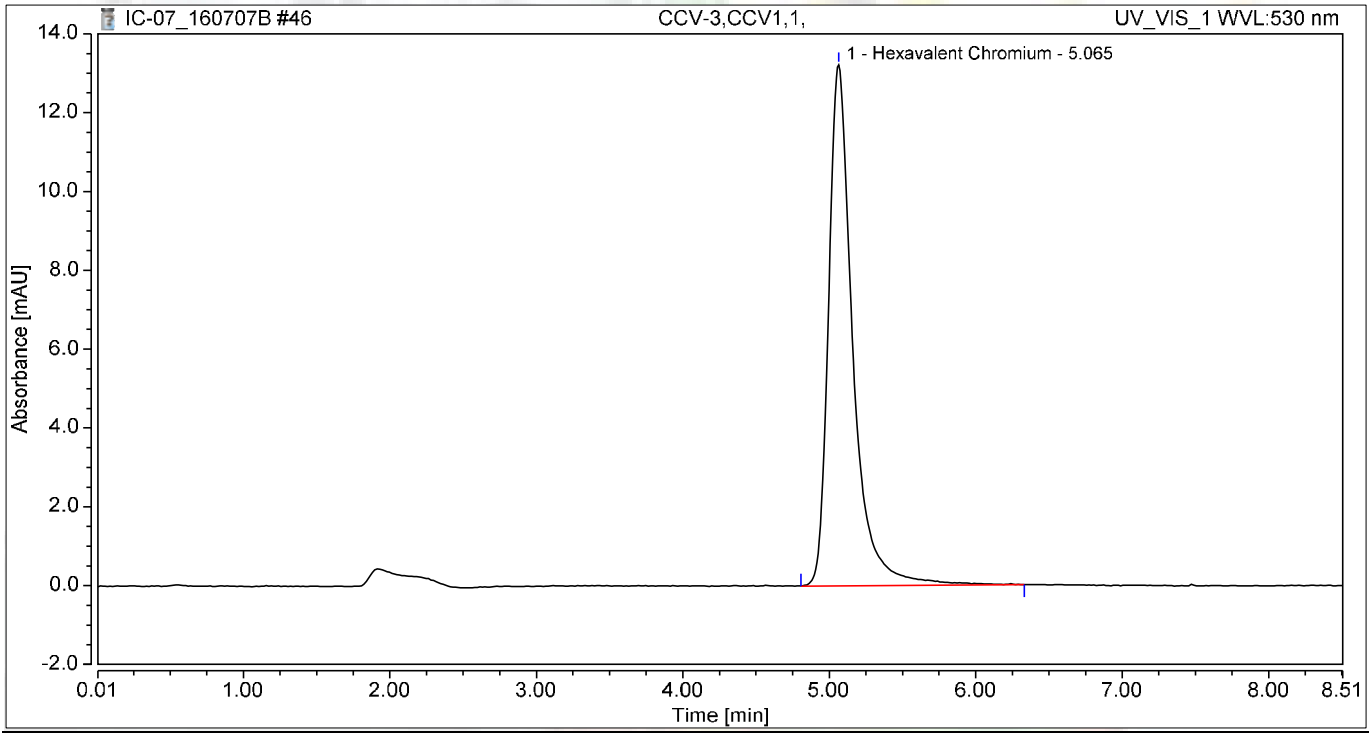
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	5.048	0.023	0.135	100.00	100.00	0.0922
Total:			**0.023**	**0.135**	**100.00**	**100.00**	

Chromatogram and Results

Injection Details

Injection Name:	**CCV-3,CCV1,1,**	*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:	**160707_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**07/Jul/16 17:24**	*Sample Weight:*	**1.0000**

Chromatogram



Integration Results

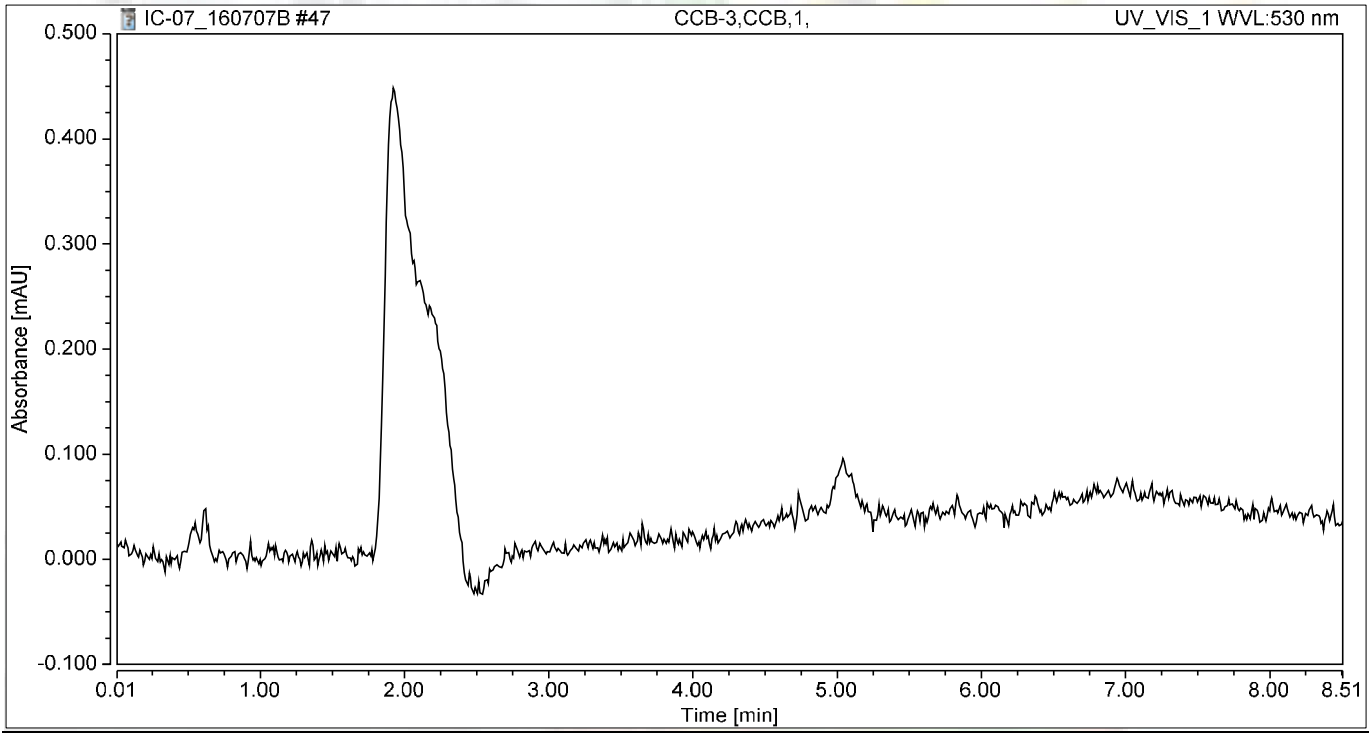
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	5.065	2.540	13.215	100.00	100.00	10.0142
Total:			**2.540**	**13.215**	**100.00**	**100.00**	

Chromatogram and Results

Injection Details

Injection Name:	**CCB-3,CCB,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:	**160707_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**07/Jul/16 17:33**	*Sample Weight:*	**1.0000**

Chromatogram



Integration Results

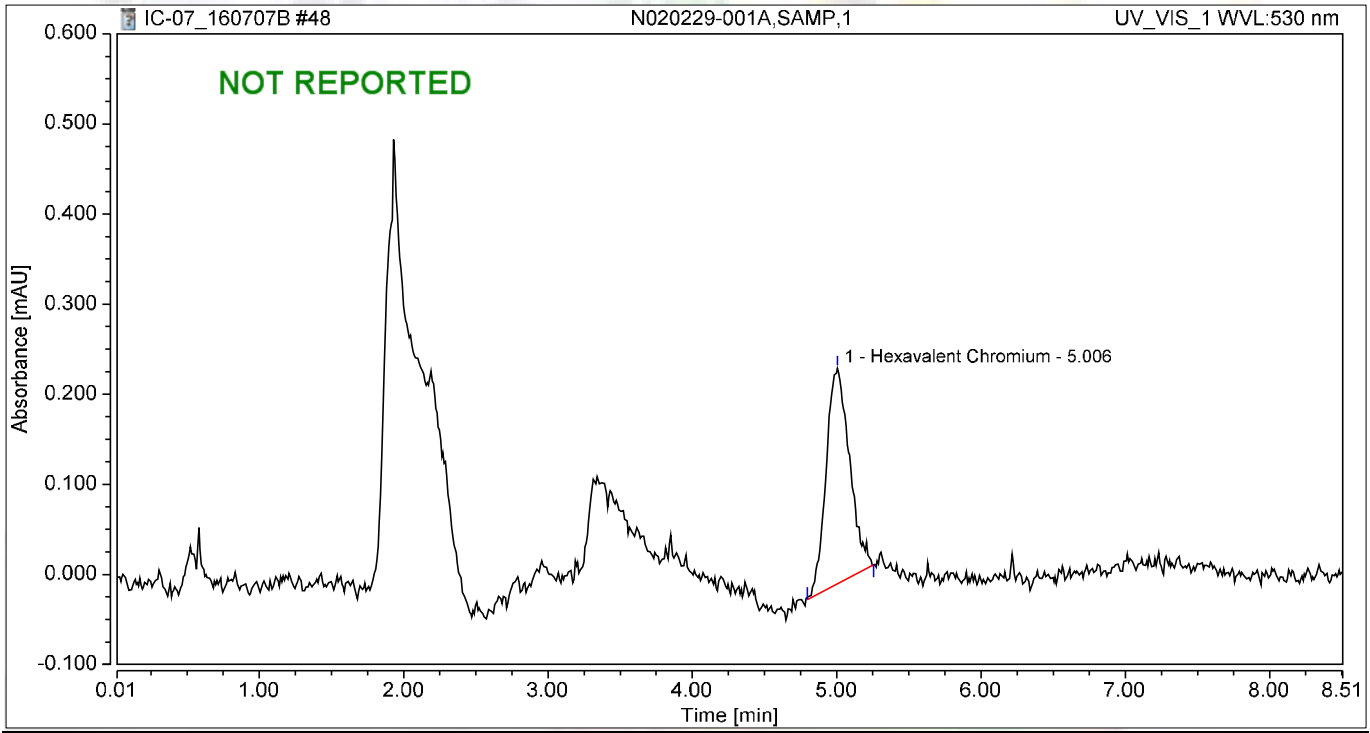
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
n.a.	Hexavalent Chromium	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Total:			**0.000**	**0.000**	**0.00**	**0.00**	

Chromatogram and Results

Injection Details

Injection Name:	**N020229-001A,SAMP,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:	**160707_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**07/Jul/16 17:43**	*Sample Weight:*	**1.0000**

Chromatogram



Integration Results

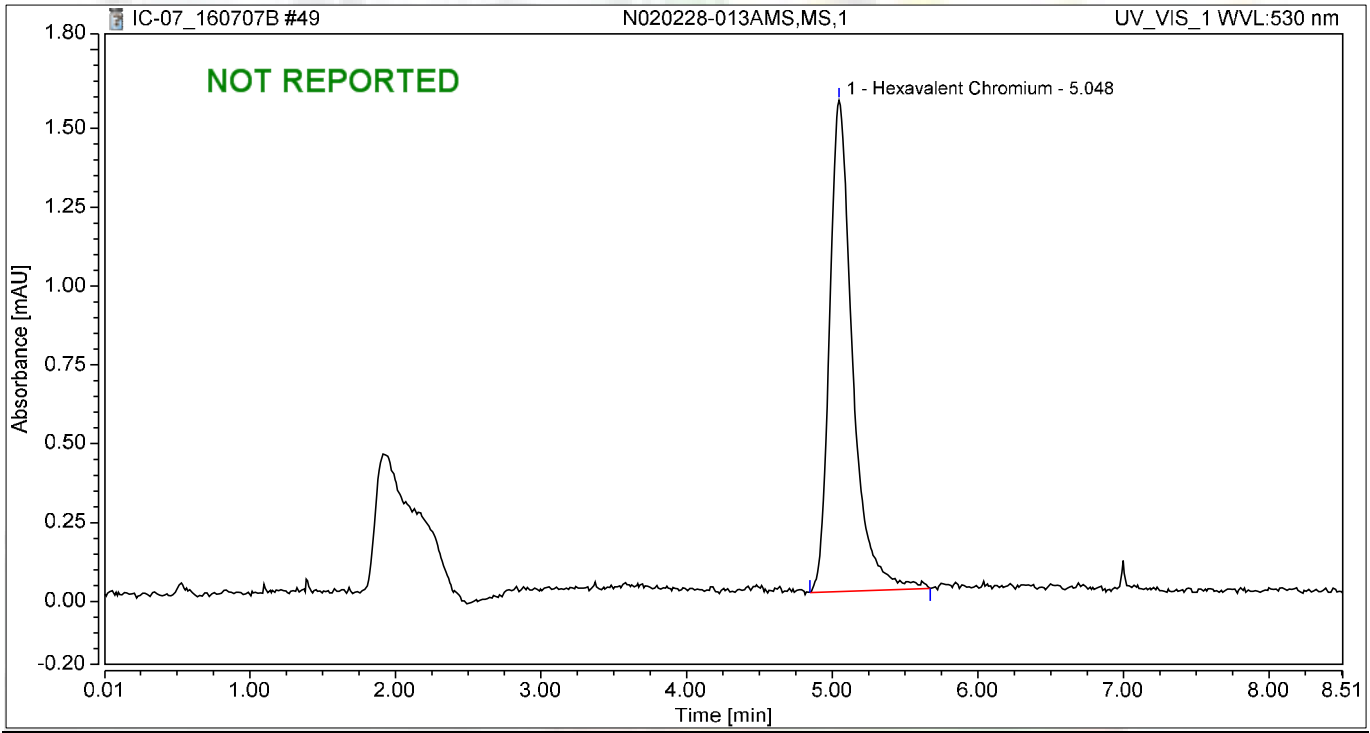
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	5.006	0.045	0.239	100.00	100.00	0.1770
Total:			**0.045**	**0.239**	**100.00**	**100.00**	

Chromatogram and Results

Injection Details

Injection Name:	**N020228-013AMS,MS,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:	**160707_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**07/Jul/16 17:52**	*Sample Weight:*	**1.0000**

Chromatogram



Integration Results

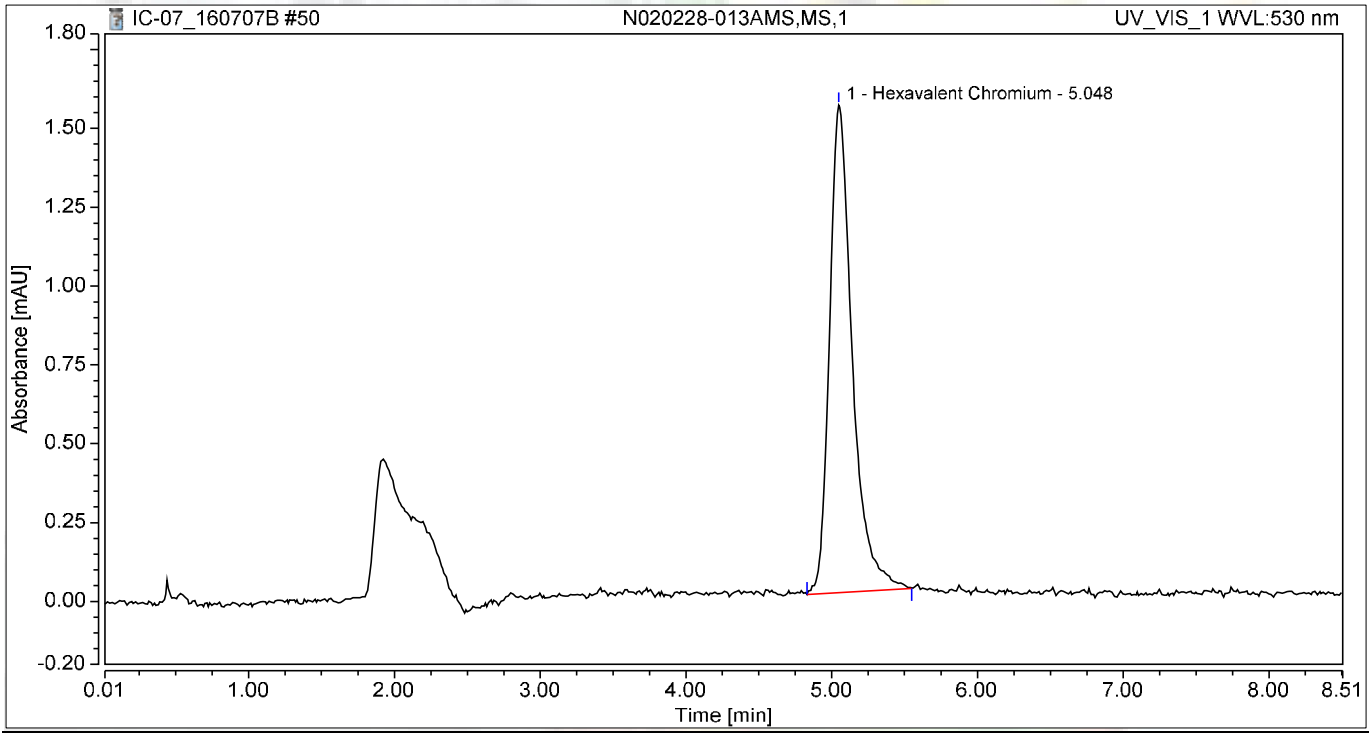
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	5.048	0.286	1.558	100.00	100.00	1.1294
Total:			**0.286**	**1.558**	**100.00**	**100.00**	

Chromatogram and Results

Injection Details

Injection Name:	**N020228-013AMS,MS,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:	**160707_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**07/Jul/16 18:04**	*Sample Weight:*	**1.0000**

Chromatogram



Integration Results

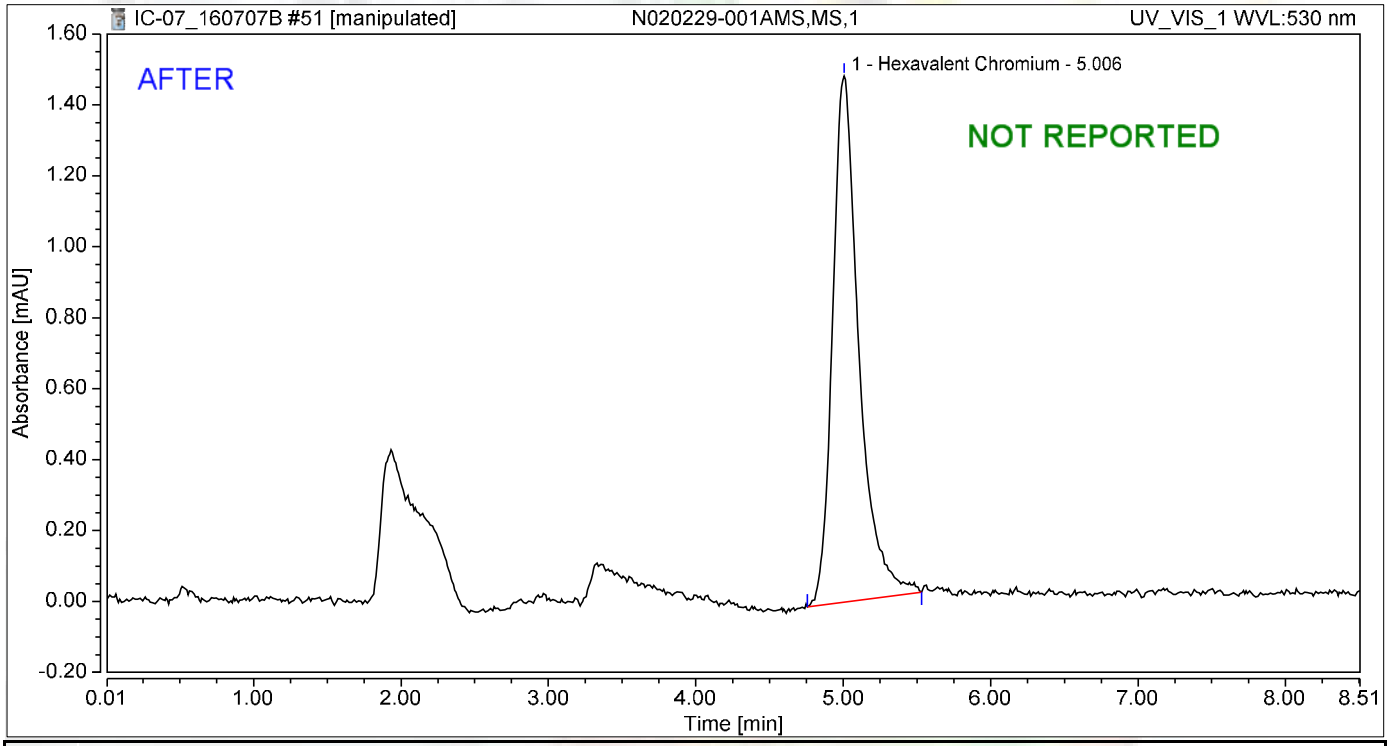
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	5.048	0.281	1.547	100.00	100.00	1.1076
Total:			**0.281**	**1.547**	**100.00**	**100.00**	

Chromatogram and Results

Injection Details

Injection Name:	**N020229-001AMS,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:	**160707_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**07/Jul/16 18:15**	*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	5.006	0.307	1.483	100.00	100.00	1.2102
Total:			**0.307**	**1.483**	**100.00**	**100.00**	

Reviewed by:

7/21/2016

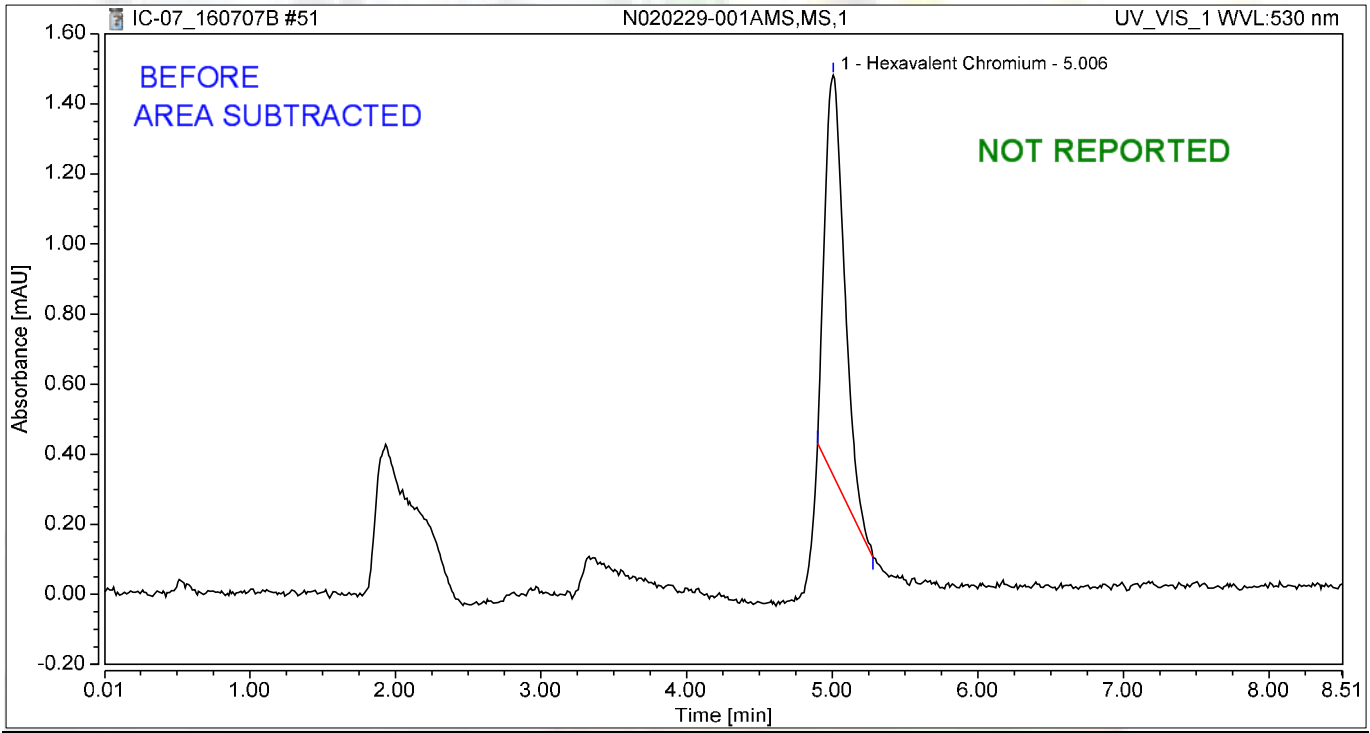
7/21/2016

Chromatogram and Results

Injection Details

Injection Name:	**N020229-001AMS,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:	**160707_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**07/Jul/16 18:15**	*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	5.006	0.179	1.143	100.00	100.00	0.7074
Total:			**0.179**	**1.143**	**100.00**	**100.00**	

7/21/2016

Reviewed by:

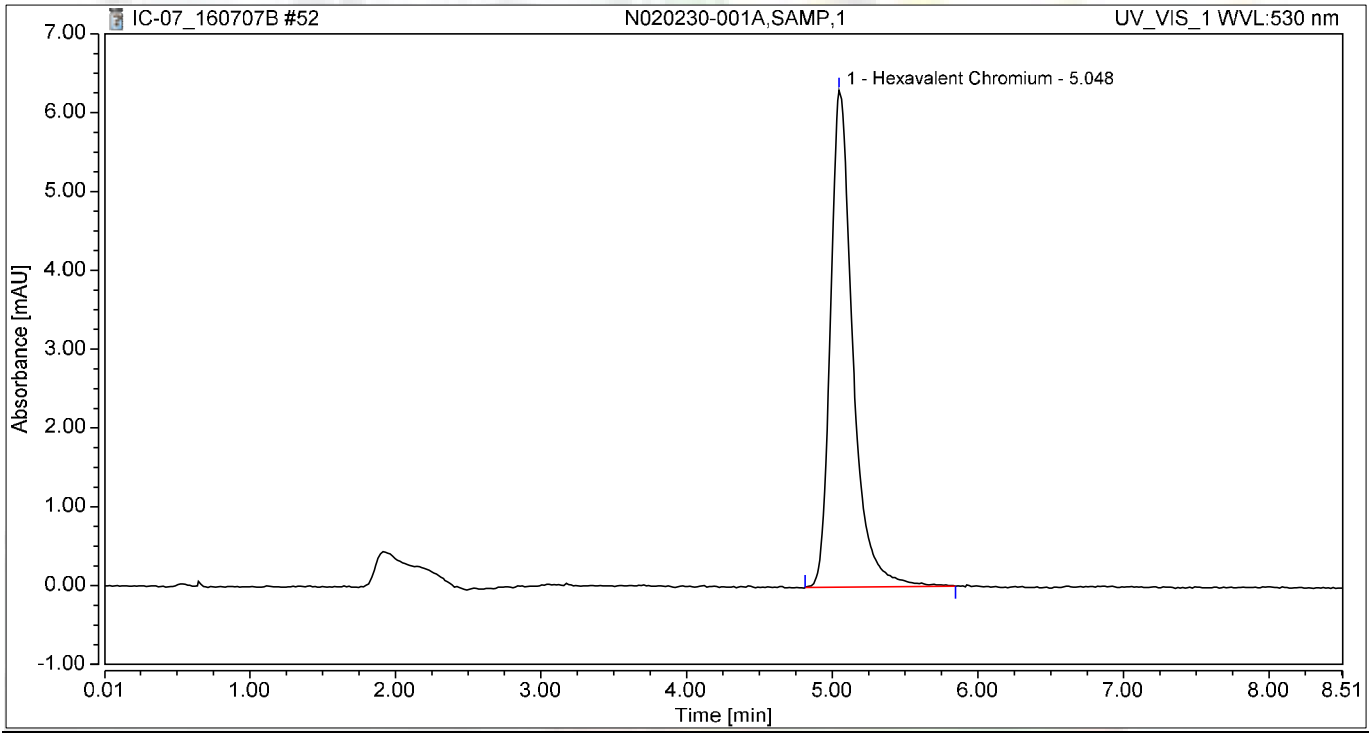
7/21/2016

Chromatogram and Results

Injection Details

Injection Name:	**N020230-001A,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:	**160707_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**07/Jul/16 18:25**	*Sample Weight:*	**1.0000**

Chromatogram



Integration Results

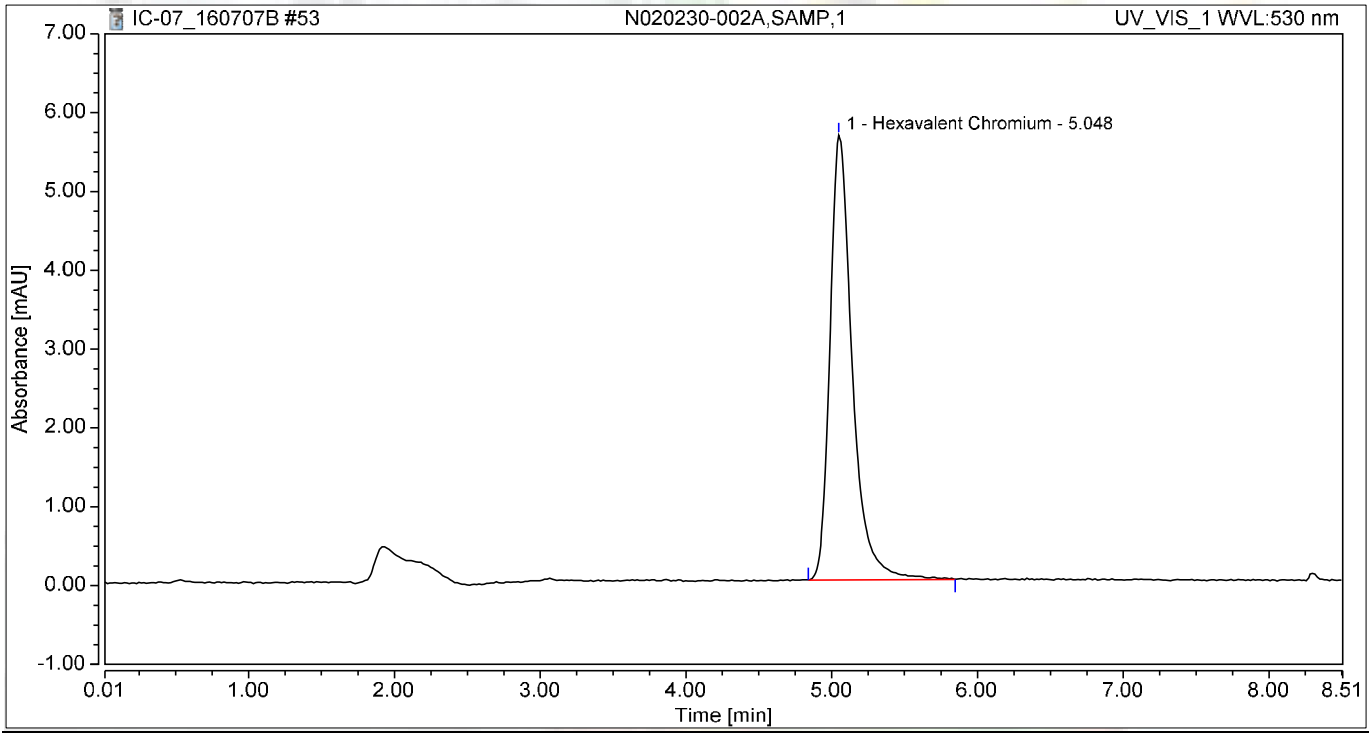
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	5.048	1.121	6.301	100.00	100.00	4.4192
Total:			**1.121**	**6.301**	**100.00**	**100.00**	

Chromatogram and Results

Injection Details

Injection Name:	**N020230-002A,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:	**160707_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**07/Jul/16 18:34**	*Sample Weight:*	**1.0000**

Chromatogram



Integration Results

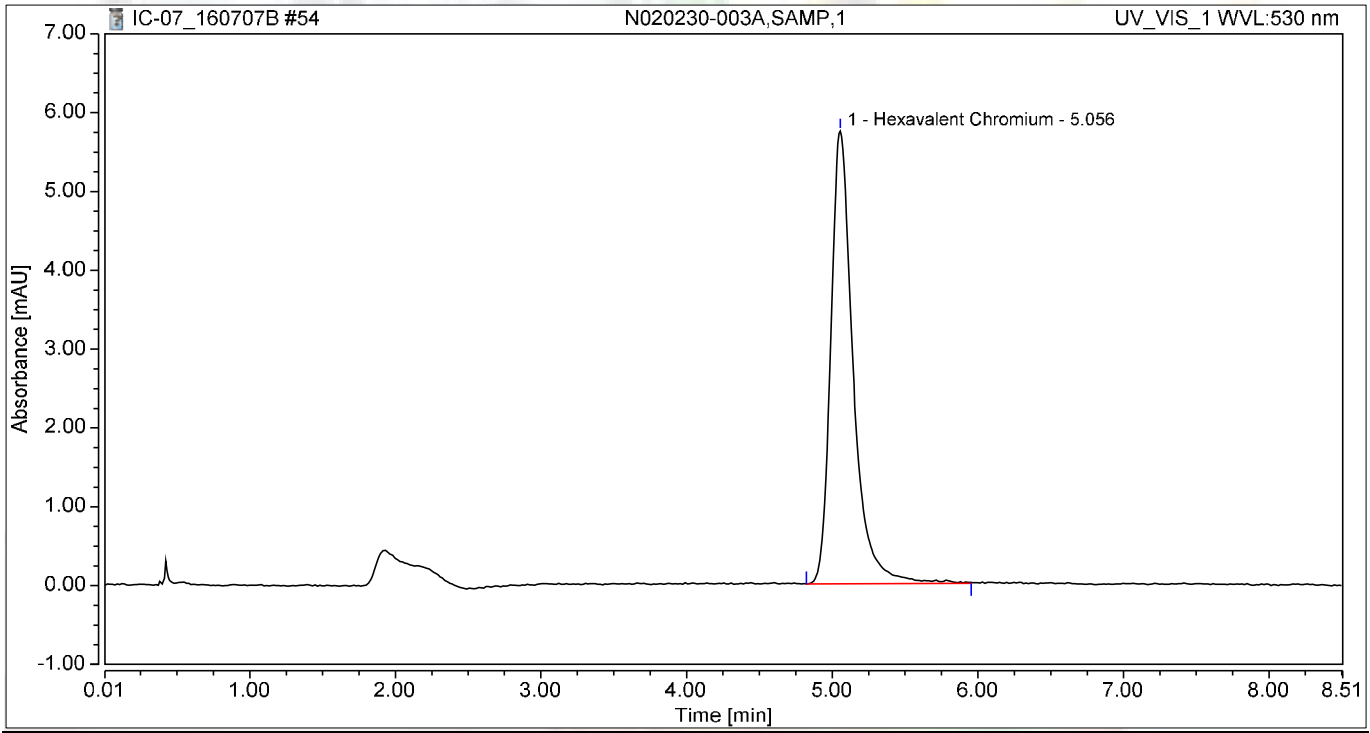
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	5.048	1.004	5.644	100.00	100.00	3.9578
Total:			**1.004**	**5.644**	**100.00**	**100.00**	

Chromatogram and Results

Injection Details

Injection Name:	**N020230-003A,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:	**160707_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**07/Jul/16 18:44**	*Sample Weight:*	**1.0000**

Chromatogram



Integration Results

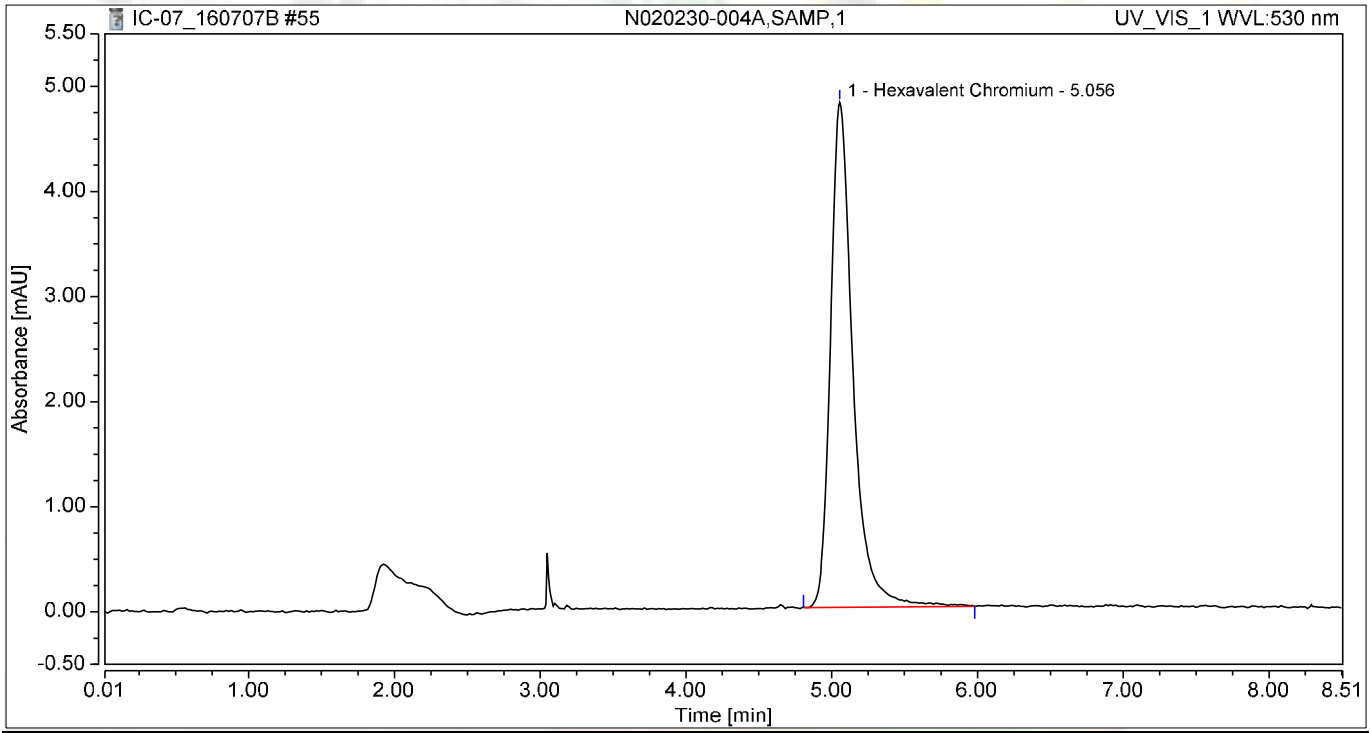
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	5.056	1.025	5.743	100.00	100.00	4.0407
Total:			**1.025**	**5.743**	**100.00**	**100.00**	

Chromatogram and Results

Injection Details

Injection Name:	**N020230-004A,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:	**160707_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**07/Jul/16 18:53**	*Sample Weight:*	**1.0000**

Chromatogram



Integration Results

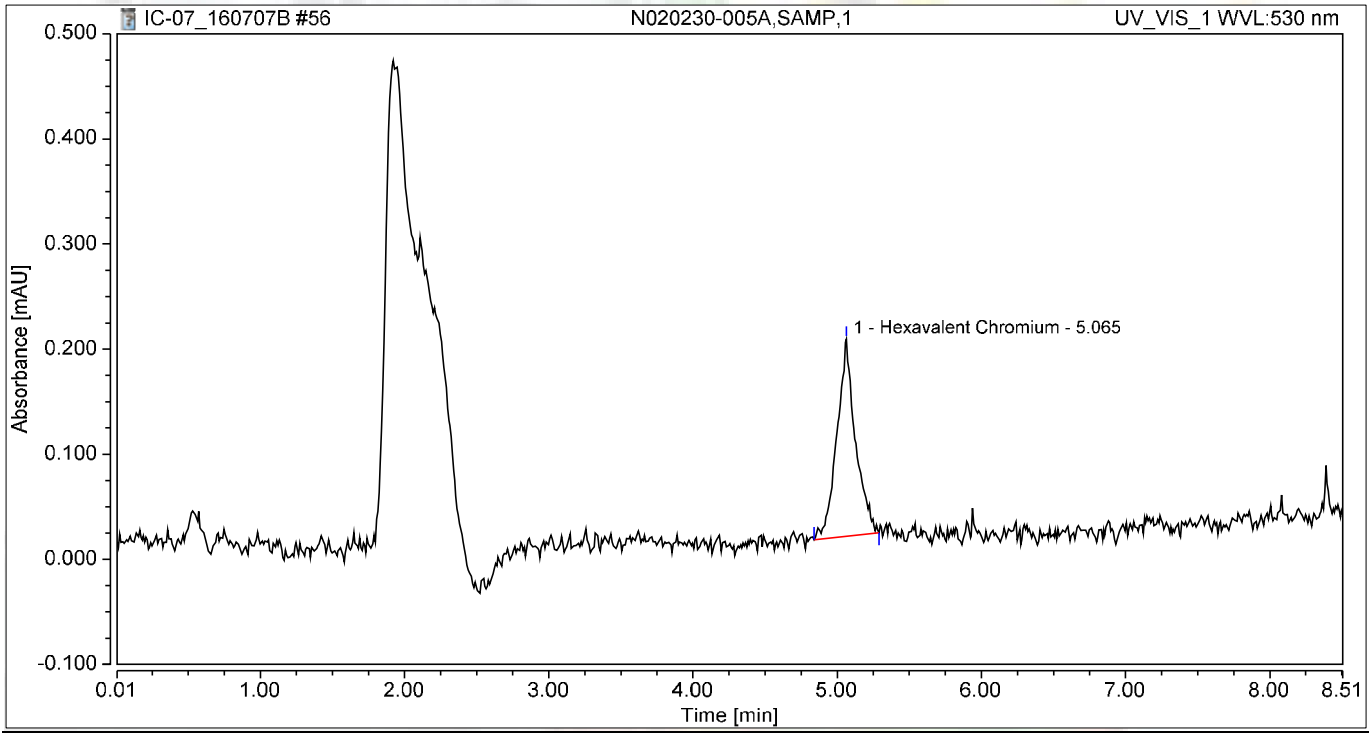
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	5.056	0.857	4.803	100.00	100.00	3.3790
Total:			**0.857**	**4.803**	**100.00**	**100.00**	

Chromatogram and Results

Injection Details

Injection Name:	**N020230-005A,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:	**160707_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**07/Jul/16 19:03**	*Sample Weight:*	**1.0000**

Chromatogram



Integration Results

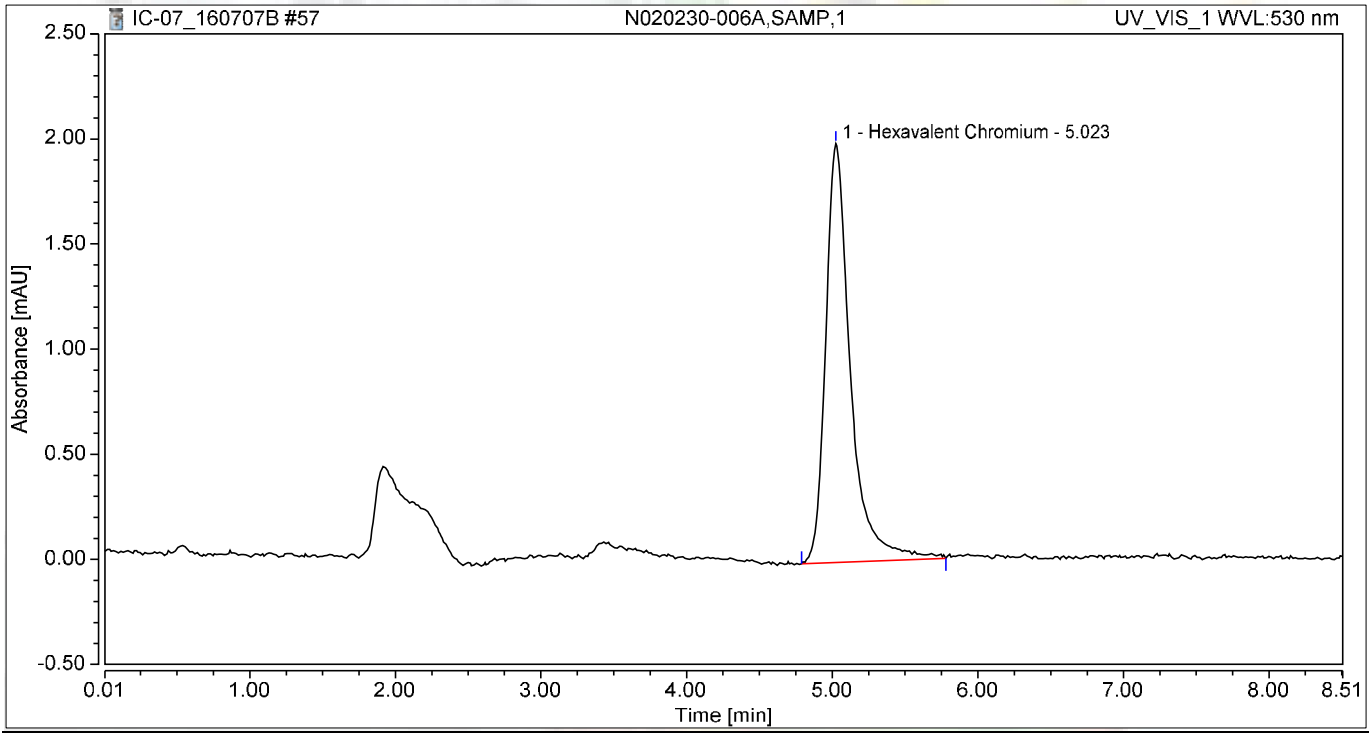
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	5.065	0.028	0.188	100.00	100.00	0.1099
Total:			**0.028**	**0.188**	**100.00**	**100.00**	

Chromatogram and Results

Injection Details

Injection Name:	**N020230-006A,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:	**160707_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**07/Jul/16 19:12**	*Sample Weight:*	**1.0000**

Chromatogram



Integration Results

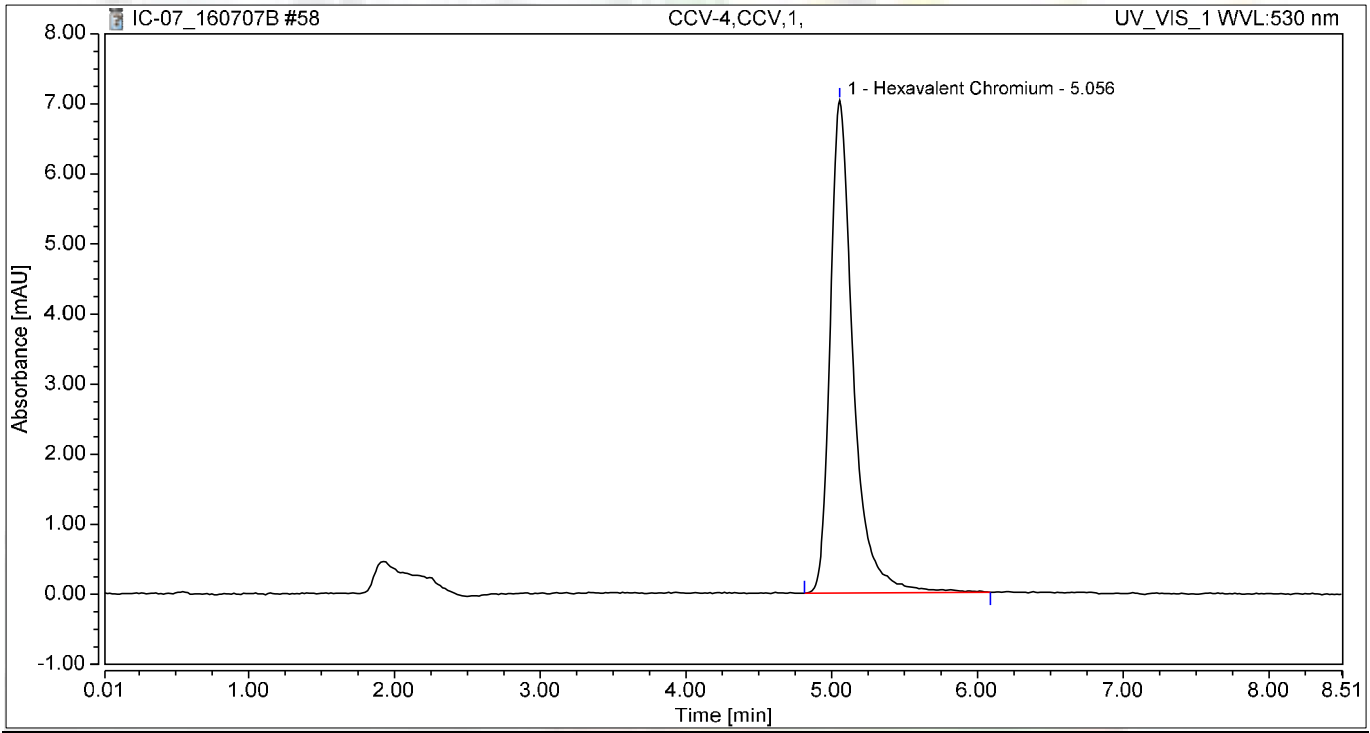
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	5.023	0.393	1.992	100.00	100.00	1.5479
Total:			**0.393**	**1.992**	**100.00**	**100.00**	

Chromatogram and Results

Injection Details

Injection Name:	**CCV-4,CCV,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:	**160707_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**07/Jul/16 19:22**	*Sample Weight:*	**1.0000**

Chromatogram



Integration Results

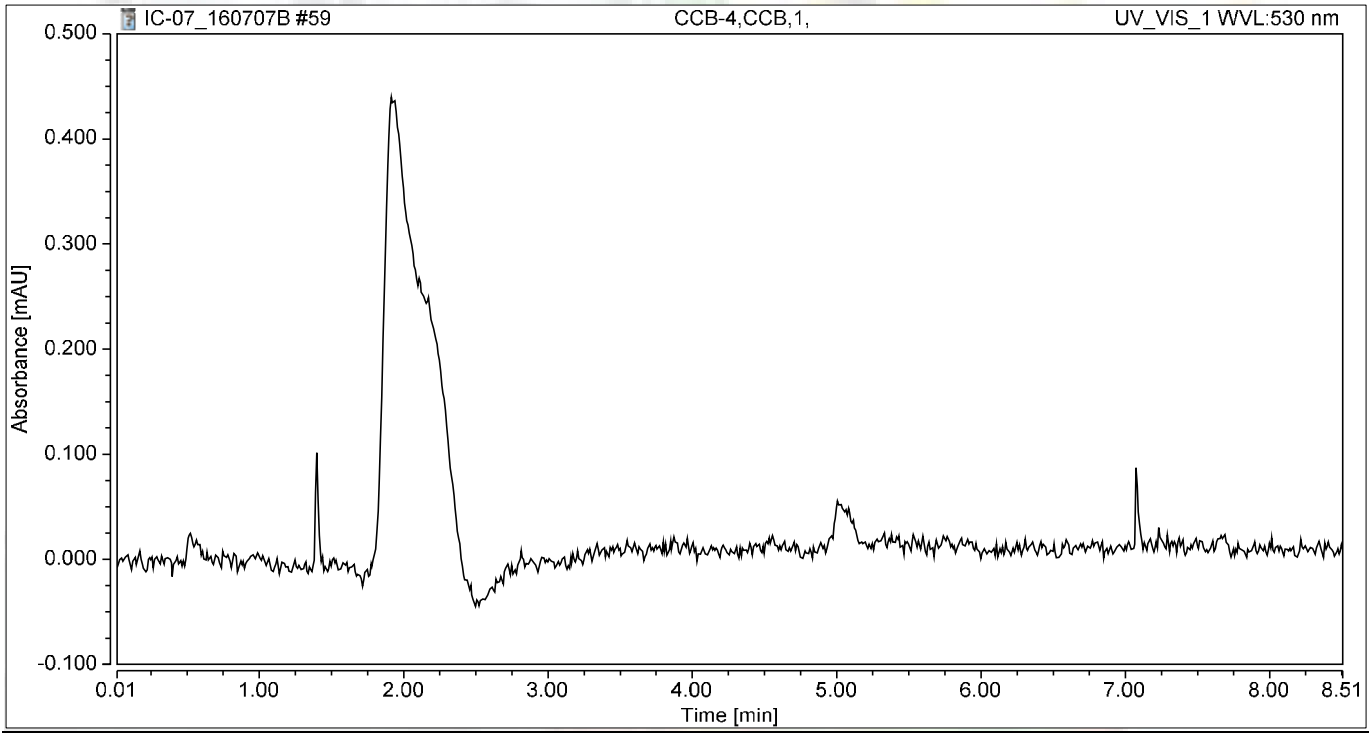
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	5.056	1.291	7.033	100.00	100.00	5.0891
Total:			**1.291**	**7.033**	**100.00**	**100.00**	

Chromatogram and Results

Injection Details

Injection Name:	**CCB-4,CCB,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:	**160707_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**07/Jul/16 19:31**	*Sample Weight:*	**1.0000**

Chromatogram



Integration Results

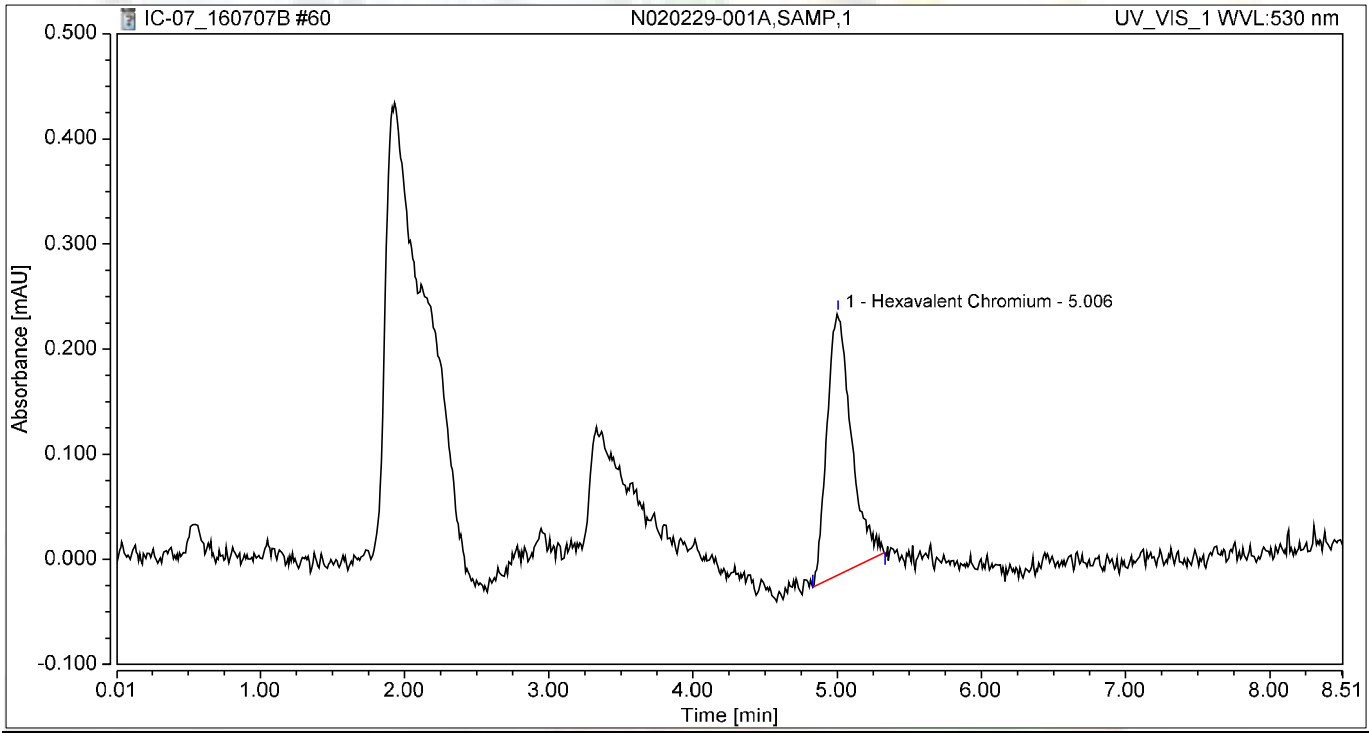
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
n.a.	Hexavalent Chromium	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Total:			**0.000**	**0.000**	**0.00**	**0.00**	

Chromatogram and Results

Injection Details

Injection Name:	**N020229-001A,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:	**160707_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**07/Jul/16 19:40**	*Sample Weight:*	**1.0000**

Chromatogram



Integration Results

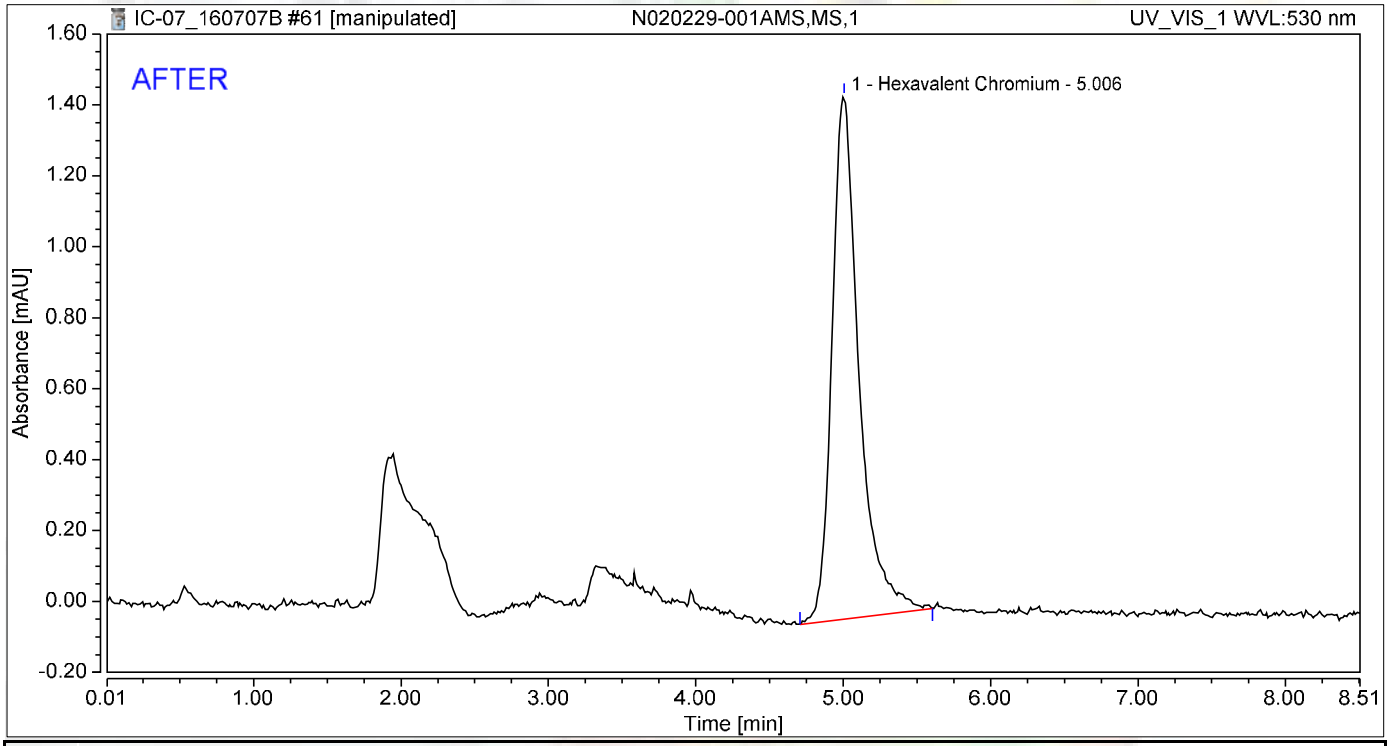
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	5.006	0.049	0.249	100.00	100.00	0.1928
Total:			**0.049**	**0.249**	**100.00**	**100.00**	

Chromatogram and Results

Injection Details

Injection Name:	**N020229-001AMS,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:	**160707_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**07/Jul/16 19:50**	*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	5.006	0.314	1.475	100.00	100.00	1.2383
Total:			**0.314**	**1.475**	**100.00**	**100.00**	

7/21/2016

Reviewed by:

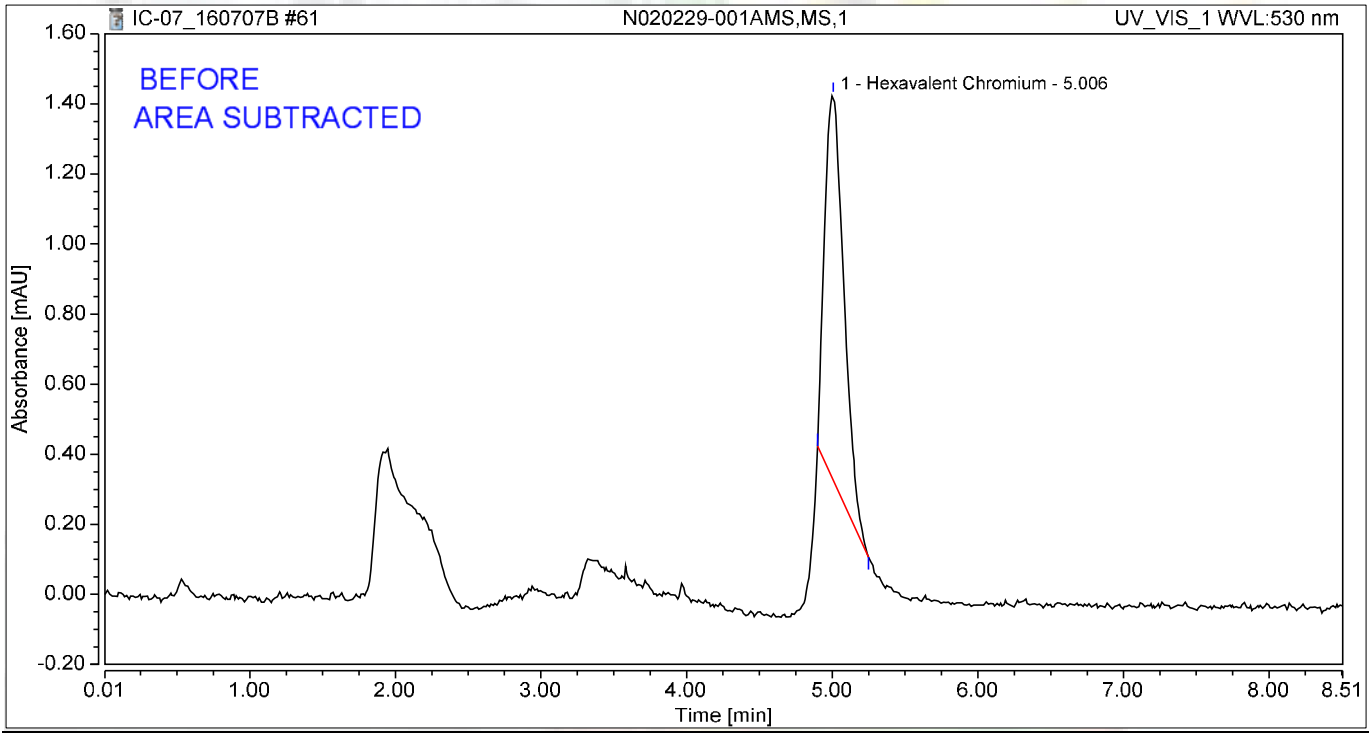
7/21/2016

Chromatogram and Results

Injection Details

Injection Name:	**N020229-001AMS,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:	**160707_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**07/Jul/16 19:50**	*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	5.006	0.169	1.100	100.00	100.00	0.6655
Total:			**0.169**	**1.100**	**100.00**	**100.00**	

Reviewed by: 7/21/2016

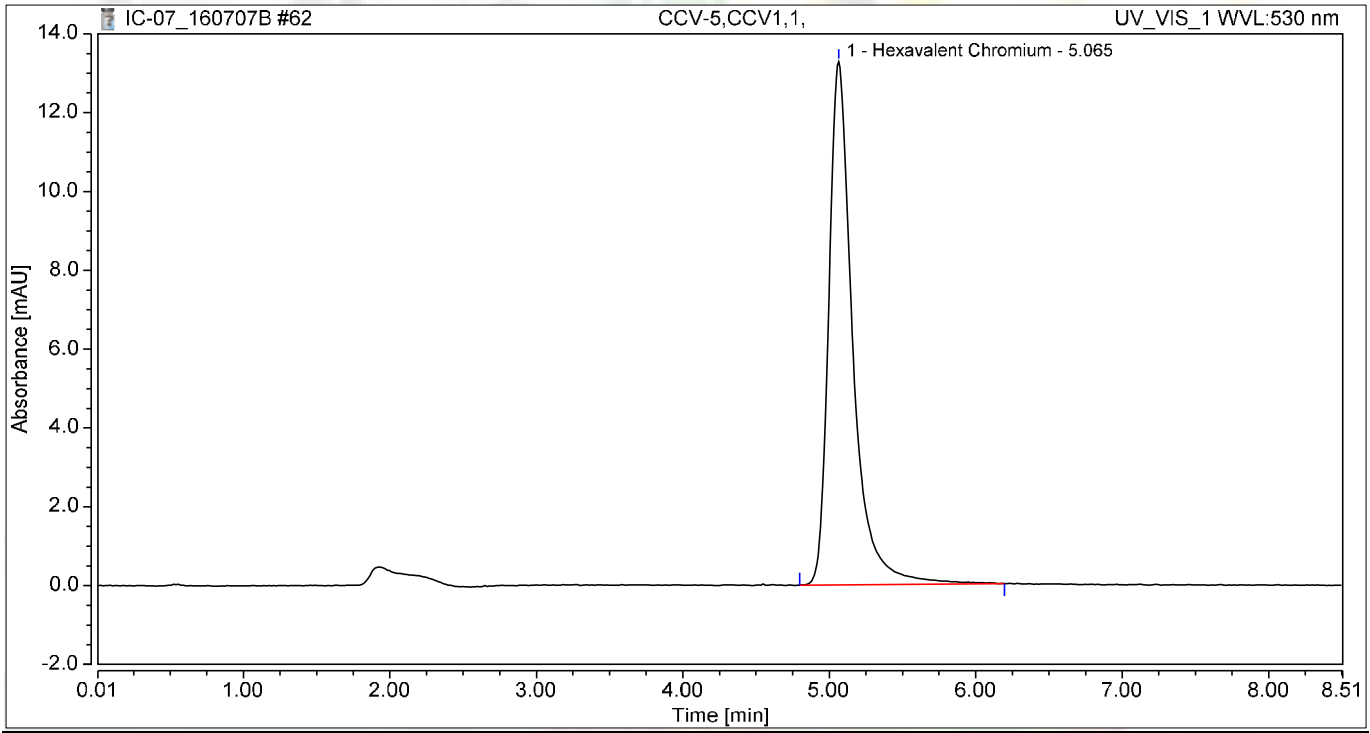
7/21/2016

Chromatogram and Results

Injection Details

Injection Name:	**CCV-5,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:	**160707_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**07/Jul/16 19:59**	*Sample Weight:*	**1.0000**

Chromatogram



Integration Results

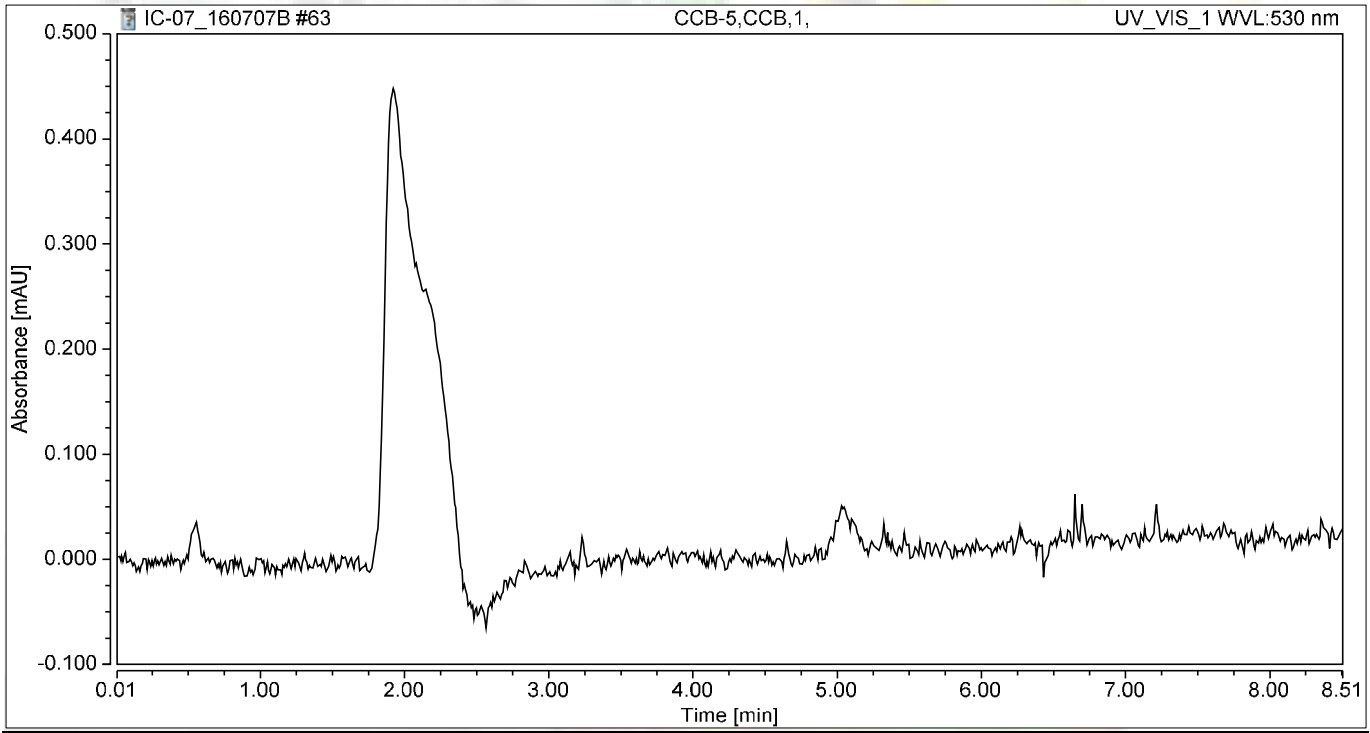
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	5.065	2.533	13.271	100.00	100.00	9.9877
Total:			**2.533**	**13.271**	**100.00**	**100.00**	

Chromatogram and Results

Injection Details

Injection Name:	**CCB-5,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:	**160707_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**07/Jul/16 20:09**	*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.
Total:			**0.000**	**0.000**	**0.00**	**0.00**	

SM 2320B

Wet Chemistry Technical Batch Review Checklist (ARCUS02)

ASSET LABORATORIES - LAS VEGAS

FIRST LEVEL REVIEW:

QC Batch Number: R109327 **Analyst:** LSR

ASSET #: N020229 **Date Analyzed:** 7/8/2016

Method: EPA 2320

Initial Calibration	1st Level Review Y	1st Level Review N	1st Level Review N/A	2nd Level Review Y	2nd Level Review N	2nd Level Review 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:

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: 7/11/2016

2nd Level Reviewer: [signature] Date: 7/21/2016

SAMPLE CALCULATION

Sample ID: **N020229-001C @ pH 8.02**

A. Standardization of Sulfuric Acid (titrant):

Normality of acid = (A) (B)/ (53.00) (C)

Where:

A, grams weighed for Na_2CO_3 solution (Na_2CO_3 Standardization Solution)
B, mL Na2CO3 solution taken for titration, and
C, ml of sulfuric acid used to inflection point

Spike Standards

Na_2CO_3 Standardization Solution, ACS Grade (1.00 ml = 2500ug as $CaCO_3$): Dissolve 2.650 grams of Na_2CO_3 in distilled water and dilute to 1 liter.

LCS/MS/MSD Stock $NaHCO_3$, ACS Grade (1.00 ml = 5000 ug as $CaCO_3$): Dissolve 0.8398 grams of $NaHCO_3$ in distilled water and dilute to 1 liter.

Therefore,

Normality of Acid = (2.65g/L) (5mL) / (53.00) (11.80 mL)

= **0.02119 N**

B. CALCULATION OF ALKALINITY (for a 50 ml sample)

Total Alkalinity (as $CaCO_3$), mg/L = $M_{vol.}$ * N H_2SO_4 * DF * 1000

Where:

$M_{vol.}$ volume titrant used to reach pH 4.5, ml
N, Normality of H_2SO_4
DF, Dilution Factor = (50 ml) / (Vol. of Sample used)

Therefore,

Total Alkalinity (as $CaCO_3$), mg/L = (10.60) (0.02119 N) (1) * 1000

= 224.6140 mg**/L**

Reporting results in two significant figures,

= **220 mg/L** as CaCO3

Julia Ramit 7/11/2016

C. SPECIATED ALKALINITY:

Phenolphthalein Alkalinity

P alkalinity, mg/L as $CaCO_3$ = $P_{vol.}$ * N H_2SO_4 * DF * 1000

= (0) (0.02119 N) (1) * 1000

= **0**

Total Alkalinity

T alkalinity, mg/L as $CaCO_3$ = $M_{vol.}$ * N H_2SO_4 * DF * 1000

= (10.60 mL) (0.02119) (1) * 1000

= 224.6140 **mg/L** as CaCO3

Where:

$P_{vol.}$ - Volume titrant used to reach pH 8.3, ml
$M_{vol.}$ - Volume titrant used to reach pH 4.5, ml
N - Normality of H_2SO_4
DF - Dilution Factor = (50 ml) / (Vol. of Sample used)

Then OH, CO_3, HCO_3 alkalinities as $CaCO_3$ will be calculated as follows:

Result of Titration	**OH Alkalinity as $CaCO_3$**	**CO_3 Alkalinity as $CaCO_3$**	**HCO_3 Alkalinity as $CaCO_3$**
P = 0	0	0	T
P < ½ T	0	2P	T – 2P
P = ½ T	0	2P	0
P > ½ T	2P – T	2(T – P)	0
P = T	T	0	0

Therefore,

OH Alkalinity as $CaCO_3$ = **0**

CO_3 Alkalinity as $CaCO_3$ = **0**

HCO_3 Alkalinity as $CaCO_3$ = **224.6140 mg/L**

Reporting results in two significant figures,

OH Alkalinity as $CaCO_3$ = **0**

CO_3 Alkalinity as $CaCO_3$ = **0**

HCO_3 Alkalinity as $CaCO_3$ = **220 mg/L**

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LOGBOOK DATA, QUANTITATION REPORT and/or SPECTRA

SAMPLE	PH SAMPLE	AMOUNT	V@8.3	VT TO 4.5	Sample Type
MB-1	4.97	50	0.00	0.05	MBLK
LCS-1	8.65	50	0.10	4.55	LCS
N020229-001C	8.02	50	0.00	10.60	SAMP
N020229-002C	7.78	50	0.00	6.25	SAMP
N020229-003C	7.87	50	0.00	7.40	SAMP
N020229-001CDUP	7.95	50	0.00	10.50	DUP
N020229-002CMS	7.99	50	0.00	10.70	MS
N020229-002CMSD	8.01	50	0.00	10.90	MSD

Standardization:		
Spike amt:	**5**	ml
Titrant used:	**11.8**	ml
N H2SO4	**0.02119**	Normal
Date Analyzed:	**7/8/16**	
Time:	**3:35 PM**	
Analyzed By:	**LSR**	
Sodium Carbonate:	**CINV-160125B**	
Sodium Bicarbonate:	**CINV-150601A**	
Sulfuric Acid:	**R160706B**	

Silvia Ramit 7/11/2016

Date Analyzed:	7/8/16		Reagents:					Standardization:					P = 0
Time Started:	3:35 PM			Sodium Carbonate:		CINV-160125B			Spike amt:	5	mL		P < 1/2 T
Analyzed By:	LSR			Hydrochloric Acid:		0			Titrant used:	11.8	mL		P = 1/2 T
				Sulfuric Acid:		R160706B							P > 1/2 T
									N H2SO4	0.02119	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	4.97				0.02119	0.00	0.05	0.05	1	0.00	1.06	
LCS-1	50	8.65				0.02119	0.10	4.45	4.55	1	2.12	96.40	
N020229-001C	50	8.02				0.02119	0.00	10.60	10.60	1	0.00	224.58	
N020229-002C	50	7.78				0.02119	0.00	6.25	6.25	1	0.00	132.42	
N020229-003C	50	7.87				0.02119	0.00	7.40	7.40	1	0.00	156.78	
N020229-001CDU	50	7.95				0.02119	0.00	10.50	10.50	1	0.00	222.46	
N020229-002CMS	50	7.99				0.02119	0.00	10.70	10.70	1	0.00	226.69	
N020229-002CMS	50	8.01				0.02119	0.00	10.90	10.90	1	0.00	230.93	

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Speciated, Alkalinity as CaCO3

SM 2320B

Date Analyzed:	7/8/16
Time:	3:35 PM
Analyzed By:	LSR

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	4.24	92.16	96.40	96.40		P < 1/2 T
N020229-001C	0.00	0.00	224.58	224.58	224.58		P = 0
N020229-002C	0.00	0.00	132.42	132.42	132.42		P = 0
N020229-003C	0.00	0.00	156.78	156.78	156.78		P = 0
N020229-001CDUP	0.00	0.00	222.46	222.46	222.46		P = 0
N020229-002CMS	0.00	0.00	226.69	226.69	226.69		P = 0
N020229-002CMSD	0.00	0.00	230.93	230.93	230.93		P = 0

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Matrix: H_2O

Date Extracted: 7/8/16
Time Extracted: LSR
Extracted By:

Date Analyzed: 7/8/16
Time Analyzed: 1535
Analyzed By: LSR

Reagent Lot # / Reagent ID
Sodium Carbonate: VNV-160125B
Hydrochloric Acid:
Sulfuric Acid: R160706B
$NaHCO_3$: 4NV-15D601A

pH Meter CALIBRATION:
SLOPE: 95.4%
pH 4 - 4.02 - 4NV 160322A
7 - 7.01 - 160309A
10 - 10.05 - 160609C

	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
	STANDARDIZATION											
	#1	50mL	10.66	1WST160701A	5mL	0.05N	-	-	11.90	50/50	N H_2SO_4 = (2.65g/L)(5mL) / (53)(V titrant)	= 0.021008403
	#2	↓	10.64	↓	↓	↓	-	-	11.70	↓		= 0.021367521
1)	MBLK	50mL	4.97	-	-	-	0.02119	0	0.05	50/50		Ave = 0.021187962
2)	LCS		8.65	1WST160701B	1mL	0.05N		0.10	4.55			
3)	NO20229-001C		8.02	-	-	-		0	10.60			
4)	2C		7.78	-	-	-		0	6.25			
5)	3C		7.87	-	-	-		0	7.40			
6)	1CDUP		7.95	-	-	-		0	10.50			
7)	2CMS		7.99	1WST160701B	1mL	0.05N		0	10.70			
8)	2CMSD		8.01	↓	↓	↓		0	10.90	↓		
9)												
10)												
11)												
12)												
13)												
14)												
15)												
16)				$P = \frac{(V\ pH\ 8.3)(N\ H_2SO_4)(50{,}000)}{V_{sx}}$								
17)												
18)												
19)												
20)				$T = \frac{(V\ pH\ 4.5)(N\ H_2SO_4)(50{,}000)}{V_{sx}}$								
	MS											
	MSD											
	LCS											

Julia Ramit 7/11/2016

EPA 300.0

IC Technical Batch Review Checklist (ARCUS02)

ASSET LABORATORIES - LAS VEGAS

IC ARCUS
REV 2.0
011416

QC Batch Number: R109301
ASSET # N020229

Instrument ID: IC2
Analyst: QBM
Date Analyzed: 7/7/2016

Method:

[X] 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					
Continuing Calibration						
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			
Sample Information						
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			
QC Items						
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			
Raw Data and Miscellaneous Information						
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					
Preliminary Report						
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 _____ Date: 7/8/2016

2nd Level Reviewer 7/25/2016 Date: _____

SAMPLE CALCULATION

Sample Calculation

METHOD: EPA 300.0
TEST NAME: INORGANIC ANIONS BY IC
MATRIX: GROUNDWATER

FORMULA:

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

Sulfate, mg/L = A * DF

where:

A = mg/L, IC calculated concentration
DF = dilution factor

For **N020229-001C** concentration in mg/L is calculated as follows:

Sulfate, mg/L = 7.291 * 50

= 364.55

Reporting result in two significant values,

Sulfate, mg/L = 360

ANALYSIS RUN LOG

DIONEX SCHEDULE - C:\DX\SCHEDULE\160617.SCH

Inj#	Sample Name	Method	Data File	Vol.	Dil.	Int.Std.
1	,BLANK,	..\160617.M	..\16061701.D01	1	1	1
2	,BLANK,	..\160617.M	..\16061701.D02	1	1	1
3	AUTOCAL1R	..\160617.M	..\16061701.D03	1	1	1
4	AUTOCAL2R	..\160617.M	..\16061701.D04	1	1	1
5	AUTOCAL3R	..\160617.M	..\16061701.D05	1	1	1
6	AUTOCAL4R	..\160617.M	..\16061701.D06	1	1	1
7	AUTOCAL5R	..\160617.M	..\16061701.D07	1	1	1
8	AUTOCAL6R	..\160617.M	..\16061701.D08	1	1	1
9	,ICV,ICV,1,	..\160617.M	..\16061701.D09	1	1	1
10	,ICB,ICB,1,	..\160617.M	..\16061701.D10	1	1	1
11	,MB-H2O,MBLK,1,	..\160617.M	..\16061701.D11	1	1	1
12	,LCS-H2O,LCS,1,	..\160617.M	..\16061701.D12	1	1	1
13	,LCSD-H2O,LCSD,1,	..\160617.M	..\16061701.D13	1	1	1
14	,N020100-001B,SAMP,	..\160617.M	..\16061701.D14	1	1	1
15	,BLANK,	..\160617.M	..\16061701.D15	1	1	1
16	,N020100-001B,SAMP,	..\160617.M	..\16061701.D16	1	1	1
17	,BLANK,	..\160617.M	..\16061701.D17	1	1	1
18	,N020098-002C,SAMP,	..\160617.M	..\16061701.D18	1	1	1
19	,N020098-002CDUP,DU	..\160617.M	..\16061701.D19	1	1	1
20	,N020098-002CMS,MS,	..\160617.M	..\16061701.D20	1	1	1
21	,CCV-2,CCV,1,	..\160617.M	..\16061701.D21	1	1	1
22	,CCB-2,CCB,1,	..\160617.M	..\16061701.D22	1	1	1
23	,N020098-002CMSD,MS	..\160617.M	..\16061701.D23	1	1	1
24	,N020096-001B,SAMP,	..\160617.M	..\16061701.D24	1	1	1
25	,N020096-002B,SAMP,	..\160617.M	..\16061701.D25	1	1	1
26	,N020096-003B,SAMP,	..\160617.M	..\16061701.D26	1	1	1
27	,N020096-004B,SAMP,	..\160617.M	..\16061701.D27	1	1	1
28	,N020096-005B,SAMP,	..\160617.M	..\16061701.D28	1	1	1
29	,N020096-006B,SAMP,	..\160617.M	..\16061701.D29	1	1	1
30	,N020096-001B,SAMP,	..\160617.M	..\16061701.D30	1	1	1
31	,N020096-001BMS,MS,	..\160617.M	..\16061701.D31	1	1	1
32	,N020096-001BMSD,MS	..\160617.M	..\16061701.D32	1	1	1
33	,CCV-3,CCV,1,	..\160617.M	..\16061701.D33	1	1	1
34	,CCB-3,CCB,1,	..\160617.M	..\16061701.D34	1	1	1
35	,N020096-002B,SAMP,	..\160617.M	..\16061701.D35	1	1	1
36	,N020096-002BDUP,DU	..\160617.M	..\16061701.D36	1	1	1
37	,N020096-003B,SAMP,	..\160617.M	..\16061701.D37	1	1	1
38	,N020096-004B,SAMP,	..\160617.M	..\16061701.D38	1	1	1
39	,N020096-005B,SAMP,	..\160617.M	..\16061701.D39	1	1	1
40	,N020096-006B,SAMP,	..\160617.M	..\16061701.D40	1	1	1
41	,N020100-001B,SAMP,	..\160617.M	..\16061701.D41	1	1	1
42	,N020100-001B,SAMP,	..\160617.M	..\16061701.D42	1	1	1
43	,CCV-4,CCV,1,	..\160617.M	..\16061701.D43	1	1	1
44	,CCB-4,CCB,1,	..\160617.M	..\16061701.D44	1	1	1
45	SHUTDOWN	..\SHUTDOWN		1	1	1

Comment:
Standard for IC-02 (Anions) = ICAL/CCV : ISST-150730A, B, C, D, E, F, G; ICV/LCS/MS/MSD: ISST160211F, G, H, I, J, K and L

6/20/2016

DIONEX SCHEDULE - C:\DX\SCHEDULE\160707.SCH

Inj#	Sample Name	Method	Data File	Vol.	Dil.	Int.Std.
1	,BLANK,	..\160617.M	..\16070701.D01	1	1	1
2	,CCV-1,CCV,1,	..\160617.M	..\16070701.D02	1	1	1
3	,CCB-1,CCB,1,	..\160617.M	..\16070701.D03	1	1	1
4	,MB-H2O,MBLK,1,	..\160617.M	..\16070701.D04	1	1	1
5	,LCS-H2O,LCS,1,	..\160617.M	..\16070701.D05	1	1	1
6	,N020232-004C,SAMP,	..\160617.M	..\16070701.D06	1	1	1
7	,N020232-005C,SAMP,	..\160617.M	..\16070701.D07	1	1	1
8	,N020232-006C,SAMP,	..\160617.M	..\16070701.D08	1	1	1
9	,N020232-007C,SAMP,	..\160617.M	..\16070701.D09	1	1	1
10	,N020232-008C,SAMP,	..\160617.M	..\16070701.D10	1	1	1
11	,N020232-009C,SAMP,	..\160617.M	..\16070701.D11	1	1	1
12	,N020232-001C,SAMP,	..\160617.M	..\16070701.D12	1	1	1
13	,N020232-002C,SAMP,	..\160617.M	..\16070701.D13	1	1	1
14	,CCV-2,CCV,1,	..\160617.M	..\16070701.D14	1	1	1
15	,CCB-2,CCB,1,	..\160617.M	..\16070701.D15	1	1	1
16	,N020232-003C,SAMP,	..\160617.M	..\16070701.D16	1	1	1
17	,N020232-002CDUP,DU	..\160617.M	..\16070701.D17	1	1	1
18	,N020232-003CMS,MS,	..\160617.M	..\16070701.D18	1	1	1
19	,N020232-003CMSD,MS	..\160617.M	..\16070701.D19	1	1	1
20	,N020232-001C,SAMP,	..\160617.M	..\16070701.D20	1	1	1
21	,N020232-001CDUP,DU	..\160617.M	..\16070701.D21	1	1	1
22	,N020232-002C,SAMP,	..\160617.M	..\16070701.D22	1	1	1
23	,N020232-002CMS,MS,	..\160617.M	..\16070701.D23	1	1	1
24	,N020232-002CMSD,MS	..\160617.M	..\16070701.D24	1	1	1
25	,N020232-003C,SAMP,	..\160617.M	..\16070701.D25	1	1	1
26	,CCV-3,CCV,1,	..\160617.M	..\16070701.D26	1	1	1
27	,CCB-3,CCB,1,	..\160617.M	..\16070701.D27	1	1	1
28	,N020232-004C,SAMP,	..\160617.M	..\16070701.D28	1	1	1
29	,N020232-005C,SAMP,	..\160617.M	..\16070701.D29	1	1	1
30	,N020232-006C,SAMP,	..\160617.M	..\16070701.D30	1	1	1
31	,N020232-007C,SAMP,	..\160617.M	..\16070701.D31	1	1	1
32	,N020232-008C,SAMP,	..\160617.M	..\16070701.D32	1	1	1
33	,N020232-009C,SAMP,	..\160617.M	..\16070701.D33	1	1	1
34	,N020229-001C,SAMP,	..\160617.M	..\16070701.D34	1	1	1
35	,N020229-002C,SAMP,	..\160617.M	..\16070701.D35	1	1	1
36	,N020229-003C,SAMP,	..\160617.M	..\16070701.D36	1	1	1
37	,N020229-003CMS,MS,	..\160617.M	..\16070701.D37	1	1	1
38	,CCV-4,CCV,1,	..\160617.M	..\16070701.D38	1	1	1
39	,CCB-4,CCB,1,	..\160617.M	..\16070701.D39	1	1	1
40	,N020229-001C,SAMP,	..\160617.M	..\16070701.D40	1	1	1
41	,N020229-001CDUP,DU	..\160617.M	..\16070701.D41	1	1	1
42	,N020229-002C,SAMP,	..\160617.M	..\16070701.D42	1	1	1
43	,N020229-003C,SAMP,	..\160617.M	..\16070701.D43	1	1	1
44	,N020229-003CMS,MS,	..\160617.M	..\16070701.D44	1	1	1
45	,N020229-003CMSD,MS	..\160617.M	..\16070701.D45	1	1	1
46	,CCV-5,CCV,1,	..\160617.M	..\16070701.D46	1	1	1
47	,CCB-5,CCB,1,	..\160617.M	..\16070701.D47	1	1	1
48	SHUTDOWN	..\SHUTDOWN		1	1	1

Comment:
Standard for IC-02 (Anions) = ICAL/CCV : ISST-150730A, B, C, D, E, F, G; ICV/LCS/MS/MSD: ISST160211F, G, H, I, J, K and L

INITIAL CALIBRATION DATA SUMMARY

DIONEX METHOD PARAMETERS - 160617.MET

Method Comment:
Column ID:
Analyst ID:

System Parameters

System Name: ANIONS

Number of Detectors	1
Run Time (minutes)	13.00
Sampling Rate (seconds)	0.20
Detector 1 Type	COND
Detector 1 real time plot scale maximum (mV)	100.000
minimum	-10.000
Detector 1 Output Equivalent to 1 Volt (in mV)	100.00
Detector 1 ACI Analog Input Connection	DET1
Save Data File	Yes

Data File Name: C:\DX\DATA\14120201.D02

-- DETECTOR 1 PARAMETERS --

Report Options

Create ASCII Report File	No
Print Report	Yes
Print All Components	Yes
Print Components Found	No
Print Missing Components	No
Print All Peaks	Yes
Print Unknown Peaks	Yes
Print Chromatogram	Yes
Autoscale Chromatogram Maximum	Yes
Autoscale Maximum Value Delay (minutes)	0.0
Autoscale Chromatogram Minimum	Yes
Autoscale Minimum Value Delay (minutes)	0.0
Fill Peaks with Color	No
Draw Grid Lines on Chromatogram	No
Show Component Fraction Numbers	No
Label with Peak Number	No
Label with Retention Times on Chromatogram	No
Label with Component Name	Yes

Format File Name: C:\DX\METHOD\DEFAULT.PRF

Integration Parameters

Starting Peak Width (seconds)	5.0
Peak Threshold	0.500
Peak Area Reject	2000
Area Reject for Reference Peaks	3000

Data Events

Time	Description
0.50	Start peak detection
0.51	Force baseline at start of this peak
0.51	Split peak
0.51	Force common baseline following this peak
0.52	End peaks on baseline penetration

6/20/2016

Calibration Parameters

Number Of Levels for Calibration	6
Force Calibration Curve Through Origin	No
Calibration Fit Type	Linear
Replace Or Average Calibrations	Replace
External or Internal Calibration	External
Calculate Unknowns by Area or Height	Area
Default Sample Volume	1.0
Default Dilution Factor	1.0
Default Response Factor for Unknown Peaks	0.0
Calibration Standard Volume	1.0
Internal Standard Amount in Samples	1.0
Amount Units	

6/20/2016

Component Table -- Last Modified: 12:17 on Fri, 17 Jun 2016

Component # 1 Fluoride Retention Time 2.53
Reference Comp. Fluoride Window Size 0.10 min.
Amount = K0 + K1*Area
K0 = 5.54716E-002
K1 = 2.81685E-006

Level	Amount	Area	Height
1	0.00000E+000	0	0
2	5.00000E-002	16304	1333
3	5.00000E-001	163159	14634
4	1.00000E+000	314951	29675
5	2.50000E+000	819871	79459
6	5.00000E+000	1780367	178945

Component # 2 Chloride Retention Time 3.74
Reference Comp. Chloride Window Size 0.10 min.
Amount = K0 + K1*Area
K0 = 9.41699E-002
K1 = 3.65682E-006

Level	Amount	Area	Height
1	0.00000E+000	0	0
2	5.00000E-001	125133	12180
3	1.00000E+000	246870	24569
4	2.50000E+000	628078	63708
5	5.00000E+000	1311657	135104
6	1.00000E+001	2729523	294030

Component # 3 Nitrite Retention Time 4.55
Reference Comp. Nitrite Window Size 0.20 min.
Amount = K0 + K1*Area
K0 = 4.91427E-002
K1 = 2.08919E-006

Level	Amount	Area	Height
1	0.00000E+000	0	0
2	5.00000E-002	27051	2328
3	5.00000E-001	205406	17150
4	1.00000E+000	431325	33991
5	2.50000E+000	1133527	92197
6	5.00000E+000	2393382	202027

Component # 4 Bromide Retention Time 5.49
Reference Comp. Bromide Window Size 0.20 min.
Amount = K0 + K1*Area
K0 = -7.38649E-003
K1 = 8.81046E-006

Level	Amount	Area	Height
1	0.00000E+000	0	0
2	2.00000E-001	22229	2051
3	5.00000E-001	60573	4608
4	1.00000E+000	119574	8794
5	2.50000E+000	275498	23159
6	5.00000E+000	571370	47713

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Component # 5 Nitrate Retention Time 6.18
Reference Comp. Nitrate Window Size 0.20 min.
Amount = K0 + K1*Area
K0 = 3.13470E-002
K1 = 1.46601E-006

Level	Amount	Area	Height
1	0.00000E+000	0	0
2	5.00000E-002	35993	2859
3	5.00000E-001	304503	22644
4	1.00000E+000	643178	47542
5	2.50000E+000	1652227	128825
6	5.00000E+000	3409023	272873

Component # 6 Phosphate Retention Time 7.99
Reference Comp. Phosphate Window Size 0.50 min.
Amount = K0 + K1*Area
K0 = -1.99498E-002
K1 = 4.38770E-006

Level	Amount	Area	Height
1	0.00000E+000	0	0
2	1.00000E-001	29718	1731
3	5.00000E-001	121320	6704
4	1.00000E+000	231482	13088
5	2.50000E+000	575299	33993
6	5.00000E+000	1143439	68574

Component # 7 Sulfate Retention Time 9.08
Reference Comp. Sulfate Window Size 0.50 min.
Amount = K0 + K1*Area
K0 = 1.17337E-001
K1 = 5.08422E-006

Level	Amount	Area	Height
1	0.00000E+000	0	0
2	5.00000E-001	109779	5535
3	2.00000E+000	360119	19581
4	5.00000E+000	929699	52211
5	1.00000E+001	1897566	110782
6	2.00000E+001	3940122	239723

Timed Events File: C:\DX\METHOD\AS4ASC2.TE

Step	Time	Description
Init		ACI Autosmp OFF
Init		ACI Autooff OFF
Init		ACI Pmpstrt ON
Init		ACI Inject OFF
Init		ACI OFF
Init		ACI OFF
Init		ACI OFF
Init		ACI OFF
Init		ACI OFF
Init		ACI OFF
1	0.0	ACI Autosmp ON
2	2.3	ACI Autosmp OFF
2	2.3	ACI Autooff ON
3	2.4	ACI Inject ON
3	2.4	Start Sampling

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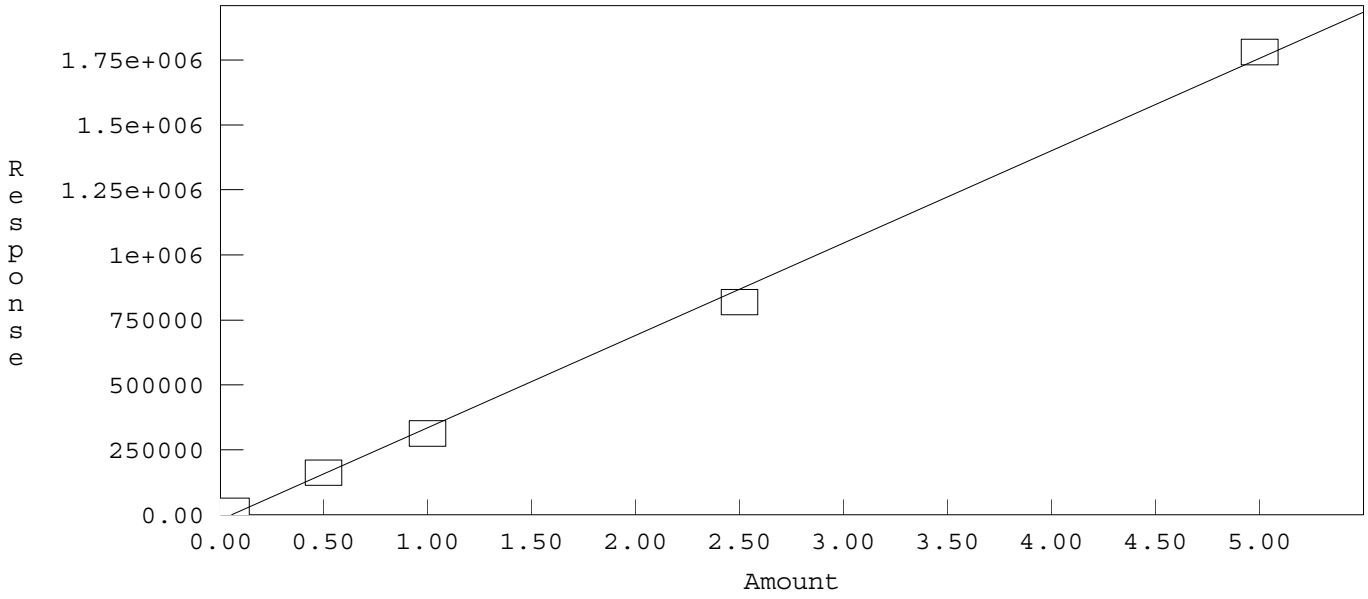
Method: 160617.MET - Last Updated: 12:17 on Fri, 17 Jun 2016

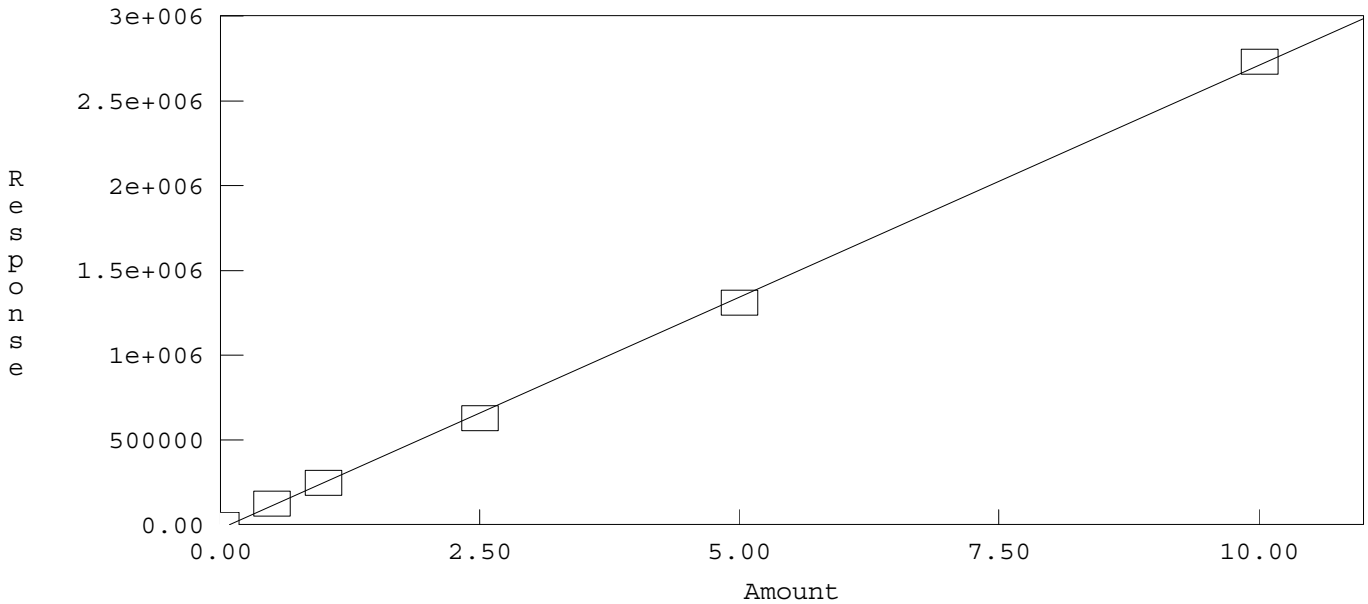
Component: Fluoride
Fit Type: Linear
r^2 = 0.998279
Amt = Resp * 2.817e-006 + 0.05547
Resp = Amt * 3.55e+005 + -1.969e+004
Standardization: External
Calibration: Area



Method: C:\DX\METHOD\160617.MET

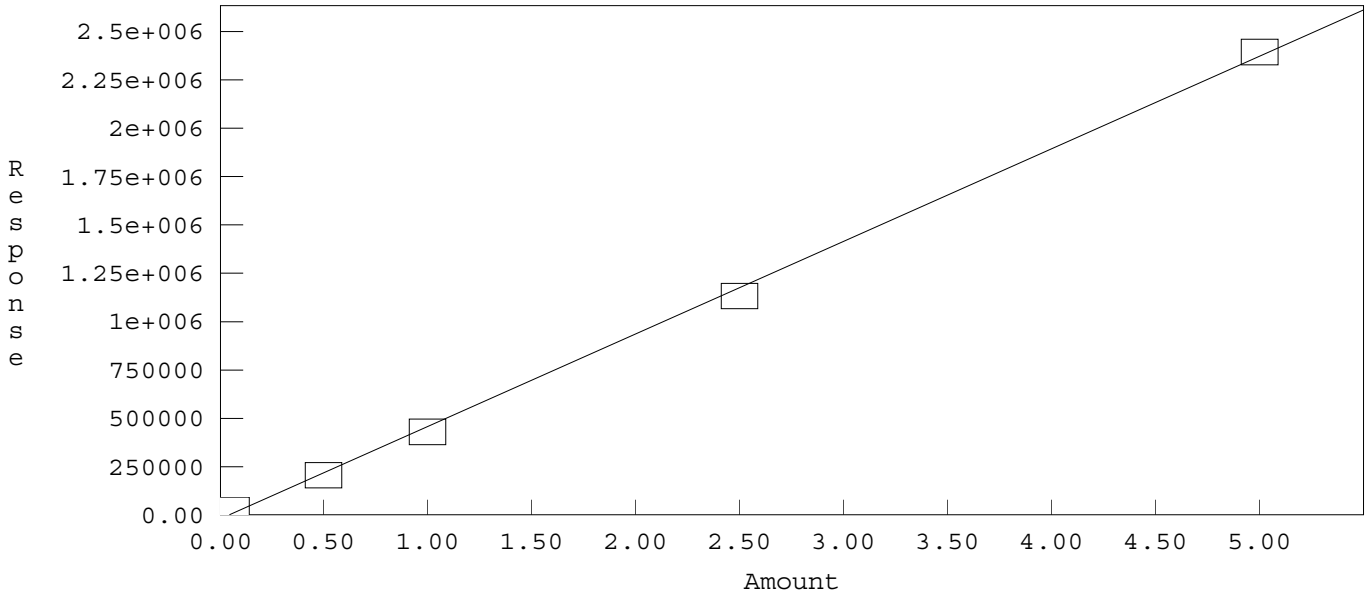
Component: Chloride
Fit Type: Linear
r^2 = 0.999432
Amt = Resp * 3.657e-006 + 0.09417
Resp = Amt * 2.735e+005 + -2.575e+004
Standardization: External
Calibration: Area

6/20/2016



Method: C:\DX\METHOD\160617.MET

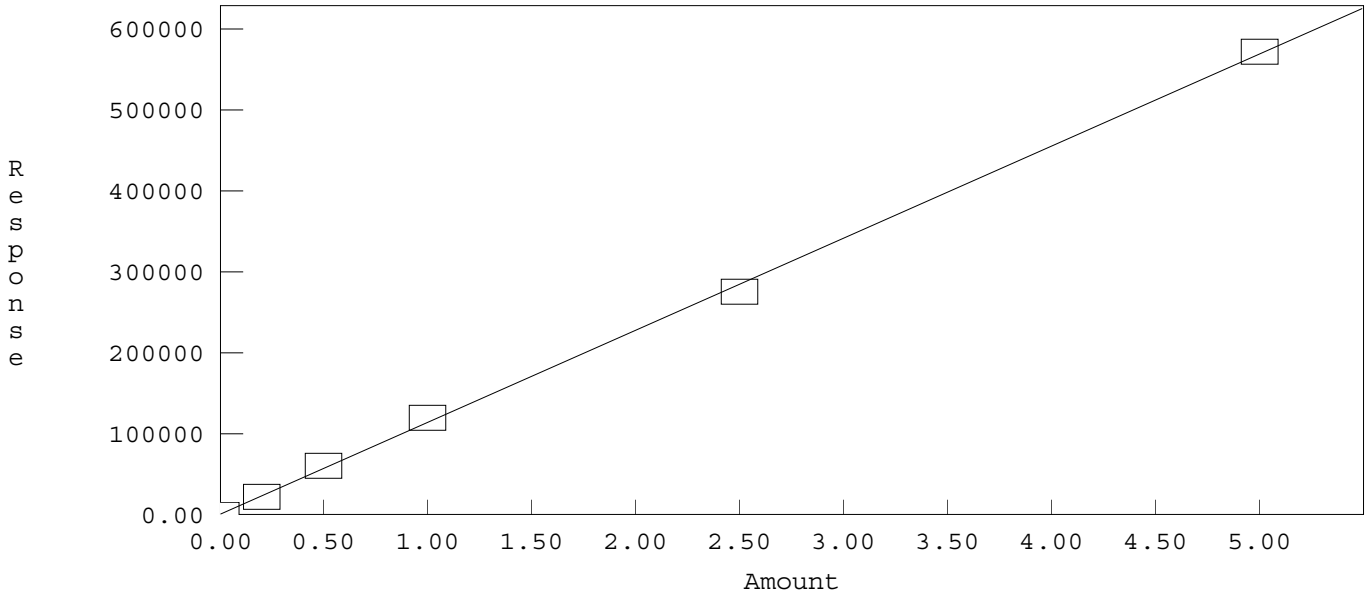
Component: Nitrite
Fit Type: Linear
r² = 0.999059
Amt = Resp * 2.089e-006 + 0.04914
Resp = Amt * 4.787e+005 + -2.352e+004
Standardization: External
Calibration: Area



Method: C:\DX\METHOD\160617.MET

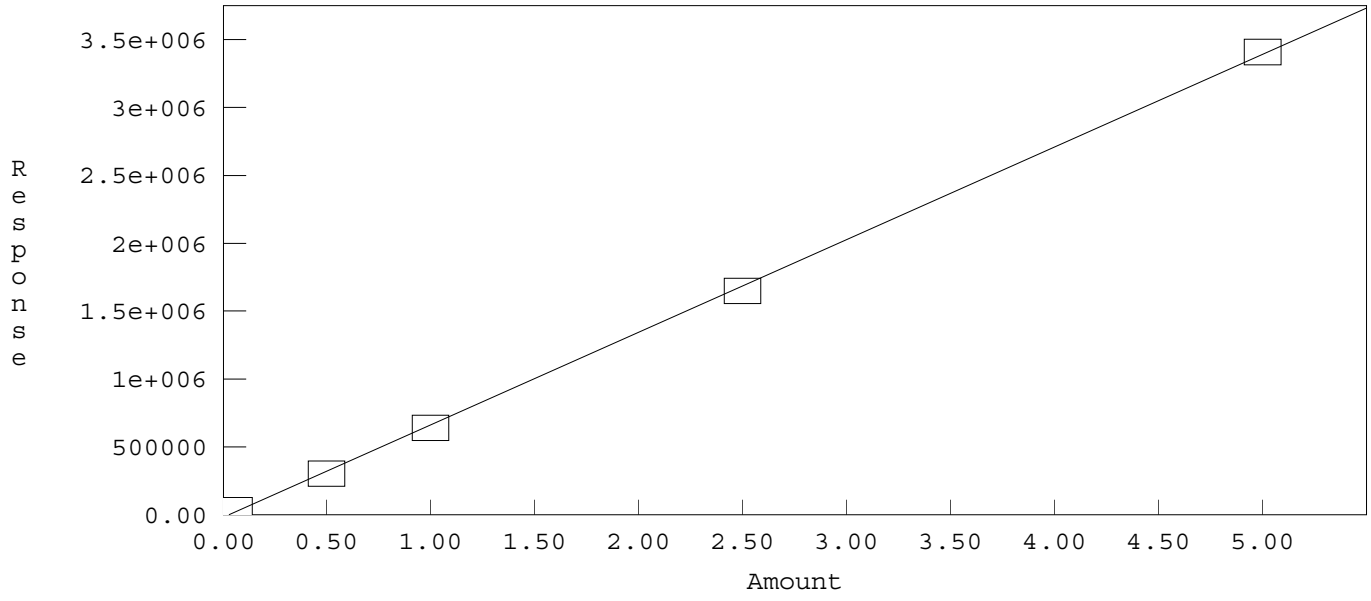
Component: Bromide
Fit Type: Linear
r² = 0.999450
Amt = Resp * 8.81e-006 + -0.007386
Resp = Amt * 1.135e+005 + 838.4
Standardization: External
Calibration: Area

6/20/2016



Method: C:\DX\METHOD\160617.MET

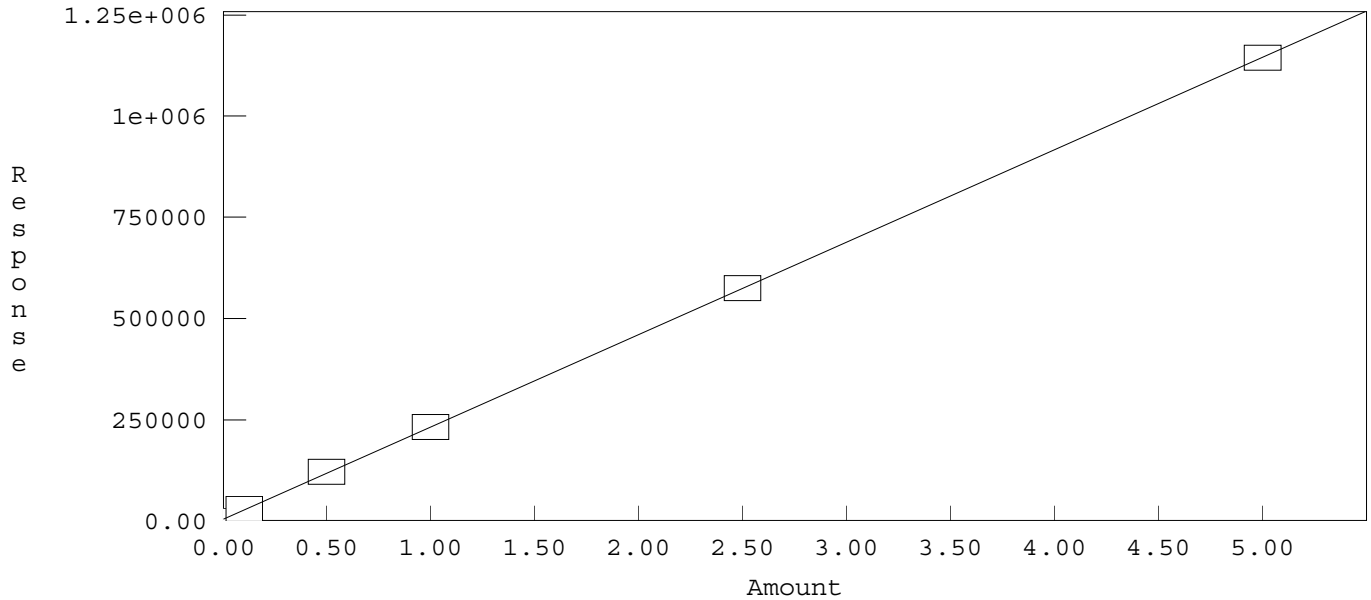
Component: Nitrate
Fit Type: Linear
r² = 0.999666
Amt = Resp * 1.466e-006 + 0.03135
Resp = Amt * 6.821e+005 + -2.138e+004
Standardization: External
Calibration: Area



Method: C:\DX\METHOD\160617.MET

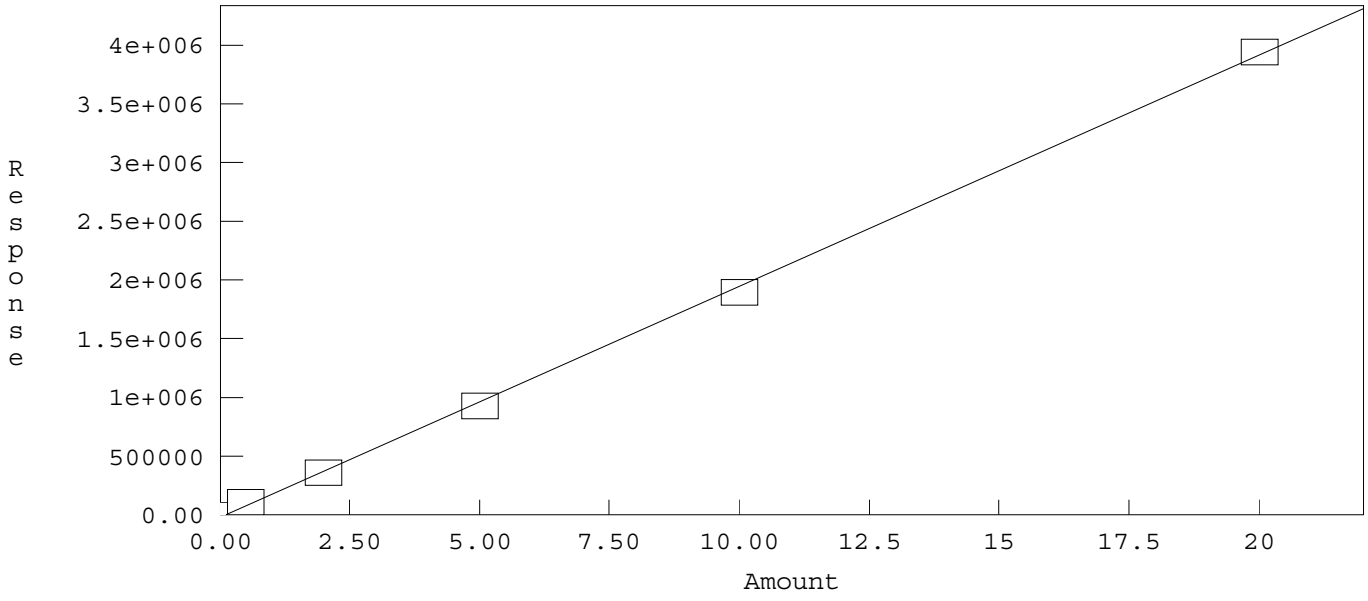
Component: Phosphate
Fit Type: Linear
r² = 0.999962
Amt = Resp * 4.388e-006 + -0.01995
Resp = Amt * 2.279e+005 + 4547
Standardization: External
Calibration: Area

6/20/2016



Method: C:\DX\METHOD\160617.MET

Component: Sulfate
Fit Type: Linear
r^2 = 0.999494
Amt = Resp * 5.084e-006 + 0.1173
Resp = Amt * 1.967e+005 + -2.308e+004
Standardization: External
Calibration: Area



6/20/2016

INITIAL CALIBRATION AND CONTINUING CALIBRATION VERIFICATION SUMMARY

CLIENT: ARCADIS U.S., Inc. - California
Work Order: N020229
Project: PG&E Topock - PMP, RC000753.0801

ANALYTICAL QC SUMMARY REPORT

TestCode: 300_W_CLPGE

Sample ID **ICV**	SampType: **ICV**	TestCode: **300_W_CLP**	Units: **mg/L**	Prep Date:	RunNo: **109301**
Client ID: **ICV**	Batch ID: **R109301**	TestNo: **EPA 300.0**		Analysis Date: **6/17/2016**	SeqNo: **2365477**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride	2.480	0.50	2.500	0	99.2	90	110				

Sample ID **CCV-1**	SampType: **CCV**	TestCode: **300_W_CLP**	Units: **mg/L**	Prep Date:	RunNo: **109301**
Client ID: **CCV**	Batch ID: **R109301**	TestNo: **EPA 300.0**		Analysis Date: **7/7/2016**	SeqNo: **2365479**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride	2.460	0.50	2.500	0	98.4	90	110				

Sample ID **CCV-2**	SampType: **CCV**	TestCode: **300_W_CLP**	Units: **mg/L**	Prep Date:	RunNo: **109301**
Client ID: **CCV**	Batch ID: **R109301**	TestNo: **EPA 300.0**		Analysis Date: **7/7/2016**	SeqNo: **2365483**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride	2.494	0.50	2.500	0	99.8	90	110				

Sample ID **CCV-3**	SampType: **CCV**	TestCode: **300_W_CLP**	Units: **mg/L**	Prep Date:	RunNo: **109301**
Client ID: **CCV**	Batch ID: **R109301**	TestNo: **EPA 300.0**		Analysis Date: **7/7/2016**	SeqNo: **2365485**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride	2.430	0.50	2.500	0	97.2	90	110				

Sample ID **CCV-4**	SampType: **CCV**	TestCode: **300_W_CLP**	Units: **mg/L**	Prep Date:	RunNo: **109301**
Client ID: **CCV**	Batch ID: **R109301**	TestNo: **EPA 300.0**		Analysis Date: **7/7/2016**	SeqNo: **2365487**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride	2.439	0.50	2.500	0	97.6	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: N020229
Project: PG&E Topock - PMP, RC000753.0801

ANALYTICAL QC SUMMARY REPORT

TestCode: 300_W_CLPGE

Sample ID **CCV-5**	SampType: **CCV**	TestCode: **300_W_CLP**	Units: **mg/L**	Prep Date:	RunNo: **109301**
Client ID: **CCV**	Batch ID: **R109301**	TestNo: **EPA 300.0**		Analysis Date: **7/7/2016**	SeqNo: **2365495**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride	2.582	0.50	2.500	0	103	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: N020229
Project: PG&E Topock - PMP, RC000753.0801

ANALYTICAL QC SUMMARY REPORT

TestCode: 300_W_SO4PGE

Sample ID **ICV**	SampType: **ICV**	TestCode: **300_W_SO4P**	Units: **mg/L**	Prep Date:	RunNo: **109301**
Client ID: **ICV**	Batch ID: **R109301**	TestNo: **EPA 300.0**		Analysis Date: **6/17/2016**	SeqNo: **2365447**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Sulfate	4.826	0.50	5.000	0	96.5	90	110				

Sample ID **CCV-1**	SampType: **CCV**	TestCode: **300_W_SO4P**	Units: **mg/L**	Prep Date:	RunNo: **109301**
Client ID: **CCV**	Batch ID: **R109301**	TestNo: **EPA 300.0**		Analysis Date: **7/7/2016**	SeqNo: **2365449**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Sulfate	5.069	0.50	5.000	0	101	90	110				

Sample ID **CCV-2**	SampType: **CCV**	TestCode: **300_W_SO4P**	Units: **mg/L**	Prep Date:	RunNo: **109301**
Client ID: **CCV**	Batch ID: **R109301**	TestNo: **EPA 300.0**		Analysis Date: **7/7/2016**	SeqNo: **2365453**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Sulfate	4.833	0.50	5.000	0	96.7	90	110				

Sample ID **CCV-3**	SampType: **CCV**	TestCode: **300_W_SO4P**	Units: **mg/L**	Prep Date:	RunNo: **109301**
Client ID: **CCV**	Batch ID: **R109301**	TestNo: **EPA 300.0**		Analysis Date: **7/7/2016**	SeqNo: **2365461**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Sulfate	4.861	0.50	5.000	0	97.2	90	110				

Sample ID **CCV-4**	SampType: **CCV**	TestCode: **300_W_SO4P**	Units: **mg/L**	Prep Date:	RunNo: **109301**
Client ID: **CCV**	Batch ID: **R109301**	TestNo: **EPA 300.0**		Analysis Date: **7/7/2016**	SeqNo: **2365473**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Sulfate	5.017	0.50	5.000	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: N020229
Project: PG&E Topock - PMP, RC000753.0801

ANALYTICAL QC SUMMARY REPORT

TestCode: 300_W_SO4PGE

Sample ID **CCV-5**	SampType: **CCV**	TestCode: **300_W_SO4P**	Units: **mg/L**	Prep Date:	RunNo: **109301**
Client ID: **CCV**	Batch ID: **R109301**	TestNo: **EPA 300.0**		Analysis Date: **7/7/2016**	SeqNo: **2365475**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Sulfate	5.139	0.50	5.000	0	103	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

CLIENT: ARCADIS U.S., Inc. - California
Work Order: N020229
Project: PG&E Topock - PMP, RC000753.0801

ANALYTICAL QC SUMMARY REPORT

TestCode: 300_W_CLPGE

Sample ID **ICB**	SampType: **ICB**	TestCode: **300_W_CLP**	Units: **mg/L**	Prep Date:	RunNo: **109301**
Client ID: **ICB**	Batch ID: **R109301**	TestNo: **EPA 300.0**		Analysis Date: **6/17/2016**	SeqNo: **2365478**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride	ND	0.50									

Sample ID **CCB-1**	SampType: **CCB**	TestCode: **300_W_CLP**	Units: **mg/L**	Prep Date:	RunNo: **109301**
Client ID: **CCB**	Batch ID: **R109301**	TestNo: **EPA 300.0**		Analysis Date: **7/7/2016**	SeqNo: **2365480**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride	ND	0.50									

Sample ID **CCB-2**	SampType: **CCB**	TestCode: **300_W_CLP**	Units: **mg/L**	Prep Date:	RunNo: **109301**
Client ID: **CCB**	Batch ID: **R109301**	TestNo: **EPA 300.0**		Analysis Date: **7/7/2016**	SeqNo: **2365484**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride	ND	0.50									

Sample ID **CCB-3**	SampType: **CCB**	TestCode: **300_W_CLP**	Units: **mg/L**	Prep Date:	RunNo: **109301**
Client ID: **CCB**	Batch ID: **R109301**	TestNo: **EPA 300.0**		Analysis Date: **7/7/2016**	SeqNo: **2365486**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride	ND	0.50									

Sample ID **CCB-4**	SampType: **CCB**	TestCode: **300_W_CLP**	Units: **mg/L**	Prep Date:	RunNo: **109301**
Client ID: **CCB**	Batch ID: **R109301**	TestNo: **EPA 300.0**		Analysis Date: **7/7/2016**	SeqNo: **2365488**

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: N020229
Project: PG&E Topock - PMP, RC000753.0801

ANALYTICAL QC SUMMARY REPORT

TestCode: 300_W_CLPGE

Sample ID **CCB-5**	SampType: **CCB**	TestCode: **300_W_CLP**	Units: **mg/L**	Prep Date:	RunNo: **109301**
Client ID: **CCB**	Batch ID: **R109301**	TestNo: **EPA 300.0**		Analysis Date: **7/7/2016**	SeqNo: **2365496**

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: N020229
Project: PG&E Topock - PMP, RC000753.0801

ANALYTICAL QC SUMMARY REPORT

TestCode: 300_W_SO4PGE

Sample ID **ICB**	SampType: **ICB**	TestCode: **300_W_SO4P**	Units: **mg/L**	Prep Date:	RunNo: **109301**
Client ID: **ICB**	Batch ID: **R109301**	TestNo: **EPA 300.0**		Analysis Date: **6/17/2016**	SeqNo: **2365448**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Sulfate	ND	0.50									

Sample ID **CCB-1**	SampType: **CCB**	TestCode: **300_W_SO4P**	Units: **mg/L**	Prep Date:	RunNo: **109301**
Client ID: **CCB**	Batch ID: **R109301**	TestNo: **EPA 300.0**		Analysis Date: **7/7/2016**	SeqNo: **2365450**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Sulfate	ND	0.50									

Sample ID **CCB-2**	SampType: **CCB**	TestCode: **300_W_SO4P**	Units: **mg/L**	Prep Date:	RunNo: **109301**
Client ID: **CCB**	Batch ID: **R109301**	TestNo: **EPA 300.0**		Analysis Date: **7/7/2016**	SeqNo: **2365454**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Sulfate	ND	0.50									

Sample ID **CCB-3**	SampType: **CCB**	TestCode: **300_W_SO4P**	Units: **mg/L**	Prep Date:	RunNo: **109301**
Client ID: **CCB**	Batch ID: **R109301**	TestNo: **EPA 300.0**		Analysis Date: **7/7/2016**	SeqNo: **2365462**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Sulfate	ND	0.50									

Sample ID **CCB-4**	SampType: **CCB**	TestCode: **300_W_SO4P**	Units: **mg/L**	Prep Date:	RunNo: **109301**
Client ID: **CCB**	Batch ID: **R109301**	TestNo: **EPA 300.0**		Analysis Date: **7/7/2016**	SeqNo: **2365474**

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
- 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: N020229
Project: PG&E Topock - PMP, RC000753.0801

ANALYTICAL QC SUMMARY REPORT

TestCode: 300_W_SO4PGE

Sample ID **CCB-5**	SampType: **CCB**	TestCode: **300_W_SO4P**	Units: **mg/L**	Prep Date:	RunNo: **109301**
Client ID: **CCB**	Batch ID: **R109301**	TestNo: **EPA 300.0**		Analysis Date: **7/7/2016**	SeqNo: **2365476**

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

RETENTION TIME (RT) SUMMARY

Instrument ID: IC-02

Analytical Sequence

Date Analyzed: 7/7/2016

Sample Name		Retention Time	Evaluation
CCV-1	Sulfate	9.08	
CCV-2	Sulfate	9.13	
CCV-3	Sulfate	8.97	
CCV-4	Sulfate	9.13	
CCV-5	Sulfate	9.03	
	Average	9.065	
	Lower Limit	8.865	
	Upper Limit	9.265	
MB-R109301_SO4	Sulfate	0	N.A
LCS-R109301_SO4	Sulfate	9.03	PASS
N020232-001CDUP	Sulfate	9.09	PASS
N020232-002CMS	Sulfate	9.17	PASS
N020232-002CMSD	Sulfate	9.03	PASS
N020229-001C	Sulfate	9.15	PASS
N020229-002C	Sulfate	8.95	PASS
N020229-003C	Sulfate	9.11	PASS
N020229-003CMS	Sulfate	8.96	PASS

RETENTION TIME (RT) SUMMARY

Instrument ID: IC-02

Analytical Sequence

Date Analyzed: 7/7/2016

Sample Name		Retention Time	Evaluation
CCV-1	Chloride	3.76	
CCV-2	Chloride	3.76	
CCV-3	Chloride	3.71	
CCV-4	Chloride	3.8	
CCV-5	Chloride	3.77	
	Average	3.760	
	Lower Limit	3.560	
	Upper Limit	3.960	
MB-R109301_CL	Chloride	0	N.A
LCS-R109301_CL	Chloride	3.77	PASS
N020229-001C	Chloride	3.80	PASS
N020229-001CDUP	Chloride	3.71	PASS
N020229-002C	Chloride	3.77	PASS
N020229-003C	Chloride	3.79	PASS
N020229-003CMS	Chloride	3.71	PASS
N020229-003CMSD	Chloride	3.78	PASS

MDL STUDY

METHOD DETECTION LIMIT 2016

Method Name: **INORGANIC IONS by Ion Chromatography (Low Level)**
Method Number: EPA 300.0
Analysis Date(s): 2/22/2016, 2/23/2016
Analyst/Technician: Quennie Manimtim

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

Instrument Name: **IC-02**

Acceptance Criteria: MDL < spike < 10XMDL

Analyte	#1	#2	#3	#4	#5	#6	#7	Spike Conc., mg/L	SD	MDL	LOD	PQL
Fluoride	0.072	0.081	0.065	0.068	0.074	0.069	0.066	0.020	0.0055	**0.0174**	0.035	0.100
Chloride	0.205	0.218	0.212	0.218	0.208	0.202	0.208	0.100	0.0062	**0.0194**	0.050	0.500
Nitrite	0.045	0.058	0.043	0.046	0.050	0.055	0.040	0.020	0.0065	**0.0205**	0.030	0.050
Bromide	0.073	0.076	0.085	0.094	0.073	0.070	0.058	0.040	0.0114	**0.0359**	0.100	0.200
Nitrate	0.052	0.063	0.062	0.061	0.058	0.056	0.063	0.020	0.0042	**0.0130**	0.030	0.050
Phosphate	0.057	0.054	0.074	0.045	0.048	0.047	0.063	0.050	0.0103	**0.0325**	0.050	0.100
Sulfate	0.285	0.238	0.238	0.264	0.249	0.241	0.284	0.100	0.0208	**0.0655**	0.150	0.500

MDL/LOD & PQL Verification 2016 (1st Quarter)

Method Name: **Inorganic Ions by Ion Chromatography (Low Level)**
Method Number: EPA Method 300.0
Analysis Date(s): 2/24/2016
Analyst: Quennie B. Manimtim

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

Instrument Name: **IC-02**

Compound	MDL	LOD Spike Conc., mg/L	LOD actual Conc., mg/L	PQL Spike Conc., mg/L	PQL actual Conc., mg/L	%Recovery
Fluoride	**0.0174**	0.035	0.087	0.100	0.125	125
Chloride	**0.0194**	0.050	0.173	0.500	0.559	112
Nitrite	**0.0205**	0.030	0.052	0.050	0.069	138
Bromide	**0.0359**	0.100	0.102	0.200	0.151	76
Nitrate	**0.0130**	0.030	0.076	0.050	0.072	144
Phosphate	**0.0325**	0.050	0.078	0.100	0.115	115
Sulfate	**0.0655**	0.150	0.294	0.500	0.574	115

SM 3500-Cr B

Wet Chemistry Technical Batch Review Checklist (ARCUS02)

ASSET LABORATORIES - LAS VEGAS

FIRST LEVEL REVIEW:

QC Batch Number: R109528 **Analyst:** QBM

ASSET #: N020229 **Date Analyzed:** 7/14/2016

Method: 3500

Initial Calibration	1st Level Review Y	N	N/A	2nd Level Review 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:

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 _____ Date: 7/20/2016

2nd Level Reviewer 7/25/2016 Date: _____

SAMPLE CALCULATION

SAMPLE CALCULATION

METHOD: SM 3500-Cr B
TEST NAME: Hexavalent Chromium by Colorimetric Method
MATRIX: ~~Water~~ Groundwater

FORMULA:

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

Hexavalent Chromium, ug/L = A * DF

Where:

A= ug/L, UV-VIS Hexavalent Chromium calculated concentration

DF= dilution factor

For **N020229-002A,** concentration in ug/L is calculated as follows:

Hexavalent Chromium, ug/L = 305.459 * 2

= 610.918 ug/L

Reporting result in 2 significant figures,

Hexavalent Chromium, ug/L = 610

7/20/2016

INITIAL CALIBRATION DATA SUMMARY

THERMO SPECTRONIC ~ VISION32 SOFTWARE V1.25

Operator Name	(None Entered)		
Department	(None Entered)	Date of Report	7/14/2016
Organisation	(None Entered)	Time of Report	5:21:14
Information	(None Entered)		

Calibration - EPA 3500_CRB_06162016.fqc

Operator Name	(None Entered)
Instrument ID	152119

Calibration Method - EPA 3500_CRB_06162016.fqc

Description	Hexavalent Chromium by EPA 7196 (Colorimetric)		
Operator Name	QBM		
Quant Mode	Single Lambda	Standards	5
Lambda 1	540.0 nm	Replicates	1
Lambda 2	Off	Initial Curve Fit	Linear
Lambda 3	Off	Conc. Units	ug/L
Integ. Time	00:00:01	Conc. Dec. Places	3
Lamp Change	325.0 nm	Flier Detection	Off
Bandwidth	2.0 nm	Valid Until	7/14/2017
Method Status	Locked		

Standards Table - EPA 3500_CRB_06162016.fqc

Standard	Conc.	Use	540.0nm	Errors
Standard01				
	10.000	Yes	0.009	None
Standard02				
	50.000	Yes	0.043	None
Standard03				
	100.000	Yes	0.085	None
Standard04				
	250.000	Yes	0.209	None
Standard05				
	500.000	Yes	0.406	None

All calculations have been performed to double precision as defined by ANSI/IEEE STD 754-1985 but have been rounded for display purposes.

Errors Key

None	: No Errors Detected
I	: Invalid Data

Calibration Line / Curve Statistics

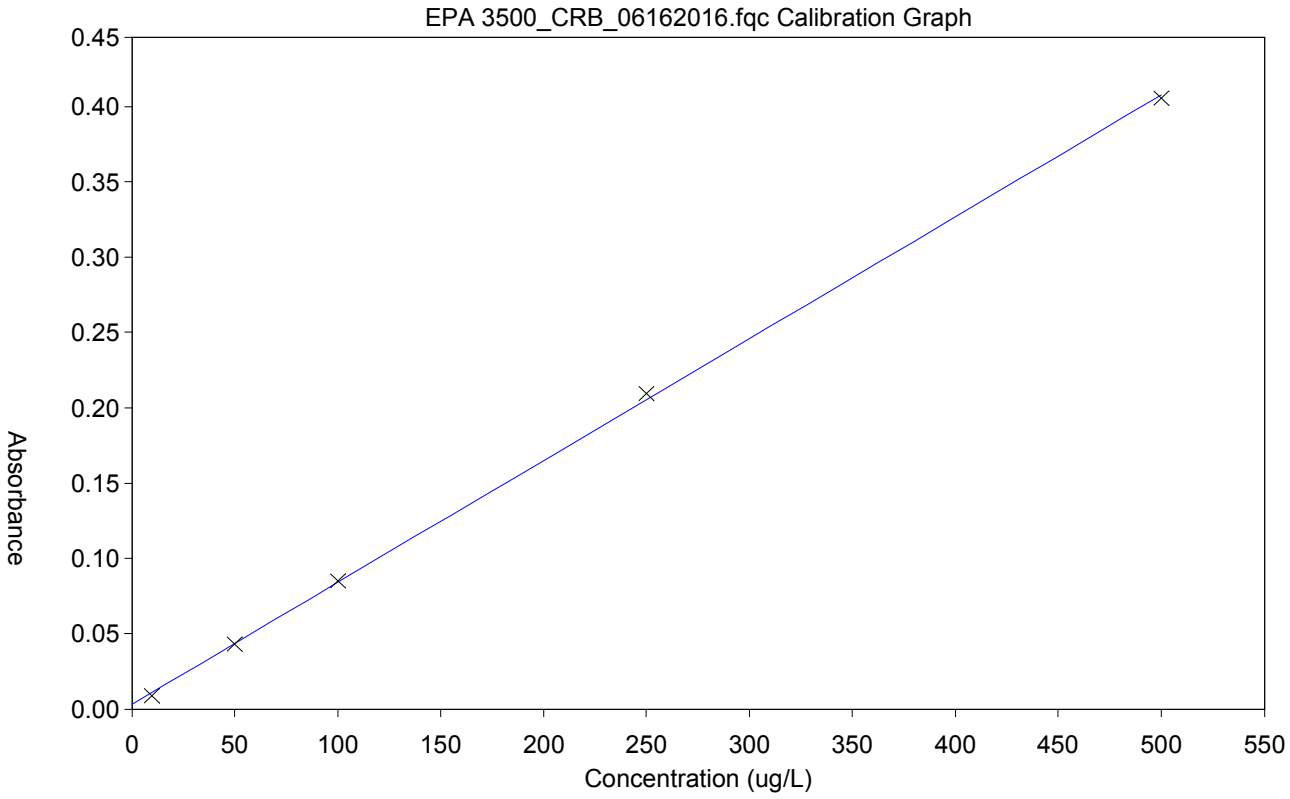
Equation	A = 0.0008 x Conc + 0.0031
Selected Fit	Linear

THERMO SPECTRONIC ~ VISION32 SOFTWARE V1.25

Operator Name	(None Entered)		
Department	(None Entered)	Date of Report	7/14/2016
Organisation	(None Entered)	Time of Report	5:21:14
Information	(None Entered)		

Coefficient	0.999731
Sum of Residuals	(<0.0001)

Calibration Graph



ICAL: IWST160310A
ICV/LCS/MS/MSD: IWST160119A
CCV: ISST150306A
10% H2SO4: R160512E
1,5-Diphenylcarbazide Solution: R160714F

INITIAL CALIBRATION AND CONTINUING CALIBRATON VERIFICATION SUMMARY

CLIENT: ARCADIS U.S., Inc. - California
Work Order: N020229
Project: PG&E Topock - PMP, RC000753.801A

ANALYTICAL QC SUMMARY REPORT

TestCode: 3500_CrBPGE

Sample ID **CCV-1**	SampType: **CCV**	TestCode: **3500_CrBPG**	Units: **µg/L**	Prep Date:	RunNo: **109528**
Client ID: **CCV**	Batch ID: **R109528**	TestNo: **SM 3500-Cr B**		Analysis Date: **7/14/2016**	SeqNo: **2377577**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium, Hexavalent	102.395	10	100.0	0	102	90	110				

Sample ID **ICV**	SampType: **ICV**	TestCode: **3500_CrBPG**	Units: **µg/L**	Prep Date:	RunNo: **109528**
Client ID: **ICV**	Batch ID: **R109528**	TestNo: **SM 3500-Cr B**		Analysis Date: **7/14/2016**	SeqNo: **2377579**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium, Hexavalent	254.210	10	250.0	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		

INITIAL CALIBRATION AND CONTINUING CALIBRATON BLANK SUMMARY

CLIENT: ARCADIS U.S., Inc. - California
Work Order: N020229
Project: PG&E Topock - PMP, RC000753.801A

ANALYTICAL QC SUMMARY REPORT

TestCode: 3500_CrBPGE

Sample ID **CCB-1**	SampType: **CCB**	TestCode: **3500_CrBPG**	Units: **µg/L**	Prep Date:	RunNo: **109528**
Client ID: **CCB**	Batch ID: **R109528**	TestNo: **SM 3500-Cr B**		Analysis Date: **7/14/2016**	SeqNo: **2377576**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium, Hexavalent	-2.264	10									

Sample ID **ICB**	SampType: **ICB**	TestCode: **3500_CrBPG**	Units: **µg/L**	Prep Date:	RunNo: **109528**
Client ID: **ICB**	Batch ID: **R109528**	TestNo: **SM 3500-Cr B**		Analysis Date: **7/14/2016**	SeqNo: **2377578**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium, Hexavalent	-2.425	10									

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis 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

Calibration Method - EPA 3500_CRB_06162016.fqc 7/14/2016 17:21

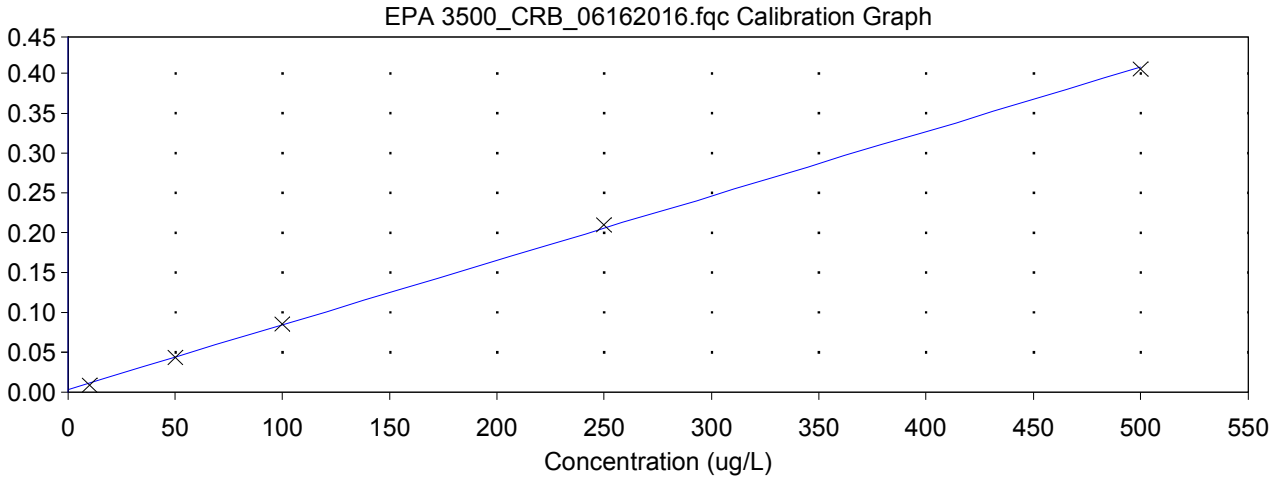
Description	Hexavalent Chromium by EPA 7196 (Colorimetric)		
Operator Name	QBM		
Quant Mode	Single Lambda	Standards	5
Lambda 1	540.0 nm	Replicates	1
Lambda 2	Off	Initial Curve Fit	Linear
Lambda 3	Off	Conc. Units	ug/L
Integ. Time	00:00:01	Conc. Dec. Places	3
Lamp Change	325.0 nm	Flier Detection	Off
Bandwidth	2.0 nm	Valid Until	7/14/2017
Method Status	Locked		

Calibration Line / Curve Statistics

Equation	A = 0.0008 x Conc + 0.0031
Selected Fit	Linear
Coefficient	0.999731
Sum of Residuals	(<0.0001)

Standard	Conc.	Use	540.0nm	Errors
Standard01	10.000	Yes	0.009	None
Standard02	50.000	Yes	0.043	None
Standard03	100.000	Yes	0.085	None
Standard04	250.000	Yes	0.209	None
Standard05	500.000	Yes	0.406	None

All calculations have been performed to double precision as defined by ANSI/IEEE STD 754-1985 but have been rounded for display purposes.



Batch : Hexavalent Chromium_07142016001.qre

	Sample	540.0nm	Conc.	Errors
1	,ICV,ICV,1,	0.209	254.210	None
2	,ICB,ICB,1,	0.001	-2.425	I
3	,MB-H2O,MBLK,1,	0.001	-2.692	I
4	,LCS-H2O,LCS,1,	0.085	100.948	None
5	,N020224-001D,SAMP,1,	0.003	0.076	None
6	,N020224-002D,SAMP,2,	0.243	296.299	None
7	,N020229-002A,SAMP,2,	0.250	305.459	None
8	,N020229-002ADUP,DUP,2,	0.250	305.511	None
9	,N020229-003A,SAMP,1,	0.045	52.360	None
10	,N020229-003AMS,MS,1,	0.128	154.398	None
11	,N020229-003AMSD,MSD,1,	0.130	156.923	None
12	,CCV-1,CCV,1,	0.086	102.395	None
13	,CCB-1,CCB,1,	0.001	-2.264	I

ICAL: IWST160310A
ICV/LCS/MS/MSD: IWST160119A
CCV: ISST150306A
10% H2SO4: R160512E
1,5-Diphenylcarbazide Solution: R160714F

All calculations have been performed to double precision as defined by ANSI/IEEE STD 754-1985 but have been rounded for display purposes.

7/20/2016 **227**

SM 4500-NO3F

Wet Chemistry Technical Batch Review Checklist (ARCUS02)

ASSET LABORATORIES - LAS VEGAS

FIRST LEVEL REVIEW:

QC Batch Number: R109368 **Analyst:** REB

ASSET #: N020229 **Date Analyzed:** 7/11/2016

Method: 4500_NO3

Initial Calibration	1st Level Review Y	N	N/A	2nd Level Review 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:

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 Reb 07/19/2016 Date:

2nd Level Reviewer Nancy 7/25/2016 Date:

SAMPLE CALCULATION

Sample Calculation

METHOD: EPA 4500NO3F
TEST NAME: Nitrate/Nitrite-N by Automated Cadmium Reduction
MATRIX: Water

FORMULA:

Calculate the Nitrate/Nitrite-N concentration, in mg/L, in the original sample as follows:

Nitrate/Nitrite-N, mg/L = A * DF

where:

A = mg/L, Nitrate/Nitrite-N instrument calculated concentration
DF = dilution factor

For **N020229-001D**, concentration in mg/L is calculated as follows:

Nitrate/Nitrite-N, mg/L = 0.0061*1

= 0.0061 mg/L

Since reporting limit is 0.050mg/L,
~~Reporting results in two significant figures~~:

Nitrate/Nitrite-N, mg/L = ND

Reb 07/19/2016

INITIAL CALIBRATION DATA SUMMARY

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

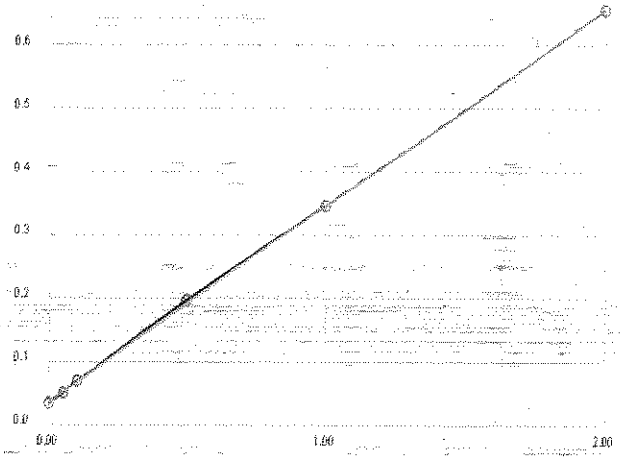
N.	Value	Tolerance
1	1	0.1

Calibration

Curve type	Linear (Calibrants)
Curve forced to zero	No
Blank inclusion	No

Formula	y = 0.3098x + 0.0369
Correlation	.99993

Calibrant	Energy	Set	Conc
1	0.0337	0.0000	-0.0104
2	0.0516	0.0500	0.0474
3	0.0683	0.1000	0.1013
4	0.1971	0.5000	0.5171
5	0.3459	1.0000	0.9975
6	0.6555	2.0000	1.9970



Notes:

2% CuSO4- R160619A
R1 Buffer- R160619B
R2 Coloring reagent- R160620B

STD 1°- ISST160211J
STD 2°- ISST150730E

Reb 07/19/2016

INITIAL CALIBRATION AND CONTINUING CALIBRATON VERIFICATION SUMMARY

CLIENT: ARCADIS U.S., Inc. - California
Work Order: N020229
Project: PG&E Topock - PMP, RC000753.801A

ANALYTICAL QC SUMMARY REPORT

TestCode: 4500N03F_W

Sample ID **ICV**	SampType: **ICV**	TestCode: **4500N03F_W**	Units: **mg/L**	Prep Date:	RunNo: **109368**
Client ID: **ICV**	Batch ID: **R109368**	TestNo: **SM4500-NO3**		Analysis Date: **7/11/2016**	SeqNo: **2369505**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrate/Nitrite as N	0.511	0.050	0.5000	0	102	90	110				

Sample ID **CCV-1**	SampType: **CCV**	TestCode: **4500N03F_W**	Units: **mg/L**	Prep Date:	RunNo: **109368**
Client ID: **CCV**	Batch ID: **R109368**	TestNo: **SM4500-NO3**		Analysis Date: **7/11/2016**	SeqNo: **2369630**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrate/Nitrite as N	0.469	0.050	0.5000	0	93.8	90	110				

Sample ID **CCV-2**	SampType: **CCV**	TestCode: **4500N03F_W**	Units: **mg/L**	Prep Date:	RunNo: **109368**
Client ID: **CCV**	Batch ID: **R109368**	TestNo: **SM4500-NO3**		Analysis Date: **7/11/2016**	SeqNo: **2369648**

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	90	110				

Sample ID **CCV-3**	SampType: **CCV**	TestCode: **4500N03F_W**	Units: **mg/L**	Prep Date:	RunNo: **109368**
Client ID: **CCV**	Batch ID: **R109368**	TestNo: **SM4500-NO3**		Analysis Date: **7/11/2016**	SeqNo: **2369666**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrate/Nitrite as N	0.470	0.050	0.5000	0	94.1	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
DO	Surrogate Diluted Out		Calculations are based on raw values		

INITIAL CALIBRATION AND CONTINUING CALIBRATON BLANK SUMMARY

CLIENT: ARCADIS U.S., Inc. - California
Work Order: N020229
Project: PG&E Topock - PMP, RC000753.801A

ANALYTICAL QC SUMMARY REPORT

TestCode: 4500N03F_W

Sample ID **ICB**	SampType: **ICB**	TestCode: **4500N03F_W**	Units: **mg/L**	Prep Date:	RunNo: **109368**
Client ID: **ICB**	Batch ID: **R109368**	TestNo: **SM4500-NO3**		Analysis Date: **7/11/2016**	SeqNo: **2369506**

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 **CCB-1**	SampType: **CCB**	TestCode: **4500N03F_W**	Units: **mg/L**	Prep Date:	RunNo: **109368**
Client ID: **CCB**	Batch ID: **R109368**	TestNo: **SM4500-NO3**		Analysis Date: **7/11/2016**	SeqNo: **2369631**

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 **CCB-2**	SampType: **CCB**	TestCode: **4500N03F_W**	Units: **mg/L**	Prep Date:	RunNo: **109368**
Client ID: **CCB**	Batch ID: **R109368**	TestNo: **SM4500-NO3**		Analysis Date: **7/11/2016**	SeqNo: **2369651**

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 **CCB-3**	SampType: **CCB**	TestCode: **4500N03F_W**	Units: **mg/L**	Prep Date:	RunNo: **109368**
Client ID: **CCB**	Batch ID: **R109368**	TestNo: **SM4500-NO3**		Analysis Date: **7/11/2016**	SeqNo: **2369668**

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
DO	Surrogate Diluted Out		Calculations are based on raw values		

LOGBOOK DATA, QUANTITATION REPORT and/or SPECTRA

Advanced Technology Laboratories, Inc.

3151 W. Post Rd.
Las Vegas, NV. 89118
702-307-2659
702-307-2691
www.atl-labs.com

Time start: 07-11-2016 16:41
Time end: 07-11-2016 19:29

			EPA 353.2 NO3 as N		
			ppm	Flags	OD
1	<BLANK>	18:50:39	-0.0068		0.0348
2	<BLANK>	18:51:40	-0.0062		0.0350
3	<CAL1>	18:52:33	-0.0104	[0]	0.0337
4	<CAL2>	18:53:29	0.0474	[0.05]	0.0516
5	<CAL3>	18:54:24	0.1013	[0.1]	0.0683
6	<CAL4>	18:55:24	0.5171	[0.5]	0.1971
7	<CAL5>	18:56:20	0.9975	[1]	0.3459
8	<CAL6>	18:57:21	1.9970	[2]	0.6555
9	,BLANK,BLANK,1,	18:58:17	0.0374		0.0485
10	,ICV,ICV,1,	18:59:11	0.5107		0.1951
11	,ICB,ICB,1,	19:00:12	0.0016		0.0374
12	,MB-H2O,MBLK,1,	19:01:08	-0.0036		0.0358
13	,LCS-H2O,LCS,1,	19:02:02	0.4929		0.1896
14	,N020223-001D,SAMP,5,	19:03:03	0.5717		0.2140
15	,N020223-001DDUP,DUP,5,	19:03:59	0.6020		0.2234
16	,N020223-001DMS,MS,5,	19:04:54	1.1424		0.3908
17	,N020223-001DMSD,MSD,5,	19:05:54	1.1353		0.3886
18	,N020223-002D,SAMP,5,	19:06:50	0.5859		0.2184
19	,N020224-001C,SAMP,1,	19:07:46	0.0991		0.0676
20	,N020224-002C,SAMP,5,	19:08:46	0.5901		0.2197
21	,BLANK,BLANK,1	19:09:41	0.0035		0.0380
22	,CCV-1,CCV,1,	19:10:37	0.4690		0.1822
23	,CCB-1,CCB,1,	19:11:38	0.0016		0.0374
24	,N020228-002E,SAMP,1,	19:12:32	0.3719		0.1521
25	,N020228-003E,SAMP,1,	19:13:34	0.3954		0.1594
26	,N020228-004E,SAMP,1,	19:14:17	0.4148		0.1654

Reb 07/19/2016

			EPA 353.2 NO3 as N		
			ppm	Flags	OD
27	,N020228-005E,SAMP,1,	19:15:05	0.4222		0.1677
28	,N020228-006E,SAMP,1,	19:15:49	0.3999		0.1608
29	,N020228-007E,SAMP,1,	19:16:37	0.3941		0.1590
30	,N020228-008E,SAMP,1,	19:17:20	0.4232		0.1680
31	,N020228-009E,SAMP,1,	19:18:02	0.4196		0.1669
32	,N020228-010E,SAMP,1,	19:18:52	0.2908		0.1270
33	,BLANK,BLANK,1	19:19:35	-0.0049		0.0354
34	,CCV-2,CCV,1,	19:20:17	0.4810		0.1859
35	,CCB-2,CCB,1,	19:21:07	-0.0097		0.0339
36	,N020228-011E,SAMP,1,	19:21:49	0.2983		0.1293
37	,N020228-012E,SAMP,1,	19:22:32	0.3893		0.1575
38	,N020228-013E,SAMP,1,	19:23:20	0.3786		0.1542
39	,N020229-001D,SAMP,1,	19:24:03	0.0061		0.0388
40	,N020229-002D,SAMP,5,	19:24:47	0.5769		0.2156
41	,N020229-003D,SAMP,1,	19:25:35	1.4414		0.4834
42	,BLANK,BLANK,1	19:26:18	0.0171		0.0422
43	,CCV-3,CCV,1,	19:27:00	0.4703		0.1826
44	,CCB-3,CCB,1,	19:27:49	-0.0081		0.0344

Reb 07/19/2016

Nitrate/Nitrite as N by Cadmium Reduction Preparation and Runlog

Matrix:

Method: SM 4500-NO3-F/ EPA 353.2
Insturument: Easy Chem Analyzer

Slope: 95.0%
pH4: 3.96
pH7: 6.95
pH10: 10.04

LCS- 7.03 @ pH7

Reagent ID #
Ammonium Chloride reagent/Buffer: R160619B
Color reagent: R160620B
2% Copper Sulfate: R160619A
Ammonium Hydroxide: CINV-160527A

Date Analyzed: 07/11/2016
Time Analyzed: 16:41PM
Analyzed By: REB

	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)
1)	N020223-001D		8.85						
2)	N020223-002D		8.98						
3)	N020224-001C		8.50						
4)	N020224-002C		8.43						
5)	N020228-002E		6.74						
6)	N020228-003E		6.20						
7)	N020228-004E		8.45						
8)	N020228-005E		8.02						
9)	N020228-006E		8.16						
10)	N020228-007E		8.04						
11)	N020228-008E		8.09						
12)	N020228-009E		7.95						
13)	N020228-010E		8.89						
14)	N020228-011E		8.23						
15)	N020228-012E		8.35						
16)	N020228-013E		8.25						
17)	N020229-001D		7.81						
18)	N020229-002D		8.17						
19)	N020229-003D		7.81						
20)									
21)									
22)									
23)									

Advanced Technology Laboratories, Inc.
Book # 1

Reb 07/19/2016

EPA 6010B
Dissolved

Metals Technical Batch Review Checklist (ARCUS02)

ASSET LABORATORIES - LAS VEGAS

FIRST LEVEL REVIEW:

QC Batch Number: 58931
ASSET #: N020229

Instrument ID: ICP-02
Analyst: CEI

Method:

Date Analyzed: 7/7/2016

[X] EPA 6010B / 200.7
[ ] EPA 6020 / 200.8
[ ] EPA 7470A / 7471A/245.1
[ ] Other _____

Initial Calibration and Initial Calibration Verification	1st Level Review Y	1st Level Review N	1st Level Review N/A	2nd Level Review Y	2nd Level Review N	2nd Level Review 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					
Interference Check						
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					
Continuing Calibration						
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 ICVand CCV analysis.	X					
11. Do all calibration blanks (ICB and CCBs) meet criteria? (< PQL)	X					
12 Is low level check twice during 8 hr period or at end within ± 30% of expected value? (ICP/ICPMS only)	X					
Sample Information						
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			
QC Items						
22. IS are within control limits (70-125% for ICPMS).	X					
23. Method blank values are below the PQL .	X					
24. LCS compounds within control limits.	X					
25. MS/MSD, RPD's are within control limits		X				
Raw Data and Miscellaneous Information						
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					
Preliminary Report						
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 N020228-011B MS 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 7/26/2016 Date:

2nd Level Reviewer 7/26/2016 Date:

Metals Technical Batch Review Checklist (ARCUS02)

ASSET LABORATORIES - LAS VEGAS

FIRST LEVEL REVIEW:

QC Batch Number: 59161
ASSET #: N020229

Instrument ID: ICP-02
Analyst: CEI
Date Analyzed: 7/25/2016

Method:

[X] EPA 6010B / 200.7
[ ] EPA 6020 / 200.8
[ ] EPA 7470A / 7471A/245.1
[ ] 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					
Interference Check						
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					
Continuing Calibration						
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 ICVand CCV analysis.	X					
11. Do all calibration blanks (ICB and CCBs) meet criteria? (< PQL)	X					
12 Is low level check twice during 8 hr period or at end within ± 30% of expected value? (ICP/ICPMS only)	X					
Sample Information						
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			
QC Items						
22. IS are within control limits (70-125% for ICPMS).	X					
23. Method blank values are below the PQL .	X					
24. LCS compounds within control limits.	X					
25. MS/MSD, RPD's are within control limits		X				
Raw Data and Miscellaneous Information						
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					
Preliminary Report						
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:

For Na run only.
%Rec of Na in N020229-001B PS/MS/MSD failed. However LCS passed criteria. Dilution test passed.

	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 7/26/2016 Date:

2nd Level Reviewer 7/26/2016 Date:

SAMPLE CALCULATION

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:

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 **N020229-001B** , the concentration ir ug/L is calculated as follows:

Calcium , ug/L = 182.987 * 1 * (25/25) * 1000

Calcium , ug/L = 182987

Reporting results in two significant figures,

Calcium , ug/L = 180000

% RSD SUMMARY

RSD SUMMARY: 160707C

Instrument ID: ICP-02

Sample Name	Type	DF	Analyte	Reported Conc	RSD	Criteria	Comment
CalBlk	IBLK	1	Ca	0	1.41	15	PASS
Standard1	ICAL	1	Ca	0.2	3.59	15	PASS
Standard2	ICAL	1	Ca	1	0.9	15	PASS
Standard3	ICAL	1	Ca	2	1.17	15	PASS
Standard4	ICAL	1	Ca	5	0.72	15	PASS
Standard5	ICAL	1	Ca	7.5	1.0073	15	PASS
Standard6	ICAL	1	Ca	10	0.86	15	PASS
Standard7	ICAL	1	Ca	20	0.52	15	PASS
ICV	ICV	1	Ca	9.92	1.015	15	PASS
ICB	ICB	1	Ca	0.029	37.61	15	<PQL
LLICV	CCV1	1	Ca	0.2	10.46	20	PASS
ICSA1	ICSA	1	Ca	462.93	0.91	15	PASS
ICSAB1	ICSAB	1	Ca	554.24	0.084	15	PASS
CCV1	CCV	1	Ca	9.7	1.43	15	PASS
CCB1	CCB	1	Ca	0.024	53.17	15	<PQL
LLCCV1	CCV2	1	Ca	0.21	4.99	20	PASS
ICSA2	ICSA	1	Ca	460.43	0.83	15	PASS
ICSA2	ICSA	1	Ca	456.61	0.35	15	PASS
ICSAB2	ICSAB	1	Ca	551.28	0.16	15	PASS
CCV2	CCV	1	Ca	9.59	1.27	15	PASS
CCB2	CCB	1	Ca	-0.02	78.1	15	<PQL
MB-58931	MBLK	1	Ca	0.04	34.18	15	<PQL
CCV3	CCV	1	Ca	9.78	0.42	15	PASS
CCB3	CCB	1	Ca	0.0075	445.48	15	<PQL
LCS1-58931	LCS	1	Ca	9.2	0.42	15	PASS
N020221-004B	SAMP	1	Ca	32.84	0.62	15	PASS
N020221-004B	SAMP	5	Ca	6.57	0.37	15	PASS
N020221-004B-PS	PS	1	Ca	43.24	0.91	15	PASS
N020221-004B-MS1	MS	1	Ca	42.26	0.25	15	PASS
N020221-004B-MSD1	MSD	1	Ca	43.32	0.69	15	PASS
N020228-002B	SAMP	1	Ca	72.49	0.33	15	PASS
N020228-003B	SAMP	1	Ca	72.26	0.77	15	PASS
N020228-004B	SAMP	1	Ca	73.86	0.84	15	PASS
N020228-005B	SAMP	1	Ca	74.82	0.4	15	PASS
CCV4	CCV	1	Ca	9.98	0.26	15	PASS
CCB4	CCB	1	Ca	0.012	98.033	15	<PQL
N020228-006B	SAMP	1	Ca	73.5	0.97	15	PASS
N020228-007B	SAMP	1	Ca	71.16	0.31	15	PASS
N020228-008B	SAMP	1	Ca	72.5	0.46	15	PASS
N020228-009B	SAMP	1	Ca	73.67	0.5	15	PASS
N020228-010B	SAMP	1	Ca	75.19	1.25	15	PASS
N020228-011B	SAMP	1	Ca	79.83	0.16	15	PASS

RSD SUMMARY: 160707C

Instrument ID: ICP-02

Sample Name	Type	DF	Analyte	Reported Conc	RSD	Criteria	Comment
N020228-011B-MS1	MS	1	Ca	86.12	0.91	15	PASS
N020228-012B	SAMP	1	Ca	71.6	1.029	15	PASS
N020228-013B	SAMP	1	Ca	76.7	0.51	15	PASS
N020229-001B	SAMP	1	Ca	182.99	1.76	15	PASS
CCV5	CCV	1	Ca	9.97	0.69	15	PASS
CCB5	CCB	1	Ca	0.027	15.12	15	<PQL
N020229-002B	SAMP	1	Ca	232.44	0.28	15	PASS
N020229-003B	SAMP	1	Ca	181.4	1.26	15	PASS
CCV6	CCV	1	Ca	9.81	0.98	15	PASS
CCB6	CCB	1	Ca	0.015	28.47	15	<PQL
LLCCV2	CCV2	1	Ca	0.22	5.61	20	PASS
ICSA3	ICSA	1	Ca	462.76	0.8	15	PASS
ICSAB3	ICSAB	1	Ca	568.76	0.63	15	PASS
CalBlk	IBLK	1	Fe	0	44.51	15	<PQL
Standard1	ICAL	1	Fe	0.02	3.75	15	PASS
Standard2	ICAL	1	Fe	0.05	1.028	15	PASS
Standard3	ICAL	1	Fe	2	0.066	15	PASS
Standard4	ICAL	1	Fe	5	0.037	15	PASS
Standard5	ICAL	1	Fe	7.5	0.071	15	PASS
Standard6	ICAL	1	Fe	10	0.057	15	PASS
Standard7	ICAL	1	Fe	20	0.031	15	PASS
ICV	ICV	1	Fe	10.07	0.1	15	PASS
ICB	ICB	1	Fe	-0.0045	10.071	15	PASS
LLICV	CCV1	1	Fe	0.017	0.63	20	PASS
ICSA1	ICSA	1	Fe	175.25	0.5	15	PASS
ICSAB1	ICSAB	1	Fe	179.19	0.56	15	PASS
CCV1	CCV	1	Fe	10	0.038	15	PASS
CCB1	CCB	1	Fe	-0.004	14.34	15	PASS
LLCCV1	CCV2	1	Fe	0.017	4.71	20	PASS
ICSA2	ICSA	1	Fe	177.28	0.65	15	PASS
ICSA2	ICSA	1	Fe	175.9	0.58	15	PASS
ICSAB2	ICSAB	1	Fe	178.26	0.66	15	PASS
CCV2	CCV	1	Fe	10	0.064	15	PASS
CCB2	CCB	1	Fe	-0.0029	18.12	15	<PQL
MB-58931	MBLK	1	Fe	-0.0061	5.12	15	PASS
CCV3	CCV	1	Fe	10.009	0.069	15	PASS
CCB3	CCB	1	Fe	-0.0038	16.72	15	<PQL
LCS1-58931	LCS	1	Fe	0.092	0.28	15	PASS
N020221-004B	SAMP	1	Fe	0.0043	78.91	15	<PQL
N020221-004B	SAMP	5	Fe	-0.0036	8.47	15	PASS
N020221-004B-PS	PS	1	Fe	0.1	1	15	PASS
N020221-004B-MS1	MS	1	Fe	0.094	0.73	15	PASS

RSD SUMMARY: 160707C

Instrument ID: ICP-02

Sample Name	Type	DF	Analyte	Reported Conc	RSD	Criteria	Comment
N020221-004B-MSD1	MSD	1	Fe	0.094	0.93	15	PASS
N020228-002B	SAMP	1	Fe	0.00042	195.99	15	<PQL
N020228-003B	SAMP	1	Fe	0.0074	5.15	15	PASS
N020228-004B	SAMP	1	Fe	0.011	2.65	15	PASS
N020228-005B	SAMP	1	Fe	0.0061	6.18	15	PASS
CCV4	CCV	1	Fe	10.002	0.064	15	PASS
CCB4	CCB	1	Fe	-0.0042	16.0096	15	<PQL
N020228-006B	SAMP	1	Fe	0.0094	10.74	15	PASS
N020228-007B	SAMP	1	Fe	0.002	37.42	15	<PQL
N020228-008B	SAMP	1	Fe	-0.0022	18.71	15	<PQL
N020228-009B	SAMP	1	Fe	0.0034	15.43	15	<PQL
N020228-010B	SAMP	1	Fe	0.0056	10.58	15	PASS
N020228-011B	SAMP	1	Fe	0.023	4.013	15	PASS
N020228-011B-MS1	MS	1	Fe	0.12	0.53	15	PASS
N020228-012B	SAMP	1	Fe	0.013	4.21	15	PASS
N020228-013B	SAMP	1	Fe	-0.001	3.062	15	PASS
N020229-001B	SAMP	1	Fe	0.0039	72.019	15	<PQL
CCV5	CCV	1	Fe	9.93	0.03	15	PASS
CCB5	CCB	1	Fe	-0.0043	9.42	15	PASS
N020229-002B	SAMP	1	Fe	0.0074	13.88	15	PASS
N020229-003B	SAMP	1	Fe	0.054	1.93	15	PASS
CCV6	CCV	1	Fe	9.98	0.057	15	PASS
CCB6	CCB	1	Fe	-0.0045	9.19	15	PASS
LLCCV2	CCV2	1	Fe	0.015	2.58	20	PASS
ICSA3	ICSA	1	Fe	172.59	0.35	15	PASS
ICSAB3	ICSAB	1	Fe	177.77	0.49	15	PASS
CalBlk	IBLK	1	Mg	0	124.064	15	<PQL
Standard1	ICAL	1	Mg	0.1	2.47	15	PASS
Standard2	ICAL	1	Mg	1	0.68	15	PASS
Standard3	ICAL	1	Mg	2	0.071	15	PASS
Standard4	ICAL	1	Mg	5	0.21	15	PASS
Standard5	ICAL	1	Mg	7.5	0.29	15	PASS
Standard6	ICAL	1	Mg	10	0.1	15	PASS
Standard7	ICAL	1	Mg	20	0.14	15	PASS
ICV	ICV	1	Mg	10	0.14	15	PASS
ICB	ICB	1	Mg	-0.0065	11.13	15	PASS
LLICV	CCV1	1	Mg	0.098	1.18	20	PASS
ICSA1	ICSA	1	Mg	455.42	0.5	15	PASS
ICSAB1	ICSAB	1	Mg	508.93	0.47	15	PASS
CCV1	CCV	1	Mg	9.74	0.14	15	PASS
CCB1	CCB	1	Mg	-0.005	7.23	15	PASS
LLCCV1	CCV2	1	Mg	0.095	0.63	20	PASS

RSD SUMMARY: 160707C

Instrument ID: ICP-02

Sample Name	Type	DF	Analyte	Reported Conc	RSD	Criteria	Comment
ICSA2	ICSA	1	Mg	456.33	0.76	15	PASS
ICSA2	ICSA	1	Mg	452.78	0.66	15	PASS
ICSAB2	ICSAB	1	Mg	503.69	0.58	15	PASS
CCV2	CCV	1	Mg	9.61	0.22	15	PASS
CCB2	CCB	1	Mg	-0.0042	27.48	15	<PQL
MB-58931	MBLK	1	Mg	-0.0044	29.065	15	<PQL
CCV3	CCV	1	Mg	9.97	0.097	15	PASS
CCB3	CCB	1	Mg	-0.0058	7.19	15	PASS
LCS1-58931	LCS	1	Mg	9.85	0.097	15	PASS
N020221-004B	SAMP	1	Mg	4.67	0.11	15	PASS
N020221-004B	SAMP	5	Mg	1.041	0.19	15	PASS
N020221-004B-PS	PS	1	Mg	15.29	0.34	15	PASS
N020221-004B-MS1	MS	1	Mg	14.57	0.15	15	PASS
N020221-004B-MSD1	MSD	1	Mg	14.73	0.11	15	PASS
N020228-002B	SAMP	1	Mg	23.26	0.1	15	PASS
N020228-003B	SAMP	1	Mg	23.11	0.019	15	PASS
N020228-004B	SAMP	1	Mg	23.44	0.32	15	PASS
N020228-005B	SAMP	1	Mg	23.49	0.33	15	PASS
CCV4	CCV	1	Mg	10.046	0.12	15	PASS
CCB4	CCB	1	Mg	-0.0059	11.18	15	PASS
N020228-006B	SAMP	1	Mg	23.7	0.11	15	PASS
N020228-007B	SAMP	1	Mg	22.64	0.14	15	PASS
N020228-008B	SAMP	1	Mg	23.14	0.11	15	PASS
N020228-009B	SAMP	1	Mg	23.74	0.2	15	PASS
N020228-010B	SAMP	1	Mg	24.81	0.24	15	PASS
N020228-011B	SAMP	1	Mg	26.12	0.055	15	PASS
N020228-011B-MS1	MS	1	Mg	35.41	0.18	15	PASS
N020228-012B	SAMP	1	Mg	22.73	0.056	15	PASS
N020228-013B	SAMP	1	Mg	24.18	0.25	15	PASS
N020229-001B	SAMP	1	Mg	38.59	0.038	15	PASS
CCV5	CCV	1	Mg	10	0.13	15	PASS
CCB5	CCB	1	Mg	-0.0058	6.92	15	PASS
N020229-002B	SAMP	1	Mg	26.9	0.16	15	PASS
N020229-003B	SAMP	1	Mg	30.76	0.24	15	PASS
CCV6	CCV	1	Mg	10.016	0.17	15	PASS
CCB6	CCB	1	Mg	-0.0064	4.66	15	PASS
LLCCV2	CCV2	1	Mg	0.098	0.26	20	PASS
ICSA3	ICSA	1	Mg	457.14	0.47	15	PASS
ICSAB3	ICSAB	1	Mg	514.77	0.66	15	PASS

RSD SUMMARY: 160725C

Instrument ID: ICP-02

Sample Name	Type	DF	Analyte	Reported Conc	RSD	Criteria	Comment
CalBlk	IBLK	1	Na	0	20.68	15	<PQL
Standard1	ICAL	1	Na	0.1	3.33	15	PASS
Standard2	ICAL	1	Na	1	0.69	15	PASS
Standard3	ICAL	1	Na	5	0.19	15	PASS
Standard4	ICAL	1	Na	10	0.66	15	PASS
Standard5	ICAL	1	Na	20	0.016	15	PASS
Standard6	ICAL	1	Na	40	0.31	15	PASS
ICV	ICV	1	Na	9.94	0.12	15	PASS
ICB	ICB	1	Na	0.022	18.62	15	<PQL
ICSA0	ICSA	1	Na	0.02	80.89	15	<PQL
ICSAB0	ICSAB	1	Na	10.11	0.43	15	PASS
MB-59161	MBLK	1	Na	0.016	56.99	15	<PQL
LCS2-59161	LCS	1	Na	20.81	0.047	15	PASS
N020229-001B	SAMP	50	Na	13.75	0.18	15	PASS
N020229-002B	SAMP	50	Na	29.41	0.083	15	PASS
N020229-003B	SAMP	50	Na	25.38	0.22	15	PASS
N020229-001B	SAMP	250	Na	2.77	0.29	15	PASS
N020229-001B-PS	PS	50	Na	14.41	0.2	15	PASS
N020229-001B-MS2	MS	50	Na	14.61	0.27	15	PASS
N020229-001B-MSD2	MSD	50	Na	14.82	0.22	15	PASS
CCV0	CCV	1	Na	10.81	0.29	15	PASS
CCB0	CCB	1	Na	0.058	13.86	15	PASS
ICSA0	ICSA	1	Na	0.055	9.44	15	PASS
ICSAB0	ICSAB	1	Na	10.68	0.38	15	PASS

ANALYSIS RUN LOG

INJECTION LOG: 160707C

Instrument ID: ICP-02

STANDARD CODE	
Standard1	MWST-160608A,0.5<50mL
Standard2	MWST-160608F
Standard3	MWST-160608J,5<50mL
Standard4	MWST-160608J,12.5<50mL
Standard5	MWST-160608J,15<40mL
Standard6	MWST-160608J,25<50mL
Standard7	MWST-160608J
ICV	~~MWST-160531E~~ MWST-160701B
CCV	MWST-160608J,25<50mL
ICSA/ICSAB	MWST-160523A/MWST-160608K
Int. Std. (Y)	MSST-160323C
PS Spike	MWST-160201~~G~~ H, MWST-160531G

7/26/2016

MWST-160701E

A/S Loc	Sample Name	Type	DF	Acq Date	Acq Time
1	CalBlk	IBLK	1	07/07/2016	04:56:26 PM
2	Standard1	ICAL	1	07/07/2016	05:01:31 PM
3	Standard2	ICAL	1	07/07/2016	05:06:35 PM
4	Standard3	ICAL	1	07/07/2016	05:11:41 PM
5	Standard4	ICAL	1	07/07/2016	05:16:49 PM
6	Standard5	ICAL	1	07/07/2016	05:23:38 PM
7	Standard6	ICAL	1	07/07/2016	05:29:55 PM
8	Standard7	ICAL	1	07/07/2016	05:36:12 PM
9	ICV	ICV	1	07/07/2016	05:42:31 PM
1	ICB	ICB	1	07/07/2016	05:58:45 PM
2	LLICV	CCV1	1	07/07/2016	06:03:49 PM
4	ICSA1	ICSA	1	07/07/2016	06:17:43 PM
5	ICSAB1	ICSAB	1	07/07/2016	06:24:38 PM
98	MB-58920	MBLK	1	07/07/2016	06:31:33 PM
99	LCS1-58920	LCS	1	07/07/2016	06:36:41 PM
105	N020232-006B	SAMP	1	07/07/2016	06:42:59 PM
106	N020232-006B-MS1	MS	1	07/07/2016	06:47:37 PM
111	N020223-001E	SAMP	1	07/07/2016	06:53:56 PM
112	N020223-001E	SAMP	5	07/07/2016	07:00:13 PM
113	N020223-001E-PS	PS	1	07/07/2016	07:05:21 PM
114	N020223-001E-MS1	MS	1	07/07/2016	07:11:38 PM
115	N020223-001E-MSD1	MSD	1	07/07/2016	07:17:57 PM
116	N020223-002E	SAMP	1	07/07/2016	07:24:16 PM
7	CCV1	CCV	1	07/07/2016	07:30:35 PM
1	CCB1	CCB	1	07/07/2016	07:39:57 PM
2	LLCCV1	CCV2	1	07/07/2016	07:43:26 PM
4	ICSA2	ICSA	1	07/07/2016	08:10:51 PM
4	ICSA2	ICSA	1	07/07/2016	08:19:24 PM

A/S Loc	Sample Name	Type	DF	Acq Date	Acq Time
5	ICSAB2	ICSAB	1	07/07/2016	08:26:19 PM
38	MB-58932	MBLK	1	07/07/2016	08:35:21 PM
39	LCS-58932	LCS	1	07/07/2016	08:40:26 PM
40	N020228-002C	SAMP	1	07/07/2016	08:47:01 PM
41	N020228-002C	SAMP	5	07/07/2016	08:51:36 PM
42	N020228-002C-PS	PS	1	07/07/2016	08:56:43 PM
43	N020228-002C-MS	MS	1	07/07/2016	09:03:00 PM
44	N020228-002C-MSD	MSD	1	07/07/2016	09:09:16 PM
45	N020228-003C	SAMP	1	07/07/2016	09:15:32 PM
46	N020228-004C	SAMP	1	07/07/2016	09:20:07 PM
47	N020228-005C	SAMP	1	07/07/2016	09:24:44 PM
7	CCV2	CCV	1	07/07/2016	09:29:51 PM
1	CCB2	CCB	1	07/07/2016	09:36:08 PM
48	N020228-006C	SAMP	1	07/07/2016	09:41:12 PM
49	N020228-007C	SAMP	1	07/07/2016	09:45:49 PM
50	N020228-008C	SAMP	1	07/07/2016	09:50:26 PM
51	N020228-009C	SAMP	1	07/07/2016	09:56:42 PM
52	N020228-010C	SAMP	1	07/07/2016	10:01:19 PM
53	N020228-011C	SAMP	1	07/07/2016	10:05:54 PM
54	N020228-012C	SAMP	1	07/07/2016	10:10:30 PM
55	N020228-012C-MS	MS	1	07/07/2016	10:15:06 PM
56	N020228-013C	SAMP	1	07/07/2016	10:21:24 PM
57	MB-58931	MBLK	1	07/07/2016	10:26:00 PM
7	CCV3	CCV	1	07/07/2016	10:31:05 PM
1	CCB3	CCB	1	07/07/2016	10:37:23 PM
58	LCS1-58931	LCS	1	07/07/2016	10:42:27 PM
59	N020221-004B	SAMP	1	07/07/2016	10:48:45 PM
60	N020221-004B	SAMP	5	07/07/2016	10:53:53 PM
61	N020221-004B-PS	PS	1	07/07/2016	10:58:59 PM
62	N020221-004B-MS1	MS	1	07/07/2016	11:05:18 PM
63	N020221-004B-MSD1	MSD	1	07/07/2016	11:11:37 PM
64	N020228-002B	SAMP	1	07/07/2016	11:17:55 PM
65	N020228-003B	SAMP	1	07/07/2016	11:22:30 PM
66	N020228-004B	SAMP	1	07/07/2016	11:27:05 PM
67	N020228-005B	SAMP	1	07/07/2016	11:32:11 PM
7	CCV4	CCV	1	07/07/2016	11:37:18 PM
1	CCB4	CCB	1	07/07/2016	11:43:35 PM
68	N020228-006B	SAMP	1	07/07/2016	11:48:38 PM
69	N020228-007B	SAMP	1	07/07/2016	11:53:13 PM
70	N020228-008B	SAMP	1	07/07/2016	11:57:49 PM
71	N020228-009B	SAMP	1	07/08/2016	12:02:55 AM
72	N020228-010B	SAMP	1	07/08/2016	12:07:31 AM
73	N020228-011B	SAMP	1	07/08/2016	12:12:07 AM
74	N020228-011B-MS1	MS	1	07/08/2016	12:16:44 AM
75	N020228-012B	SAMP	1	07/08/2016	12:23:02 AM
76	N020228-013B	SAMP	1	07/08/2016	12:28:08 AM

A/S Loc	Sample Name	Type	DF	Acq Date	Acq Time
77	N020229-001B	SAMP	1	07/08/2016	12:33:15 AM
7	CCV5	CCV	1	07/08/2016	12:39:32 AM
1	CCB5	CCB	1	07/08/2016	12:45:49 AM
78	N020229-002B	SAMP	1	07/08/2016	12:50:52 AM
79	N020229-003B	SAMP	1	07/08/2016	12:57:10 AM
7	CCV6	CCV	1	07/08/2016	01:03:27 AM
1	CCB6	CCB	1	07/08/2016	01:09:44 AM
2	LLCCV2	CCV2	1	07/08/2016	01:14:48 AM
4	ICSA3	ICSA	1	07/08/2016	01:19:52 AM
5	ICSAB3	ICSAB	1	07/08/2016	01:26:48 AM

INJECTION LOG: 160725C

Instrument ID: ICP-02

STANDARD CODE	
Standard1	MWST-160608L,0.025<50mL
Standard2	MWST-160608L,0.25<50mL
Standard3	MWST-160608L,1.25<50mL
Standard4	MWST-160608L,2.5<50mL
Standard5	MWST-160608L,5<50mL
Standard6	MWST-160608L,10<50mL
ICV	MWST-160608M
CCV	MWST-160608L,2.5<50mL
ICSA/ICSAB	MWST-160523A/MWST-160608N
Int. Std. (Sc):	MSST-160323B
PS Spike	MSST-130329D/-111006A/-150717A

A/S Loc	Sample Name	Type	DF	Acq Date	Acq Time
1	CalBlk	IBLK	1	07/25/2016	08:51:10 PM
2	Standard1	ICAL	1	07/25/2016	08:54:27 PM
3	Standard2	ICAL	1	07/25/2016	08:57:44 PM
4	Standard3	ICAL	1	07/25/2016	09:01:03 PM
5	Standard4	ICAL	1	07/25/2016	09:04:53 PM
6	Standard5	ICAL	1	07/25/2016	09:08:44 PM
7	Standard6	ICAL	1	07/25/2016	09:12:33 PM
8	ICV	ICV	1	07/25/2016	09:16:24 PM
1	ICB	ICB	1	07/25/2016	09:20:15 PM
3	ICSA1	ICSA	1	07/25/2016	09:23:31 PM
4	ICSAB1	ICSAB	1	07/25/2016	09:26:50 PM
38	MB-59161	MBLK	1	07/25/2016	09:30:41 PM
39	LCS2-59161	LCS	1	07/25/2016	09:33:59 PM
40	N020229-001B	SAMP	50	07/25/2016	09:39:20 PM
41	N020229-002B	SAMP	50	07/25/2016	09:42:37 PM
42	N020229-003B	SAMP	50	07/25/2016	09:45:56 PM
43	N020229-001B	SAMP	250	07/25/2016	09:53:15 PM
44	N020229-001B-PS	PS	50	07/25/2016	09:56:59 PM
45	N020229-001B-MS2	MS	50	07/25/2016	10:00:18 PM
46	N020229-001B-MSD2	MSD	50	07/25/2016	10:03:37 PM
5	CCV1	CCV	1	07/25/2016	10:10:21 PM
1	CCB1	CCB	1	07/25/2016	10:14:12 PM
3	ICSA2	ICSA	1	07/25/2016	10:17:29 PM
4	ICSAB2	ICSAB	1	07/25/2016	10:20:47 PM

SAMPLE PREPARATION LOG

ASSET Laboratories

PREP BATCH REPORT

Prep Start Date: **7/7/2016 2:30:00 P**
Prep End Date: **7/7/2016 7:00:00 P**
Prep Batch **58931** Prep Code: **3010_W_DISS**

Reviewed/ Date: _____
Initials/ Date: 7/26/2016
Technician **Amy Mata**

Prep Factor Units	Temp. (°C):	Location:
mL / mL	**94.6**	**02-17**

Sample ID	Matrix	pH	SampAmt	3 Replicates	Sol Added	Sol Recov	Fin Vol	factor	Clean Up Code	TURB Check
LCS1-58931	Aqueous		25	☐	0	0	25	1.000		
LCS2-58931	Aqueous		25	☐	0	0	25	1.000		
MB-58931	Aqueous		25	☐	0	0	25	1.000		
N020221-004B	Groundwater	<2	25	☐	0	0	25	1.000		
N020221-004B-MS	Groundwater	<2	25	☐	0	0	25	1.000		
N020221-004B-MS	Groundwater	<2	25	☐	0	0	25	1.000		
N020228-002B	Groundwater	<2	25	☐	0	0	25	1.000		
N020228-003B	Groundwater	<2	25	☐	0	0	25	1.000		
N020228-004B	Groundwater	<2	25	☐	0	0	25	1.000		
N020228-005B	Groundwater	<2	25	☐	0	0	25	1.000		
N020228-006B	Groundwater	<2	25	☐	0	0	25	1.000		
N020228-007B	Groundwater	<2	25	☐	0	0	25	1.000		
N020228-008B	Groundwater	<2	25	☐	0	0	25	1.000		
N020228-009B	Groundwater	<2	25	☐	0	0	25	1.000		

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

Number	Reagent Name
8446	NITRIC ACID
8493	HYDROCHLORIC ACID

Spk ID	Spike Name	SampType	AmtAdd
MSST-111006A	Potassium, 10000ppm (Secondary)	LCS/MS/MSD	0.05
MSST-140120B	Sodium, 10000ppm (Secondary)	LCS/MS/MSD	0.05
MWST-160201H	ICP Solution B	LCS,MS,MSD	0.5
MWST-160531G	ICP Solution C	LCS,MS,MSD	0.5
MWST-160701E	ICP Solution A	LCS,MS,MSD	0.5

ASSET Laboratories

PREP BATCH REPORT

Prep Start Date: **7/7/2016 2:30:00 P**
Prep End Date: **7/7/2016 7:00:00 P**
Prep Batch **58931** Prep Code: **3010_W_DISS**

Reviewed/ Date: _____
Initials/ Date: 7/26/2016
Technician **Amy Mata**

Prep Factor Units	Temp. (°C):	Location:
mL / mL	**94.6**	**02-17**

Sample ID	Matrix	pH	SampAmt	3 Replicates	Sol Added	Sol Recov	Fin Vol	factor	Clean Up Code	TURB Check
N020228-010B	Groundwater	<2	25	☐	0	0	25	1.000		
N020228-011B	Groundwater	<2	25	☐	0	0	25	1.000		
N020228-011B-MS	Groundwater	<2	25	☐	0	0	25	1.000		
N020228-012B	Groundwater	<2	25	☐	0	0	25	1.000		
N020228-012B-MS	Groundwater	<2	25	☐	0	0	25	1.000		
N020228-013B	Groundwater	<2	25	☐	0	0	25	1.000		
N020229-001B	Groundwater	<2	25	☐	0	0	25	1.000		
N020229-002B	Groundwater	<2	25	☐	0	0	25	1.000		
N020229-003B	Groundwater	<2	25	☐	0	0	25	1.000		
N020229-003B-MS	Groundwater	<2	25	☐	0	0	25	1.000		
N020229-003B-MS	Groundwater	<2	25	☐	0	0	25	1.000		

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

Number	Reagent Name
8446	NITRIC ACID
8493	HYDROCHLORIC ACID

Spk ID	Spike Name	SampType	AmtAdd
MSST-111006A	Potassium, 10000ppm (Secondary)	LCS/MS/MSD	0.05
MSST-140120B	Sodium, 10000ppm (Secondary)	LCS/MS/MSD	0.05
MWST-160201H	ICP Solution B	LCS,MS,MSD	0.5
MWST-160531G	ICP Solution C	LCS,MS,MSD	0.5
MWST-160701E	ICP Solution A	LCS,MS,MSD	0.5

ASSET Laboratories

PREP BATCH REPORT

Prep Start Date: **7/25/2016 4:00:00 P**
Prep End Date: **7/25/2016 8:00:00 P**
Prep Batch **59161** Prep Code: **3010_W_DISS**

Reviewed/ Date: _____
Initials/ Date: _____ 7/26/2016
Technician: **Claire Ignacio**

Prep Factor Units: **mL / mL**

Sample ID	Matrix	pH	SampAmt	3 Replicates	Sol Added	Sol Recov	Fin Vol	factor	Clean Up Code	TURB Check
LCS2-59161	Aqueous		25	☐	0	0	25	1.000		
MB-59161	Aqueous		25	☐	0	0	25	1.000		
N020229-001B	Groundwater	<2	25	☐	0	0	25	1.000		
N020229-001B-MS	Groundwater	<2	25	☐	0	0	25	1.000		
N020229-001B-MS	Groundwater	<2	25	☐	0	0	25	1.000		
N020229-002B	Groundwater	<2	25	☐	0	0	25	1.000		
N020229-003B	Groundwater	<2	25	☐	0	0	25	1.000		

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

Number	Reagent Name
8495	HYDROCHLORIC ACID
8525	NITRIC ACID

Spk ID	Spike Name	SampType	AmtAdd
MSST-111006A	Potassium, 10000ppm (Secondary)	LCS/MS/MSD	0.05
MSST-140120B	Sodium, 10000ppm (Secondary)	LCS/MS/MSD	0.05

INITIAL CALIBRATION DATA SUMMARY

INITIAL CALIBRATION SUMMARY: 160707C

Instrument ID: ICP-02

Sample ID	Date	Time	Elem	Wavelength	Corrected Intensity	Concentration	Units	R
Magnesium								
CalBlk	07/07/2016	04:56:26 PM	Mg	279.079	28	0.00	mg/L	
Standard1	07/07/2016	05:01:31 PM	Mg	279.079	969	0.1000	mg/L	
Standard2	07/07/2016	05:06:35 PM	Mg	279.079	9927	1.000	mg/L	
Standard3	07/07/2016	05:11:41 PM	Mg	279.079	19263	2.000	mg/L	
Standard4	07/07/2016	05:16:49 PM	Mg	279.079	48398	5.000	mg/L	
Standard5	07/07/2016	05:23:38 PM	Mg	279.079	72063	7.500	mg/L	
Standard6	07/07/2016	05:29:55 PM	Mg	279.079	95633	10.000	mg/L	
Standard7	07/07/2016	05:36:12 PM	Mg	279.079	189882	20.000	mg/L	1.0000
Calcium								
CalBlk	07/07/2016	04:56:26 PM	Ca	227.546	-121	0.00	mg/L	
Standard1	07/07/2016	05:01:31 PM	Ca	227.546	84	0.2000	mg/L	
Standard2	07/07/2016	05:06:35 PM	Ca	227.546	352	1.000	mg/L	
Standard3	07/07/2016	05:11:41 PM	Ca	227.546	753	2.000	mg/L	
Standard4	07/07/2016	05:16:49 PM	Ca	227.546	1891	5.000	mg/L	
Standard5	07/07/2016	05:23:38 PM	Ca	227.546	2791	7.500	mg/L	
Standard6	07/07/2016	05:29:55 PM	Ca	227.546	3723	10.000	mg/L	
Standard7	07/07/2016	05:36:12 PM	Ca	227.546	7493	20.000	mg/L	1.0000
Iron								
CalBlk	07/07/2016	04:56:26 PM	Fe	273.953	113	0.00	mg/L	
Standard1	07/07/2016	05:01:31 PM	Fe	273.953	661	0.0200	mg/L	
Standard2	07/07/2016	05:06:35 PM	Fe	273.953	1700	0.050	mg/L	
Standard3	07/07/2016	05:11:41 PM	Fe	273.953	73674	2.000	mg/L	
Standard4	07/07/2016	05:16:49 PM	Fe	273.953	183490	5.000	mg/L	
Standard5	07/07/2016	05:23:38 PM	Fe	273.953	271610	7.500	mg/L	
Standard6	07/07/2016	05:29:55 PM	Fe	273.953	358799	10.000	mg/L	
Standard7	07/07/2016	05:36:12 PM	Fe	273.953	707977	20.000	mg/L	0.9999

INITIAL CALIBRATION SUMMARY: 160725C

Instrument ID: ICP-02

Sample ID	Date	Time	Elem	Wavelength	Corrected Intensity	Concentration	Units	R
Sodium								
CalBlk	07/25/2016	08:51:10 PM	Na	589.594	20	0.00	mg/L	
Standard1	07/25/2016	08:54:27 PM	Na	589.594	108	0.1000	mg/L	
Standard2	07/25/2016	08:57:44 PM	Na	589.594	1110	1.000	mg/L	
Standard3	07/25/2016	09:01:03 PM	Na	589.594	5455	5.000	mg/L	
Standard4	07/25/2016	09:04:53 PM	Na	589.594	11192	10.000	mg/L	
Standard5	07/25/2016	09:08:44 PM	Na	589.594	22299	20.000	mg/L	
Standard6	07/25/2016	09:12:33 PM	Na	589.594	44721	40.000	mg/L	1.0000

INITIAL CALIBRATION AND CONTINUING CALIBRATION VERIFICATION SUMMARY

CLIENT: ARCADIS U.S., Inc. - California
Work Order: N020229
Project: PG&E Topock - PMP, RC000753.801A

ANALYTICAL QC SUMMARY REPORT

TestCode: 6010_WDPGEPPB

Sample ID **ICV** SampType: **ICV** TestCode: **6010_WDPG** Units: **ug/L** Prep Date: RunNo: **109304**
Client ID: **ICV** Batch ID: **R109304** TestNo: **EPA 6010B** Analysis Date: **7/7/2016** SeqNo: **2366371**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Calcium	9920.300	500	10000	0	99.2	90	110				
Iron	10070.346	20	10000	0	101	90	110				
Magnesium	9998.258	100	10000	0	100	90	110				

Sample ID **LLICV** SampType: **CCV1** TestCode: **6010_WDPG** Units: **ug/L** Prep Date: RunNo: **109304**
Client ID: **ZZZZZZ** Batch ID: **R109304** TestNo: **EPA 6010B** Analysis Date: **7/7/2016** SeqNo: **2366373**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Calcium	204.116	500	200.0	0	102	80	120				
Iron	16.940	20	20.00	0	84.7	80	120				
Magnesium	98.440	100	100.0	0	98.4	80	120				

Sample ID **CCV1** SampType: **CCV** TestCode: **6010_WDPG** Units: **ug/L** Prep Date: RunNo: **109304**
Client ID: **CCV** Batch ID: **R109304** TestNo: **EPA 6010B** Analysis Date: **7/7/2016** SeqNo: **2366386**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Calcium	9696.982	500	10000	0	97.0	90	110				
Iron	9999.190	20	10000	0	100	90	110				
Magnesium	9742.869	100	10000	0	97.4	90	110				

Sample ID **LLCCV1** SampType: **CCV2** TestCode: **6010_WDPG** Units: **ug/L** Prep Date: RunNo: **109304**
Client ID: **ZZZZZZ** Batch ID: **R109304** TestNo: **EPA 6010B** Analysis Date: **7/7/2016** SeqNo: **2366388**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Calcium	206.322	500	200.0	0	103	70	130				
Iron	16.572	20	20.00	0	82.9	70	130				
Magnesium	94.676	100	100.0	0	94.7	70	130				

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

ANALYTICAL QC SUMMARY REPORT

TestCode: 6010_WDPGEPPB

Sample ID **CCV2**	SampType: **CCV**	TestCode: **6010_WDPG**	Units: **ug/L**	Prep Date:	RunNo: **109304**
Client ID: **CCV**	Batch ID: **R109304**	TestNo: **EPA 6010B**		Analysis Date: **7/7/2016**	SeqNo: **2366402**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Calcium	9586.427	500	10000	0	95.9	90	110				
Iron	9999.685	20	10000	0	100	90	110				
Magnesium	9608.149	100	10000	0	96.1	90	110				

Sample ID **CCV3**	SampType: **CCV**	TestCode: **6010_WDPG**	Units: **ug/L**	Prep Date:	RunNo: **109304**
Client ID: **CCV**	Batch ID: **R109304**	TestNo: **EPA 6010B**		Analysis Date: **7/7/2016**	SeqNo: **2366414**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Calcium	9781.975	500	10000	0	97.8	90	110				
Iron	10009.330	20	10000	0	100	90	110				
Magnesium	9966.760	100	10000	0	99.7	90	110				

Sample ID **CCV4**	SampType: **CCV**	TestCode: **6010_WDPG**	Units: **ug/L**	Prep Date:	RunNo: **109304**
Client ID: **CCV**	Batch ID: **R109304**	TestNo: **EPA 6010B**		Analysis Date: **7/7/2016**	SeqNo: **2366426**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Calcium	9982.344	500	10000	0	99.8	90	110				
Iron	10001.815	20	10000	0	100	90	110				
Magnesium	10045.827	100	10000	0	100	90	110				

Sample ID **CCV5**	SampType: **CCV**	TestCode: **6010_WDPG**	Units: **ug/L**	Prep Date:	RunNo: **109304**
Client ID: **CCV**	Batch ID: **R109304**	TestNo: **EPA 6010B**		Analysis Date: **7/8/2016**	SeqNo: **2366437**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Calcium	9971.041	500	10000	0	99.7	90	110				
Iron	9930.313	20	10000	0	99.3	90	110				
Magnesium	9997.997	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: N020229
Project: PG&E Topock - PMP, RC000753.801A

ANALYTICAL QC SUMMARY REPORT

TestCode: 6010_WDPGEPPB

Sample ID **CCV6**	SampType: **CCV**	TestCode: **6010_WDPG**	Units: **ug/L**	Prep Date:	RunNo: **109304**
Client ID: **CCV**	Batch ID: **R109304**	TestNo: **EPA 6010B**		Analysis Date: **7/8/2016**	SeqNo: **2366441**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Calcium	9813.643	500	10000	0	98.1	90	110				
Iron	9978.808	20	10000	0	99.8	90	110				
Magnesium	10016.138	100	10000	0	100	90	110				

Sample ID **LLCCV2**	SampType: **CCV2**	TestCode: **6010_WDPG**	Units: **ug/L**	Prep Date:	RunNo: **109304**
Client ID: **ZZZZZZ**	Batch ID: **R109304**	TestNo: **EPA 6010B**		Analysis Date: **7/8/2016**	SeqNo: **2366443**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Calcium	220.052	500	200.0	0	110	70	130				
Iron	15.302	20	20.00	0	76.5	70	130				
Magnesium	97.692	100	100.0	0	97.7	70	130				

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: N020229
Project: PG&E Topock - PMP, RC000753.801A

ANALYTICAL QC SUMMARY REPORT

TestCode: 6010_WDPGEPPB

Sample ID **ICV**	SampType: **ICV**	TestCode: **6010_WDPG**	Units: **ug/L**	Prep Date:	RunNo: **109634**
Client ID: **ICV**	Batch ID: **R109634**	TestNo: **EPA 6010B**		Analysis Date: **7/25/2016**	SeqNo: **2383516**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Sodium	9944.832	500	10000	0	99.4	90	110				

Sample ID **CCV1**	SampType: **CCV**	TestCode: **6010_WDPG**	Units: **ug/L**	Prep Date:	RunNo: **109634**
Client ID: **CCV**	Batch ID: **R109634**	TestNo: **EPA 6010B**		Analysis Date: **7/25/2016**	SeqNo: **2383529**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Sodium	10806.419	500	10000	0	108	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

CLIENT: ARCADIS U.S., Inc. - California
Work Order: N020229
Project: PG&E Topock - PMP, RC000753.801A

ANALYTICAL QC SUMMARY REPORT

TestCode: 6010_WDPGEPPB

Sample ID **ICB**	SampType: **ICB**	TestCode: **6010_WDPG**	Units: **ug/L**	Prep Date:	RunNo: **109304**
Client ID: **ICB**	Batch ID: **R109304**	TestNo: **EPA 6010B**		Analysis Date: **7/7/2016**	SeqNo: **2366372**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Calcium	28.524	500									
Iron	-4.458174	20									
Magnesium	-6.501943	100									

Sample ID **CCB1**	SampType: **CCB**	TestCode: **6010_WDPG**	Units: **ug/L**	Prep Date:	RunNo: **109304**
Client ID: **CCB**	Batch ID: **R109304**	TestNo: **EPA 6010B**		Analysis Date: **7/7/2016**	SeqNo: **2366387**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Calcium	23.714	500									
Iron	-4.030642	20									
Magnesium	-4.975162	100									

Sample ID **CCB2**	SampType: **CCB**	TestCode: **6010_WDPG**	Units: **ug/L**	Prep Date:	RunNo: **109304**
Client ID: **CCB**	Batch ID: **R109304**	TestNo: **EPA 6010B**		Analysis Date: **7/7/2016**	SeqNo: **2366403**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Calcium	-19.950977	500									
Iron	-2.864066	20									
Magnesium	-4.201727	100									

Sample ID **CCB3**	SampType: **CCB**	TestCode: **6010_WDPG**	Units: **ug/L**	Prep Date:	RunNo: **109304**
Client ID: **CCB**	Batch ID: **R109304**	TestNo: **EPA 6010B**		Analysis Date: **7/7/2016**	SeqNo: **2366415**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Calcium	7.477	500									
Iron	-3.766532	20									
Magnesium	-5.832912	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
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: ARCADIS U.S., Inc. - California
Work Order: N020229
Project: PG&E Topock - PMP, RC000753.801A

ANALYTICAL QC SUMMARY REPORT

TestCode: 6010_WDPGEPPB

Sample ID **CCB4**	SampType: **CCB**	TestCode: **6010_WDPG**	Units: **ug/L**	Prep Date:	RunNo: **109304**
Client ID: **CCB**	Batch ID: **R109304**	TestNo: **EPA 6010B**		Analysis Date: **7/7/2016**	SeqNo: **2366427**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Calcium	11.576	500									
Iron	-4.206	20									
Magnesium	-5.917161	100									

Sample ID **CCB5**	SampType: **CCB**	TestCode: **6010_WDPG**	Units: **ug/L**	Prep Date:	RunNo: **109304**
Client ID: **CCB**	Batch ID: **R109304**	TestNo: **EPA 6010B**		Analysis Date: **7/8/2016**	SeqNo: **2366438**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Calcium	26.999	500									
Iron	-4.311633	20									
Magnesium	-5.78949	100									

Sample ID **CCB6**	SampType: **CCB**	TestCode: **6010_WDPG**	Units: **ug/L**	Prep Date:	RunNo: **109304**
Client ID: **CCB**	Batch ID: **R109304**	TestNo: **EPA 6010B**		Analysis Date: **7/8/2016**	SeqNo: **2366442**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Calcium	14.590	500									
Iron	-4.520805	20									
Magnesium	-6.351615	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
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: ARCADIS U.S., Inc. - California
Work Order: N020229
Project: PG&E Topock - PMP, RC000753.801A

ANALYTICAL QC SUMMARY REPORT

TestCode: 6010_WDPGEPPB

Sample ID **ICB**	SampType: **ICB**	TestCode: **6010_WDPG**	Units: **ug/L**	Prep Date:	RunNo: **109634**
Client ID: **ICB**	Batch ID: **R109634**	TestNo: **EPA 6010B**		Analysis Date: **7/25/2016**	SeqNo: **2383517**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Sodium	22.185	500									

Sample ID **CCB1**	SampType: **CCB**	TestCode: **6010_WDPG**	Units: **ug/L**	Prep Date:	RunNo: **109634**
Client ID: **CCB**	Batch ID: **R109634**	TestNo: **EPA 6010B**		Analysis Date: **7/25/2016**	SeqNo: **2383530**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Sodium	58.487	500									

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 CHECK (ICSA & ICSAB)

CLIENT: ARCADIS U.S., Inc. - California
Work Order: N020229
Project: PG&E Topock - PMP, RC000753.801A

ANALYTICAL QC SUMMARY REPORT

TestCode: 6010_WDPGEPPB

Sample ID **ICSA1** SampType: **ICSA** TestCode: **6010_WDPG** Units: **ug/L** Prep Date: RunNo: **109304**
Client ID: **ICSA** Batch ID: **R109304** TestNo: **EPA 6010B** Analysis Date: **7/7/2016** SeqNo: **2366374**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aluminum	467319.059	50	500000	0	93.5	80	120				
Calcium	462926.629	500	500000	0	92.6	80	120				
Iron	175248.057	20	200000	0	87.6	80	120				
Magnesium	455421.970	100	500000	0	91.1	80	120				

Sample ID **ICSAB1** SampType: **ICSAB** TestCode: **6010_WDPG** Units: **ug/L** Prep Date: RunNo: **109304**
Client ID: **ICSAB** Batch ID: **R109304** TestNo: **EPA 6010B** Analysis Date: **7/7/2016** SeqNo: **2366375**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aluminum	562621.992	50	500000	0	113	80	120				
Calcium	554241.296	500	500000	0	111	80	120				
Iron	179190.495	20	200000	0	89.6	80	120				
Magnesium	508927.673	100	500000	0	102	80	120				

Sample ID **ICSA2** SampType: **ICSA** TestCode: **6010_WDPG** Units: **ug/L** Prep Date: RunNo: **109304**
Client ID: **ICSA** Batch ID: **R109304** TestNo: **EPA 6010B** Analysis Date: **7/7/2016** SeqNo: **2366390**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aluminum	467660.383	50	500000	0	93.5	80	120				
Calcium	456608.626	500	500000	0	91.3	80	120				
Iron	175899.317	20	200000	0	87.9	80	120				
Magnesium	452782.302	100	500000	0	90.6	80	120				

Sample ID **ICSAB2** SampType: **ICSAB** TestCode: **6010_WDPG** Units: **ug/L** Prep Date: RunNo: **109304**
Client ID: **ICSAB** Batch ID: **R109304** TestNo: **EPA 6010B** Analysis Date: **7/7/2016** SeqNo: **2366391**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aluminum	561980.116	50	500000	0	112	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: N020229
Project: PG&E Topock - PMP, RC000753.801A

ANALYTICAL QC SUMMARY REPORT

TestCode: 6010_WDPGEPPB

Sample ID **ICSAB2**	SampType: **ICSAB**	TestCode: **6010_WDPG**	Units: **ug/L**	Prep Date:	RunNo: **109304**
Client ID: **ICSAB**	Batch ID: **R109304**	TestNo: **EPA 6010B**		Analysis Date: **7/7/2016**	SeqNo: **2366391**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Calcium	551276.661	500	500000	0	110	80	120				
Iron	178257.777	20	200000	0	89.1	80	120				
Magnesium	503689.641	100	500000	0	101	80	120				

Sample ID **ICSA3**	SampType: **ICSA**	TestCode: **6010_WDPG**	Units: **ug/L**	Prep Date:	RunNo: **109304**
Client ID: **ICSA**	Batch ID: **R109304**	TestNo: **EPA 6010B**		Analysis Date: **7/8/2016**	SeqNo: **2366444**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aluminum	468505.831	50	500000	0	93.7	80	120				
Calcium	462759.709	500	500000	0	92.6	80	120				
Iron	172591.371	20	200000	0	86.3	80	120				
Magnesium	457144.547	100	500000	0	91.4	80	120				

Sample ID **ICSAB3**	SampType: **ICSAB**	TestCode: **6010_WDPG**	Units: **ug/L**	Prep Date:	RunNo: **109304**
Client ID: **ICSAB**	Batch ID: **R109304**	TestNo: **EPA 6010B**		Analysis Date: **7/8/2016**	SeqNo: **2366445**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aluminum	579879.659	50	500000	0	116	80	120				
Calcium	568756.169	500	500000	0	114	80	120				
Iron	177771.655	20	200000	0	88.9	80	120				
Magnesium	514774.780	100	500000	0	103	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: N020229
Project: PG&E Topock - PMP, RC000753.801A

ANALYTICAL QC SUMMARY REPORT

TestCode: 6010_WDPGEPPB

Sample ID **ICSA1**	SampType: **ICSA**	TestCode: **6010_WDPG**	Units: **ug/L**	Prep Date:	RunNo: **109634**
Client ID: **ICSA**	Batch ID: **R109634**	TestNo: **EPA 6010B**		Analysis Date: **7/25/2016**	SeqNo: **2383518**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Sodium	19.844	500									

Sample ID **ICSAB1**	SampType: **ICSAB**	TestCode: **6010_WDPG**	Units: **ug/L**	Prep Date:	RunNo: **109634**
Client ID: **ICSAB**	Batch ID: **R109634**	TestNo: **EPA 6010B**		Analysis Date: **7/25/2016**	SeqNo: **2383519**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Sodium	10109.287	500	10000	0	101	80	120				

Sample ID **ICSA2**	SampType: **ICSA**	TestCode: **6010_WDPG**	Units: **ug/L**	Prep Date:	RunNo: **109634**
Client ID: **ICSA**	Batch ID: **R109634**	TestNo: **EPA 6010B**		Analysis Date: **7/25/2016**	SeqNo: **2383531**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Sodium	54.766	500									

Sample ID **ICSAB2**	SampType: **ICSAB**	TestCode: **6010_WDPG**	Units: **ug/L**	Prep Date:	RunNo: **109634**
Client ID: **ICSAB**	Batch ID: **R109634**	TestNo: **EPA 6010B**		Analysis Date: **7/25/2016**	SeqNo: **2383532**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Sodium	10677.687	500	10000	0	107	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

INTERNAL STANDARD SUMMARY

INTERNAL STANDARD: 160707C

Instrument ID: ICP-02

Yttrium

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	99.95	65-125	PASS
Standard2	ICAL	1	1.0079	100.79	65-125	PASS
Standard3	ICAL	1	1.0037	100.37	65-125	PASS
Standard4	ICAL	1	1	99.67	65-125	PASS
Standard5	ICAL	1	1.0024	100.24	65-125	PASS
Standard6	ICAL	1	0.97	97.48	65-125	PASS
Standard7	ICAL	1	0.95	95.16	65-125	PASS
ICV	ICV	1	0.97	96.66	65-125	PASS
ICB	ICB	1	0.98	98.5	65-125	PASS
LLICV	CCV1	1	0.98	98.41	65-125	PASS
ICSA1	ICSA	1	0.97	96.91	65-125	PASS
ICSAB1	ICSAB	1	0.81	80.71	65-125	PASS
CCV1	CCV	1	0.99	98.63	65-125	PASS
CCB1	CCB	1	1.025	102.51	65-125	PASS
LLCCV1	CCV2	1	1.021	102.08	65-125	PASS
ICSA2	ICSA	1	0.94	93.82	65-125	PASS
ICSA2	ICSA	1	0.94	94.24	65-125	PASS
ICSAB2	ICSAB	1	0.79	79.35	65-125	PASS
CCV2	CCV	1	0.92	91.51	65-125	PASS
CCB2	CCB	1	0.95	95.17	65-125	PASS
MB-58931	MBLK	1	1.072	107.21	65-125	PASS
CCV3	CCV	1	1.014	101.45	65-125	PASS
CCB3	CCB	1	1.052	105.19	65-125	PASS
LCS1-58931	LCS	1	1.13	113.25	65-125	PASS
N020221-004B	SAMP	1	1.081	108.1	65-125	PASS
N020221-004B	SAMP	5	1.052	105.23	65-125	PASS
N020221-004B-PS	PS	1	1.022	102.24	65-125	PASS
N020221-004B-MS1	MS	1	1.077	107.71	65-125	PASS
N020221-004B-MSD1	MSD	1	1.071	107.1	65-125	PASS
N020228-002B	SAMP	1	1.068	106.76	65-125	PASS
N020228-003B	SAMP	1	1.083	108.33	65-125	PASS
N020228-004B	SAMP	1	1.065	106.55	65-125	PASS
N020228-005B	SAMP	1	1.074	107.4	65-125	PASS
CCV4	CCV	1	1.023	102.33	65-125	PASS
CCB4	CCB	1	1.047	104.73	65-125	PASS
N020228-006B	SAMP	1	1.079	107.9	65-125	PASS
N020228-007B	SAMP	1	1.073	107.35	65-125	PASS
N020228-008B	SAMP	1	1.045	104.46	65-125	PASS
N020228-009B	SAMP	1	1.06	105.97	65-125	PASS
N020228-010B	SAMP	1	1.06	105.97	65-125	PASS

for 7/26/2016

INTERNAL STANDARD: 160707C

Instrument ID: ICP-02

Yttrium

Sample Name	Type	DF	Scandium, 1.0 mg/L			
			Reported Conc	%REC	Criteria	Comment
N020228-011B	SAMP	1	1.088	108.81	65-125	PASS
N020228-011B-MS1	MS	1	1.068	106.81	65-125	PASS
N020228-012B	SAMP	1	1.11	110.98	65-125	PASS
N020228-013B	SAMP	1	1.1	109.98	65-125	PASS
N020229-001B	SAMP	1	1.024	102.45	65-125	PASS
CCV5	CCV	1	1.091	109.11	65-125	PASS
CCB5	CCB	1	1.11	111.35	65-125	PASS
N020229-002B	SAMP	1	0.98	97.92	65-125	PASS
N020229-003B	SAMP	1	0.99	98.68	65-125	PASS
CCV6	CCV	1	1.054	105.43	65-125	PASS
CCB6	CCB	1	1.099	109.88	65-125	PASS
LLCCV2	CCV2	1	1.096	109.59	65-125	PASS
ICSA3	ICSA	1	1.088	108.8	65-125	PASS
ICSAB3	ICSAB	1	0.92	91.92	65-125	PASS

for 7/26/201

INTERNAL STANDARD: 160725C

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	1.06	106.05	65-125	PASS
Standard2	ICAL	1	1.039	103.86	65-125	PASS
Standard3	ICAL	1	1.021	102.13	65-125	PASS
Standard4	ICAL	1	1.0015	100.15	65-125	PASS
Standard5	ICAL	1	1.053	105.32	65-125	PASS
Standard6	ICAL	1	1.033	103.3	65-125	PASS
ICV	ICV	1	1.071	107.12	65-125	PASS
ICB	ICB	1	1.0066	100.66	65-125	PASS
ICSA1	ICSA	1	1.0085	100.85	65-125	PASS
ICSAB1	ICSAB	1	1.042	104.22	65-125	PASS
MB-59161	MBLK	1	1.0045	100.45	65-125	PASS
LCS2-59161	LCS	1	1.036	103.59	65-125	PASS
N020229-001B	SAMP	50	1.0043	100.43	65-125	PASS
N020229-002B	SAMP	50	0.99	99.25	65-125	PASS
N020229-003B	SAMP	50	1.0002	100.02	65-125	PASS
N020229-001B	SAMP	250	0.81	80.99	65-125	PASS
N020229-001B-PS	PS	50	0.82	82.18	65-125	PASS
N020229-001B-MS2	MS	50	0.82	82.24	65-125	PASS
N020229-001B-MSD2	MSD	50	0.81	81.49	65-125	PASS
CCV1	CCV	1	0.85	84.91	65-125	PASS
CCB1	CCB	1	0.83	82.83	65-125	PASS
ICSA2	ICSA	1	0.83	82.92	65-125	PASS
ICSAB2	ICSAB	1	0.87	87.23	65-125	PASS

SERIAL DILUTION/
POST DIGESTION SPIKE

ASSET Laboratories

ICP-Metals in Water

Dilution Test Summary

Work Order No.: N020229
Test Method: EPA 6010B
Analysis Date: 7/7/2016

Matrix: Groundwater
Batch No.: 58931

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
N020221-004B DT 5X	Calcium	ug/L	32852.43	PASS	32841.5	0.03%	10
N020221-004B DT 5X	Iron	ug/L	0	NA	4.278246	100.00%	10
N020221-004B DT 5X	Magnesium	ug/L	5204.002	FAIL	4674.59	11.33%	10

Note: NA - Not applicable

ASSET Laboratories

ICP-Metals in Water

Dilution Test Summary

Work Order No.: N020229
Test Method: EPA 6010B
Analysis Date: 7/25/2016

Matrix: Groundwater
Batch No.: 59161

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

Comments:

Analyzed By: Mary Claire Ignacio

Sample ID	Analyte	Units	Calc Val	OQual	SAMPRefVal	%DIFF	%DIFFlimit
N020229-001B DT 250X	Sodium	ug/L	691252	PASS	687588.4	0.53%	10

Note: NA - Not applicable

CLIENT: ARCADIS U.S., Inc. - California
Work Order: N020229
Project: PG&E Topock - PMP, RC000753.801A

ANALYTICAL QC SUMMARY REPORT

TestCode: 6010_WDPGEPPB

Sample ID	**N020221-004B-PS**	SampType: **PS**	TestCode: **6010_WDPG**	Units: **ug/L**	Prep Date:	RunNo: **109304**
Client ID:	**ZZZZZZ**	Batch ID: **58931**	TestNo: **EPA 6010B**	**EPA 3010A**	Analysis Date: **7/7/2016**	SeqNo: **2366419**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Calcium	43239.674	500	10000	32840	104	80	120				
Iron	104.453	20	100.0	4.278	100	80	120				
Magnesium	15294.850	100	10000	4675	106	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: N020229
Project: PG&E Topock - PMP, RC000753.801A

ANALYTICAL QC SUMMARY REPORT

TestCode: 6010_WDPGEPPB

Sample ID	**N020229-001B-PS**	SampType: **PS**	TestCode: **6010_WDPG**	Units: **ug/L**	Prep Date:	RunNo: **109634**
Client ID:	**ZZZZZZ**	Batch ID: **59161**	TestNo: **EPA 6010B**	**EPA 3010A**	Analysis Date: **7/25/2016**	SeqNo: **2383526**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Sodium	720345.881	25000	20000	687600	164	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
DO	Surrogate Diluted Out		Calculations are based on raw values		

MDL STUDY

METHOD DETECTION LIMIT 2016

Method Name: **Metals by ICP**
Method Number: EPA 200.7/ 6010
Analysis Date(s): 4/1/2016, 4/4/2016
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	0.0021	0.0020	0.0020	0.0020	0.0019	0.0020	0.0020	0.00125	0.00005062	**0.00016**	**0.0025**
Al	237.312	0.0272	0.0288	0.0288	0.0267	0.0269	0.0277	0.0276	0.025	0.00085451	**0.00269**	**0.050**
As	188.983	0.0054	0.0049	0.0037	0.0044	0.0060	0.0041	0.0048	0.005	0.00075065	**0.00236**	**0.010**
B	249.679	0.0735	0.0561	0.0463	0.0445	0.0396	0.0464	0.0398	0.05	0.01193786	**0.03752**	**0.10**
Ba	233.529	0.0007	0.0007	0.0006	0.0006	0.0006	0.0007	0.0007	0.000625	0.00003047	**0.00010**	**0.0025**
Be	313.104	0.0007	0.0006	0.0006	0.0006	0.0006	0.0006	0.0007	0.0005	0.00004386	**0.00014**	**0.0010**
Ca	227.546	0.0967	0.1086	0.0893	0.0864	0.0826	0.0978	0.0988	0.1	0.00880307	**0.02767**	**0.20**
Cd	214.437	0.0006	0.0006	0.0007	0.0006	0.0007	0.0006	0.0006	0.000313	0.00003910	**0.00012**	**0.0025**
Co	228.614	0.0011	0.0011	0.0010	0.0010	0.0009	0.0010	0.0011	0.00125	0.00005473	**0.00017**	**0.0025**
Cr	267.719	0.0004	0.0003	0.0004	0.0004	0.0004	0.0003	0.0004	0.0005	0.00004860	**0.00015**	**0.0010**
Cu	324.753	0.0013	0.0015	0.0015	0.0022	0.0022	0.0016	0.0015	0.0025	0.00034907	**0.00110**	**0.0050**
Fe	273.953	0.0115	0.0117	0.0112	0.0102	0.0105	0.0114	0.0114	0.01	0.00057502	**0.00181**	**0.020**
Mg	279.079	0.0227	0.0231	0.0204	0.0225	0.0221	0.0222	0.0250	0.025	0.00138863	**0.00436**	**0.10**
Mn	257.607	0.0013	0.0013	0.0013	0.0012	0.0012	0.0012	0.0012	0.00125	0.00004429	**0.00014**	**0.010**
Mo	202.03	0.0031	0.0032	0.0031	0.0030	0.0026	0.0029	0.0029	0.0025	0.00018274	**0.00057**	**0.0050**
Ni	231.604	0.0019	0.0020	0.0020	0.0022	0.0022	0.0021	0.0021	0.0025	0.00012429	**0.00039**	**0.0050**
Pb	220.351	0.0049	0.0049	0.0048	0.0044	0.0048	0.0048	0.0050	0.005	0.00018831	**0.00059**	**0.010**
Sb	206.836	0.0035	0.0038	0.0020	0.0034	0.0033	0.0032	0.0046	0.005	0.00076686	**0.00241**	**0.010**
Se	196.025	0.0017	0.0033	0.0025	0.0025	0.0015	0.0034	0.0025	0.005	0.00070697	**0.00222**	**0.010**
Sn	189.927	0.0051	0.0048	0.0052	0.0051	0.0044	0.0045	0.0050	0.005	0.00031282	**0.00098**	**0.010**
Ti	334.943	0.0011	0.0011	0.0011	0.0010	0.0011	0.0010	0.0010	0.00125	0.00005159	**0.00016**	**0.010**
Tl	190.794	0.0067	0.0060	0.0064	0.0047	0.0062	0.0067	0.0062	0.0075	0.00070505	**0.00222**	**0.015**
V	292.404	0.0007	0.0007	0.0007	0.0006	0.0006	0.0007	0.0007	0.00125	0.00006264	**0.00020**	**0.0025**
Zn	206.201	0.0024	0.0026	0.0024	0.0024	0.0024	0.0024	0.0033	0.0025	0.00034911	**0.00110**	**0.010**

EPA 6020
Dissolved

Metals Technical Batch Review Checklist (ARCUS02)

ASSET LABORATORIES - LAS VEGAS

FIRST LEVEL REVIEW:

QC Batch Number: 58934
ASSET #: N020229

Instrument ID: ICPMS-02
Analyst: CEI
Date Analyzed: 7/7/2016

Method:

[ ] EPA 6010B / 200.7
[X] EPA 6020 / 200.8
[ ] EPA 7470A / 7471A/245.1
[ ] 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					
Interference Check						
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					
Continuing Calibration						
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 ICVand CCV analysis.	X					
11. Do all calibration blanks (ICB and CCBs) meet criteria? (< PQL)	X					
12 Is low level check twice during 8 hr period or at end within ± 30% of expected value? (ICP/ICPMS only)	X					
Sample Information						
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			
QC Items						
22. IS are within control limits (70-125% for ICPMS).	X					
23. Method blank values are below the PQL .	X					
24. LCS compounds within control limits.	X					
25. MS/MSD, RPD's are within control limits	X					
Raw Data and Miscellaneous Information						
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					
Preliminary Report						
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:

	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 7/21/2016 Date: —

2nd Level Reviewer 7/25/2016 Date: ~

SAMPLE CALCULATION

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:

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 **N020229-002B** , the concentration in ug/L is calculated as follows:

Chromium , ug/L = 129.019 * 5 * (25/25)

Chromium , ug/L = 645.095

Reporting results in two significant figures,

Chromium , ug/L = 650

% RSD SUMMARY

PERCENT RSD SUMMARY: 160707B

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	6.72	15	PASS	0.11	3.51	15	PASS
Std2-0.5/5 ppb	ICAL	1	0.53	1.14	15	PASS	0.52	2.53	15	PASS
Std3-5/50 ppb	ICAL	1	5.18	2.64	15	PASS	5.14	0.63	15	PASS
Std4-10/100 ppb	ICAL	1	10.35	0.87	15	PASS	10.23	1.15	15	PASS
Std5-20/200 ppb	ICAL	1	20.58	0.77	15	PASS	20.46	0.37	15	PASS
Std6-40/400 ppb	ICAL	1	40.88	1.24	15	PASS	40.41	1.46	15	PASS
Std7-100/1000 ppb	ICAL	1	101.21	0.24	15	PASS	100.99	0.63	15	PASS
Std8-200/2000 ppb	ICAL	1	199.14	0.72	15	PASS	199.36	1.15	15	PASS
ICV	ICV	1	10.039	0.63	15	PASS	98.21	0.68	15	PASS
ICB	ICB	1	<0.000	N/A	15	<PQL	<0.000	N/A	15	<PQL
LLICV	CCV1	1	1.085	3.11	20	PASS	0.63	4.22	20	PASS
ICSA1	ICSA	1	0.21	4.1	15	PASS	<0.000	N/A	15	<PQL
ICSAB1	ICSAB	1	20.71	1.28	15	PASS	17.79	1.16	15	PASS
LLICV	CCV1	1	1.1	1.12	20	PASS	0.56	2.93	20	PASS
CCV1	CCV	1	20.66	1.0067	15	PASS	20.61	0.72	15	PASS
CCB1	CCB	1	<0.000	N/A	15	<PQL	<0.000	N/A	15	<PQL
CCV2	CCV	1	21.05	0.99	15	PASS	20.72	0.7	15	PASS
CCB2	CCB	1	<0.000	N/A	15	<PQL	<0.000	N/A	15	<PQL
CCV3	CCV	1	20.96	1.19	15	PASS	20.67	1.65	15	PASS
CCB3	CCB	1	0.00052	1077.4	15	<PQL	<0.000	N/A	15	<PQL
MB-58934	MBLK	1	<0.000	N/A	15	<PQL	<0.000	N/A	15	<PQL
LCS-58934	LCS	1	10.23	1.16	15	PASS	100.33	0.84	15	PASS
N020230-011B	SAMP	1	5.03	0.7	15	PASS	0.4	6.31	15	PASS
CCV4	CCV	1	20.81	1.39	15	PASS	20.69	1.22	15	PASS
CCB4	CCB	1	<0.000	N/A	15	<PQL	<0.000	N/A	15	<PQL
LLCCV1	CCV2	1	1.12	2.86	20	PASS	0.56	4.28	20	PASS
ICSA2	ICSA	1	0.22	3.66	15	PASS	<0.000	N/A	15	<PQL
ICSAB2	ICSAB	1	20.76	1.42	15	PASS	17.91	1.87	15	PASS
N020230-011B	SAMP	5	1.052	2.24	15	PASS	0.051	20.13	15	<PQL
N020230-011B-PS	PS	1	14.25	0.45	15	PASS	93.77	0.54	15	PASS
N020230-011B-MS	MS	1	14.38	0.1	15	PASS	94.58	0.18	15	PASS
N020230-011B-MSD	MSD	1	14.39	0.9	15	PASS	94.49	0.61	15	PASS
N020230-012B	SAMP	1	5.46	0.89	15	PASS	0.71	3.06	15	PASS
N020228-002B	SAMP	1	0.032	25.64	15	<PQL	1.8	2.43	15	PASS
N020228-003B	SAMP	1	0.025	3.35	15	PASS	2.29	2.19	15	PASS
N020228-004B	SAMP	1	0.018	28.66	15	<PQL	0.34	9.028	15	PASS
N020228-005B	SAMP	1	0.012	41.94	15	<PQL	0.6	4.22	15	PASS
N020228-006B	SAMP	1	0.015	9.85	15	PASS	9.13	1.054	15	PASS
CCV5	CCV	1	20.68	0.48	15	PASS	20.52	0.43	15	PASS
CCB5	CCB	1	<0.000	N/A	15	<PQL	<0.000	N/A	15	<PQL

PERCENT RSD SUMMARY: 160707B

Instrument ID: ICPMS-02

Sample Name	Type	DF	52 Cr [2]				55 Mn [2]			
			Conc. [ppb]	RSD	Criteria	Comment	Conc. [ppb]	RSD	Criteria	Comment
N020228-007B	SAMP	1	0.0061	66.14	15	<PQL	0.58	3.56	15	PASS
N020228-008B	SAMP	1	0.0033	69.9	15	<PQL	0.059	24.046	15	<PQL
N020228-009B	SAMP	1	0.0073	88.3	15	<PQL	0.37	7.025	15	PASS
N020228-010B	SAMP	1	<0.000	N/A	15	<PQL	124.18	0.48	15	PASS
N020228-011B	SAMP	1	0.038	136.91	15	<PQL	133.92	0.33	15	PASS
N020228-012B	SAMP	1	0.027	12.96	15	PASS	1.57	1.95	15	PASS
N020228-013B	SAMP	1	0.031	33.33	15	<PQL	1.063	2.29	15	PASS
N020229-001B	SAMP	1	0.27	3.68	15	PASS	186.0033	0.67	15	PASS
N020229-001B-MS	MS	1	9.65	0.99	15	PASS	271.11	1.069	15	PASS
N020229-002B	SAMP	1	587.13	0.52	15	PASS	11.82	0.34	15	PASS
CCV6	CCV	1	21.21	0.87	15	PASS	20.41	1.22	15	PASS
CCB6	CCB	1	0.016	39.15	15	<PQL	<0.000	N/A	15	<PQL
N020229-003B	SAMP	1	56.52	0.88	15	PASS	52.3	1.31	15	PASS
N020230-011B	SAMP	25	0.21	3.62	15	PASS	<0.000	N/A	15	<PQL
N020230-011B-PS	PS	5	3.18	1.21	15	PASS	20.38	0.54	15	PASS
N020230-011B-MS	MS	5	3.21	0.59	15	PASS	20.7	1.39	15	PASS
N020230-011B-MSD	MSD	5	3.2	1.95	15	PASS	20.81	0.34	15	PASS
N020229-001B	SAMP	5	0.048	25.36	15	<PQL	41.47	1.35	15	PASS
N020229-001B-MS	MS	5	2.062	2.51	15	PASS	60.89	0.66	15	PASS
N020229-002B	SAMP	5	129.019	0.96	15	PASS	2.59	1.69	15	PASS
N020229-003B	SAMP	5	12.27	0.73	15	PASS	11.5	0.91	15	PASS
N020229-003B	SAMP	25	2.55	0.51	15	PASS	2.37	0.63	15	PASS
~~CCV8~~ CCV7	CCV	1	20.88	0.36	15	PASS	20.6	0.55	15	PASS
~~CCB8~~ CCB7	CCB	1	<0.000	N/A	15	<PQL	<0.000	N/A	15	<PQL
LLCCV2	CCV2	1	1.13	1.0071	20	PASS	0.55	2.82	20	PASS
ICSA3	ICSA	1	0.2	7.27	15	PASS	<0.000	N/A	15	<PQL
ICSAB3	ICSAB	1	20.87	1.067	15	PASS	17.99	1	15	PASS



7/21/2016

ANALYSIS RUN LOG

INJECTION LOG: 160707B

Instrument ID: ICPMS-02

Data File	Sample Name	Type	DF	Acq. Date-Time
B0707001.D	RINSE	RINSE	1	07/07/16 8:14 PM
B0707002.D	Cal Blank	IBLK	1	07/07/16 8:20 PM
B0707003.D	Std1-0.1/1 ppb	ICAL	1	07/07/16 8:26 PM
B0707004.D	Std2-0.5/5 ppb	ICAL	1	07/07/16 8:31 PM
B0707005.D	Std3-5/50 ppb	ICAL	1	07/07/16 8:37 PM
B0707006.D	Std4-10/100 ppb	ICAL	1	07/07/16 8:42 PM
B0707007.D	Std5-20/200 ppb	ICAL	1	07/07/16 8:48 PM
B0707008.D	Std6-40/400 ppb	ICAL	1	07/07/16 8:53 PM
B0707009.D	Std7-100/1000 ppb	ICAL	1	07/07/16 8:59 PM
B0707010.D	Std8-200/2000 ppb	ICAL	1	07/07/16 9:04 PM
B0707011.D	ICV	ICV	1	07/07/16 9:10 PM
B0707012.D	ICB	ICB	1	07/07/16 9:15 PM
B0707013.D	LLICV	CCV1	1	07/07/16 9:20 PM
B0707014.D	ICSA1	ICSA	1	07/07/16 9:26 PM
B0707015.D	ICSAB1	ICSAB	1	07/07/16 9:32 PM
B0707016.D	LLICV	CCV1	1	07/07/16 9:37 PM
B0707017.D	MB-58933	MBLK	1	07/07/16 9:43 PM
B0707018.D	LCS-58933	LCS	1	07/07/16 9:48 PM
B0707019.D	N020231-001B	SAMP	1	07/07/16 9:54 PM
B0707020.D	N020231-001B	SAMP	5	07/07/16 9:59 PM
B0707021.D	N020231-001B-PS	PS	1	07/07/16 10:05 PM
B0707022.D	N020231-001B-MS	MS	1	07/07/16 10:11 PM
B0707023.D	N020231-001B-MSD	MSD	1	07/07/16 10:16 PM
B0707024.D	N020231-002B	SAMP	1	07/07/16 10:22 PM
B0707025.D	N020231-003B	SAMP	1	07/07/16 10:27 PM
B0707026.D	N020231-004B	SAMP	1	07/07/16 10:33 PM
B0707027.D	CCV1	CCV	1	07/07/16 10:38 PM
B0707028.D	CCB1	CCB	1	07/07/16 10:44 PM
B0707029.D	MB-58933	MBLK	1	07/07/16 10:49 PM
B0707030.D	LCS-58933	LCS	1	07/07/16 10:55 PM
B0707031.D	N020231-001B	SAMP	1	07/07/16 11:00 PM
B0707032.D	N020231-001B	SAMP	5	07/07/16 11:06 PM
B0707033.D	N020231-001B-PS	PS	1	07/07/16 11:11 PM
B0707034.D	N020231-001B-MS	MS	1	07/07/16 11:17 PM
B0707035.D	N020231-001B-MSD	MSD	1	07/07/16 11:23 PM
B0707036.D	N020231-002B	SAMP	1	07/07/16 11:28 PM
B0707037.D	N020231-003B	SAMP	1	07/07/16 11:34 PM
B0707038.D	N020231-004B	SAMP	1	07/07/16 11:39 PM
B0707039.D	CCV2	CCV	1	07/07/16 11:45 PM
B0707040.D	CCB2	CCB	1	07/07/16 11:50 PM
B0707041.D	N020231-005B	SAMP	1	07/07/16 11:56 PM
B0707042.D	N020231-006B	SAMP	1	07/08/16 12:01 AM

INJECTION LOG: 160707B

Instrument ID: ICPMS-02

Data File	Sample Name	Type	DF	Acq. Date-Time
B0707043.D	N020231-007B	SAMP	1	07/08/16 12:07 AM
B0707044.D	N020231-008B	SAMP	1	07/08/16 12:12 AM
B0707045.D	N020231-009B	SAMP	1	07/08/16 12:18 AM
B0707046.D	N020231-010B	SAMP	1	07/08/16 12:24 AM
B0707047.D	N020231-011B	SAMP	1	07/08/16 12:29 AM
B0707048.D	N020231-011B-MS	MS	1	07/08/16 12:35 AM
B0707049.D	N020230-001B	SAMP	1	07/08/16 12:40 AM
B0707050.D	N020230-002B	SAMP	1	07/08/16 12:46 AM
B0707051.D	CCV3	CCV	1	07/08/16 12:51 AM
B0707052.D	CCB3	CCB	1	07/08/16 12:57 AM
B0707053.D	N020230-003B	SAMP	1	07/08/16 1:02 AM
B0707054.D	N020230-004B	SAMP	1	07/08/16 1:08 AM
B0707055.D	N020230-006B	SAMP	1	07/08/16 1:13 AM
B0707056.D	N020230-007B	SAMP	1	07/08/16 1:19 AM
B0707057.D	N020230-008B	SAMP	1	07/08/16 1:24 AM
B0707058.D	N020230-009B	SAMP	1	07/08/16 1:30 AM
B0707059.D	N020230-010B	SAMP	1	07/08/16 1:36 AM
B0707060.D	MB-58934	MBLK	1	07/08/16 1:41 AM
B0707061.D	LCS-58934	LCS	1	07/08/16 1:47 AM
B0707062.D	N020230-011B	SAMP	1	07/08/16 1:52 AM
B0707063.D	CCV4	CCV	1	07/08/16 1:58 AM
B0707064.D	CCB4	CCB	1	07/08/16 2:03 AM
B0707065.D	LLCCV1	CCV2	1	07/08/16 2:09 AM
B0707066.D	ICSA2	ICSA	1	07/08/16 2:14 AM
B0707067.D	ICSAB2	ICSAB	1	07/08/16 2:20 AM
B0707068.D	N020230-011B	SAMP	5	07/08/16 2:25 AM
B0707069.D	N020230-011B-PS	PS	1	07/08/16 2:31 AM
B0707070.D	N020230-011B-MS	MS	1	07/08/16 2:36 AM
B0707071.D	N020230-011B-MSD	MSD	1	07/08/16 2:42 AM
B0707072.D	N020230-012B	SAMP	1	07/08/16 2:48 AM
B0707073.D	N020228-002B	SAMP	1	07/08/16 2:53 AM
B0707074.D	N020228-003B	SAMP	1	07/08/16 2:59 AM
B0707075.D	N020228-004B	SAMP	1	07/08/16 3:04 AM
B0707076.D	N020228-005B	SAMP	1	07/08/16 3:10 AM
B0707077.D	N020228-006B	SAMP	1	07/08/16 3:15 AM
B0707078.D	CCV5	CCV	1	07/08/16 3:21 AM
B0707079.D	CCB5	CCB	1	07/08/16 3:27 AM
B0707080.D	N020228-007B	SAMP	1	07/08/16 3:32 AM
B0707081.D	N020228-008B	SAMP	1	07/08/16 3:38 AM
B0707082.D	N020228-009B	SAMP	1	07/08/16 3:43 AM
B0707083.D	N020228-010B	SAMP	1	07/08/16 3:49 AM
B0707084.D	N020228-011B	SAMP	1	07/08/16 3:54 AM

INJECTION LOG: 160707B

Instrument ID: ICPMS-02

Data File	Sample Name	Type	DF	Acq. Date-Time
B0707085.D	N020228-012B	SAMP	1	07/08/16 4:00 AM
B0707086.D	N020228-013B	SAMP	1	07/08/16 4:05 AM
B0707087.D	N020229-001B	SAMP	1	07/08/16 4:11 AM
B0707088.D	N020229-001B-MS	MS	1	07/08/16 4:16 AM
B0707089.D	N020229-002B	SAMP	1	07/08/16 4:22 AM
B0707090.D	CCV6	CCV	1	07/08/16 4:28 AM
B0707091.D	CCB6	CCB	1	07/08/16 4:33 AM
B0707092.D	N020229-003B	SAMP	1	07/08/16 4:39 AM
B0707093.D	N020230-011B	SAMP	25	07/08/16 4:44 AM
B0707094.D	N020230-011B-PS	PS	5	07/08/16 4:50 AM
B0707095.D	N020230-011B-MS	MS	5	07/08/16 4:55 AM
B0707096.D	N020230-011B-MSD	MSD	5	07/08/16 5:01 AM
B0707097.D	N020229-001B	SAMP	5	07/08/16 5:06 AM
B0707098.D	N020229-001B-MS	MS	5	07/08/16 5:12 AM
B0707099.D	N020229-002B	SAMP	5	07/08/16 5:18 AM
B0707100.D	N020229-003B	SAMP	5	07/08/16 5:23 AM
B0707101.D	N020229-003B	SAMP	25	07/08/16 5:29 AM
B0707102.D	~~CCV8~~ CCV7	CCV	1	07/08/16 5:34 AM
B0707103.D	~~CCB8~~ CCB7	CCB	1	07/08/16 5:40 AM
B0707104.D	LLCCV2	CCV2	1	07/08/16 5:45 AM
B0707105.D	ICSA3	ICSA	1	07/08/16 5:51 AM
B0707106.D	ICSAB3	ICSAB	1	07/08/16 5:56 AM
B0707107.D	RINSE	RINSE	1	07/08/16 6:02 AM
B0707108.D	RINSE	RINSE	1	07/08/16 6:07 AM

7/21/2016

SAMPLE PREPARATION LOG

ASSET Laboratories

PREP BATCH REPORT

Prep Start Date: **7/7/2016 2:30:00 P**
Prep End Date: **7/7/2016 7:00:00 P**
Prep Batch **58934** Prep Code: **3010_W_MSDI**

Reviewed/ Date: _____
Initials/ Date: CI 7/21/2016
Technician **Claire Ignacio**

Prep Factor Units	Temp. (°C):	Location:
mL / mL	**94.6**	**02-22**

Sample ID	Matrix	pH	SampAmt	3 Replicates	Sol Added	Sol Recov	Fin Vol	factor	Clean Up Code	TURB Check
LCS-58934	Aqueous		25	☐	0	0	25	1.000		
MB-58934	Aqueous		25	☐	0	0	25	1.000		
N020228-002B	Groundwater	<2	25	☐	0	0	25	1.000		
N020228-003B	Groundwater	<2	25	☐	0	0	25	1.000		
N020228-004B	Groundwater	<2	25	☐	0	0	25	1.000		
N020228-005B	Groundwater	<2	25	☐	0	0	25	1.000		
N020228-006B	Groundwater	<2	25	☐	0	0	25	1.000		
N020228-007B	Groundwater	<2	25	☐	0	0	25	1.000		
N020228-008B	Groundwater	<2	25	☐	0	0	25	1.000		
N020228-009B	Groundwater	<2	25	☐	0	0	25	1.000		
N020228-010B	Groundwater	<2	25	☐	0	0	25	1.000		
N020228-011B	Groundwater	<2	25	☐	0	0	25	1.000		
N020228-012B	Groundwater	<2	25	☐	0	0	25	1.000		
N020228-013B	Groundwater	<2	25	☐	0	0	25	1.000		

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

Number	Reagent Name
8441	HYDROCHLORIC ACID
8442	NITRIC ACID

Spk ID	Spike Name	SampType	AmtAdd
2MWST-160201	ICV/MS/MSD/LCS/LCSD Solution B		0.25
2MWST-160606	ICV/MS/MSD/LCS/LCSD Solution A		0.25
2MWST-160606	ICV/MS/MSD/LCS/LCSD Solution C		0.25
2MWST-160606	ICV/MS/MSD/LCS/LCSD Solution D		0.25

ASSET Laboratories

PREP BATCH REPORT

Prep Start Date: **7/7/2016 2:30:00 P**
Prep End Date: **7/7/2016 7:00:00 P**
Prep Batch **58934** Prep Code: **3010_W_MSDI**

Reviewed/ Date: _____
Initials/ Date: 7/21/2016
Technician **Claire Ignacio**

Prep Factor Units	Temp. (°C):	Location:
mL / mL	**94.6**	**02-22**

Sample ID	Matrix	pH	SampAmt	3 Replicates	Sol Added	Sol Recov	Fin Vol	factor	Clean Up Code	TURB Check
N020229-001B	Groundwater	<2	25	☐	0	0	25	1.000		
N020229-001B-MS	Groundwater	<2	25	☐	0	0	25	1.000		
N020229-002B	Groundwater	<2	25	☐	0	0	25	1.000		
N020229-003B	Groundwater	<2	25	☐	0	0	25	1.000		
N020230-011B	Groundwater	<2	25	☐	0	0	25	1.000		
N020230-011B-MS	Groundwater	<2	25	☐	0	0	25	1.000		
N020230-011B-MS	Groundwater	<2	25	☐	0	0	25	1.000		
N020230-012B	Groundwater	<2	25	☐	0	0	25	1.000		

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

Number	Reagent Name
8441	HYDROCHLORIC ACID
8442	NITRIC ACID

Spk ID	Spike Name	SampType	AmtAdd
2MWST-160201	ICV/MS/MSD/LCS/LCSD Solution B		0.25
2MWST-160606	ICV/MS/MSD/LCS/LCSD Solution A		0.25
2MWST-160606	ICV/MS/MSD/LCS/LCSD Solution C		0.25
2MWST-160606	ICV/MS/MSD/LCS/LCSD Solution D		0.25

INSTRUMENT TUNING CHECK

QC Tune Report

Data File: C:\ICPMH\1\7500\QCTUNE.D
Date Acquired: 7 Jul 2016 08:57:08 am
Operator:
Misc Info:
Vial Number: 0
Current Method: C:\ICPMH\1\METHODS\TuneCHK.m

Minimum Response(CPS)

Element	Actual	Required	Flag
9 Be	247487.00	0.00	
24 Mg	993266.00	0.00	
25 Mg	132225.00	0.00	
26 Mg	157331.00	0.00	
59 Co	1755290.00	0.00	
115 In	2662140.00	0.00	
206 Pb	684810.00	0.00	
207 Pb	596858.00	0.00	
208 Pb	1463320.00	0.00	

RSD (%)

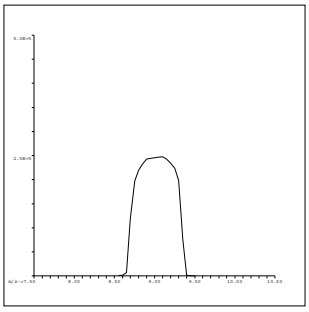
Element	Actual	Required	Flag
9 Be	0.42	5.00	
24 Mg	0.53	5.00	
25 Mg	0.34	5.00	
26 Mg	0.38	5.00	
59 Co	1.68	5.00	
115 In	0.42	5.00	
206 Pb	0.54	5.00	
207 Pb	0.75	5.00	
208 Pb	1.16	5.00	

Ion Ratio

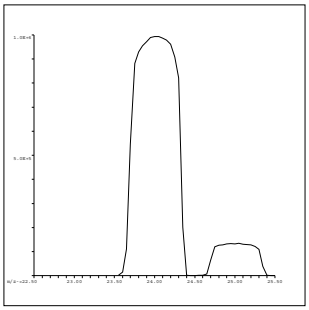
Element	Actual	Required	Flag
9 Be			
24 Mg			
25 Mg			
26 Mg			
59 Co			
115 In			
206 Pb			
207 Pb			
208 Pb			

Maximum Bkg. Count(CPS)

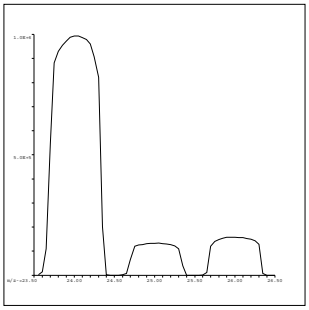
Element	Actual	Required	Flag



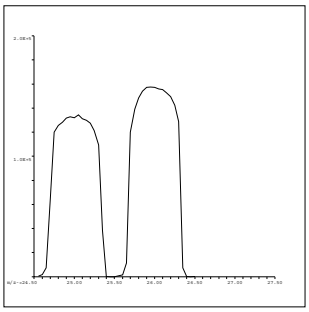
9 Be
Mass Calib.
Actual: 9.05
Required: 8.90-9.10
Flag:
Peak Width
Actual: 0.65
Required: 0.75
Flag:



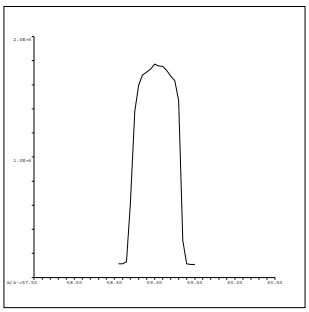
24 Mg
Mass Calib.
Actual: 24.05
Required: 23.90-24.10
Flag:
Peak Width
Actual: 0.70
Required: 0.75
Flag:



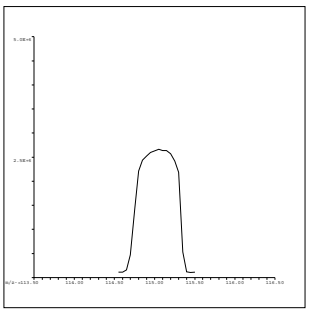
25 Mg
Mass Calib.
Actual: 25.00
Required: 24.90-25.10
Flag:
Peak Width
Actual: 0.70
Required: 0.75
Flag:



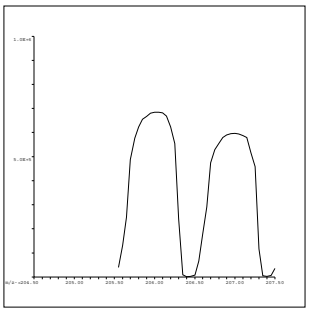
26 Mg
Mass Calib.
Actual: 26.00
Required: 25.90-26.10
Flag:
Peak Width
Actual: 0.65
Required: 0.75
Flag:



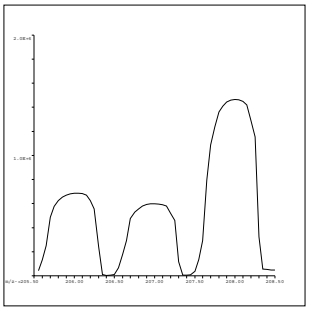
59 Co
Mass Calib.
Actual: 59.05
Required: 58.90-59.10
Flag:
Peak Width
Actual: 0.65
Required: 0.75
Flag:



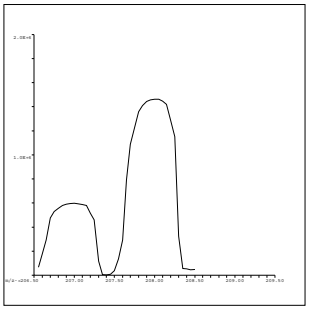
115 In
Mass Calib.
Actual: 115.05
Required: 114.90-115.10
Flag:
Peak Width
Actual: 0.65
Required: 0.75
Flag:



206 Pb
Mass Calib.
Actual: 206.05
Required: 205.90-206.10
Flag:
Peak Width
Actual: 0.70
Required: 0.75
Flag:



207 Pb
Mass Calib.
Actual: 207.00
Required: 206.90-207.10
Flag:
Peak Width
Actual: 0.75
Required: 0.75
Flag:



208 Pb
Mass Calib.
Actual: 208.00
Required: 207.90-208.10
Flag:
Peak Width
Actual: 0.70
Required: 0.75
Flag:

QC Tune Result:Pass

INITIAL CALIBRATION DATA SUMMARY

INITIAL CALIBRATION SUMMARY: 160707B

Instrument ID: ICPMS-02

Analyte	Data File	B0707002.D	B0707004.D	B0707005.D	B0707006.D	B0707007.D	B0707008.D	B0707009.D	B0707010.D	
	Acq. Date-Time	07/07/2016 08:20 PM	07/07/2016 08:31 PM	07/07/2016 08:37 PM	07/07/2016 08:42 PM	07/07/2016 08:48 PM	07/07/2016 08:53 PM	07/07/2016 08:59 PM	07/07/2016 09:04 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	318490.6	325036.4	320907.4	321311.2	319065.2	322668.5	317505.2	316770.7	
55 Mn [2]	CPS	594.5	7567.8	69168.6	137185.2	271852.5	542520.2	1333232.7	2625330.5	1.0000
52 Cr [2]	CPS	1176.6	14153	126646.6	252270.6	497170.1	997374.5	2428099.8	4765367.2	1.0000

Standard Code
ICAL: 2MSST-151207C
ICAL: 2MSST-151207D
ICAL: 2MWST-160606G
IS Mix: 2MWST-160606A

Calibration Acceptance Criteria: > 0.995 Correlation

INITIAL CALIBRATION AND CONTINUING CALIBRATION VERIFICATION SUMMARY

CLIENT: ARCADIS U.S., Inc. - California
Work Order: N020229
Project: PG&E Topock - PMP, RC000753.801A

ANALYTICAL QC SUMMARY REPORT

TestCode: 6020_DIS

Sample ID: **ICV** SampType: **ICV** TestCode: **6020_DIS** Units: **µg/L** Prep Date: RunNo: **109344**
Client ID: **ICV** Batch ID: **R109344** TestNo: **EPA 6020** Analysis Date: **7/7/2016** SeqNo: **2367739**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Manganese	98.212	0.50	100.0	0	98.2	90	110				

Sample ID: **LLICV** SampType: **CCV1** TestCode: **6020_DIS** Units: **µg/L** Prep Date: RunNo: **109344**
Client ID: **ZZZZZZ** Batch ID: **R109344** TestNo: **EPA 6020** Analysis Date: **7/7/2016** SeqNo: **2367744**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Manganese	0.561	0.50	0.5000	0	112	80	120				

Sample ID: **CCV1** SampType: **CCV** TestCode: **6020_DIS** Units: **µg/L** Prep Date: RunNo: **109344**
Client ID: **CCV** Batch ID: **R109344** TestNo: **EPA 6020** Analysis Date: **7/7/2016** SeqNo: **2367755**

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: **CCV2** SampType: **CCV** TestCode: **6020_DIS** Units: **µg/L** Prep Date: RunNo: **109344**
Client ID: **CCV** Batch ID: **R109344** TestNo: **EPA 6020** Analysis Date: **7/7/2016** SeqNo: **2367767**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Manganese	20.723	0.50	20.00	0	104	90	110				

Sample ID: **CCV3** SampType: **CCV** TestCode: **6020_DIS** Units: **µg/L** Prep Date: RunNo: **109344**
Client ID: **CCV** Batch ID: **R109344** TestNo: **EPA 6020** Analysis Date: **7/8/2016** SeqNo: **2367779**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Manganese	20.671	0.50	20.00	0	103	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: N020229
Project: PG&E Topock - PMP, RC000753.801A

ANALYTICAL QC SUMMARY REPORT

TestCode: 6020_DIS

Sample ID: **CCV4**	SampType: **CCV**	TestCode: **6020_DIS**	Units: **µg/L**	Prep Date:	RunNo: **109344**
Client ID: **CCV**	Batch ID: **R109344**	TestNo: **EPA 6020**		Analysis Date: **7/8/2016**	SeqNo: **2367791**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Manganese	20.691	0.50	20.00	0	103	90	110				

Sample ID: **LLCCV1**	SampType: **CCV2**	TestCode: **6020_DIS**	Units: **µg/L**	Prep Date:	RunNo: **109344**
Client ID: **ZZZZZZ**	Batch ID: **R109344**	TestNo: **EPA 6020**		Analysis Date: **7/8/2016**	SeqNo: **2367793**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Manganese	0.560	0.50	0.5000	0	112	70	130				

Sample ID: **CCV5**	SampType: **CCV**	TestCode: **6020_DIS**	Units: **µg/L**	Prep Date:	RunNo: **109344**
Client ID: **CCV**	Batch ID: **R109344**	TestNo: **EPA 6020**		Analysis Date: **7/8/2016**	SeqNo: **2367806**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Manganese	20.524	0.50	20.00	0	103	90	110				

Sample ID: **CCV6**	SampType: **CCV**	TestCode: **6020_DIS**	Units: **µg/L**	Prep Date:	RunNo: **109344**
Client ID: **CCV**	Batch ID: **R109344**	TestNo: **EPA 6020**		Analysis Date: **7/8/2016**	SeqNo: **2367818**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Manganese	20.411	0.50	20.00	0	102	90	110				

Sample ID: **CCV7**	SampType: **CCV**	TestCode: **6020_DIS**	Units: **µg/L**	Prep Date:	RunNo: **109344**
Client ID: **CCV**	Batch ID: **R109344**	TestNo: **EPA 6020**		Analysis Date: **7/8/2016**	SeqNo: **2367830**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Manganese	20.603	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
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: ARCADIS U.S., Inc. - California
Work Order: N020229
Project: PG&E Topock - PMP, RC000753.801A

ANALYTICAL QC SUMMARY REPORT

TestCode: 6020_DIS

Sample ID: **LLCCV2**	SampType: **CCV2**	TestCode: **6020_DIS**	Units: **µg/L**	Prep Date:	RunNo: **109344**
Client ID: **ZZZZZZ**	Batch ID: **R109344**	TestNo: **EPA 6020**		Analysis Date: **7/8/2016**	SeqNo: **2367832**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Manganese	0.555	0.50	0.5000	0	111	70	130				

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis 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: N020229
Project: PG&E Topock - PMP, RC000753.801A

ANALYTICAL QC SUMMARY REPORT

TestCode: 6020DIS_CrPGE

Sample ID: **ICV**	SampType: **ICV**	TestCode: **6020DIS_CrP**	Units: **µg/L**	Prep Date:	RunNo: **109332**
Client ID: **ICV**	Batch ID: **R109332**	TestNo: **EPA 6020**		Analysis Date: **7/7/2016**	SeqNo: **2367164**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium	10.039	1.0	10.00	0	100	90	110				

Sample ID: **LLICV**	SampType: **CCV1**	TestCode: **6020DIS_CrP**	Units: **µg/L**	Prep Date:	RunNo: **109332**
Client ID: **ZZZZZZ**	Batch ID: **R109332**	TestNo: **EPA 6020**		Analysis Date: **7/7/2016**	SeqNo: **2367169**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium	1.104	1.0	1.000	0	110	80	120				

Sample ID: **CCV1**	SampType: **CCV**	TestCode: **6020DIS_CrP**	Units: **µg/L**	Prep Date:	RunNo: **109332**
Client ID: **CCV**	Batch ID: **R109332**	TestNo: **EPA 6020**		Analysis Date: **7/7/2016**	SeqNo: **2367180**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium	20.656	1.0	20.00	0	103	90	110				

Sample ID: **CCV2**	SampType: **CCV**	TestCode: **6020DIS_CrP**	Units: **µg/L**	Prep Date:	RunNo: **109332**
Client ID: **CCV**	Batch ID: **R109332**	TestNo: **EPA 6020**		Analysis Date: **7/7/2016**	SeqNo: **2367192**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium	21.050	1.0	20.00	0	105	90	110				

Sample ID: **CCV3**	SampType: **CCV**	TestCode: **6020DIS_CrP**	Units: **µg/L**	Prep Date:	RunNo: **109332**
Client ID: **CCV**	Batch ID: **R109332**	TestNo: **EPA 6020**		Analysis Date: **7/8/2016**	SeqNo: **2367204**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium	20.964	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
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: ARCADIS U.S., Inc. - California
Work Order: N020229
Project: PG&E Topock - PMP, RC000753.801A

ANALYTICAL QC SUMMARY REPORT

TestCode: 6020DIS_CrPGE

Sample ID: **CCV4**	SampType: **CCV**	TestCode: **6020DIS_CrP**	Units: **µg/L**	Prep Date:	RunNo: **109332**
Client ID: **CCV**	Batch ID: **R109332**	TestNo: **EPA 6020**		Analysis Date: **7/8/2016**	SeqNo: **2367216**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium	20.808	1.0	20.00	0	104	90	110				

Sample ID: **LLCCV1**	SampType: **CCV2**	TestCode: **6020DIS_CrP**	Units: **µg/L**	Prep Date:	RunNo: **109332**
Client ID: **ZZZZZZ**	Batch ID: **R109332**	TestNo: **EPA 6020**		Analysis Date: **7/8/2016**	SeqNo: **2367218**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium	1.117	1.0	1.000	0	112	70	130				

Sample ID: **CCV5**	SampType: **CCV**	TestCode: **6020DIS_CrP**	Units: **µg/L**	Prep Date:	RunNo: **109332**
Client ID: **CCV**	Batch ID: **R109332**	TestNo: **EPA 6020**		Analysis Date: **7/8/2016**	SeqNo: **2367710**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium	20.682	1.0	20.00	0	103	90	110				

Sample ID: **CCV6**	SampType: **CCV**	TestCode: **6020DIS_CrP**	Units: **µg/L**	Prep Date:	RunNo: **109332**
Client ID: **CCV**	Batch ID: **R109332**	TestNo: **EPA 6020**		Analysis Date: **7/8/2016**	SeqNo: **2367722**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium	21.213	1.0	20.00	0	106	90	110				

Sample ID: **CCV7**	SampType: **CCV**	TestCode: **6020DIS_CrP**	Units: **µg/L**	Prep Date:	RunNo: **109332**
Client ID: **CCV**	Batch ID: **R109332**	TestNo: **EPA 6020**		Analysis Date: **7/8/2016**	SeqNo: **2367734**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium	20.876	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: N020229
Project: PG&E Topock - PMP, RC000753.801A

ANALYTICAL QC SUMMARY REPORT

TestCode: 6020DIS_CrPGE

Sample ID: **LLCCV2** SampType: **CCV2** TestCode: **6020DIS_CrP** Units: **µg/L** Prep Date: RunNo: **109332**
Client ID: **ZZZZZZ** Batch ID: **R109332** TestNo: **EPA 6020** Analysis Date: **7/8/2016** SeqNo: **2367736**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium	1.133	1.0	1.000	0	113	70	130				

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis 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

CLIENT: ARCADIS U.S., Inc. - California
Work Order: N020229
Project: PG&E Topock - PMP, RC000753.801A

ANALYTICAL QC SUMMARY REPORT

TestCode: 6020_DIS

Sample ID: **ICB**	SampType: **ICB**	TestCode: **6020_DIS**	Units: **µg/L**	Prep Date:	RunNo: **109344**
Client ID: **ICB**	Batch ID: **R109344**	TestNo: **EPA 6020**		Analysis Date: **7/7/2016**	SeqNo: **2367740**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Manganese	ND	0.50									

Sample ID: **CCB1**	SampType: **CCB**	TestCode: **6020_DIS**	Units: **µg/L**	Prep Date:	RunNo: **109344**
Client ID: **CCB**	Batch ID: **R109344**	TestNo: **EPA 6020**		Analysis Date: **7/7/2016**	SeqNo: **2367756**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Manganese	ND	0.50									

Sample ID: **CCB2**	SampType: **CCB**	TestCode: **6020_DIS**	Units: **µg/L**	Prep Date:	RunNo: **109344**
Client ID: **CCB**	Batch ID: **R109344**	TestNo: **EPA 6020**		Analysis Date: **7/7/2016**	SeqNo: **2367768**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Manganese	ND	0.50									

Sample ID: **CCB3**	SampType: **CCB**	TestCode: **6020_DIS**	Units: **µg/L**	Prep Date:	RunNo: **109344**
Client ID: **CCB**	Batch ID: **R109344**	TestNo: **EPA 6020**		Analysis Date: **7/8/2016**	SeqNo: **2367780**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Manganese	ND	0.50									

Sample ID: **CCB4**	SampType: **CCB**	TestCode: **6020_DIS**	Units: **µg/L**	Prep Date:	RunNo: **109344**
Client ID: **CCB**	Batch ID: **R109344**	TestNo: **EPA 6020**		Analysis Date: **7/8/2016**	SeqNo: **2367792**

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
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: ARCADIS U.S., Inc. - California
Work Order: N020229
Project: PG&E Topock - PMP, RC000753.801A

ANALYTICAL QC SUMMARY REPORT

TestCode: 6020_DIS

Sample ID: **CCB5**	SampType: **CCB**	TestCode: **6020_DIS**	Units: **µg/L**	Prep Date:	RunNo: **109344**
Client ID: **CCB**	Batch ID: **R109344**	TestNo: **EPA 6020**		Analysis Date: **7/8/2016**	SeqNo: **2367807**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Manganese	ND	0.50									

Sample ID: **CCB6**	SampType: **CCB**	TestCode: **6020_DIS**	Units: **µg/L**	Prep Date:	RunNo: **109344**
Client ID: **CCB**	Batch ID: **R109344**	TestNo: **EPA 6020**		Analysis Date: **7/8/2016**	SeqNo: **2367819**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Manganese	ND	0.50									

Sample ID: **CCB7**	SampType: **CCB**	TestCode: **6020_DIS**	Units: **µg/L**	Prep Date:	RunNo: **109344**
Client ID: **CCB**	Batch ID: **R109344**	TestNo: **EPA 6020**		Analysis Date: **7/8/2016**	SeqNo: **2367831**

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
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: ARCADIS U.S., Inc. - California
Work Order: N020229
Project: PG&E Topock - PMP, RC000753.801A

ANALYTICAL QC SUMMARY REPORT

TestCode: 6020DIS_CrPGE

Sample ID: **ICB**	SampType: **ICB**	TestCode: **6020DIS_CrP**	Units: **µg/L**	Prep Date:	RunNo: **109332**
Client ID: **ICB**	Batch ID: **R109332**	TestNo: **EPA 6020**		Analysis Date: **7/7/2016**	SeqNo: **2367165**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium	ND	1.0									

Sample ID: **CCB1**	SampType: **CCB**	TestCode: **6020DIS_CrP**	Units: **µg/L**	Prep Date:	RunNo: **109332**
Client ID: **CCB**	Batch ID: **R109332**	TestNo: **EPA 6020**		Analysis Date: **7/7/2016**	SeqNo: **2367181**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium	ND	1.0									

Sample ID: **CCB2**	SampType: **CCB**	TestCode: **6020DIS_CrP**	Units: **µg/L**	Prep Date:	RunNo: **109332**
Client ID: **CCB**	Batch ID: **R109332**	TestNo: **EPA 6020**		Analysis Date: **7/7/2016**	SeqNo: **2367193**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium	ND	1.0									

Sample ID: **CCB3**	SampType: **CCB**	TestCode: **6020DIS_CrP**	Units: **µg/L**	Prep Date:	RunNo: **109332**
Client ID: **CCB**	Batch ID: **R109332**	TestNo: **EPA 6020**		Analysis Date: **7/8/2016**	SeqNo: **2367205**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium	ND	1.0									

Sample ID: **CCB4**	SampType: **CCB**	TestCode: **6020DIS_CrP**	Units: **µg/L**	Prep Date:	RunNo: **109332**
Client ID: **CCB**	Batch ID: **R109332**	TestNo: **EPA 6020**		Analysis Date: **7/8/2016**	SeqNo: **2367217**

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
- 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: N020229
Project: PG&E Topock - PMP, RC000753.801A

ANALYTICAL QC SUMMARY REPORT

TestCode: 6020DIS_CrPGE

Sample ID: **CCB5**	SampType: **CCB**	TestCode: **6020DIS_CrP**	Units: **µg/L**	Prep Date:	RunNo: **109332**
Client ID: **CCB**	Batch ID: **R109332**	TestNo: **EPA 6020**		Analysis Date: **7/8/2016**	SeqNo: **2367711**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium	ND	1.0									

Sample ID: **CCB6**	SampType: **CCB**	TestCode: **6020DIS_CrP**	Units: **µg/L**	Prep Date:	RunNo: **109332**
Client ID: **CCB**	Batch ID: **R109332**	TestNo: **EPA 6020**		Analysis Date: **7/8/2016**	SeqNo: **2367723**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium	ND	1.0									

Sample ID: **CCB7**	SampType: **CCB**	TestCode: **6020DIS_CrP**	Units: **µg/L**	Prep Date:	RunNo: **109332**
Client ID: **CCB**	Batch ID: **R109332**	TestNo: **EPA 6020**		Analysis Date: **7/8/2016**	SeqNo: **2367735**

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)

CLIENT: ARCADIS U.S., Inc. - California
Work Order: N020229
Project: PG&E Topock - PMP, RC000753.0801

ANALYTICAL QC SUMMARY REPORT

TestCode: 6020_DIS

Sample ID	**ICSA1**	SampType:	**ICSA**	TestCode:	**6020_DIS**	Units:	**µg/L**	Prep Date:		RunNo:	**109344**
Client ID:	**ICSA**	Batch ID:	**R109344**	TestNo:	**EPA 6020**			Analysis Date:	**7/7/2016**	SeqNo:	**2367742**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Manganese	ND	0.50									

Sample ID	**ICSAB1**	SampType:	**ICSAB**	TestCode:	**6020_DIS**	Units:	**µg/L**	Prep Date:		RunNo:	**109344**
Client ID:	**ICSAB**	Batch ID:	**R109344**	TestNo:	**EPA 6020**			Analysis Date:	**7/7/2016**	SeqNo:	**2367743**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Manganese	17.790	0.50	20.00	0	88.9	80	120				

Sample ID	**ICSA2**	SampType:	**ICSA**	TestCode:	**6020_DIS**	Units:	**µg/L**	Prep Date:		RunNo:	**109344**
Client ID:	**ICSA**	Batch ID:	**R109344**	TestNo:	**EPA 6020**			Analysis Date:	**7/8/2016**	SeqNo:	**2367794**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Manganese	ND	0.50									

Sample ID	**ICSAB2**	SampType:	**ICSAB**	TestCode:	**6020_DIS**	Units:	**µg/L**	Prep Date:		RunNo:	**109344**
Client ID:	**ICSAB**	Batch ID:	**R109344**	TestNo:	**EPA 6020**			Analysis Date:	**7/8/2016**	SeqNo:	**2367795**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Manganese	17.913	0.50	20.00	0	89.6	80	120				

Sample ID	**ICSA3**	SampType:	**ICSA**	TestCode:	**6020_DIS**	Units:	**µg/L**	Prep Date:		RunNo:	**109344**
Client ID:	**ICSA**	Batch ID:	**R109344**	TestNo:	**EPA 6020**			Analysis Date:	**7/8/2016**	SeqNo:	**2367833**

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: N020229
Project: PG&E Topock - PMP, RC000753.0801

ANALYTICAL QC SUMMARY REPORT

TestCode: 6020_DIS

Sample ID **ICSAB3**	SampType: **ICSAB**	TestCode: **6020_DIS**	Units: **µg/L**	Prep Date:	RunNo: **109344**
Client ID: **ICSAB**	Batch ID: **R109344**	TestNo: **EPA 6020**		Analysis Date: **7/8/2016**	SeqNo: **2367834**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Manganese	17.989	0.50	20.00	0	89.9	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
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: ARCADIS U.S., Inc. - California
Work Order: N020229
Project: PG&E Topock - PMP, RC000753.0801

ANALYTICAL QC SUMMARY REPORT

TestCode: 6020DIS_CrPGE

Sample ID	ICSA1	SampType:	ICSA	TestCode:	6020DIS_CrP	Units:	µg/L	Prep Date:		RunNo:	109332
Client ID:	ICSA	Batch ID:	R109332	TestNo:	EPA 6020			Analysis Date:	7/7/2016	SeqNo:	2367167

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium	0.212	1.0									

Sample ID	ICSAB1	SampType:	ICSAB	TestCode:	6020DIS_CrP	Units:	µg/L	Prep Date:		RunNo:	109332
Client ID:	ICSAB	Batch ID:	R109332	TestNo:	EPA 6020			Analysis Date:	7/7/2016	SeqNo:	2367168

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium	20.713	1.0	20.00	0	104	80	120				

Sample ID	ICSA2	SampType:	ICSA	TestCode:	6020DIS_CrP	Units:	µg/L	Prep Date:		RunNo:	109332
Client ID:	ICSA	Batch ID:	R109332	TestNo:	EPA 6020			Analysis Date:	7/8/2016	SeqNo:	2367219

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium	0.220	1.0									

Sample ID	ICSAB2	SampType:	ICSAB	TestCode:	6020DIS_CrP	Units:	µg/L	Prep Date:		RunNo:	109332
Client ID:	ICSAB	Batch ID:	R109332	TestNo:	EPA 6020			Analysis Date:	7/8/2016	SeqNo:	2367220

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium	20.763	1.0	20.00	0	104	80	120				

Sample ID	ICSA3	SampType:	ICSA	TestCode:	6020DIS_CrP	Units:	µg/L	Prep Date:		RunNo:	109332
Client ID:	ICSA	Batch ID:	R109332	TestNo:	EPA 6020			Analysis Date:	7/8/2016	SeqNo:	2367737

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium	0.205	1.0									

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: N020229
Project: PG&E Topock - PMP, RC000753.0801

ANALYTICAL QC SUMMARY REPORT

TestCode: 6020DIS_CrPGE

Sample ID **ICSAB3**	SampType: **ICSAB**	TestCode: **6020DIS_CrP**	Units: **µg/L**	Prep Date:	RunNo: **109332**
Client ID: **ICSAB**	Batch ID: **R109332**	TestNo: **EPA 6020**		Analysis Date: **7/8/2016**	SeqNo: **2367738**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium	20.866	1.0	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
DO	Surrogate Diluted Out		Calculations are based on raw values		

INTERNAL STANDARD SUMMARY

INTERNAL STANDARD: 160707B

Instrument ID: ICPMS-02

Sample Name	Type	DF	45 Sc (ISTD) [2]				
			CPS	REF	%REC	Comment	Criteria
Cal Blank	IBLK	1	318490.6	318490.6	100	PASS	70-125
Std1-0.1/1 ppb	ICAL	1	335169.2	318490.6	105.24	PASS	70-125
Std2-0.5/5 ppb	ICAL	1	325036.4	318490.6	102.06	PASS	70-125
Std3-5/50 ppb	ICAL	1	320907.4	318490.6	100.76	PASS	70-125
Std4-10/100 ppb	ICAL	1	321311.2	318490.6	100.89	PASS	70-125
Std5-20/200 ppb	ICAL	1	319065.2	318490.6	100.18	PASS	70-125
Std6-40/400 ppb	ICAL	1	322668.5	318490.6	101.31	PASS	70-125
Std7-100/1000 ppb	ICAL	1	317505.2	318490.6	99.69	PASS	70-125
Std8-200/2000 ppb	ICAL	1	316770.7	318490.6	99.46	PASS	70-125
ICV	ICV	1	306499.9	318490.6	96.24	PASS	70-125
ICB	ICB	1	308036	318490.6	96.72	PASS	70-125
LLICV	CCV1	1	234241.4	318490.6	73.55	PASS	70-125
ICSA1	ICSA	1	317692.5	318490.6	99.75	PASS	70-125
ICSAB1	ICSAB	1	330565.6	318490.6	103.79	PASS	70-125
LLICV	CCV1	1	337419.5	318490.6	105.94	PASS	70-125
CCV1	CCV	1	293809.7	318490.6	92.25	PASS	70-125
CCB1	CCB	1	282915.2	318490.6	88.83	PASS	70-125
CCV2	CCV	1	286193.5	318490.6	89.86	PASS	70-125
CCB2	CCB	1	276125.6	318490.6	86.7	PASS	70-125
CCV3	CCV	1	270189.6	318490.6	84.83	PASS	70-125
CCB3	CCB	1	259612.8	318490.6	81.51	PASS	70-125
MB-58934	MBLK	1	253034.8	318490.6	79.45	PASS	70-125
LCS-58934	LCS	1	255774.2	318490.6	80.31	PASS	70-125
N020230-011B	SAMP	1	270944.2	318490.6	85.071	PASS	70-125
CCV4	CCV	1	268839.5	318490.6	84.41	PASS	70-125
CCB4	CCB	1	259361.7	318490.6	81.43	PASS	70-125
LLCCV1	CCV2	1	255580.8	318490.6	80.25	PASS	70-125
ICSA2	ICSA	1	285068.2	318490.6	89.51	PASS	70-125
ICSAB2	ICSAB	1	305575.1	318490.6	95.94	PASS	70-125
N020230-011B	SAMP	5	300216.1	318490.6	94.26	PASS	70-125
N020230-011B-PS	PS	1	309196.3	318490.6	97.082	PASS	70-125
N020230-011B-MS	MS	1	306239.5	318490.6	96.15	PASS	70-125
N020230-011B-MSD	MSD	1	303938.6	318490.6	95.43	PASS	70-125
N020230-012B	SAMP	1	295702.6	318490.6	92.85	PASS	70-125
N020228-002B	SAMP	1	287312.4	318490.6	90.21	PASS	70-125
N020228-003B	SAMP	1	286878.1	318490.6	90.074	PASS	70-125
N020228-004B	SAMP	1	290705.1	318490.6	91.28	PASS	70-125
N020228-005B	SAMP	1	282623.9	318490.6	88.74	PASS	70-125
N020228-006B	SAMP	1	277030.4	318490.6	86.98	PASS	70-125
CCV5	CCV	1	288333.5	318490.6	90.53	PASS	70-125
CCB5	CCB	1	280800.9	318490.6	88.17	PASS	70-125

INTERNAL STANDARD: 160707B

Instrument ID: ICPMS-02

Sample Name	Type	DF	45 Sc (ISTD) [2]				
			CPS	REF	%REC	Comment	Criteria
N020228-007B	SAMP	1	277086.2	318490.6	87	PASS	70-125
N020228-008B	SAMP	1	273245	318490.6	85.79	PASS	70-125
N020228-009B	SAMP	1	276738.6	318490.6	86.89	PASS	70-125
N020228-010B	SAMP	1	284756.2	318490.6	89.41	PASS	70-125
N020228-011B	SAMP	1	290647.4	318490.6	91.26	PASS	70-125
N020228-012B	SAMP	1	285610.8	318490.6	89.68	PASS	70-125
N020228-013B	SAMP	1	285716.4	318490.6	89.71	PASS	70-125
N020229-001B	SAMP	1	295168.1	318490.6	92.68	PASS	70-125
N020229-001B-MS	MS	1	292391.5	318490.6	91.81	PASS	70-125
N020229-002B	SAMP	1	274627.6	318490.6	86.23	PASS	70-125
CCV6	CCV	1	297362.6	318490.6	93.37	PASS	70-125
CCB6	CCB	1	283236.5	318490.6	88.93	PASS	70-125
N020229-003B	SAMP	1	273992.3	318490.6	86.028	PASS	70-125
N020230-011B	SAMP	25	275358.7	318490.6	86.46	PASS	70-125
N020230-011B-PS	PS	5	265920.5	318490.6	83.49	PASS	70-125
N020230-011B-MS	MS	5	259749	318490.6	81.56	PASS	70-125
N020230-011B-MSD	MSD	5	256473.6	318490.6	80.53	PASS	70-125
N020229-001B	SAMP	5	255532.6	318490.6	80.23	PASS	70-125
N020229-001B-MS	MS	5	263101.6	318490.6	82.61	PASS	70-125
N020229-002B	SAMP	5	273424	318490.6	85.85	PASS	70-125
N020229-003B	SAMP	5	269682.2	318490.6	84.68	PASS	70-125
N020229-003B	SAMP	25	268529.8	318490.6	84.31	PASS	70-125
CCV8	CCV	1	274159.8	318490.6	86.081	PASS	70-125
CCB8	CCB	1	263818	318490.6	82.83	PASS	70-125
LLCCV2	CCV2	1	252084.2	318490.6	79.15	PASS	70-125
ICSA3	ICSA	1	284101.9	318490.6	89.2	PASS	70-125
ICSAB3	ICSAB	1	292780.2	318490.6	91.93	PASS	70-125

SERIAL DILUTION / POST DIGESTION SPIKE

ASSET Laboratories

ICP-MS-Metals in Water

Dilution Test Summary

Work Order No.: N020229
Test Method: EPA 6020
Analysis Date: 7/7/2016

Matrix: Groundwater
Batch No.: 58934

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

Comments:

Analyzed By: Mary Claire Ignacio

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

Sample ID	Analyte	Units	Calc Val	OQual	SAMPRefVal	%DIFF	%DIFFlimit
N020230-011B DT 5X	Chromium	ug/L	5.260964	NA	5.029992	4.59%	10
N020230-011B DT 5X	Manganese	ug/L	0	NA	0.400374	100.00%	10

Note: NA - Not applicable

CLIENT: ARCADIS U.S., Inc. - California
Work Order: N020229
Project: PG&E Topock - PMP, RC000753.0801

ANALYTICAL QC SUMMARY REPORT

TestCode: 6020_DIS

Sample ID	**N020230-011B-PS**	SampType: **PS**	TestCode: **6020_DIS**	Units: **µg/L**	Prep Date:	RunNo: **109344**
Client ID:	**ZZZZZZ**	Batch ID: **58934**	TestNo: **EPA 6020**	**EPA 3010A**	Analysis Date: **7/8/2016**	SeqNo: **2367797**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Manganese	93.770	0.50	100.0	0.4004	93.4	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: N020229
Project: PG&E Topock - PMP, RC000753.0801

ANALYTICAL QC SUMMARY REPORT

TestCode: 6020DIS_CrPGE

Sample ID	**N020230-011B-PS**	SampType: **PS**	TestCode: **6020DIS_CrP**	Units: **µg/L**	Prep Date:	RunNo: **109332**
Client ID:	**ZZZZZZ**	Batch ID: **58934**	TestNo: **EPA 6020**	**EPA 3010A**	Analysis Date: **7/8/2016**	SeqNo: **2367222**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium	14.245	1.0	10.00	5.030	92.2	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
DO	Surrogate Diluted Out		Calculations are based on raw values		

MDL STUDY

METHOD DETECTION LIMIT 2016

Method Detection Limit
Analytical Method: EPA 6020 / 200.8
Digestion Method: EPA 3010A
Date of Analysis: 4/5/2016,4/6/2016
Digestion Date: 4/1/2016
Instrument Name: ICPMS2
Analysts: MEI

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

ACCEPTANCE CRITERIA: MDL<SPIKE<10XMDL

Analyte	AMT SPIKED, ppb	1	2	3	4	5	6	7	SD	MDL	MDL*10	LOD	ACTUAL LOD	PQL	ACTUAL PQL	% REC
ANTIMONY	0.100	0.091	0.078	0.067	0.089	0.069	0.088	0.087	0.0100	0.0313	0.3133	0.3000	0.187	0.50	0.515	103
ARSENIC	0.050	0.054	0.045	0.064	0.053	0.047	0.051	0.039	0.0079	0.0248	0.2485	0.3000	0.049	0.10	0.103	103
BARIUM	0.100	0.199	0.158	0.159	0.206	0.167	0.196	0.207	0.0222	0.0699	0.6986	0.3000	0.403	1.00	1.245	125
BERYLLIUM	0.100	0.090	0.089	0.072	0.104	0.077	0.103	0.107	0.0137	0.0430	0.4304	0.3000	0.185	0.50	0.524	105
CADMIUM	0.100	0.105	0.093	0.089	0.122	0.093	0.121	0.122	0.0151	0.0473	0.4734	0.3000	0.174	0.50	0.501	100
CHROMIUM	0.100	0.088	0.096	0.092	0.093	0.085	0.100	0.102	0.0061	0.0192	0.1925	0.3000	0.321	1.00	0.973	97
COBALT	0.100	0.102	0.088	0.084	0.096	0.085	0.104	0.100	0.0084	0.0263	0.2630	0.3000	0.163	0.50	0.475	95
COPPER	0.500	0.789	0.565	0.564	0.559	0.574	0.563	0.596	0.0836	0.2626	2.6262	0.3000	0.328	1.00	1.062	106
IRON	1.000	0.685	0.581	0.566	1.123	0.578	0.843	1.075	0.2394	0.7517	7.5170	0.3000	0.605	10.00	11.338	113
LEAD	0.100	0.108	0.098	0.088	0.116	0.089	0.113	0.112	0.0117	0.0367	0.3670	0.3000	0.343	1.00	1.018	102
MANGANESE	0.100	0.162	0.122	0.123	0.160	0.133	0.156	0.154	0.0177	0.0554	0.5543	0.3000	0.193	0.50	0.605	121
MOLYBDENUM	0.100	0.100	0.095	0.079	0.109	0.080	0.098	0.109	0.0123	0.0385	0.3853	0.3000	0.247	0.50	0.660	132
NICKEL	0.100	0.126	0.095	0.090	0.119	0.105	0.110	0.106	0.0126	0.0395	0.3954	0.3000	0.341	1.00	1.002	100
SELENIUM	0.100	0.113	0.104	0.091	0.104	0.092	0.110	0.110	0.0088	0.0276	0.2760	0.3000	0.170	0.50	0.502	100
SILVER	0.100	0.028	0.065	0.071	0.079	0.076	0.079	0.082	0.0188	0.0590	0.5899	0.3000	0.247	1.00	1.029	103
THALLIUM	0.100	0.084	0.076	0.067	0.091	0.070	0.088	0.087	0.0094	0.0296	0.2961	0.3000	0.186	0.50	0.549	110
URANIUM	0.100	0.099	0.090	0.082	0.104	0.083	0.105	0.106	0.0104	0.0327	0.3272	0.3000	0.181	0.50	0.533	107
VANADIUM	0.100	0.126	0.111	0.110	0.126	0.116	0.123	0.122	0.0068	0.0213	0.2133	0.3000	0.221	1.00	0.873	87
ZINC	0.500	0.930	0.695	0.905	0.781	0.765	0.744	0.810	0.0853	0.2678	2.6780	0.3000	3.286	10.00	10.085	101

ARCADIS

Project: PG&E Topock - RMP
Project No.: RC000753.0801

ASSET Laboratories Work Order:
N020244

ANALYTICAL and QC RESULTS
SAMPLE RECEIVING ITEMS

PRIVILEGED AND CONFIDENTIAL

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July 23, 2016

Dan Bush
ARCADIS U.S., Inc. - California
1410 Rocky Ridge Dr #330
Roseville, CA 95661

TEL: (916) 786-3302
FAX:

CA-ELAP No.: 2676
NV Cert. No.: NV-00922

Workorder No.: N020244

RE: PG&E Topock - RMP, RC000753.0801

Attention: Dan Bush

Enclosed are the results for sample(s) received on July 07, 2016 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 Ribucan for

Puri Romualdo
Laboratory Director

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CLIENT: ARCADIS U.S., Inc. - California
Project: PG&E Topock - RMP, RC000753.0801
Lab Order: N020244

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 6010B_Total:

Matrix Spike (MS) is outside recovery criteria for Iron on QC sample N020245-002C-MS possibly due to matrix interference. The associated Laboratory Control Sample (LCS) recovery was acceptable.

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ASSET Laboratories

Date: *23-Jul-16*

CLIENT: ARCADIS U.S., Inc. - California
Project: PG&E Topock - RMP, RC000753.0801
Lab Order: N020244
Contract No:

Work Order Sample Summary

Lab Sample ID	Client Sample ID	Matrix	Collection Date	Date Received	Date Reported
N020244-001A	C-CON-D-Q316	Groundwater	7/7/2016 9:20:00 AM	7/7/2016	7/23/2016
N020244-001B	C-CON-D-Q316	Groundwater	7/7/2016 9:20:00 AM	7/7/2016	7/23/2016
N020244-001C	C-CON-D-Q316	Groundwater	7/7/2016 9:20:00 AM	7/7/2016	7/23/2016
N020244-001D	C-CON-D-Q316	Groundwater	7/7/2016 9:20:00 AM	7/7/2016	7/23/2016
N020244-001E	C-CON-D-Q316	Groundwater	7/7/2016 9:20:00 AM	7/7/2016	7/23/2016
N020244-002A	C-CON-S-Q316	Groundwater	7/7/2016 9:35:00 AM	7/7/2016	7/23/2016
N020244-002B	C-CON-S-Q316	Groundwater	7/7/2016 9:35:00 AM	7/7/2016	7/23/2016
N020244-002C	C-CON-S-Q316	Groundwater	7/7/2016 9:35:00 AM	7/7/2016	7/23/2016
N020244-002D	C-CON-S-Q316	Groundwater	7/7/2016 9:35:00 AM	7/7/2016	7/23/2016
N020244-002E	C-CON-S-Q316	Groundwater	7/7/2016 9:35:00 AM	7/7/2016	7/23/2016
N020244-003A	C-NR1-D-Q316	Groundwater	7/7/2016 10:15:00 AM	7/7/2016	7/23/2016
N020244-003B	C-NR1-D-Q316	Groundwater	7/7/2016 10:15:00 AM	7/7/2016	7/23/2016
N020244-003C	C-NR1-D-Q316	Groundwater	7/7/2016 10:15:00 AM	7/7/2016	7/23/2016
N020244-003D	C-NR1-D-Q316	Groundwater	7/7/2016 10:15:00 AM	7/7/2016	7/23/2016
N020244-003E	C-NR1-D-Q316	Groundwater	7/7/2016 10:15:00 AM	7/7/2016	7/23/2016
N020244-004A	C-NR1-S-Q316	Groundwater	7/7/2016 10:30:00 AM	7/7/2016	7/23/2016
N020244-004B	C-NR1-S-Q316	Groundwater	7/7/2016 10:30:00 AM	7/7/2016	7/23/2016
N020244-004C	C-NR1-S-Q316	Groundwater	7/7/2016 10:30:00 AM	7/7/2016	7/23/2016
N020244-004D	C-NR1-S-Q316	Groundwater	7/7/2016 10:30:00 AM	7/7/2016	7/23/2016
N020244-004E	C-NR1-S-Q316	Groundwater	7/7/2016 10:30:00 AM	7/7/2016	7/23/2016
N020244-005A	C-NR3-D-Q316	Groundwater	7/7/2016 11:15:00 AM	7/7/2016	7/23/2016
N020244-005B	C-NR3-D-Q316	Groundwater	7/7/2016 11:15:00 AM	7/7/2016	7/23/2016
N020244-005C	C-NR3-D-Q316	Groundwater	7/7/2016 11:15:00 AM	7/7/2016	7/23/2016
N020244-005D	C-NR3-D-Q316	Groundwater	7/7/2016 11:15:00 AM	7/7/2016	7/23/2016
N020244-005E	C-NR3-D-Q316	Groundwater	7/7/2016 11:15:00 AM	7/7/2016	7/23/2016
N020244-006A	C-NR3-S-Q316	Groundwater	7/7/2016 11:30:00 AM	7/7/2016	7/23/2016
N020244-006B	C-NR3-S-Q316	Groundwater	7/7/2016 11:30:00 AM	7/7/2016	7/23/2016
N020244-006C	C-NR3-S-Q316	Groundwater	7/7/2016 11:30:00 AM	7/7/2016	7/23/2016
N020244-006D	C-NR3-S-Q316	Groundwater	7/7/2016 11:30:00 AM	7/7/2016	7/23/2016

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CLIENT: ARCADIS U.S., Inc. - California
Project: PG&E Topock - RMP, RC000753.0801
Lab Order: N020244
Contract No:

Work Order Sample Summary

Lab Sample ID	Client Sample ID	Matrix	Collection Date	Date Received	Date Reported
N020244-006E	C-NR3-S-Q316	Groundwater	7/7/2016 11:30:00 AM	7/7/2016	7/23/2016
N020244-007A	C-NR4-D-Q316	Groundwater	7/7/2016 12:05:00 PM	7/7/2016	7/23/2016
N020244-007B	C-NR4-D-Q316	Groundwater	7/7/2016 12:05:00 PM	7/7/2016	7/23/2016
N020244-007C	C-NR4-D-Q316	Groundwater	7/7/2016 12:05:00 PM	7/7/2016	7/23/2016
N020244-007D	C-NR4-D-Q316	Groundwater	7/7/2016 12:05:00 PM	7/7/2016	7/23/2016
N020244-007E	C-NR4-D-Q316	Groundwater	7/7/2016 12:05:00 PM	7/7/2016	7/23/2016
N020244-008A	C-NR4-S-Q316	Groundwater	7/7/2016 12:20:00 PM	7/7/2016	7/23/2016
N020244-008B	C-NR4-S-Q316	Groundwater	7/7/2016 12:20:00 PM	7/7/2016	7/23/2016
N020244-008C	C-NR4-S-Q316	Groundwater	7/7/2016 12:20:00 PM	7/7/2016	7/23/2016
N020244-008D	C-NR4-S-Q316	Groundwater	7/7/2016 12:20:00 PM	7/7/2016	7/23/2016
N020244-008E	C-NR4-S-Q316	Groundwater	7/7/2016 12:20:00 PM	7/7/2016	7/23/2016
N020244-009A	RRB-Q316	Groundwater	7/7/2016 8:45:00 AM	7/7/2016	7/23/2016
N020244-009B	RRB-Q316	Groundwater	7/7/2016 8:45:00 AM	7/7/2016	7/23/2016
N020244-009C	RRB-Q316	Groundwater	7/7/2016 8:45:00 AM	7/7/2016	7/23/2016
N020244-009D	RRB-Q316	Groundwater	7/7/2016 8:45:00 AM	7/7/2016	7/23/2016
N020244-009E	RRB-Q316	Groundwater	7/7/2016 8:45:00 AM	7/7/2016	7/23/2016
N020244-010A	SW1-Q316	Groundwater	7/7/2016 1:45:00 PM	7/7/2016	7/23/2016
N020244-010B	SW1-Q316	Groundwater	7/7/2016 1:45:00 PM	7/7/2016	7/23/2016
N020244-010C	SW1-Q316	Groundwater	7/7/2016 1:45:00 PM	7/7/2016	7/23/2016
N020244-011A	SW2-Q316	Groundwater	7/7/2016 2:00:00 PM	7/7/2016	7/23/2016
N020244-011B	SW2-Q316	Groundwater	7/7/2016 2:00:00 PM	7/7/2016	7/23/2016
N020244-011C	SW2-Q316	Groundwater	7/7/2016 2:00:00 PM	7/7/2016	7/23/2016

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CLIENT:	ARCADIS U.S., Inc. - California	**Client Sample ID:**	C-CON-D-Q316
Lab Order:	N020244	**Collection Date:**	7/7/2016 9:20:00 AM
Project:	PG&E Topock - RMP, RC000753.0801	**Matrix:**	GROUNDWATER
Lab ID:	N020244-001		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
SPECIFIC CONDUCTANCE							
			EPA 120.1				
RunID: **WETCHEM_160708B**	QC Batch: **R109322**			PrepDate			Analyst: **LR**
Specific Conductance	970	0.10	0.10		umhos/cm	1	7/8/2016 10:10 AM

Qualifiers:

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

CLIENT:	ARCADIS U.S., Inc. - California	**Client Sample ID:**	C-CON-S-Q316
Lab Order:	N020244	**Collection Date:**	7/7/2016 9:35:00 AM
Project:	PG&E Topock - RMP, RC000753.0801	**Matrix:**	GROUNDWATER
Lab ID:	N020244-002		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
SPECIFIC CONDUCTANCE							
			EPA 120.1				
RunID: **WETCHEM_160708B**	QC Batch: **R109322**			PrepDate			Analyst: **LR**
Specific Conductance	960	0.10	0.10		umhos/cm	1	7/8/2016 10:10 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		

CLIENT: ARCADIS U.S., Inc. - California
Lab Order: N020244
Project: PG&E Topock - RMP, RC000753.0801
Lab ID: N020244-003

Client Sample ID: C-NR1-D-Q316
Collection Date: 7/7/2016 10:15:00 AM
Matrix: GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
SPECIFIC CONDUCTANCE							
			EPA 120.1				
RunID: **WETCHEM_160708B**	QC Batch: **R109322**			PrepDate			Analyst: **LR**
Specific Conductance	950	0.10	0.10		umhos/cm	1	7/8/2016 10:10 AM

CLIENT: ARCADIS U.S., Inc. - California
Lab Order: N020244
Project: PG&E Topock - RMP, RC000753.0801
Lab ID: N020244-004

Client Sample ID: C-NR1-S-Q316
Collection Date: 7/7/2016 10:30:00 AM
Matrix: GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
SPECIFIC CONDUCTANCE							
			EPA 120.1				
RunID: **WETCHEM_160708B**	QC Batch: **R109322**			PrepDate			Analyst: **LR**
Specific Conductance	960	0.10	0.10		umhos/cm	1	7/8/2016 10:10 AM

CLIENT:	ARCADIS U.S., Inc. - California	**Client Sample ID:**	C-NR3-D-Q316
Lab Order:	N020244	**Collection Date:**	7/7/2016 11:15:00 AM
Project:	PG&E Topock - RMP, RC000753.0801	**Matrix:**	GROUNDWATER
Lab ID:	N020244-005		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
SPECIFIC CONDUCTANCE							
			EPA 120.1				
RunID: **WETCHEM_160708B**	QC Batch: **R109322**			PrepDate			Analyst: **LR**
Specific Conductance	960	0.10	0.10		umhos/cm	1	7/8/2016 10:10 AM

Qualifiers:

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

CLIENT:	ARCADIS U.S., Inc. - California	**Client Sample ID:**	C-NR3-S-Q316
Lab Order:	N020244	**Collection Date:**	7/7/2016 11:30:00 AM
Project:	PG&E Topock - RMP, RC000753.0801	**Matrix:**	GROUNDWATER
Lab ID:	N020244-006		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
SPECIFIC CONDUCTANCE							
			EPA 120.1				
RunID: **WETCHEM_160708B**	QC Batch: **R109322**			PrepDate			Analyst: **LR**
Specific Conductance	950	0.10	0.10		umhos/cm	1	7/8/2016 10:10 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		

CLIENT: ARCADIS U.S., Inc. - California
Lab Order: N020244
Project: PG&E Topock - RMP, RC000753.0801
Lab ID: N020244-007

Client Sample ID: C-NR4-D-Q316
Collection Date: 7/7/2016 12:05:00 PM
Matrix: GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
SPECIFIC CONDUCTANCE							
			EPA 120.1				
RunID: **WETCHEM_160708B**	QC Batch: **R109322**			PrepDate			Analyst: **LR**
Specific Conductance	960	0.10	0.10		umhos/cm	1	7/8/2016 10:10 AM

Qualifiers:

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

CLIENT:	ARCADIS U.S., Inc. - California	**Client Sample ID:**	C-NR4-S-Q316
Lab Order:	N020244	**Collection Date:**	7/7/2016 12:20:00 PM
Project:	PG&E Topock - RMP, RC000753.0801	**Matrix:**	GROUNDWATER
Lab ID:	N020244-008		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
SPECIFIC CONDUCTANCE							
			EPA 120.1				
RunID: **WETCHEM_160708B**	QC Batch: **R109322**			PrepDate			Analyst: **LR**
Specific Conductance	960	0.10	0.10		umhos/cm	1	7/8/2016 10:10 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		

CLIENT: ARCADIS U.S., Inc. - California
Lab Order: N020244
Project: PG&E Topock - RMP, RC000753.0801
Lab ID: N020244-009

Client Sample ID: RRB-Q316
Collection Date: 7/7/2016 8:45:00 AM
Matrix: GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
SPECIFIC CONDUCTANCE							
			EPA 120.1				
RunID: **WETCHEM_160708B**	QC Batch: **R109322**			PrepDate			Analyst: **LR**
Specific Conductance	970	0.10	0.10		umhos/cm	1	7/8/2016 10:10 AM

Qualifiers:

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

CLIENT:	ARCADIS U.S., Inc. - California	**Client Sample ID:**	SW1-Q316
Lab Order:	N020244	**Collection Date:**	7/7/2016 1:45:00 PM
Project:	PG&E Topock - RMP, RC000753.0801	**Matrix:**	GROUNDWATER
Lab ID:	N020244-010		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
SPECIFIC CONDUCTANCE							
			EPA 120.1				
RunID: **WETCHEM_160708B**	QC Batch: **R109322**			PrepDate			Analyst: **LR**
Specific Conductance	1000	0.10	0.10		umhos/cm	1	7/8/2016 10:10 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		

CLIENT: ARCADIS U.S., Inc. - California
Lab Order: N020244
Project: PG&E Topock - RMP, RC000753.0801
Lab ID: N020244-011

Client Sample ID: SW2-Q316
Collection Date: 7/7/2016 2:00:00 PM
Matrix: GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
SPECIFIC CONDUCTANCE							
			EPA 120.1				
RunID: **WETCHEM_160708B**	QC Batch: **R109322**			PrepDate			Analyst: **LR**
Specific Conductance	1000	0.10	0.10		umhos/cm	1	7/8/2016 10:10 AM

Qualifiers:

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

CLIENT: ARCADIS U.S., Inc. - California
Work Order: N020244
Project: PG&E Topock - RMP, RC000753.0801

ANALYTICAL QC SUMMARY REPORT

TestCode: 120.1_WPGE

Sample ID **N020244-001DDUP**	SampType: **DUP**	TestCode: **120.1_WPGE**	Units: **umhos/cm**	Prep Date:	RunNo: **109322**
Client ID: **ZZZZZZ**	Batch ID: **R109322**	TestNo: **EPA 120.1**		Analysis Date: **7/8/2016**	SeqNo: **2366668**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Specific Conductance	974.000	0.10						967.0	0.721	10	

Sample ID **N020245-002DDUP**	SampType: **DUP**	TestCode: **120.1_WPGE**	Units: **umhos/cm**	Prep Date:	RunNo: **109322**
Client ID: **ZZZZZZ**	Batch ID: **R109322**	TestNo: **EPA 120.1**		Analysis Date: **7/8/2016**	SeqNo: **2366734**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Specific Conductance	991.000	0.10						994.0	0.302	10	

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis 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
Lab Order: N020244
Project: PG&E Topock - RMP, RC000753.0801
Lab ID: N020244-001

Client Sample ID: C-CON-D-Q316
Collection Date: 7/7/2016 9:20:00 AM
Matrix: GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
PH							
			SM4500-H+B				
RunID: **WETCHEM_160708D**	QC Batch: **R109326**			PrepDate			Analyst: **LR**
pH	8.2	0.10	0.10	H	pH Units	1	7/8/2016 10:55 AM
Temp. at time of pH Analysis	22	0.10	0.10	H	°C	1	7/8/2016 10:55 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

CLIENT: ARCADIS U.S., Inc. - California
Lab Order: N020244
Project: PG&E Topock - RMP, RC000753.0801
Lab ID: N020244-002

Client Sample ID: C-CON-S-Q316
Collection Date: 7/7/2016 9:35:00 AM
Matrix: GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
PH							
			SM4500-H+B				
RunID: **WETCHEM_160708D**	QC Batch: **R109326**			PrepDate			Analyst: **LR**
pH	8.3	0.10	0.10	H	pH Units	1	7/8/2016 10:55 AM
Temp. at time of pH Analysis	21	0.10	0.10	H	°C	1	7/8/2016 10:55 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

CLIENT: ARCADIS U.S., Inc. - California
Lab Order: N020244
Project: PG&E Topock - RMP, RC000753.0801
Lab ID: N020244-003

Client Sample ID: C-NR1-D-Q316
Collection Date: 7/7/2016 10:15:00 AM
Matrix: GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
PH							
			SM4500-H+B				
RunID: **WETCHEM_160708D**	QC Batch: **R109326**			PrepDate			Analyst: **LR**
pH	8.3	0.10	0.10	H	pH Units	1	7/8/2016 10:55 AM
Temp. at time of pH Analysis	21	0.10	0.10	H	°C	1	7/8/2016 10:55 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

CLIENT: ARCADIS U.S., Inc. - California
Lab Order: N020244
Project: PG&E Topock - RMP, RC000753.0801
Lab ID: N020244-004

Client Sample ID: C-NR1-S-Q316
Collection Date: 7/7/2016 10:30:00 AM
Matrix: GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
PH							
			SM4500-H+B				
RunID: **WETCHEM_160708D**	QC Batch: **R109326**			PrepDate			Analyst: **LR**
pH	8.3	0.10	0.10	H	pH Units	1	7/8/2016 10:55 AM
Temp. at time of pH Analysis	22	0.10	0.10	H	°C	1	7/8/2016 10:55 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

CLIENT: ARCADIS U.S., Inc. - California
Lab Order: N020244
Project: PG&E Topock - RMP, RC000753.0801
Lab ID: N020244-005

Client Sample ID: C-NR3-D-Q316
Collection Date: 7/7/2016 11:15:00 AM
Matrix: GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
PH							
			SM4500-H+B				
RunID: **WETCHEM_160708D**	QC Batch: **R109326**			PrepDate			Analyst: **LR**
pH	8.2	0.10	0.10	H	pH Units	1	7/8/2016 10:55 AM
Temp. at time of pH Analysis	22	0.10	0.10	H	°C	1	7/8/2016 10:55 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

CLIENT: ARCADIS U.S., Inc. - California
Lab Order: N020244
Project: PG&E Topock - RMP, RC000753.0801
Lab ID: N020244-006

Client Sample ID: C-NR3-S-Q316
Collection Date: 7/7/2016 11:30:00 AM
Matrix: GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
PH							
			SM4500-H+B				
RunID: **WETCHEM_160708D**	QC Batch: **R109326**			PrepDate			Analyst: **LR**
pH	8.3	0.10	0.10	H	pH Units	1	7/8/2016 10:55 AM
Temp. at time of pH Analysis	22	0.10	0.10	H	°C	1	7/8/2016 10:55 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

CLIENT: ARCADIS U.S., Inc. - California
Lab Order: N020244
Project: PG&E Topock - RMP, RC000753.0801
Lab ID: N020244-007

Client Sample ID: C-NR4-D-Q316
Collection Date: 7/7/2016 12:05:00 PM
Matrix: GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
PH							
			SM4500-H+B				
RunID: **WETCHEM_160708D**	QC Batch: **R109326**			PrepDate			Analyst: **LR**
pH	8.3	0.10	0.10	H	pH Units	1	7/8/2016 10:55 AM
Temp. at time of pH Analysis	22	0.10	0.10	H	°C	1	7/8/2016 10:55 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

CLIENT: ARCADIS U.S., Inc. - California
Lab Order: N020244
Project: PG&E Topock - RMP, RC000753.0801
Lab ID: N020244-008

Client Sample ID: C-NR4-S-Q316
Collection Date: 7/7/2016 12:20:00 PM
Matrix: GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
PH							
			SM4500-H+B				
RunID: **WETCHEM_160708D**	QC Batch: **R109326**			PrepDate			Analyst: **LR**
pH	8.3	0.10	0.10	H	pH Units	1	7/8/2016 10:55 AM
Temp. at time of pH Analysis	22	0.10	0.10	H	°C	1	7/8/2016 10:55 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

CLIENT: ARCADIS U.S., Inc. - California
Lab Order: N020244
Project: PG&E Topock - RMP, RC000753.0801
Lab ID: N020244-009

Client Sample ID: RRB-Q316
Collection Date: 7/7/2016 8:45:00 AM
Matrix: GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
PH							
			SM4500-H+B				
RunID: **WETCHEM_160708D**	QC Batch: **R109326**			PrepDate			Analyst: **LR**
pH	8.3	0.10	0.10	H	pH Units	1	7/8/2016 10:55 AM
Temp. at time of pH Analysis	22	0.10	0.10	H	°C	1	7/8/2016 10:55 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

CLIENT: ARCADIS U.S., Inc. - California
Lab Order: N020244
Project: PG&E Topock - RMP, RC000753.0801
Lab ID: N020244-010

Client Sample ID: SW1-Q316
Collection Date: 7/7/2016 1:45:00 PM
Matrix: GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
PH							
			SM4500-H+B				
RunID: **WETCHEM_160708D**	QC Batch: **R109326**			PrepDate			Analyst: **LR**
pH	8.0	0.10	0.10	H	pH Units	1	7/8/2016 10:55 AM
Temp. at time of pH Analysis	22	0.10	0.10	H	°C	1	7/8/2016 10:55 AM

CLIENT: ARCADIS U.S., Inc. - California
Lab Order: N020244
Project: PG&E Topock - RMP, RC000753.0801
Lab ID: N020244-011

Client Sample ID: SW2-Q316
Collection Date: 7/7/2016 2:00:00 PM
Matrix: GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
PH							
			SM4500-H+B				
RunID: **WETCHEM_160708D**	QC Batch: **R109326**			PrepDate			Analyst: **LR**
pH	7.9	0.10	0.10	H	pH Units	1	7/8/2016 10:55 AM
Temp. at time of pH Analysis	22	0.10	0.10	H	°C	1	7/8/2016 10:55 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

CLIENT: ARCADIS U.S., Inc. - California
Work Order: N020244
Project: PG&E Topock - RMP, RC000753.0801

ANALYTICAL QC SUMMARY REPORT

TestCode: 150.1_4500H+B_W

Sample ID **N020244-001DDUP**	SampType: **DUP**	TestCode: **150.1_4500H**	Units: **pH Units**	Prep Date:	RunNo: **109326**
Client ID: **ZZZZZZ**	Batch ID: **R109326**	TestNo: **SM4500-H+B**		Analysis Date: **7/8/2016**	SeqNo: **2366797**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
pH	8.160	0.10						8.210	0.611	10	H
Temp. at time of pH Analysis	21.900	0.10						21.50	1.84	10	H

Sample ID **N020245-002DDUP**	SampType: **DUP**	TestCode: **150.1_4500H**	Units: **pH Units**	Prep Date:	RunNo: **109326**
Client ID: **ZZZZZZ**	Batch ID: **R109326**	TestNo: **SM4500-H+B**		Analysis Date: **7/8/2016**	SeqNo: **2366810**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
pH	8.210	0.10						8.190	0.244	10	H
Temp. at time of pH Analysis	22.500	0.10						22.70	0.885	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
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: ARCADIS U.S., Inc. - California
Lab Order: N020244
Project: PG&E Topock - RMP, RC000753.0801
Lab ID: N020244-001

Client Sample ID: C-CON-D-Q316
Collection Date: 7/7/2016 9:20:00 AM
Matrix: GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
TOTAL NON-FILTERABLE RESIDUE							
			SM2540D				
RunID: **WETCHEM_160708G**	QC Batch: **58951**				PrepDate	**7/8/2016**	Analyst: **LR**
Suspended Solids (Residue, Non-Filterable)	ND	10	10		mg/L	1	7/8/2016 12:07 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

CLIENT:	ARCADIS U.S., Inc. - California	**Client Sample ID:**	C-CON-S-Q316
Lab Order:	N020244	**Collection Date:**	7/7/2016 9:35:00 AM
Project:	PG&E Topock - RMP, RC000753.0801	**Matrix:**	GROUNDWATER
Lab ID:	N020244-002		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
TOTAL NON-FILTERABLE RESIDUE							
			SM2540D				
RunID: **WETCHEM_160708G**	QC Batch: **58951**				PrepDate	**7/8/2016**	Analyst: **LR**
Suspended Solids (Residue, Non-Filterable)	ND	10	10		mg/L	1	7/8/2016 12:07 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

CLIENT:	ARCADIS U.S., Inc. - California	**Client Sample ID:**	C-NR1-D-Q316
Lab Order:	N020244	**Collection Date:**	7/7/2016 10:15:00 AM
Project:	PG&E Topock - RMP, RC000753.0801	**Matrix:**	GROUNDWATER
Lab ID:	N020244-003		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
TOTAL NON-FILTERABLE RESIDUE							
			SM2540D				
RunID: **WETCHEM_160708G**	QC Batch: **58951**				PrepDate	**7/8/2016**	Analyst: **LR**
Suspended Solids (Residue, Non-Filterable)	ND	10	10		mg/L	1	7/8/2016 12:07 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

CLIENT:	ARCADIS U.S., Inc. - California	**Client Sample ID:**	C-NR1-S-Q316
Lab Order:	N020244	**Collection Date:**	7/7/2016 10:30:00 AM
Project:	PG&E Topock - RMP, RC000753.0801	**Matrix:**	GROUNDWATER
Lab ID:	N020244-004		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
TOTAL NON-FILTERABLE RESIDUE							
			SM2540D				
RunID: **WETCHEM_160708G**	QC Batch: **58951**				PrepDate	**7/8/2016**	Analyst: **LR**
Suspended Solids (Residue, Non-Filterable)	ND	10	10		mg/L	1	7/8/2016 12:07 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

CLIENT:	ARCADIS U.S., Inc. - California	**Client Sample ID:**	C-NR3-D-Q316
Lab Order:	N020244	**Collection Date:**	7/7/2016 11:15:00 AM
Project:	PG&E Topock - RMP, RC000753.0801	**Matrix:**	GROUNDWATER
Lab ID:	N020244-005		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
TOTAL NON-FILTERABLE RESIDUE							
			SM2540D				
RunID: **WETCHEM_160708G**	QC Batch: **58951**				PrepDate	**7/8/2016**	Analyst: **LR**
Suspended Solids (Residue, Non-Filterable)	ND	10	10		mg/L	1	7/8/2016 12:07 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

CLIENT: ARCADIS U.S., Inc. - California
Lab Order: N020244
Project: PG&E Topock - RMP, RC000753.0801
Lab ID: N020244-006

Client Sample ID: C-NR3-S-Q316
Collection Date: 7/7/2016 11:30:00 AM
Matrix: GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
TOTAL NON-FILTERABLE RESIDUE							
			SM2540D				
RunID: **WETCHEM_160708G**	QC Batch: **58951**				PrepDate	**7/8/2016**	Analyst: **LR**
Suspended Solids (Residue, Non-Filterable)	ND	10	10		mg/L	1	7/8/2016 12:07 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

CLIENT:	ARCADIS U.S., Inc. - California	**Client Sample ID:**	C-NR4-D-Q316
Lab Order:	N020244	**Collection Date:**	7/7/2016 12:05:00 PM
Project:	PG&E Topock - RMP, RC000753.0801	**Matrix:**	GROUNDWATER
Lab ID:	N020244-007		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
TOTAL NON-FILTERABLE RESIDUE							
			SM2540D				
RunID: **WETCHEM_160708G**	QC Batch: **58951**				PrepDate	**7/8/2016**	Analyst: **LR**
Suspended Solids (Residue, Non-Filterable)	ND	10	10		mg/L	1	7/8/2016 12:07 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

CLIENT:	ARCADIS U.S., Inc. - California	**Client Sample ID:**	C-NR4-S-Q316
Lab Order:	N020244	**Collection Date:**	7/7/2016 12:20:00 PM
Project:	PG&E Topock - RMP, RC000753.0801	**Matrix:**	GROUNDWATER
Lab ID:	N020244-008		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
TOTAL NON-FILTERABLE RESIDUE					**SM2540D**		
RunID: **WETCHEM_160708H**	QC Batch: **58952**				PrepDate	**7/8/2016**	Analyst: **LR**
Suspended Solids (Residue, Non-Filterable)	ND	10	10		mg/L	1	7/8/2016 12:07 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

CLIENT:	ARCADIS U.S., Inc. - California	**Client Sample ID:**	RRB-Q316
Lab Order:	N020244	**Collection Date:**	7/7/2016 8:45:00 AM
Project:	PG&E Topock - RMP, RC000753.0801	**Matrix:**	GROUNDWATER
Lab ID:	N020244-009		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
TOTAL NON-FILTERABLE RESIDUE							
			SM2540D				
RunID: **WETCHEM_160708H**	QC Batch: **58952**			PrepDate	**7/8/2016**		Analyst: **LR**
Suspended Solids (Residue, Non-Filterable)	ND	10	10		mg/L	1	7/8/2016 12:07 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

CLIENT: ARCADIS U.S., Inc. - California
Work Order: N020244
Project: PG&E Topock - RMP, RC000753.0801

ANALYTICAL QC SUMMARY REPORT

TestCode: 160.2_2540D_W

Sample ID	LCS-58951	SampType:	LCS	TestCode:	160.2_2540D	Units:	mg/L	Prep Date:	7/8/2016	RunNo:	109336
Client ID:	LCSW	Batch ID:	58951	TestNo:	SM2540D			Analysis Date:	7/8/2016	SeqNo:	2367502

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Suspended Solids (Residue, Non-Filter	942.000	10	1000	0	94.2	80	120				

Sample ID	MBLK-58951	SampType:	MBLK	TestCode:	160.2_2540D	Units:	mg/L	Prep Date:	7/8/2016	RunNo:	109336
Client ID:	PBW	Batch ID:	58951	TestNo:	SM2540D			Analysis Date:	7/8/2016	SeqNo:	2367503

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	N020244-001DDUP	SampType:	DUP	TestCode:	160.2_2540D	Units:	mg/L	Prep Date:	7/8/2016	RunNo:	109336
Client ID:	ZZZZZZ	Batch ID:	58951	TestNo:	SM2540D			Analysis Date:	7/8/2016	SeqNo:	2367508

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
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: ARCADIS U.S., Inc. - California
Work Order: N020244
Project: PG&E Topock - RMP, RC000753.0801

ANALYTICAL QC SUMMARY REPORT

TestCode: 160.2_2540D_W

Sample ID	LCS-58952	SampType:	LCS	TestCode:	160.2_2540D	Units:	mg/L	Prep Date:	7/8/2016	RunNo:	109337
Client ID:	LCSW	Batch ID:	58952	TestNo:	SM2540D			Analysis Date:	7/8/2016	SeqNo:	2367515

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Suspended Solids (Residue, Non-Filter	947.000	10	1000	0	94.7	80	120				

Sample ID	MBLK-58952	SampType:	MBLK	TestCode:	160.2_2540D	Units:	mg/L	Prep Date:	7/8/2016	RunNo:	109337
Client ID:	PBW	Batch ID:	58952	TestNo:	SM2540D			Analysis Date:	7/8/2016	SeqNo:	2367516

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	N020245-001DDUP	SampType:	DUP	TestCode:	160.2_2540D	Units:	mg/L	Prep Date:	7/8/2016	RunNo:	109337
Client ID:	ZZZZZZ	Batch ID:	58952	TestNo:	SM2540D			Analysis Date:	7/8/2016	SeqNo:	2367520

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
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: ARCADIS U.S., Inc. - California
Lab Order: N020244
Project: PG&E Topock - RMP, RC000753.0801
Lab ID: N020244-001

Client Sample ID: C-CON-D-Q316
Collection Date: 7/7/2016 9:20:00 AM
Matrix: GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
HEXAVALENT CHROMIUM BY IC							
			EPA 218.6				
RunID: **IC7_160708A**	QC Batch: **R109328**			PrepDate			Analyst: **QBM**
Hexavalent Chromium	ND	0.066	0.20		µg/L	1	7/8/2016 12:58 PM
DISSOLVED METALS BY ICP-MS							
		EPA 3010A		**EPA 6020**			
RunID: **ICP7_160710A**	QC Batch: **58947**			PrepDate	**7/8/2016**		Analyst: **CEI**
Chromium	ND	0.019	1.0		µg/L	1	7/10/2016 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

CLIENT:	ARCADIS U.S., Inc. - California	**Client Sample ID:**	C-CON-S-Q316
Lab Order:	N020244	**Collection Date:**	7/7/2016 9:35:00 AM
Project:	PG&E Topock - RMP, RC000753.0801	**Matrix:**	GROUNDWATER
Lab ID:	N020244-002		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
HEXAVALENT CHROMIUM BY IC							
		EPA 218.6					
RunID: **IC7_160708A**	QC Batch: **R109328**			PrepDate			Analyst: **QBM**
Hexavalent Chromium	ND	0.066	0.20		µg/L	1	7/8/2016 01:26 PM
DISSOLVED METALS BY ICP-MS							
	EPA 3010A			**EPA 6020**			
RunID: **ICP7_160710A**	QC Batch: **58947**			PrepDate	**7/8/2016**		Analyst: **CEI**
Chromium	ND	0.019	1.0		µg/L	1	7/10/2016 01:40 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

CLIENT:	ARCADIS U.S., Inc. - California	**Client Sample ID:**	C-NR1-D-Q316
Lab Order:	N020244	**Collection Date:**	7/7/2016 10:15:00 AM
Project:	PG&E Topock - RMP, RC000753.0801	**Matrix:**	GROUNDWATER
Lab ID:	N020244-003		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
HEXAVALENT CHROMIUM BY IC							
			EPA 218.6				
RunID: **IC7_160708A**	QC Batch: **R109328**			PrepDate			Analyst: **QBM**
Hexavalent Chromium	ND	0.066	0.20		µg/L	1	7/8/2016 01:45 PM
DISSOLVED METALS BY ICP-MS							
	EPA 3010A		**EPA 6020**				
RunID: **ICP7_160710A**	QC Batch: **58947**			PrepDate	**7/8/2016**		Analyst: **CEI**
Chromium	ND	0.019	1.0		µg/L	1	7/10/2016 01:51 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

CLIENT: ARCADIS U.S., Inc. - California
Lab Order: N020244
Project: PG&E Topock - RMP, RC000753.0801
Lab ID: N020244-004

Client Sample ID: C-NR1-S-Q316
Collection Date: 7/7/2016 10:30:00 AM
Matrix: GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
HEXAVALENT CHROMIUM BY IC							
			EPA 218.6				
RunID: **IC7_160708A**	QC Batch: **R109328**			PrepDate			Analyst: **QBM**
Hexavalent Chromium	ND	0.066	0.20		µg/L	1	7/8/2016 02:04 PM
DISSOLVED METALS BY ICP-MS							
	EPA 3010A			**EPA 6020**			
RunID: **ICP7_160710A**	QC Batch: **58947**			PrepDate	**7/8/2016**		Analyst: **CEI**
Chromium	ND	0.019	1.0		µg/L	1	7/10/2016 01:57 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

CLIENT:	ARCADIS U.S., Inc. - California	**Client Sample ID:**	C-NR3-D-Q316
Lab Order:	N020244	**Collection Date:**	7/7/2016 11:15:00 AM
Project:	PG&E Topock - RMP, RC000753.0801	**Matrix:**	GROUNDWATER
Lab ID:	N020244-005		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
HEXAVALENT CHROMIUM BY IC							
		EPA 218.6					
RunID: **IC7_160708A**	QC Batch: **R109328**			PrepDate			Analyst: **QBM**
Hexavalent Chromium	ND	0.066	0.20		µg/L	1	7/8/2016 02:23 PM
DISSOLVED METALS BY ICP-MS							
	EPA 3010A			**EPA 6020**			
RunID: **ICP7_160710A**	QC Batch: **58947**			PrepDate	**7/8/2016**		Analyst: **CEI**
Chromium	ND	0.019	1.0		µg/L	1	7/10/2016 02:13 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

CLIENT:	ARCADIS U.S., Inc. - California	**Client Sample ID:**	C-NR3-S-Q316
Lab Order:	N020244	**Collection Date:**	7/7/2016 11:30:00 AM
Project:	PG&E Topock - RMP, RC000753.0801	**Matrix:**	GROUNDWATER
Lab ID:	N020244-006		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
HEXAVALENT CHROMIUM BY IC							
		EPA 218.6					
RunID: **IC7_160708A**	QC Batch: **R109328**			PrepDate			Analyst: **QBM**
Hexavalent Chromium	ND	0.066	0.20		µg/L	1	7/8/2016 03:01 PM
DISSOLVED METALS BY ICP-MS							
	EPA 3010A		**EPA 6020**				
RunID: **ICP7_160710A**	QC Batch: **58947**			PrepDate	**7/8/2016**		Analyst: **CEI**
Chromium	ND	0.019	1.0		µg/L	1	7/10/2016 02:19 PM

Qualifiers:

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

CLIENT: ARCADIS U.S., Inc. - California
Lab Order: N020244
Project: PG&E Topock - RMP, RC000753.0801
Lab ID: N020244-007

Client Sample ID: C-NR4-D-Q316
Collection Date: 7/7/2016 12:05:00 PM
Matrix: GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
HEXAVALENT CHROMIUM BY IC							
			EPA 218.6				
RunID: **IC7_160708A**	QC Batch: **R109328**			PrepDate			Analyst: **QBM**
Hexavalent Chromium	ND	0.066	0.20		µg/L	1	7/8/2016 03:20 PM
DISSOLVED METALS BY ICP-MS							
	EPA 3010A			**EPA 6020**			
RunID: **ICP7_160710A**	QC Batch: **58947**			PrepDate	**7/8/2016**		Analyst: **CEI**
Chromium	ND	0.019	1.0		µg/L	1	7/10/2016 02:24 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

CLIENT: ARCADIS U.S., Inc. - California
Lab Order: N020244
Project: PG&E Topock - RMP, RC000753.0801
Lab ID: N020244-008

Client Sample ID: C-NR4-S-Q316
Collection Date: 7/7/2016 12:20:00 PM
Matrix: GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
HEXAVALENT CHROMIUM BY IC							
			EPA 218.6				
RunID: **IC7_160708A**	QC Batch: **R109328**			PrepDate			Analyst: **QBM**
Hexavalent Chromium	ND	0.066	0.20		µg/L	1	7/8/2016 03:39 PM
DISSOLVED METALS BY ICP-MS							
	EPA 3010A			**EPA 6020**			
RunID: **ICP7_160710A**	QC Batch: **58947**			PrepDate	**7/8/2016**		Analyst: **CEI**
Chromium	ND	0.019	1.0		µg/L	1	7/10/2016 02:30 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

CLIENT: ARCADIS U.S., Inc. - California
Lab Order: N020244
Project: PG&E Topock - RMP, RC000753.0801
Lab ID: N020244-009

Client Sample ID: RRB-Q316
Collection Date: 7/7/2016 8:45:00 AM
Matrix: GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
HEXAVALENT CHROMIUM BY IC							
			EPA 218.6				
RunID: **IC7_160708A**	QC Batch: **R109328**			PrepDate			Analyst: **QBM**
Hexavalent Chromium	ND	0.066	0.20		µg/L	1	7/8/2016 03:58 PM
DISSOLVED METALS BY ICP-MS							
	EPA 3010A			**EPA 6020**			
RunID: **ICP7_160710A**	QC Batch: **58947**			PrepDate	**7/8/2016**		Analyst: **CEI**
Chromium	ND	0.019	1.0		µg/L	1	7/10/2016 02:35 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

CLIENT: ARCADIS U.S., Inc. - California
Lab Order: N020244
Project: PG&E Topock - RMP, RC000753.0801
Lab ID: N020244-010

Client Sample ID: SW1-Q316
Collection Date: 7/7/2016 1:45:00 PM
Matrix: GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
HEXAVALENT CHROMIUM BY IC							
			EPA 218.6				
RunID: **IC7_160708A**	QC Batch: **R109328**			PrepDate			Analyst: **QBM**
Hexavalent Chromium	ND	0.066	0.20		µg/L	1	7/8/2016 04:17 PM
DISSOLVED METALS BY ICP-MS							
	EPA 3010A			**EPA 6020**			
RunID: **ICP7_160710A**	QC Batch: **58947**			PrepDate	**7/8/2016**		Analyst: **CEI**
Chromium	ND	0.019	1.0		µg/L	1	7/10/2016 02:41 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

CLIENT: ARCADIS U.S., Inc. - California
Lab Order: N020244
Project: PG&E Topock - RMP, RC000753.0801
Lab ID: N020244-011

Client Sample ID: SW2-Q316
Collection Date: 7/7/2016 2:00:00 PM
Matrix: GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
HEXAVALENT CHROMIUM BY IC							
			EPA 218.6				
RunID: **IC7_160708A**	QC Batch: **R109328**			PrepDate			Analyst: **QBM**
Hexavalent Chromium	ND	0.066	0.20		µg/L	1	7/8/2016 04:54 PM
DISSOLVED METALS BY ICP-MS							
	EPA 3010A			**EPA 6020**			
RunID: **ICP7_160710A**	QC Batch: **58947**			PrepDate	**7/8/2016**		Analyst: **CEI**
Chromium	ND	0.019	1.0		µg/L	1	7/10/2016 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

CLIENT: ARCADIS U.S., Inc. - California
Work Order: N020244
Project: PG&E Topock - RMP, RC000753.0801

ANALYTICAL QC SUMMARY REPORT

TestCode: 218.6_WPGE

Sample ID	MB-R109328	SampType:	MBLK	TestCode:	218.6_WPGE	Units:	µg/L	Prep Date:		RunNo:	109328		
Client ID:	PBW	Batch ID:	R109328	TestNo:	EPA 218.6			Analysis Date:	7/8/2016	SeqNo:	2366827		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual		
Hexavalent Chromium	ND	0.20											

Sample ID	LCS-R109328	SampType:	LCS	TestCode:	218.6_WPGE	Units:	µg/L	Prep Date:		RunNo:	109328		
Client ID:	LCSW	Batch ID:	R109328	TestNo:	EPA 218.6			Analysis Date:	7/8/2016	SeqNo:	2366828		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual		
Hexavalent Chromium	5.070	0.20	5.000	0	101	90	110						

Sample ID	N020230-013ADUP	SampType:	DUP	TestCode:	218.6_WPGE	Units:	µg/L	Prep Date:		RunNo:	109328		
Client ID:	ZZZZZZ	Batch ID:	R109328	TestNo:	EPA 218.6			Analysis Date:	7/8/2016	SeqNo:	2366836		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual		
Hexavalent Chromium	0.123	0.20						0.1318	0	20			

Sample ID	N020244-001AMS	SampType:	MS	TestCode:	218.6_WPGE	Units:	µg/L	Prep Date:		RunNo:	109328		
Client ID:	ZZZZZZ	Batch ID:	R109328	TestNo:	EPA 218.6			Analysis Date:	7/8/2016	SeqNo:	2366840		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual		
Hexavalent Chromium	1.109	0.20	1.000	0.09600	101	90	110						

Sample ID	N020244-001AMSD	SampType:	MSD	TestCode:	218.6_WPGE	Units:	µg/L	Prep Date:		RunNo:	109328		
Client ID:	ZZZZZZ	Batch ID:	R109328	TestNo:	EPA 218.6			Analysis Date:	7/8/2016	SeqNo:	2366841		
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	0.09600	102	90	110	1.109	0.808	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
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: ARCADIS U.S., Inc. - California
Work Order: N020244
Project: PG&E Topock - RMP, RC000753.0801

ANALYTICAL QC SUMMARY REPORT

TestCode: 218.6_WPGE

Sample ID	N020244-002AMS	SampType:	MS	TestCode:	218.6_WPGE	Units:	µg/L	Prep Date:		RunNo:	109328
Client ID:	ZZZZZZ	Batch ID:	R109328	TestNo:	EPA 218.6			Analysis Date:	7/8/2016	SeqNo:	2366843

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	0.07980	102	90	110				

Sample ID	N020244-003AMS	SampType:	MS	TestCode:	218.6_WPGE	Units:	µg/L	Prep Date:		RunNo:	109328
Client ID:	ZZZZZZ	Batch ID:	R109328	TestNo:	EPA 218.6			Analysis Date:	7/8/2016	SeqNo:	2366845

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	0.08530	99.1	90	110				

Sample ID	N020244-004AMS	SampType:	MS	TestCode:	218.6_WPGE	Units:	µg/L	Prep Date:		RunNo:	109328
Client ID:	ZZZZZZ	Batch ID:	R109328	TestNo:	EPA 218.6			Analysis Date:	7/8/2016	SeqNo:	2366847

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	1.081	0.20	1.000	0.08200	99.9	90	110				

Sample ID	N020244-005AMS	SampType:	MS	TestCode:	218.6_WPGE	Units:	µg/L	Prep Date:		RunNo:	109328
Client ID:	ZZZZZZ	Batch ID:	R109328	TestNo:	EPA 218.6			Analysis Date:	7/8/2016	SeqNo:	2366851

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	0.1041	98.2	90	110				

Sample ID	N020244-006AMS	SampType:	MS	TestCode:	218.6_WPGE	Units:	µg/L	Prep Date:		RunNo:	109328
Client ID:	ZZZZZZ	Batch ID:	R109328	TestNo:	EPA 218.6			Analysis Date:	7/8/2016	SeqNo:	2366853

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	1.117	0.20	1.000	0.08910	103	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: N020244
Project: PG&E Topock - RMP, RC000753.0801

ANALYTICAL QC SUMMARY REPORT

TestCode: 218.6_WPGE

Sample ID **N020244-007AMS**	SampType: **MS**	TestCode: **218.6_WPGE**	Units: **µg/L**	Prep Date:	RunNo: **109328**
Client ID: **ZZZZZZ**	Batch ID: **R109328**	TestNo: **EPA 218.6**		Analysis Date: **7/8/2016**	SeqNo: **2366855**

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	0.1070	99.3	90	110				

Sample ID **N020244-008AMS**	SampType: **MS**	TestCode: **218.6_WPGE**	Units: **µg/L**	Prep Date:	RunNo: **109328**
Client ID: **ZZZZZZ**	Batch ID: **R109328**	TestNo: **EPA 218.6**		Analysis Date: **7/8/2016**	SeqNo: **2366857**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	1.059	0.20	1.000	0	106	90	110				

Sample ID **N020244-009AMS**	SampType: **MS**	TestCode: **218.6_WPGE**	Units: **µg/L**	Prep Date:	RunNo: **109328**
Client ID: **ZZZZZZ**	Batch ID: **R109328**	TestNo: **EPA 218.6**		Analysis Date: **7/8/2016**	SeqNo: **2366859**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	1.116	0.20	1.000	0.1202	99.6	90	110				

Sample ID **N020244-010AMS**	SampType: **MS**	TestCode: **218.6_WPGE**	Units: **µg/L**	Prep Date:	RunNo: **109328**
Client ID: **ZZZZZZ**	Batch ID: **R109328**	TestNo: **EPA 218.6**		Analysis Date: **7/8/2016**	SeqNo: **2366863**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	1.145	0.20	1.000	0.1176	103	90	110				

Sample ID **N020244-011AMS**	SampType: **MS**	TestCode: **218.6_WPGE**	Units: **µg/L**	Prep Date:	RunNo: **109328**
Client ID: **ZZZZZZ**	Batch ID: **R109328**	TestNo: **EPA 218.6**		Analysis Date: **7/8/2016**	SeqNo: **2366865**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	1.093	0.20	1.000	0.1004	99.2	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: N020244
Project: PG&E Topock - RMP, RC000753.0801

ANALYTICAL QC SUMMARY REPORT

TestCode: 218.6_WPGE

Sample ID	N020245-001AMS	SampType:	MS	TestCode:	218.6_WPGE	Units:	µg/L	Prep Date:		RunNo:	109328
Client ID:	ZZZZZZ	Batch ID:	R109328	TestNo:	EPA 218.6			Analysis Date:	7/8/2016	SeqNo:	2366867

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	1.108	0.20	1.000	0.09390	101	90	110				

Sample ID	N020245-002AMS	SampType:	MS	TestCode:	218.6_WPGE	Units:	µg/L	Prep Date:		RunNo:	109328
Client ID:	ZZZZZZ	Batch ID:	R109328	TestNo:	EPA 218.6			Analysis Date:	7/8/2016	SeqNo:	2366869

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	1.101	0.20	1.000	0.09030	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		

CLIENT: ARCADIS U.S., Inc. - California
Work Order: N020244
Project: PG&E Topock - RMP, RC000753.0801

ANALYTICAL QC SUMMARY REPORT

TestCode: 6020DIS_CrPGE

Sample ID **MB-58947**	SampType: **MBLK**	TestCode: **6020DIS_CrP**	Units: **µg/L**	Prep Date: **7/8/2016**	RunNo: **109346**
Client ID: **PBW**	Batch ID: **58947**	TestNo: **EPA 6020**	**EPA 3010A**	Analysis Date: **7/10/2016**	SeqNo: **2368021**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium	ND	1.0									

Sample ID **LCS-58947**	SampType: **LCS**	TestCode: **6020DIS_CrP**	Units: **µg/L**	Prep Date: **7/8/2016**	RunNo: **109346**
Client ID: **LCSW**	Batch ID: **58947**	TestNo: **EPA 6020**	**EPA 3010A**	Analysis Date: **7/10/2016**	SeqNo: **2368022**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium	9.849	1.0	10.00	0	98.5	85	115				

Sample ID **N020246-001B-MS**	SampType: **MS**	TestCode: **6020DIS_CrP**	Units: **µg/L**	Prep Date: **7/8/2016**	RunNo: **109346**
Client ID: **ZZZZZZ**	Batch ID: **58947**	TestNo: **EPA 6020**	**EPA 3010A**	Analysis Date: **7/10/2016**	SeqNo: **2368026**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium	12.129	1.0	10.00	2.605	95.2	75	125				

Sample ID **N020246-001B-MSD**	SampType: **MSD**	TestCode: **6020DIS_CrP**	Units: **µg/L**	Prep Date: **7/8/2016**	RunNo: **109346**
Client ID: **ZZZZZZ**	Batch ID: **58947**	TestNo: **EPA 6020**	**EPA 3010A**	Analysis Date: **7/10/2016**	SeqNo: **2368027**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium	12.071	1.0	10.00	2.605	94.7	75	125	12.13	0.480	20	

Sample ID **N020244-002B-MS**	SampType: **MS**	TestCode: **6020DIS_CrP**	Units: **µg/L**	Prep Date: **7/8/2016**	RunNo: **109346**
Client ID: **ZZZZZZ**	Batch ID: **58947**	TestNo: **EPA 6020**	**EPA 3010A**	Analysis Date: **7/10/2016**	SeqNo: **2368040**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium	9.493	1.0	10.00	0	94.9	75	125				

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
Lab Order: N020244
Project: PG&E Topock - RMP, RC000753.0801
Lab ID: N020244-001

Client Sample ID: C-CON-D-Q316
Collection Date: 7/7/2016 9:20:00 AM
Matrix: GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
NITRATE/NITRITE-N BY CADMIUM REDUCTION							
			SM4500-NO3F				
RunID: **WETCHEM_160712B**	QC Batch: **R109386**		PrepDate				Analyst: **RB**
Nitrate/Nitrite as N	0.43	0.022	0.050		mg/L	1	7/12/2016

Qualifiers:

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

CLIENT:	ARCADIS U.S., Inc. - California	**Client Sample ID:**	C-CON-S-Q316
Lab Order:	N020244	**Collection Date:**	7/7/2016 9:35:00 AM
Project:	PG&E Topock - RMP, RC000753.0801	**Matrix:**	GROUNDWATER
Lab ID:	N020244-002		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
NITRATE/NITRITE-N BY CADMIUM REDUCTION							
			SM4500-NO3F				
RunID: **WETCHEM_160712B**	QC Batch: **R109386**		PrepDate				Analyst: **RB**
Nitrate/Nitrite as N	0.45	0.022	0.050		mg/L	1	7/12/2016

Qualifiers:

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

CLIENT:	ARCADIS U.S., Inc. - California	**Client Sample ID:**	C-NR1-D-Q316
Lab Order:	N020244	**Collection Date:**	7/7/2016 10:15:00 AM
Project:	PG&E Topock - RMP, RC000753.0801	**Matrix:**	GROUNDWATER
Lab ID:	N020244-003		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
NITRATE/NITRITE-N BY CADMIUM REDUCTION							
			SM4500-NO3F				
RunID: **WETCHEM_160712B**	QC Batch: **R109386**		PrepDate				Analyst: **RB**
Nitrate/Nitrite as N	0.44	0.022	0.050		mg/L	1	7/12/2016

Qualifiers:

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

CLIENT: ARCADIS U.S., Inc. - California
Lab Order: N020244
Project: PG&E Topock - RMP, RC000753.0801
Lab ID: N020244-004

Client Sample ID: C-NR1-S-Q316
Collection Date: 7/7/2016 10:30:00 AM
Matrix: GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
NITRATE/NITRITE-N BY CADMIUM REDUCTION							
			SM4500-NO3F				
RunID: **WETCHEM_160712B**	QC Batch: **R109386**		PrepDate				Analyst: **RB**
Nitrate/Nitrite as N	0.38	0.022	0.050		mg/L	1	7/12/2016

Qualifiers:

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

CLIENT:	ARCADIS U.S., Inc. - California	**Client Sample ID:**	C-NR3-D-Q316
Lab Order:	N020244	**Collection Date:**	7/7/2016 11:15:00 AM
Project:	PG&E Topock - RMP, RC000753.0801	**Matrix:**	GROUNDWATER
Lab ID:	N020244-005		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
NITRATE/NITRITE-N BY CADMIUM REDUCTION							
			SM4500-NO3F				
RunID: **WETCHEM_160712B**	QC Batch: **R109386**		PrepDate				Analyst: **RB**
Nitrate/Nitrite as N	0.41	0.022	0.050		mg/L	1	7/12/2016

Qualifiers:

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

CLIENT:	ARCADIS U.S., Inc. - California	**Client Sample ID:**	C-NR3-S-Q316
Lab Order:	N020244	**Collection Date:**	7/7/2016 11:30:00 AM
Project:	PG&E Topock - RMP, RC000753.0801	**Matrix:**	GROUNDWATER
Lab ID:	N020244-006		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
NITRATE/NITRITE-N BY CADMIUM REDUCTION							
			SM4500-NO3F				
RunID: **WETCHEM_160712B**	QC Batch: **R109386**		PrepDate				Analyst: **RB**
Nitrate/Nitrite as N	0.38	0.022	0.050		mg/L	1	7/12/2016

Qualifiers:

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

CLIENT:	ARCADIS U.S., Inc. - California	**Client Sample ID:**	C-NR4-D-Q316
Lab Order:	N020244	**Collection Date:**	7/7/2016 12:05:00 PM
Project:	PG&E Topock - RMP, RC000753.0801	**Matrix:**	GROUNDWATER
Lab ID:	N020244-007		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
NITRATE/NITRITE-N BY CADMIUM REDUCTION							
			SM4500-NO3F				
RunID: **WETCHEM_160712B**	QC Batch: **R109386**		PrepDate				Analyst: **RB**
Nitrate/Nitrite as N	0.42	0.022	0.050		mg/L	1	7/12/2016

Qualifiers:

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

CLIENT:	ARCADIS U.S., Inc. - California	**Client Sample ID:**	C-NR4-S-Q316
Lab Order:	N020244	**Collection Date:**	7/7/2016 12:20:00 PM
Project:	PG&E Topock - RMP, RC000753.0801	**Matrix:**	GROUNDWATER
Lab ID:	N020244-008		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
NITRATE/NITRITE-N BY CADMIUM REDUCTION							
			SM4500-NO3F				
RunID: **WETCHEM_160712B**	QC Batch: **R109386**		PrepDate				Analyst: **RB**
Nitrate/Nitrite as N	0.41	0.022	0.050		mg/L	1	7/12/2016

Qualifiers:

B	Analyte detected in the associated Method Blank
H	Holding times for preparation or analysis exceeded
S	Spike/Surrogate outside of limits due to 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 RESULTS

Print Date: *23-Jul-16*

CLIENT:	ARCADIS U.S., Inc. - California	**Client Sample ID:**	RRB-Q316
Lab Order:	N020244	**Collection Date:**	7/7/2016 8:45:00 AM
Project:	PG&E Topock - RMP, RC000753.0801	**Matrix:**	GROUNDWATER
Lab ID:	N020244-009		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
NITRATE/NITRITE-N BY CADMIUM REDUCTION							
			SM4500-NO3F				
RunID: **WETCHEM_160712B**	QC Batch: **R109386**		PrepDate				Analyst: **RB**
Nitrate/Nitrite as N	0.38	0.022	0.050		mg/L	1	7/12/2016

Qualifiers:

B	Analyte detected in the associated Method Blank
H	Holding times for preparation or analysis exceeded
S	Spike/Surrogate outside of limits due to 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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11060 Artesia Blvd., Ste C, Cerritos, CA 90703
P: 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: N020244
Project: PG&E Topock - RMP, RC000753.0801

ANALYTICAL QC SUMMARY REPORT

TestCode: 4500N03F_W

Sample ID	SampType	TestCode	Units	Prep Date	RunNo
MB-R109386	**MBLK**	**4500N03F_W**	**mg/L**		**109386**
Client ID: **PBW**	Batch ID: **R109386**	TestNo: **SM4500-NO3**		Analysis Date: **7/12/2016**	SeqNo: **2370902**

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	SampType	TestCode	Units	Prep Date	RunNo
LCS-R109386	**LCS**	**4500N03F_W**	**mg/L**		**109386**
Client ID: **LCSW**	Batch ID: **R109386**	TestNo: **SM4500-NO3**		Analysis Date: **7/12/2016**	SeqNo: **2370903**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrate/Nitrite as N	0.470	0.050	0.5000	0	94.0	85	115				

Sample ID	SampType	TestCode	Units	Prep Date	RunNo
N020244-001EDUP	**DUP**	**4500N03F_W**	**mg/L**		**109386**
Client ID: **ZZZZZZ**	Batch ID: **R109386**	TestNo: **SM4500-NO3**		Analysis Date: **7/12/2016**	SeqNo: **2370905**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrate/Nitrite as N	0.398	0.050						0.4262	6.79	20	

Sample ID	SampType	TestCode	Units	Prep Date	RunNo
N020244-001EMS	**MS**	**4500N03F_W**	**mg/L**		**109386**
Client ID: **ZZZZZZ**	Batch ID: **R109386**	TestNo: **SM4500-NO3**		Analysis Date: **7/12/2016**	SeqNo: **2370906**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrate/Nitrite as N	0.992	0.050	0.5000	0.4262	113	75	125				

Sample ID	SampType	TestCode	Units	Prep Date	RunNo
N020244-001EMSD	**MSD**	**4500N03F_W**	**mg/L**		**109386**
Client ID: **ZZZZZZ**	Batch ID: **R109386**	TestNo: **SM4500-NO3**		Analysis Date: **7/12/2016**	SeqNo: **2370907**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrate/Nitrite as N	1.009	0.050	0.5000	0.4262	116	75	125	0.9919	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
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: ARCADIS U.S., Inc. - California
Lab Order: N020244
Project: PG&E Topock - RMP, RC000753.0801
Lab ID: N020244-001

Client Sample ID: C-CON-D-Q316
Collection Date: 7/7/2016 9:20:00 AM
Matrix: GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
DISSOLVED METALS BY ICP							
	EPA 3010A			**EPA 6010B**			
RunID: **ICP2_160712D**	QC Batch: **58946**			PrepDate	**7/8/2016**		Analyst: **CEI**
Iron	ND	1.8	20		ug/L	1	7/12/2016 05:34 AM
TOTAL METALS BY ICP							
	EPA 3010A			**EPA 6010B**			
RunID: **ICP2_160712D**	QC Batch: **58945**			PrepDate	**7/8/2016**		Analyst: **CEI**
Iron	140	1.8	20		ug/L	1	7/12/2016 07:37 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

CLIENT: ARCADIS U.S., Inc. - California
Lab Order: N020244
Project: PG&E Topock - RMP, RC000753.0801
Lab ID: N020244-002

Client Sample ID: C-CON-S-Q316
Collection Date: 7/7/2016 9:35:00 AM
Matrix: GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
DISSOLVED METALS BY ICP							
	EPA 3010A			**EPA 6010B**			
RunID: **ICP2_160712D**	QC Batch: **58946**			PrepDate	**7/8/2016**		Analyst: **CEI**
Iron	ND	1.8	20		ug/L	1	7/12/2016 06:03 AM
TOTAL METALS BY ICP							
	EPA 3010A			**EPA 6010B**			
RunID: **ICP2_160712D**	QC Batch: **58945**			PrepDate	**7/8/2016**		Analyst: **CEI**
Iron	99	1.8	20		ug/L	1	7/12/2016 08:06 AM

Qualifiers:

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

CLIENT: ARCADIS U.S., Inc. - California
Lab Order: N020244
Project: PG&E Topock - RMP, RC000753.0801
Lab ID: N020244-003

Client Sample ID: C-NR1-D-Q316
Collection Date: 7/7/2016 10:15:00 AM
Matrix: GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
DISSOLVED METALS BY ICP							
	EPA 3010A			**EPA 6010B**			
RunID: **ICP2_160712D**	QC Batch: **58946**			PrepDate	**7/8/2016**		Analyst: **CEI**
Iron	ND	1.8	20		ug/L	1	7/12/2016 06:08 AM
TOTAL METALS BY ICP							
	EPA 3010A			**EPA 6010B**			
RunID: **ICP2_160712D**	QC Batch: **58945**			PrepDate	**7/8/2016**		Analyst: **CEI**
Iron	100	1.8	20		ug/L	1	7/12/2016 08:12 AM

Qualifiers:

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

CLIENT: ARCADIS U.S., Inc. - California
Lab Order: N020244
Project: PG&E Topock - RMP, RC000753.0801
Lab ID: N020244-004

Client Sample ID: C-NR1-S-Q316
Collection Date: 7/7/2016 10:30:00 AM
Matrix: GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
DISSOLVED METALS BY ICP							
	EPA 3010A			**EPA 6010B**			
RunID: **ICP2_160712D**	QC Batch: **58946**			PrepDate	**7/8/2016**		Analyst: **CEI**
Iron	ND	1.8	20		ug/L	1	7/12/2016 06:14 AM
TOTAL METALS BY ICP							
	EPA 3010A			**EPA 6010B**			
RunID: **ICP2_160712D**	QC Batch: **58945**			PrepDate	**7/8/2016**		Analyst: **CEI**
Iron	58	1.8	20		ug/L	1	7/12/2016 08:17 AM

Qualifiers:

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

CLIENT: ARCADIS U.S., Inc. - California
Lab Order: N020244
Project: PG&E Topock - RMP, RC000753.0801
Lab ID: N020244-005

Client Sample ID: C-NR3-D-Q316
Collection Date: 7/7/2016 11:15:00 AM
Matrix: GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
DISSOLVED METALS BY ICP							
	EPA 3010A			**EPA 6010B**			
RunID: **ICP2_160712D**	QC Batch: **58946**			PrepDate	**7/8/2016**		Analyst: **CEI**
Iron	ND	1.8	20		ug/L	1	7/12/2016 06:31 AM
TOTAL METALS BY ICP							
	EPA 3010A			**EPA 6010B**			
RunID: **ICP2_160712D**	QC Batch: **58945**			PrepDate	**7/8/2016**		Analyst: **CEI**
Iron	120	1.8	20		ug/L	1	7/12/2016 08:23 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

CLIENT: ARCADIS U.S., Inc. - California
Lab Order: N020244
Project: PG&E Topock - RMP, RC000753.0801
Lab ID: N020244-006

Client Sample ID: C-NR3-S-Q316
Collection Date: 7/7/2016 11:30:00 AM
Matrix: GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
DISSOLVED METALS BY ICP							
	EPA 3010A			**EPA 6010B**			
RunID: **ICP2_160712D**	QC Batch: **58946**			PrepDate	**7/8/2016**		Analyst: **CEI**
Iron	26	1.8	20		ug/L	1	7/12/2016 06:36 AM
TOTAL METALS BY ICP							
	EPA 3010A			**EPA 6010B**			
RunID: **ICP2_160712D**	QC Batch: **58945**			PrepDate	**7/8/2016**		Analyst: **CEI**
Iron	62	1.8	20		ug/L	1	7/12/2016 08:29 AM

Qualifiers:

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

CLIENT: ARCADIS U.S., Inc. - California
Lab Order: N020244
Project: PG&E Topock - RMP, RC000753.0801
Lab ID: N020244-007

Client Sample ID: C-NR4-D-Q316
Collection Date: 7/7/2016 12:05:00 PM
Matrix: GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
DISSOLVED METALS BY ICP							
	EPA 3010A			**EPA 6010B**			
RunID: **ICP2_160712D**	QC Batch: **58946**				PrepDate	**7/8/2016**	Analyst: **CEI**
Iron	25	1.8	20		ug/L	1	7/12/2016 06:42 AM
TOTAL METALS BY ICP							
	EPA 3010A			**EPA 6010B**			
RunID: **ICP2_160712D**	QC Batch: **58945**				PrepDate	**7/8/2016**	Analyst: **CEI**
Iron	91	1.8	20		ug/L	1	7/12/2016 08:45 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

CLIENT: ARCADIS U.S., Inc. - California
Lab Order: N020244
Project: PG&E Topock - RMP, RC000753.0801
Lab ID: N020244-008

Client Sample ID: C-NR4-S-Q316
Collection Date: 7/7/2016 12:20:00 PM
Matrix: GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
DISSOLVED METALS BY ICP							
	EPA 3010A			**EPA 6010B**			
RunID: **ICP2_160712D**	QC Batch: **58946**			PrepDate	**7/8/2016**		Analyst: **CEI**
Iron	ND	1.8	20		ug/L	1	7/12/2016 06:48 AM
TOTAL METALS BY ICP							
	EPA 3010A			**EPA 6010B**			
RunID: **ICP2_160712D**	QC Batch: **58945**			PrepDate	**7/8/2016**		Analyst: **CEI**
Iron	49	1.8	20		ug/L	1	7/12/2016 08:51 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

CLIENT: ARCADIS U.S., Inc. - California
Lab Order: N020244
Project: PG&E Topock - RMP, RC000753.0801
Lab ID: N020244-009

Client Sample ID: RRB-Q316
Collection Date: 7/7/2016 8:45:00 AM
Matrix: GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
DISSOLVED METALS BY ICP							
	EPA 3010A			**EPA 6010B**			
RunID: **ICP2_160712D**	QC Batch: **58946**			PrepDate	**7/8/2016**		Analyst: **CEI**
Iron	ND	1.8	20		ug/L	1	7/12/2016 06:53 AM
TOTAL METALS BY ICP							
	EPA 3010A			**EPA 6010B**			
RunID: **ICP2_160712D**	QC Batch: **58945**			PrepDate	**7/8/2016**		Analyst: **CEI**
Iron	47	1.8	20		ug/L	1	7/12/2016 08:56 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

CLIENT: ARCADIS U.S., Inc. - California
Work Order: N020244
Project: PG&E Topock - RMP, RC000753.0801

ANALYTICAL QC SUMMARY REPORT

TestCode: 6010_WDPGEPPB

Sample ID	MB-58946	SampType:	MBLK	TestCode:	6010_WDPG	Units:	ug/L	Prep Date:	7/8/2016	RunNo:	109377
Client ID:	PBW	Batch ID:	58946	TestNo:	EPA 6010B	EPA 3010A		Analysis Date:	7/12/2016	SeqNo:	2370445

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Iron	ND	20									

Sample ID	LCS-58946	SampType:	LCS	TestCode:	6010_WDPG	Units:	ug/L	Prep Date:	7/8/2016	RunNo:	109377
Client ID:	LCSW	Batch ID:	58946	TestNo:	EPA 6010B	EPA 3010A		Analysis Date:	7/12/2016	SeqNo:	2370446

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Iron	111.142	20	100.0	0	111	85	115				

Sample ID	N020244-001B-MS	SampType:	MS	TestCode:	6010_WDPG	Units:	ug/L	Prep Date:	7/8/2016	RunNo:	109377
Client ID:	ZZZZZZ	Batch ID:	58946	TestNo:	EPA 6010B	EPA 3010A		Analysis Date:	7/12/2016	SeqNo:	2370450

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Iron	104.724	20	100.0	2.150	103	75	125				

Sample ID	N020244-001B-MSD	SampType:	MSD	TestCode:	6010_WDPG	Units:	ug/L	Prep Date:	7/8/2016	RunNo:	109377
Client ID:	ZZZZZZ	Batch ID:	58946	TestNo:	EPA 6010B	EPA 3010A		Analysis Date:	7/12/2016	SeqNo:	2370451

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Iron	103.106	20	100.0	2.150	101	75	125	104.7	1.56	20	

Sample ID	N020245-002B-MS	SampType:	MS	TestCode:	6010_WDPG	Units:	ug/L	Prep Date:	7/8/2016	RunNo:	109377
Client ID:	ZZZZZZ	Batch ID:	58946	TestNo:	EPA 6010B	EPA 3010A		Analysis Date:	7/12/2016	SeqNo:	2370464

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Iron	116.243	20	100.0	22.26	94.0	75	125				

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: N020244
Project: PG&E Topock - RMP, RC000753.0801

ANALYTICAL QC SUMMARY REPORT

TestCode: 6010_WPGEPPB

Sample ID	MB-58945	SampType:	MBLK	TestCode:	6010_WPGE	Units:	ug/L	Prep Date:	7/8/2016	RunNo:	109377
Client ID:	PBW	Batch ID:	58945	TestNo:	EPA 6010B	EPA 3010A		Analysis Date:	7/12/2016	SeqNo:	2370519

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Iron	ND	20									

Sample ID	LCS-58945	SampType:	LCS	TestCode:	6010_WPGE	Units:	ug/L	Prep Date:	7/8/2016	RunNo:	109377
Client ID:	LCSW	Batch ID:	58945	TestNo:	EPA 6010B	EPA 3010A		Analysis Date:	7/12/2016	SeqNo:	2370520

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Iron	96.935	20	100.0	0	96.9	85	115				

Sample ID	N020244-001C-MS	SampType:	MS	TestCode:	6010_WPGE	Units:	ug/L	Prep Date:	7/8/2016	RunNo:	109377
Client ID:	ZZZZZZ	Batch ID:	58945	TestNo:	EPA 6010B	EPA 3010A		Analysis Date:	7/12/2016	SeqNo:	2370526

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Iron	222.501	20	100.0	142.2	80.3	75	125				

Sample ID	N020244-001C-MSD	SampType:	MSD	TestCode:	6010_WPGE	Units:	ug/L	Prep Date:	7/8/2016	RunNo:	109377
Client ID:	ZZZZZZ	Batch ID:	58945	TestNo:	EPA 6010B	EPA 3010A		Analysis Date:	7/12/2016	SeqNo:	2370527

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Iron	223.509	20	100.0	142.2	81.3	75	125	222.5	0.452	20	

Sample ID	N020245-002C-MS	SampType:	MS	TestCode:	6010_WPGE	Units:	ug/L	Prep Date:	7/8/2016	RunNo:	109377
Client ID:	ZZZZZZ	Batch ID:	58945	TestNo:	EPA 6010B	EPA 3010A		Analysis Date:	7/12/2016	SeqNo:	2370540

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Iron	153.381	20	100.0	82.90	70.5	75	125				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

CLIENT: ARCADIS U.S., Inc. - California
Lab Order: N020244
Project: PG&E Topock - RMP, RC000753.0801
Lab ID: N020244-001

Client Sample ID: C-CON-D-Q316
Collection Date: 7/7/2016 9:20:00 AM
Matrix: GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
DISSOLVED METALS BY ICP-MS							
	EPA 3010A			**EPA 6020**			
RunID: **ICP7_160710A**	QC Batch: **58947**			PrepDate	**7/8/2016**	Analyst: **CEI**	
Arsenic	2.4	0.025	0.10		µg/L	1	7/10/2016 01:35 PM
Barium	130	0.070	1.0		µg/L	1	7/10/2016 01:35 PM
Manganese	ND	0.056	0.50		µg/L	1	7/10/2016 01:35 PM
Molybdenum	5.6	0.039	0.50		µg/L	1	7/10/2016 01:35 PM
Selenium	1.6	0.028	0.50		µg/L	1	7/10/2016 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

CLIENT: ARCADIS U.S., Inc. - California
Lab Order: N020244
Project: PG&E Topock - RMP, RC000753.0801
Lab ID: N020244-002

Client Sample ID: C-CON-S-Q316
Collection Date: 7/7/2016 9:35:00 AM
Matrix: GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
DISSOLVED METALS BY ICP-MS							
	EPA 3010A			**EPA 6020**			
RunID: **ICP7_160710A**	QC Batch: **58947**			PrepDate	**7/8/2016**	Analyst: **CEI**	
Arsenic	2.3	0.025	0.10		µg/L	1	7/10/2016 01:40 PM
Barium	140	0.35	5.0		µg/L	5	7/11/2016 03:20 PM
Manganese	ND	0.056	0.50		µg/L	1	7/10/2016 01:40 PM
Molybdenum	5.3	0.039	0.50		µg/L	1	7/10/2016 01:40 PM
Selenium	1.6	0.028	0.50		µg/L	1	7/10/2016 01:40 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

CLIENT: ARCADIS U.S., Inc. - California
Lab Order: N020244
Project: PG&E Topock - RMP, RC000753.0801
Lab ID: N020244-003

Client Sample ID: C-NR1-D-Q316
Collection Date: 7/7/2016 10:15:00 AM
Matrix: GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
DISSOLVED METALS BY ICP-MS							
	EPA 3010A			**EPA 6020**			
RunID: **ICP7_160710A**	QC Batch: **58947**			PrepDate	**7/8/2016**	Analyst: **CEI**	
Arsenic	2.4	0.025	0.10		µg/L	1	7/10/2016 01:51 PM
Barium	140	0.070	1.0		µg/L	1	7/10/2016 01:51 PM
Manganese	0.66	0.056	0.50		µg/L	1	7/10/2016 01:51 PM
Molybdenum	5.7	0.039	0.50		µg/L	1	7/10/2016 01:51 PM
Selenium	1.6	0.028	0.50		µg/L	1	7/10/2016 01:51 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

CLIENT: ARCADIS U.S., Inc. - California
Lab Order: N020244
Project: PG&E Topock - RMP, RC000753.0801
Lab ID: N020244-004

Client Sample ID: C-NR1-S-Q316
Collection Date: 7/7/2016 10:30:00 AM
Matrix: GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
DISSOLVED METALS BY ICP-MS							
	EPA 3010A			**EPA 6020**			
RunID: **ICP7_160710A**	QC Batch: **58947**			PrepDate	**7/8/2016**	Analyst: **CEI**	
Arsenic	2.3	0.025	0.10		µg/L	1	7/10/2016 01:57 PM
Barium	130	0.070	1.0		µg/L	1	7/10/2016 01:57 PM
Manganese	0.77	0.056	0.50		µg/L	1	7/10/2016 01:57 PM
Molybdenum	5.3	0.039	0.50		µg/L	1	7/10/2016 01:57 PM
Selenium	1.6	0.028	0.50		µg/L	1	7/10/2016 01:57 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

CLIENT: ARCADIS U.S., Inc. - California
Lab Order: N020244
Project: PG&E Topock - RMP, RC000753.0801
Lab ID: N020244-005

Client Sample ID: C-NR3-D-Q316
Collection Date: 7/7/2016 11:15:00 AM
Matrix: GROUNDWATER

DISSOLVED METALS BY ICP-MS

EPA 3010A **EPA 6020**

RunID: **ICP7_160710A** QC Batch: **58947** PrepDate **7/8/2016** Analyst: **CEI**

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
Arsenic	2.2	0.025	0.10		µg/L	1	7/10/2016 02:13 PM
Barium	130	0.070	1.0		µg/L	1	7/10/2016 02:13 PM
Manganese	1.2	0.056	0.50		µg/L	1	7/10/2016 02:13 PM
Molybdenum	5.2	0.039	0.50		µg/L	1	7/10/2016 02:13 PM
Selenium	1.4	0.028	0.50		µg/L	1	7/10/2016 02:13 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

CLIENT: ARCADIS U.S., Inc. - California
Lab Order: N020244
Project: PG&E Topock - RMP, RC000753.0801
Lab ID: N020244-006

Client Sample ID: C-NR3-S-Q316
Collection Date: 7/7/2016 11:30:00 AM
Matrix: GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
DISSOLVED METALS BY ICP-MS							
	EPA 3010A			**EPA 6020**			
RunID: **ICP7_160710A**	QC Batch: **58947**			PrepDate	**7/8/2016**	Analyst: **CEI**	
Arsenic	2.4	0.025	0.10		µg/L	1	7/10/2016 02:19 PM
Barium	130	0.070	1.0		µg/L	1	7/10/2016 02:19 PM
Manganese	0.88	0.056	0.50		µg/L	1	7/10/2016 02:19 PM
Molybdenum	5.4	0.039	0.50		µg/L	1	7/10/2016 02:19 PM
Selenium	1.5	0.028	0.50		µg/L	1	7/10/2016 02:19 PM

Qualifiers:

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

CLIENT: ARCADIS U.S., Inc. - California
Lab Order: N020244
Project: PG&E Topock - RMP, RC000753.0801
Lab ID: N020244-007

Client Sample ID: C-NR4-D-Q316
Collection Date: 7/7/2016 12:05:00 PM
Matrix: GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
DISSOLVED METALS BY ICP-MS							
	EPA 3010A			**EPA 6020**			
RunID: **ICP7_160710A**	QC Batch: **58947**			PrepDate	**7/8/2016**	Analyst: **CEI**	
Arsenic	2.3	0.025	0.10		µg/L	1	7/10/2016 02:24 PM
Barium	130	0.070	1.0		µg/L	1	7/10/2016 02:24 PM
Manganese	0.62	0.056	0.50		µg/L	1	7/10/2016 02:24 PM
Molybdenum	5.5	0.039	0.50		µg/L	1	7/10/2016 02:24 PM
Selenium	1.6	0.028	0.50		µg/L	1	7/10/2016 02:24 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

CLIENT: ARCADIS U.S., Inc. - California
Lab Order: N020244
Project: PG&E Topock - RMP, RC000753.0801
Lab ID: N020244-008

Client Sample ID: C-NR4-S-Q316
Collection Date: 7/7/2016 12:20:00 PM
Matrix: GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
DISSOLVED METALS BY ICP-MS							
	EPA 3010A			**EPA 6020**			
RunID: **ICP7_160710A**	QC Batch: **58947**			PrepDate	**7/8/2016**	Analyst: **CEI**	
Arsenic	2.3	0.025	0.10		µg/L	1	7/10/2016 02:30 PM
Barium	130	0.070	1.0		µg/L	1	7/10/2016 02:30 PM
Manganese	ND	0.056	0.50		µg/L	1	7/10/2016 02:30 PM
Molybdenum	5.3	0.039	0.50		µg/L	1	7/10/2016 02:30 PM
Selenium	1.6	0.028	0.50		µg/L	1	7/10/2016 02:30 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

CLIENT: ARCADIS U.S., Inc. - California
Lab Order: N020244
Project: PG&E Topock - RMP, RC000753.0801
Lab ID: N020244-009

Client Sample ID: RRB-Q316
Collection Date: 7/7/2016 8:45:00 AM
Matrix: GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
DISSOLVED METALS BY ICP-MS							
	EPA 3010A			**EPA 6020**			
RunID: **ICP7_160710A**	QC Batch: **58947**			PrepDate	**7/8/2016**	Analyst: **CEI**	
Arsenic	2.3	0.025	0.10		µg/L	1	7/10/2016 02:35 PM
Barium	130	0.070	1.0		µg/L	1	7/10/2016 02:35 PM
Manganese	2.5	0.056	0.50		µg/L	1	7/10/2016 02:35 PM
Molybdenum	5.4	0.039	0.50		µg/L	1	7/10/2016 02:35 PM
Selenium	1.5	0.028	0.50		µg/L	1	7/10/2016 02:35 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

CLIENT: ARCADIS U.S., Inc. - California
Work Order: N020244
Project: PG&E Topock - RMP, RC000753.0801

ANALYTICAL QC SUMMARY REPORT

TestCode: 6020_DIS

Sample ID **MB-58947**	SampType: **MBLK**	TestCode: **6020_DIS**	Units: **µg/L**	Prep Date: **7/8/2016**	RunNo: **109346**
Client ID: **PBW**	Batch ID: **58947**	TestNo: **EPA 6020**	**EPA 3010A**	Analysis Date: **7/10/2016**	SeqNo: **2368169**

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									
Selenium	ND	0.50									

Sample ID **LCS-58947**	SampType: **LCS**	TestCode: **6020_DIS**	Units: **µg/L**	Prep Date: **7/8/2016**	RunNo: **109346**
Client ID: **LCSW**	Batch ID: **58947**	TestNo: **EPA 6020**	**EPA 3010A**	Analysis Date: **7/10/2016**	SeqNo: **2368170**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	9.597	0.10	10.00	0	96.0	85	115				
Barium	103.855	1.0	100.0	0	104	85	115				
Manganese	98.411	0.50	100.0	0	98.4	85	115				
Molybdenum	10.080	0.50	10.00	0	101	85	115				
Selenium	8.875	0.50	10.00	0	88.7	85	115				

Sample ID **N020246-001B-MS**	SampType: **MS**	TestCode: **6020_DIS**	Units: **µg/L**	Prep Date: **7/8/2016**	RunNo: **109346**
Client ID: **ZZZZZZ**	Batch ID: **58947**	TestNo: **EPA 6020**	**EPA 3010A**	Analysis Date: **7/10/2016**	SeqNo: **2368174**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	36.469	0.10	10.00	26.60	98.7	75	125				
Barium	128.224	1.0	100.0	28.57	99.7	75	125				
Manganese	96.313	0.50	100.0	1.015	95.3	75	125				
Molybdenum	30.721	0.50	10.00	19.08	116	75	125				
Selenium	8.841	0.50	10.00	0.3327	85.1	75	125				

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: N020244
Project: PG&E Topock - RMP, RC000753.0801

ANALYTICAL QC SUMMARY REPORT

TestCode: 6020_DIS

Sample ID	N020246-001B-MSD	SampType:	MSD	TestCode:	6020_DIS	Units:	µg/L	Prep Date:	7/8/2016	RunNo:	109346
Client ID:	ZZZZZZ	Batch ID:	58947	TestNo:	EPA 6020	EPA 3010A		Analysis Date:	7/10/2016	SeqNo:	2368175

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	36.428	0.10	10.00	26.60	98.2	75	125	36.47	0.113	20	
Barium	127.946	1.0	100.0	28.57	99.4	75	125	128.2	0.217	20	
Manganese	96.491	0.50	100.0	1.015	95.5	75	125	96.31	0.184	20	
Molybdenum	30.741	0.50	10.00	19.08	117	75	125	30.72	0.0620	20	
Selenium	9.110	0.50	10.00	0.3327	87.8	75	125	8.841	3.00	20	

Sample ID	N020244-002B-MS	SampType:	MS	TestCode:	6020_DIS	Units:	µg/L	Prep Date:	7/8/2016	RunNo:	109346
Client ID:	ZZZZZZ	Batch ID:	58947	TestNo:	EPA 6020	EPA 3010A		Analysis Date:	7/10/2016	SeqNo:	2368188

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	12.046	0.10	10.00	2.302	97.4	75	125				
Manganese	94.444	0.50	100.0	0.3892	94.1	75	125				
Molybdenum	16.467	0.50	10.00	5.339	111	75	125				
Selenium	10.155	0.50	10.00	1.591	85.6	75	125				

Sample ID	N020244-002B-MS	SampType:	MS	TestCode:	6020_DIS	Units:	µg/L	Prep Date:	7/8/2016	RunNo:	109348
Client ID:	ZZZZZZ	Batch ID:	58947	TestNo:	EPA 6020	EPA 3010A		Analysis Date:	7/11/2016	SeqNo:	2368379

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Barium	239.649	5.0	100.0	136.1	104	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
DO	Surrogate Diluted Out		Calculations are based on raw values		

SAMPLE RECEIVING ITEMS

ASSET LABORATORIES
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CHAIN OF CUSTODY RECORD

Page 1 of 1

Client: Arcadis	Report to: Dan Bush	Bill to: Marty Bloes	EDD Requirement: Excel EDD; Geotracker; Labspec; Others ✓ (RWQCB); Specify; Global ID
Address: 1410 Rocky Ridge Dr # 330	Company: Arcadis	Address:	QA/QC: RTNE; RWQCB ✓; CalTrans; LEVEL III; LEVEL IV; Regulatory; Specify State
Address: Roseville, CA 95661	Email: [redacted]	Address:	Sample Receipt Condition: 1 Chilled Y; 2 Headspace; 3 Container Intact Y; 4. Seal Present; 5. IR number 2; 6 Method of Cooling: ICE
Phone: 916-786-3302 Fax:	Address: 1410 Rocky Ridge Dr # 330, Roseville, CA 95661	Email to: mbloes@pivox.com	P.O.#
Submitted By:	Phone: 916-786-3302 Fax:	Phone: 949-727-1400, ext 200	Fax:
Title: Environmental tech			Sample Temp: 4.3, 3.2, 5.0°C
Signature: [signature] Date: 7-7-16	Sampled By: Susan Mahn	Matrix: Ground x; Sediment; Potable; Soil; NPDES; Other Solid; Surface	Courier: ASSET
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		Tracking No
Project Name: PG&E Topock - RMP	Signature: [signature] Date: 7/7/16		
Project Number: RC000753.0801			

Item No.	Laboratory Work Order No.	Sample ID/Location	Sample Date	Sample Time	Others	Cr(VI) FF (E218.6) (NH4)2 SO4, NH4 OH (3x250 mL poly)	Field QC Cr(VI) FF (E218.6) (NH4)2, SO4, NH4 OH	Dissolved metals (SW6010B/SW6020A-dis) FF, HNO3 (500mL poly) Cr	Dissolved metals (SW6010B/SW6020A-dis) FF, HNO3 (500mL poly) Ca, Mg, K, Na, B	Dissolved metals (SW6010B/SW6020A-dis) FF, HNO3 (500mL poly) As, Mn, Fe, Se, Mo, Ba	Total metals (SW6010B); HNO3 (500 mL poly) Fe	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 (SM4500N03) Nitrate, H2SO4 (125 mL poly)	Turn Around Time	No. of Container	Container Type	PRESERVATION	Remarks
1	N020244 - 01	C-CON-D-Q316	7/7/2016	920		X		X		X	X		X	X			X	X	E	7	P	BNS	
2	- 02	C-CON-S-Q316	7/7/2016	935		X		X		X	X		X	X			X	X	E	7	P	BNS	
3	- 03	C-NR1-D-Q316	7/7/2016	1015		X		X		X	X		X	X			X	X	E	7	P	BNS	
4	- 04	C-NR1-S-Q316	7/7/2016	1030		X		X		X	X		X	X			X	X	E	7	P	BNS	
5	- 05	C-NR3-D-Q316	7/7/2016	1115		X		X		X	X		X	X			X	X	E	7	P	BNS	
7	- 06	C-NR3-S-Q316	7/7/2016	1130		X		X		X	X		X	X			X	X	E	7	P	BNS	
8	- 07	C-NR4-D-Q316	7/7/2016	1205		X		X		X	X		X	X			X	X	E	7	P	BNS	
9	- 08	C-NR4-S-Q316	7/7/2016	1220		X		X		X	X		X	X			X	X	E	7	P	BNS	
12	- 09	RRB-Q316	7/7/2016	0845		X		X		X	X		X	X			X	X	E	7	P	BNS	
13	- 10	SW1-Q316	7/7/2016	0845		X		X					X	X					E	5	P	BNS	
14	- 11	SW2-Q316	7/7/2016	1400		X		X					X	X					E	5	P	BNS	

Relinquished by (Signature and Printed Name): [signature]	Date/Time: 7/7/16 1600
Relinquished by (Signature and Printed Name): [signature]	Date/Time: 7/7/16 @1601
Relinquished by (Signature and Printed Name): [signature]	Date/Time: 7/7/16 @1842
Relinquished by (Signature and Printed Name): Yoonsun Hong	Date/Time: 7/7/16 18:42
Relinquished by (Signature and Printed Name):	Date/Time:
Relinquished by (Signature and Printed Name):	Date/Time:

Turn Around Time (TAT)

- A = < 24 Hrs or Same Day TAT
- B = Next Workday
- C = 2 Workdays
- D = 3 Workdays
- x E = Routine 5-7 Workdays

TAT Starts at 8 AM the following day if samples received after 3:00PM

Special Instruction:

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 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=HNO_3	S=H_2SO_4	C=4°C	T=Tube	V=VOA	P=Pint
Z=Zn(AC)$_2$	O=NaOH	T=$Na_2S_2O_3$		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

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:	7/7/2016	Workorder:	N020244
Rep sample Temp (Deg C):	4.3/3.2/5.6	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 ☑	No ☐	Not Present ☐
2. Custody seals intact, signed, dated on shippping container/cooler?	Yes ☐	No ☐	Not Present ☑
3. Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
4. Chain of custody present?	Yes ☑	No ☐	
5. Sampler's name present in COC?	Yes ☑	No ☐	
6. Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
7. Chain of custody agrees with sample labels?	Yes ☑	No ☐	
8. Samples in proper container/bottle?	Yes ☑	No ☐	
9. Sample containers intact?	Yes ☑	No ☐	
10. Sufficient sample volume for indicated test?	Yes ☑	No ☐	
11. All samples received within holding time?	Yes ☐	No ☑	
12. Temperature of rep sample or Temp Blank within acceptable limit?	Yes ☑	No ☐	NA ☐
13. Water - VOA vials have zero headspace?	Yes ☐	No ☐	NA ☑
14. Water - pH acceptable upon receipt? Example: pH > 12 for (CN,S); pH<2 for Metals	Yes ☑	No ☐	NA ☐
15. Did the bottle labels indicate correct preservatives used?	Yes ☑	No ☐	NA ☐
16. Were there Non-Conformance issues at login?	Yes ☑	No ☐	NA ☐
Was Client notified?	Yes ☐	No ☐	NA ☑

Comments: Sample for pH was past holding time upon receipt.

Checklist Completed By: YR 7/11/2016

Reviewed By: 7/14/2016

ASSET Laboratories

WORK ORDER Summary

11-Jul-16

WorkOrder: N020244

Client ID: ARCUS02

Project: PG&E Topock - RMP, RC000753.0801 **QC Level:** Level IV **Date Received:** 7/7/2016

Comments:

Sample ID	Client Sample ID	Date Collected	Date Due	Matrix	Test No	Test Name	Hld	MS	Sub	Storage
N020244-001A	C-CON-D-Q316	7/7/2016 9:20:00 AM	7/21/2016	Groundwater	EPA 218.6	Hexavalent Chromium by IC	☐	☐	☐	WW
N020244-001B			7/21/2016		EPA 3010A	AQPREP TOTAL METALS: ICP, FLAA	☐	☐	☐	WW
			7/21/2016		EPA 3010A	AQPREP TOTAL METALS: ICP, FLAA	☐	☐	☐	WW
			7/21/2016		EPA 6010B	DISSOLVED METALS BY ICP	☐	☐	☐	WW
			7/21/2016		EPA 6020	DISSOLVED METALS BY ICP-MS	☐	☐	☐	WW
			7/21/2016		EPA 6020	DISSOLVED METALS BY ICP-MS	☐	☐	☐	WW
N020244-001C			7/21/2016		EPA 3010A	AQPREP TOTAL METALS: ICP, FLAA	☐	☐	☐	WW
			7/21/2016		EPA 6010B	TOTAL METALS BY ICP	☐	☐	☐	WW
N020244-001D			7/21/2016		EPA 120.1	SPECIFIC CONDUCTANCE	☐	☐	☐	WW
			7/21/2016		SM4500-H+B	pH	☐	☐	☐	WW
			7/21/2016		SM2540D	TOTAL NON-FILTERABLE RESIDUE	☐	☐	☐	WW
			7/21/2016			Total Suspended Solids Prep	☐	☐	☐	WW
N020244-001E			7/21/2016		SM4500-NO3F	NITRATE/NITRITE-N BY CADMIUM REDUCTION	☐	☐	☐	WW
N020244-002A	C-CON-S-Q316	7/7/2016 9:35:00 AM	7/21/2016		EPA 218.6	Hexavalent Chromium by IC	☐	☐	☐	WW
N020244-002B			7/21/2016		EPA 3010A	AQPREP TOTAL METALS: ICP, FLAA	☐	☐	☐	WW
			7/21/2016		EPA 3010A	AQPREP TOTAL METALS: ICP, FLAA	☐	☐	☐	WW
			7/21/2016		EPA 6010B	DISSOLVED METALS BY ICP	☐	☐	☐	WW
			7/21/2016		EPA 6020	DISSOLVED METALS BY ICP-MS	☐	☐	☐	WW
			7/21/2016		EPA 6020	DISSOLVED METALS BY ICP-MS	☐	☐	☐	WW
N020244-002C			7/21/2016		EPA 3010A	AQPREP TOTAL METALS: ICP, FLAA	☐	☐	☐	WW
			7/21/2016		EPA 6010B	TOTAL METALS BY ICP	☐	☐	☐	WW
N020244-002D			7/21/2016		EPA 120.1	SPECIFIC CONDUCTANCE	☐	☐	☐	WW

WORK ORDER Summary

11-Jul-16

WorkOrder: N020244

Client ID: ARCUS02

Project: PG&E Topock - RMP, RC000753.0801 **QC Level:** Level IV **Date Received:** 7/7/2016

Comments:

Sample ID	Client Sample ID	Date Collected	Date Due	Matrix	Test No	Test Name	Hld	MS	Sub	Storage
N020244-002D	C-CON-S-Q316	7/7/2016 9:35:00 AM	7/21/2016	Groundwater	SM4500-H+B	pH	☐	☐	☐	WW
			7/21/2016		SM2540D	TOTAL NON-FILTERABLE RESIDUE	☐	☐	☐	WW
			7/21/2016			Total Suspended Solids Prep	☐	☐	☐	WW
N020244-002E			7/21/2016		SM4500-NO3F	NITRATE/NITRITE-N BY CADMIUM REDUCTION	☐	☐	☐	WW
N020244-003A	C-NR1-D-Q316	7/7/2016 10:15:00 AM	7/21/2016		EPA 218.6	Hexavalent Chromium by IC	☐	☐	☐	WW
N020244-003B			7/21/2016		EPA 3010A	AQPREP TOTAL METALS: ICP, FLAA	☐	☐	☐	WW
			7/21/2016		EPA 3010A	AQPREP TOTAL METALS: ICP, FLAA	☐	☐	☐	WW
			7/21/2016		EPA 6010B	DISSOLVED METALS BY ICP	☐	☐	☐	WW
			7/21/2016		EPA 6020	DISSOLVED METALS BY ICP-MS	☐	☐	☐	WW
			7/21/2016		EPA 6020	DISSOLVED METALS BY ICP-MS	☐	☐	☐	WW
N020244-003C			7/21/2016		EPA 3010A	AQPREP TOTAL METALS: ICP, FLAA	☐	☐	☐	WW
			7/21/2016		EPA 6010B	TOTAL METALS BY ICP	☐	☐	☐	WW
N020244-003D			7/21/2016		EPA 120.1	SPECIFIC CONDUCTANCE	☐	☐	☐	WW
			7/21/2016		SM4500-H+B	pH	☐	☐	☐	WW
			7/21/2016		SM2540D	TOTAL NON-FILTERABLE RESIDUE	☐	☐	☐	WW
			7/21/2016			Total Suspended Solids Prep	☐	☐	☐	WW
N020244-003E			7/21/2016		SM4500-NO3F	NITRATE/NITRITE-N BY CADMIUM REDUCTION	☐	☐	☐	WW
N020244-004A	C-NR1-S-Q316	7/7/2016 10:30:00 AM	7/21/2016		EPA 218.6	Hexavalent Chromium by IC	☐	☐	☐	WW
N020244-004B			7/21/2016		EPA 3010A	AQPREP TOTAL METALS: ICP, FLAA	☐	☐	☐	WW
			7/21/2016		EPA 3010A	AQPREP TOTAL METALS: ICP, FLAA	☐	☐	☐	WW
			7/21/2016		EPA 6010B	DISSOLVED METALS BY ICP	☐	☐	☐	WW

WORK ORDER Summary

11-Jul-16

WorkOrder: N020244

Client ID: ARCUS02

Project: PG&E Topock - RMP, RC000753.0801 **QC Level:** Level IV **Date Received:** 7/7/2016

Comments:

Sample ID	Client Sample ID	Date Collected	Date Due	Matrix	Test No	Test Name	Hld	MS	Sub	Storage
N020244-004B	C-NR1-S-Q316	7/7/2016 10:30:00 AM	7/21/2016	Groundwater	EPA 6020	DISSOLVED METALS BY ICP-MS	☐	☐	☐	WW
			7/21/2016		EPA 6020	DISSOLVED METALS BY ICP-MS	☐	☐	☐	WW
N020244-004C			7/21/2016		EPA 3010A	AQPREP TOTAL METALS: ICP, FLAA	☐	☐	☐	WW
			7/21/2016		EPA 6010B	TOTAL METALS BY ICP	☐	☐	☐	WW
N020244-004D			7/21/2016		EPA 120.1	SPECIFIC CONDUCTANCE	☐	☐	☐	WW
			7/21/2016		SM4500-H+B	pH	☐	☐	☐	WW
			7/21/2016		SM2540D	TOTAL NON-FILTERABLE RESIDUE	☐	☐	☐	WW
			7/21/2016			Total Suspended Solids Prep	☐	☐	☐	WW
N020244-004E			7/21/2016		SM4500-NO3F	NITRATE/NITRITE-N BY CADMIUM REDUCTION	☐	☐	☐	WW
N020244-005A	C-NR3-D-Q316	7/7/2016 11:15:00 AM	7/21/2016		EPA 218.6	Hexavalent Chromium by IC	☐	☐	☐	WW
N020244-005B			7/21/2016		EPA 3010A	AQPREP TOTAL METALS: ICP, FLAA	☐	☐	☐	WW
			7/21/2016		EPA 3010A	AQPREP TOTAL METALS: ICP, FLAA	☐	☐	☐	WW
			7/21/2016		EPA 6010B	DISSOLVED METALS BY ICP	☐	☐	☐	WW
			7/21/2016		EPA 6020	DISSOLVED METALS BY ICP-MS	☐	☐	☐	WW
			7/21/2016		EPA 6020	DISSOLVED METALS BY ICP-MS	☐	☐	☐	WW
N020244-005C			7/21/2016		EPA 3010A	AQPREP TOTAL METALS: ICP, FLAA	☐	☐	☐	WW
			7/21/2016		EPA 6010B	TOTAL METALS BY ICP	☐	☐	☐	WW
N020244-005D			7/21/2016		EPA 120.1	SPECIFIC CONDUCTANCE	☐	☐	☐	WW
			7/21/2016		SM4500-H+B	pH	☐	☐	☐	WW
			7/21/2016		SM2540D	TOTAL NON-FILTERABLE RESIDUE	☐	☐	☐	WW
			7/21/2016			Total Suspended Solids Prep	☐	☐	☐	WW

WORK ORDER Summary

11-Jul-16

WorkOrder: N020244

Client ID: ARCUS02

Project: PG&E Topock - RMP, RC000753.0801 **QC Level:** Level IV **Date Received:** 7/7/2016

Comments:

Sample ID	Client Sample ID	Date Collected	Date Due	Matrix	Test No	Test Name	Hld	MS	Sub	Storage
N020244-005E	C-NR3-D-Q316	7/7/2016 11:15:00 AM	7/21/2016	Groundwater	SM4500-NO3F	NITRATE/NITRITE-N BY CADMIUM REDUCTION	☐	☐	☐	WW
N020244-006A	C-NR3-S-Q316	7/7/2016 11:30:00 AM	7/21/2016		EPA 218.6	Hexavalent Chromium by IC	☐	☐	☐	WW
N020244-006B			7/21/2016		EPA 3010A	AQPREP TOTAL METALS: ICP, FLAA	☐	☐	☐	WW
			7/21/2016		EPA 3010A	AQPREP TOTAL METALS: ICP, FLAA	☐	☐	☐	WW
			7/21/2016		EPA 6010B	DISSOLVED METALS BY ICP	☐	☐	☐	WW
			7/21/2016		EPA 6020	DISSOLVED METALS BY ICP-MS	☐	☐	☐	WW
			7/21/2016		EPA 6020	DISSOLVED METALS BY ICP-MS	☐	☐	☐	WW
N020244-006C			7/21/2016		EPA 3010A	AQPREP TOTAL METALS: ICP, FLAA	☐	☐	☐	WW
			7/21/2016		EPA 6010B	TOTAL METALS BY ICP	☐	☐	☐	WW
N020244-006D			7/21/2016		EPA 120.1	SPECIFIC CONDUCTANCE	☐	☐	☐	WW
			7/21/2016		SM4500-H+B	pH	☐	☐	☐	WW
			7/21/2016		SM2540D	TOTAL NON-FILTERABLE RESIDUE	☐	☐	☐	WW
			7/21/2016			Total Suspended Solids Prep	☐	☐	☐	WW
N020244-006E			7/21/2016		SM4500-NO3F	NITRATE/NITRITE-N BY CADMIUM REDUCTION	☐	☐	☐	WW
N020244-007A	C-NR4-D-Q316	7/7/2016 12:05:00 PM	7/21/2016		EPA 218.6	Hexavalent Chromium by IC	☐	☐	☐	WW
N020244-007B			7/21/2016		EPA 3010A	AQPREP TOTAL METALS: ICP, FLAA	☐	☐	☐	WW
			7/21/2016		EPA 3010A	AQPREP TOTAL METALS: ICP, FLAA	☐	☐	☐	WW
			7/21/2016		EPA 6010B	DISSOLVED METALS BY ICP	☐	☐	☐	WW
			7/21/2016		EPA 6020	DISSOLVED METALS BY ICP-MS	☐	☐	☐	WW
			7/21/2016		EPA 6020	DISSOLVED METALS BY ICP-MS	☐	☐	☐	WW
N020244-007C			7/21/2016		EPA 3010A	AQPREP TOTAL METALS: ICP, FLAA	☐	☐	☐	WW

WORK ORDER Summary

11-Jul-16

WorkOrder: N020244

Client ID: ARCUS02

Project: PG&E Topock - RMP, RC000753.0801 **QC Level:** Level IV **Date Received:** 7/7/2016

Comments:

Sample ID	Client Sample ID	Date Collected	Date Due	Matrix	Test No	Test Name	Hld	MS	Sub	Storage
N020244-007C	C-NR4-D-Q316	7/7/2016 12:05:00 PM	7/21/2016	Groundwater	EPA 6010B	TOTAL METALS BY ICP	☐	☐	☐	WW
N020244-007D			7/21/2016		EPA 120.1	SPECIFIC CONDUCTANCE	☐	☐	☐	WW
			7/21/2016		SM4500-H+B	pH	☐	☐	☐	WW
			7/21/2016		SM2540D	TOTAL NON-FILTERABLE RESIDUE	☐	☐	☐	WW
			7/21/2016			Total Suspended Solids Prep	☐	☐	☐	WW
N020244-007E			7/21/2016		SM4500-NO3F	NITRATE/NITRITE-N BY CADMIUM REDUCTION	☐	☐	☐	WW
N020244-008A	C-NR4-S-Q316	7/7/2016 12:20:00 PM	7/21/2016		EPA 218.6	Hexavalent Chromium by IC	☐	☐	☐	WW
N020244-008B			7/21/2016		EPA 3010A	AQPREP TOTAL METALS: ICP, FLAA	☐	☐	☐	WW
			7/21/2016		EPA 3010A	AQPREP TOTAL METALS: ICP, FLAA	☐	☐	☐	WW
			7/21/2016		EPA 6010B	DISSOLVED METALS BY ICP	☐	☐	☐	WW
			7/21/2016		EPA 6020	DISSOLVED METALS BY ICP-MS	☐	☐	☐	WW
			7/21/2016		EPA 6020	DISSOLVED METALS BY ICP-MS	☐	☐	☐	WW
N020244-008C			7/21/2016		EPA 3010A	AQPREP TOTAL METALS: ICP, FLAA	☐	☐	☐	WW
			7/21/2016		EPA 6010B	TOTAL METALS BY ICP	☐	☐	☐	WW
N020244-008D			7/21/2016		EPA 120.1	SPECIFIC CONDUCTANCE	☐	☐	☐	WW
			7/21/2016		SM4500-H+B	pH	☐	☐	☐	WW
			7/21/2016		SM2540D	TOTAL NON-FILTERABLE RESIDUE	☐	☐	☐	WW
			7/21/2016			Total Suspended Solids Prep	☐	☐	☐	WW
N020244-008E			7/21/2016		SM4500-NO3F	NITRATE/NITRITE-N BY CADMIUM REDUCTION	☐	☐	☐	WW
N020244-009A	RRB-Q316	7/7/2016 8:45:00 AM	7/21/2016		EPA 218.6	Hexavalent Chromium by IC	☐	☐	☐	WW
N020244-009B			7/21/2016		EPA 3010A	AQPREP TOTAL METALS: ICP, FLAA	☐	☐	☐	WW

WORK ORDER Summary

11-Jul-16

WorkOrder: N020244

Client ID: ARCUS02

Project: PG&E Topock - RMP, RC000753.0801 **QC Level:** Level IV **Date Received:** 7/7/2016

Comments:

Sample ID	Client Sample ID	Date Collected	Date Due	Matrix	Test No	Test Name	Hld	MS	Sub	Storage
N020244-009B	RRB-Q316	7/7/2016 8:45:00 AM	7/21/2016	Groundwater	EPA 3010A	AQPREP TOTAL METALS: ICP, FLAA	☐	☐	☐	WW
			7/21/2016		EPA 6010B	DISSOLVED METALS BY ICP	☐	☐	☐	WW
			7/21/2016		EPA 6020	DISSOLVED METALS BY ICP-MS	☐	☐	☐	WW
			7/21/2016		EPA 6020	DISSOLVED METALS BY ICP-MS	☐	☐	☐	WW
N020244-009C			7/21/2016		EPA 3010A	AQPREP TOTAL METALS: ICP, FLAA	☐	☐	☐	WW
			7/21/2016		EPA 6010B	TOTAL METALS BY ICP	☐	☐	☐	WW
N020244-009D			7/21/2016		EPA 120.1	SPECIFIC CONDUCTANCE	☐	☐	☐	WW
			7/21/2016		SM4500-H+B	pH	☐	☐	☐	WW
			7/21/2016		SM2540D	TOTAL NON-FILTERABLE RESIDUE	☐	☐	☐	WW
			7/21/2016			Total Suspended Solids Prep	☐	☐	☐	WW
N020244-009E			7/21/2016		SM4500-NO3F	NITRATE/NITRITE-N BY CADMIUM REDUCTION	☐	☐	☐	WW
N020244-010A	SW1-Q316	7/7/2016 1:45:00 PM	7/21/2016		EPA 218.6	Hexavalent Chromium by IC	☐	☐	☐	WW
N020244-010B			7/21/2016		EPA 3010A	AQPREP TOTAL METALS: ICP, FLAA	☐	☐	☐	WW
			7/21/2016		EPA 6020	DISSOLVED METALS BY ICP-MS	☐	☐	☐	WW
N020244-010C			7/21/2016		EPA 120.1	SPECIFIC CONDUCTANCE	☐	☐	☐	LR
			7/21/2016		SM4500-H+B	pH	☐	☐	☐	LR
N020244-011A	SW2-Q316	7/7/2016 2:00:00 PM	7/21/2016		EPA 218.6	Hexavalent Chromium by IC	☐	☐	☐	WW
N020244-011B			7/21/2016		EPA 3010A	AQPREP TOTAL METALS: ICP, FLAA	☐	☐	☐	WW
			7/21/2016		EPA 6020	DISSOLVED METALS BY ICP-MS	☐	☐	☐	WW
N020244-011C			7/21/2016		EPA 120.1	SPECIFIC CONDUCTANCE	☐	☐	☐	LR
			7/21/2016		SM4500-H+B	pH	☐	☐	☐	LR
N020244-012A	FOLDER		7/21/2016		EDD	RWQCB	☐	☐	☐	LAB

WORK ORDER Summary

11-Jul-16

WorkOrder: N020244

Client ID: ARCUS02

Project: PG&E Topock - RMP, RC000753.0801 **QC Level:** Level IV **Date Received:** 7/7/2016

Comments:

Sample ID	Client Sample ID	Date Collected	Date Due	Matrix	Test No	Test Name	Hld	MS	Sub	Storage
N020244-012A	FOLDER		7/21/2016		Folder	Folder	☐	☐	☐	LAB

List of Analysts

ASSET Laboratories Work Order: **N020244**

NAME	TEST METHOD
Quennie Manimtim	EPA 218.6
Claire Ignacio	EPA 6010B, EPA 6020
Ryan Balilu	SM 4500-NO3F
Lilia Ramit	EPA 120.1, SM 4500-H+B, SM 2540D

EPA 120.1

Wet Chemistry Technical Batch Review Checklist (ARCUS02)

ASSET LABORATORIES - LAS VEGAS

FIRST LEVEL REVIEW:

QC Batch Number: R109322 **Analyst:** LSR

ASSET #: N020244 **Date Analyzed:** 7/8/2016

Method: EPA 120.1

Initial Calibration	1st Level Review Y	1st Level Review N	1st Level Review N/A	2nd Level Review Y	2nd Level Review N	2nd Level Review 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:

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: Tricia Ramit Date: 7/11/2016

2nd Level Reviewer: Mary 7/23/2016 Date: —

LOGBOOK DATA, QUANTITATION REPORT and/or SPECTRA

Conductivity Logbook

Date: 7/8/16 1010

Analyst: LBR

	Standard	Std ID	Reading	Comments
	1431 µS/cm	CNW-160111A	941 µS/cm @ 25.1°C	% Rec: (90-110%)
	1411	160425A	1414 @ 23.1°C	
	9988	160425B	9990 @ 23.1°C	
	10000	160322B	10100 @ 23.1°C	

	Sample ID	Matrix	Reading	Comments
1	NO20244-001D	H2O	967 @ 22.1°C	
2	2D		980 @ 21.5°C	
3	3D		952 @ 21.5°C	
4	4D		960 @ 21.2°C	
5	5D		957 @ 21.4°C	
6	6D		948 @ 21.4°C	
7	7D		958 @ 21.3°C	
8	8D		965 @ 21.4°C	
9	9D		971 @ 21.5°C	
10	10C		196 @ 21.5°C	
Dup	1DUP		974 @ 21.4°C	Accept: 10% water, 20% soil
	Std Chk:			% Rec: (90-110%)

Date:

Analyst: CONTD

	Standard	Std ID	Reading	Comments
	1413 µS/cm	CNW-160111E	1462 @ 23.3°C	% Rec: (90-110%)
	10,000	160425C	10580 @ 23.3°C	
	99893	151130A	104700 @ 23.3°C	

	Sample ID	Matrix	Reading	Comments
1	NO20244-01C	H2O	1020 @ 22.0°C	
2	NO20245-001D		980 @ 22.1°C	
3	2D		994 @ 21.9°C	
4	2D DUP		991 @ 22.0°C	
5				
6				
7				
8				
9	1413 µS/cm	CNW-160111E	1461 µS/cm @ 23.4°C	
10	10000	160425C	10530 @ 23.4°C	
Dup	99893	151130A	10528 @ 23.4°C	Accept: 10% water, 20% soil
	Std Chk:			% Rec: (90-110%)

Logbook # 5

ASSET ANALYTICAL SERVICES

Julia Ramit 7/11/2016

SM 4500-H+B

pH Technical Batch Review Checklist (ARCUS02)

ASSET LABORATORIES - LAS VEGAS

FIRST LEVEL REVIEW:

QC Batch Number: R109326 **Instrument ID:** pH meter

ASSET #: N020244 **Analyst:** LSR

Date Analyzed: 7/8/2016

Method: EPA 150.1

pH Meter Calibration	1st Level Review Y	1st Level Review N	1st Level Review N/A	2nd Level Review Y	2nd Level Review N	2nd Level Review 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					
Sample Information						
4. Are all samples analyzed within hold time.		X				
QC Items						
5. Was a duplicate sample analyzed?	X					
Raw Data and Miscellaneous Information						
6. Are Non-Conformances documented			X			
7. Runlog complete and included in package.	X					
Preliminary Report						
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:

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: 7/12/2016

2nd Level Reviewer: 7/23/2016 Date: —

LOGBOOK DATA, QUANTITATION REPORT and/or SPECTRA

pH Logbook

Date: 7/7/16 1410
Analyst: LSR

Standard	Std ID	pH	Comments
Buffer 4	CNW-160322A	4.02 @ 22.7°C	SLOPE: 95.3%
Buffer 7	160307A	7.00 @ 22.8°C	
Buffer 10	160609C	10.04 @ 22.6°C	

	Sample ID	Matrix	pH	Comments
1	NO20235-002A	Soil	7.62 @ 23.8°C	
2	4A		7.80 @ 23.7°C	
3	6A		7.86 @ 23.8°C	
4	8A		7.65 @ 23.7°C	
5	10A		8.01 @ 23.8°C	
6	12A		7.24 @ 24.0°C	
7	111A		8.32 @ 23.8°C	
8	114A-DUP		8.31 @ 24.1°C	
9	16A		8.02 @ 23.8°C	
10	17A		8.15 @ 23.9°C	
Dup				Accept: 10% water, 20% soil
	Buffer 4, (7), 10	CNW-160111C	6.97 @ 25.8°C	Accept: +/-0.1 pH units from expected value

(Circle one)

Date: 7/8/16 1055
Analyst: LSR

Standard	Std ID	pH	Comments
Buffer 4	CNW-160322A	4.02 @ 23.2°C	SLOPE: 95.4%
Buffer 7	160309A	7.01 @ 23.6°C	
Buffer 10	160609C	10.05 @ 22.9°C	

	Sample ID	Matrix	pH	Comments
1	NO20244-001D	Soil	8.21 @ 21.5°C	
2	2D		8.28 @ 21.4°C	
3	3D		8.27 @ 21.3°C	
4	4D		8.28 @ 21.5°C	
5	5D		8.24 @ 21.5°C	
6	6D		8.28 @ 21.5°C	
7	7D		8.28 @ 21.6°C	
8	8D		8.27 @ 21.7°C	
9	9D		8.29 @ 21.8°C	
10	10C		7.97 @ 21.7°C	
Dup	10D DUP		8.16 @ 21.9°C	Accept: 10% water, 20% soil
	Buffer 4, (7), 10	CNW-160111C	7.04 @ 24.4°C	Accept: +/-0.1 pH units from expected value

(Circle one)

pH Logbook

Date: 7/8/16 1055

Analyst: ISR CONTD

Standard	Std ID	pH	Comments
Buffer 4	CINV-160322A	4.02 @ 23.2°C	SLOPE: 95.4%
Buffer 7	160309A	7.01 @ 23.6°C	
Buffer 10	160609C	10.03 @ 22.9°C	

	Sample ID	Matrix	pH	Comments
1	N020244-011C	H2O	7.93 @ 21.9°C	
2	N020245-001D		8.31 @ 21.9°C	
3	2D		8.19 @ 22.7°C	
4	2D DUP		8.21 @ 22.5°C	
5				
6				
7				
8				
9				
10				
Dup				Accept: 10% water, 20% soil
	Buffer 4, (7), 10 (Circle one)	CINV-160111C	7.02 @ 24.6°C	Accept: +/-0.1 pH units from expected value

Date: 7/11/16

Analyst: Mark

Standard	Std ID	pH	Comments
Buffer 4	CINV-160322A	4.01 @ 23.3°C	Slope: 96.7%
Buffer 7	160309A	7.00 @ 23.5°C	
Buffer 10	160609C	10.03 @ 23.5°C	

	Sample ID	Matrix	pH	Comments
1	N020239-001A	Soil	9.14 / 2.14	
2				
3				
4				
5				
6				
7				
8				
9				
10				
Dup				Accept: 10% water, 20% soil
	Buffer 4, (7), 10 (Circle one)	CINV-160111C	7.02 @ 23.5°C	Accept: +/-0.1 pH units from expected value

SM 2540D

Wet Chemistry Technical Batch Review Checklist (ARCUS02)

ASSET LABORATORIES - LAS VEGAS

FIRST LEVEL REVIEW:

QC Batch Number: 58951/58952 **Analyst:** LSR

ASSET #: N020244 **Date Analyzed:** 7/8/2016

Method: EPA 160.2

Initial Calibration	1st Level Review Y	N	N/A	2nd Level Review 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/MS~~D, 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:

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: 7/12/2016

2nd Level Reviewer: Nancy 7/23/2016 Date: —

SAMPLE CALCULATION

SAMPLE CALCULATION

METHOD: SM 2540D
TEST NAME: Total Non-Filterable Residue
MATRIX: ~~Water~~ Groundwater

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 **N020244-001D,** TSS concentration in mg/L is calculated as follows:

$$\text{TSS, mg/L} = \frac{(1.4505- 1.4498) *1000000}{100}$$
$$= 7 \text{ mg/L}$$

Since reporting limit is 10 mg/L, therefore:

TSS = ND

Julia Ramit 7/12/2016

SAMPLE PREPARATION LOG

ASSET Laboratories

PREP BATCH REPORT

Prep Start Date: **7/8/2016 12:07:13 P**
Prep End Date: **7/8/2016 6:00:00 P**
Reviewed/ Date: _____
Initials/ Date: Lilia Ramit 7/12/2016
Prep Batch **58951** Prep Code: **160.2_W_PRE** Technician: **Lilia Ramit**
Prep Factor Units: **mL / mL** Temp. (°C): **105**

Sample ID	Matrix	pH	SampAmt	3 Replicates	Sol Added	Sol Recov	Fin Vol	factor	Clean Up Code	TURB Check
LCS-58951	Water		100	☐	0	0	100	1.000		
MB-58951	Water		100	☐	0	0	100	1.000		
N020228-011D	Groundwater		100	☐	0	0	100	1.000		
N020228-012D	Groundwater		100	☐	0	0	100	1.000		
N020228-013D	Groundwater		100	☐	0	0	100	1.000		
N020244-001D	Groundwater		100	☐	0	0	100	1.000		
N020244-001D-DU	Groundwater		100	☐	0	0	100	1.000		
N020244-002D	Groundwater		100	☐	0	0	100	1.000		
N020244-003D	Groundwater		100	☐	0	0	100	1.000		
N020244-004D	Groundwater		100	☐	0	0	100	1.000		
N020244-005D	Groundwater		100	☐	0	0	100	1.000		
N020244-006D	Groundwater		100	☐	0	0	100	1.000		
N020244-007D	Groundwater		100	☐	0	0	100	1.000		

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

Number	Reagent Name
8395	Glass Fiber Filter, 47mm

Spk ID	Spike Name	SampType	AmtAdd
IWST160520A	1000 ppm Talc	LCS	100

ASSET Laboratories

PREP BATCH REPORT

Prep Start Date: **7/8/2016 12:07:13 P**
Prep End Date:

Reviewed/ Date: _____

Initials/ Date: Lilia Ramit 7/12/2016

Prep Batch **58951** 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-58951	Water	1W ST160 520	100	☐	0	0	100	1.000		
MB-58951	Water		100	☐	0	0	100	1.000		
N020228-011D	Groundwater		100	☐	0	0	100	1.000		
N020228-012D	Groundwater		100	☐	0	0	100	1.000		
N020228-013D	Groundwater		100	☐	0	0	100	1.000		
N020244-001D	Groundwater		100	☐	0	0	100	1.000		
N020244-001D-DU	Groundwater		100	☐	0	0	100	1.000		
N020244-002D	Groundwater		100	☐	0	0	100	1.000		
N020244-003D	Groundwater		100	☐	0	0	100	1.000		
N020244-004D	Groundwater		100	☐	0	0	100	1.000		
N020244-005D	Groundwater		100	☐	0	0	100	1.000		
N020244-006D	Groundwater		100	☐	0	0	100	1.000		
N020244-007D	Groundwater		100	☐	0	0	100	1.000		

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

8395

ASSET Laboratories

PREP BATCH REPORT

Prep Start Date: **7/8/2016 12:07:13 P**
Prep End Date: **7/8/2016 6:00:00 P**
Reviewed/ Date: _____
Initials/ Date: Lilia Ramit 7/12/2016
Prep Batch **58952** Prep Code: **160.2_W_PRE** Technician: **Lilia Ramit**
Prep Factor Units: **mL / mL** Temp. (°C): **105**

Sample ID	Matrix	pH	SampAmt	3 Replicates	Sol Added	Sol Recov	Fin Vol	factor	Clean Up Code	TURB Check
LCS-58952	Water		100	☐	0	0	100	1.000		
MB-58952	Water		100	☐	0	0	100	1.000		
N020244-008D	Groundwater		100	☐	0	0	100	1.000		
N020244-009D	Groundwater		100	☐	0	0	100	1.000		
N020245-001D	Groundwater		100	☐	0	0	100	1.000		
N020245-001D-DU	Groundwater		100	☐	0	0	100	1.000		
N020245-002D	Groundwater		100	☐	0	0	100	1.000		

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

Number	Reagent Name
8395	Glass Fiber Filter, 47mm

Spk ID	Spike Name	SampType	AmtAdd
IWST160520A	1000 ppm Talc	LCS	100

ASSET Laboratories

PREP BATCH REPORT

Prep Start Date: 7/8/2016 12:07:13 P
Prep End Date:

Reviewed/ Date: _____
Initials/ Date: Lilia Ramit 7/12/2016

Prep Batch 58952 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-58952	Water	IWR1600 5207	100	☐	0	0	100	1.000		
MB-58952	Water		100	☐	0	0	100	1.000		
N020244-008D	Groundwater		100	☐	0	0	100	1.000		
N020244-009D	Groundwater		100	☐	0	0	100	1.000		
N020245-001D	Groundwater		100	☐	0	0	100	1.000		
N020245-001D-DU	Groundwater		100	☐	0	0	100	1.000		
N020245-002D	Groundwater		100	☐	0	0	100	1.000		

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

#83915

LOGBOOK DATA, QUANTITATION REPORT and/or SPECTRA

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
7/8/16 1207	MB2 58951	100	1.3755 1.3753	1.3753 1.3752	
2m	CCS2 58951	100	1.4410 1.4409	1.5348 1.5351	
11	NO20228-0110	100	1.4423 1.4425	1.4577 1.4574	murky
12	120	100	1.4268 1.4266	1.4273 1.4274	
13	130	100	1.4282 1.4280	1.4286 1.4287	
14	NO20244-0010	100	1.4498 1.4498	1.4505 1.4505	
100P3	10 DUP	100	1.3833 1.3833	1.3841 1.3841	
15	20	100	1.4234 1.4237	1.4239 1.4240	
16	30	100	1.4324 1.4324	1.4326 1.4328	
17	40	100	1.4401 1.4404	1.4408 1.4407	

Julia Ramit 7/12/2016

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
7/8/16 T207 18	N020244-005D	100	1.4434 1.4433	1.4442 1.44~~3~~40 4	
19	6D	100	1.4227 1.4227	1.4236 1.4234	
20	7D	100	1.4454 1.4455	1.4462 1.4460	
	MB3 58952	100	1.3622 1.3619	1.3618 1.3619	
30	LCS3 58952	100	1.4210 1.4210	1.5156 1.5157	
21	N020244-008D	100	1.4298 1.4298	1.4301 1.4302	
22	9D	100	1.4194 1.4194	1.4201 1.4198	
23	N020245-001D	100	1.4235 1.4233	1.4237 1.4239	
DP4	1D DUP	100	1.3682 1.3680	1.3686 1.3685	
24	2D	100	1.4406 1.4406	1.4412 1.4413	

Julia Ramit 7/12/2016

TOTAL SUSPENDED SOLIDS, TSS

TSS, mg/L = (A-B) * 10000*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

Date:	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
7/8/2016							
MBLK-58951	100	1.3753	1.3752	-1.0000	1.00	-1	MBLK
LCS-58951	100	1.4409	1.5351	942.0000	1.00	942	LCS
N020228-011D	100	1.4425	1.4574	149.0000	1.00	149	SAMP
N020228-012D	100	1.4266	1.4274	8.0000	1.00	8	SAMP
N020228-013D	100	1.428	1.4287	7.0000	1.00	7	SAMP
N020244-001D	100	1.4498	1.4505	7.0000	1.00	7	SAMP
N020244-001DDUP	100	1.3833	1.3841	8.0000	1.00	8	DUP
N020244-002D	100	1.4237	1.424	3.0000	1.00	3	SAMP
N020244-003D	100	1.4324	1.4328	4.0000	1.00	4	SAMP
N020244-004D	100	1.4404	1.4407	3.0000	1.00	3	SAMP
N020244-005D	100	1.4433	1.444	7.0000	1.00	7	SAMP
N020244-006D	100	1.4227	1.4234	7.0000	1.00	7	SAMP
N020244-007D	100	1.4455	1.446	5.0000	1.00	5	SAMP

Silvia Ramit 7/12/2016

TOTAL SUSPENDED SOLIDS, TSS

TSS, mg/L = (A-B) * 10000*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

Date:	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
7/8/2016							
MBLK-58952	100	1.3619	1.3619	0.0000	1.00	0	MBLK
LCS-58952	100	1.4210	1.5157	947.0000	1.00	947	LCS
N020244-008D	100	1.4298	1.4302	4.0000	1.00	4	SAMP
N020244-009D	100	1.4194	1.4198	4.0000	1.00	4	SAMP
N020245-001D	100	1.4233	1.4239	6.0000	1.00	6	SAMP
N020245-001DDUP	100	1.368	1.3685	5.0000	1.00	5	DUP
N020245-002D	100	1.4406	1.4413	7.0000	1.00	7	SAMP

Julia Ramit 7/12/2016

EPA 218.6

IC Technical Batch Review Checklist (ARCUS02)

ASSET LABORATORIES - LAS VEGAS

IC ARCUS
REV 2.0
011416

QC Batch Number: R109328
ASSET #: N020244

Instrument ID: IC-07
Analyst: QBM
Date Analyzed: 7/8/2016

Method:

- [ ] EPA 300.0
- [ ] EPA 7199
- [x] 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					
Continuing Calibration						
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					
Sample Information						
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			
QC Items						
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			
Raw Data and Miscellaneous Information						
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					
Preliminary Report						
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 _____ Date: 7/21/2016

2nd Level Reviewer 7/23/2016 Date: —

SAMPLE CALCULATION

Sample Calculation

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

FORMULA:

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

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

where:

A = μg/L, IC Cr^{+6} calculated concentration
DF = dilution factor

For **N020244-002A** concentration in μg/L is calculated as follows:

$$Cr^{+6}, \mu g/L = 0.0798 * 1$$

$$= 0.0798$$

Since reporting limit is 0.20 μg/L,

Cr^{+6}, μg/L = ND

7/21/2016

ANALYSIS RUN LOG

INJECTION LOG: 160707A

Instrument ID: IC-07

Sample No	Sample Name	Type	DF	Peak Name	Injection Date/Time	Comments
1	BLANK	BLANK	1	Hexavalent Chromium	07/07/16 10:12 AM	Not Reported
2	iBLANK	iBLANK	1	Hexavalent Chromium	07/07/16 10:23 AM	~~Not~~ Reported
3	STD-0.2 ppb	ICAL	1	Hexavalent Chromium	07/07/16 10:32 AM	Reported
4	STD-1.0 ppb	ICAL	1	Hexavalent Chromium	07/07/16 10:42 AM	Reported
5	STD-5.0 ppb	ICAL	1	Hexavalent Chromium	07/07/16 10:51 AM	Reported
6	STD-10.0 ppb	ICAL	1	Hexavalent Chromium	07/07/16 11:00 AM	Reported
7	STD-15.0 ppb	ICAL	1	Hexavalent Chromium	07/07/16 11:10 AM	Reported
8	STD-20.0 ppb	ICAL	1	Hexavalent Chromium	07/07/16 11:19 AM	Reported
9	ICV	ICV	1	Hexavalent Chromium	07/07/16 11:29 AM	Reported
10	PQL@0.2ppb	CCV2	1	Hexavalent Chromium	07/07/16 11:38 AM	Reported
11	ICB	ICB	1	Hexavalent Chromium	07/07/16 11:48 AM	Reported
12	MB-109313	MBLK	1	Hexavalent Chromium	07/07/16 11:59 AM	Reported
13	LCS-109313	LCS	1	Hexavalent Chromium	07/07/16 12:09 PM	Reported
14	N020228-001A	SAMP	1	Hexavalent Chromium	07/07/16 12:18 PM	Reported
15	N020228-001ADUP	DUP	1	Hexavalent Chromium	07/07/16 12:28 PM	Reported
16	N020228-001AMS	MS	1	Hexavalent Chromium	07/07/16 12:37 PM	Reported
17	N020228-002A	SAMP	1	Hexavalent Chromium	07/07/16 12:47 PM	Reported
18	N020228-002AMS	MS	1	Hexavalent Chromium	07/07/16 12:56 PM	Reported
19	N020228-002AMSD	MSD	1	Hexavalent Chromium	07/07/16 1:06 PM	Reported
20	N020228-003A	SAMP	1	Hexavalent Chromium	07/07/16 1:15 PM	Reported
21	N020228-003AMS	MS	1	Hexavalent Chromium	07/07/16 1:25 PM	Reported
22	CCV-1	CCV1	1	Hexavalent Chromium	07/07/16 1:34 PM	Reported
23	CCB-1	CCB	1	Hexavalent Chromium	07/07/16 1:44 PM	Reported
24	N020228-004A	SAMP	1	Hexavalent Chromium	07/07/16 1:53 PM	Reported
25	N020228-004AMS	MS	1	Hexavalent Chromium	07/07/16 2:02 PM	Reported
26	N020228-005A	SAMP	1	Hexavalent Chromium	07/07/16 2:12 PM	Reported
27	N020228-005AMS	MS	1	Hexavalent Chromium	07/07/16 2:21 PM	Not Reported
28	N020228-006A	SAMP	1	Hexavalent Chromium	07/07/16 2:31 PM	Reported
29	N020228-006AMS	MS	1	Hexavalent Chromium	07/07/16 2:40 PM	Reported
30	N020228-007A	SAMP	1	Hexavalent Chromium	07/07/16 2:50 PM	Reported
31	N020228-007AMS	MS	1	Hexavalent Chromium	07/07/16 2:59 PM	Reported
32	N020228-008A	SAMP	1	Hexavalent Chromium	07/07/16 3:09 PM	Reported
33	N020228-008AMS	MS	1	Hexavalent Chromium	07/07/16 3:18 PM	Reported
34	CCV-2	CCV	1	Hexavalent Chromium	07/07/16 3:28 PM	Reported
35	CCB-2	CCB	1	Hexavalent Chromium	07/07/16 3:37 PM	Reported
36	N020228-005AMS	MS	1	Hexavalent Chromium	07/07/16 3:47 PM	Reported
37	N020228-009A	SAMP	1	Hexavalent Chromium	07/07/16 3:56 PM	Reported
38	N020228-009AMS	MS	1	Hexavalent Chromium	07/07/16 4:05 PM	Reported
39	N020228-010A	SAMP	1	Hexavalent Chromium	07/07/16 4:15 PM	Reported
40	N020228-010AMS	MS	1	Hexavalent Chromium	07/07/16 4:24 PM	Reported
41	N020228-011A	SAMP	1	Hexavalent Chromium	07/07/16 4:34 PM	Reported
42	N020228-011AMS	MS	1	Hexavalent Chromium	07/07/16 4:44 PM	Reported

7/21/2016

INJECTION LOG: 160707A

Instrument ID: IC-07

Sample No	Sample Name	Type	DF	Peak Name	Injection Date/Time	Comments
43	N020228-012A	SAMP	1	Hexavalent Chromium	07/07/16 4:53 PM	Reported
44	N020228-012AMS	MS	1	Hexavalent Chromium	07/07/16 5:02 PM	Reported
45	N020228-013A	SAMP	1	Hexavalent Chromium	07/07/16 5:12 PM	Reported
46	CCV-3	CCV1	1	Hexavalent Chromium	07/07/16 5:24 PM	Reported
47	CCB-3	CCB	1	Hexavalent Chromium	07/07/16 5:33 PM	Reported
48	N020229-001A	SAMP	1	Hexavalent Chromium	07/07/16 5:43 PM	Not Reported
49	N020228-013AMS	MS	1	Hexavalent Chromium	07/07/16 5:52 PM	Not Reported
50	N020228-013AMS	MS	1	Hexavalent Chromium	07/07/16 6:04 PM	Reported
51	N020229-001AMS	MS	1	Hexavalent Chromium	07/07/16 6:15 PM	Not Reported
52	N020230-001A	SAMP	1	Hexavalent Chromium	07/07/16 6:25 PM	Reported
53	N020230-002A	SAMP	1	Hexavalent Chromium	07/07/16 6:34 PM	Reported
54	N020230-003A	SAMP	1	Hexavalent Chromium	07/07/16 6:44 PM	Reported
55	N020230-004A	SAMP	1	Hexavalent Chromium	07/07/16 6:53 PM	Reported
56	N020230-005A	SAMP	1	Hexavalent Chromium	07/07/16 7:03 PM	Reported
57	N020230-006A	SAMP	1	Hexavalent Chromium	07/07/16 7:12 PM	Reported
58	CCV-4	CCV	1	Hexavalent Chromium	07/07/16 7:22 PM	Reported
59	CCB-4	CCB	1	Hexavalent Chromium	07/07/16 7:31 PM	Reported
60	N020229-001A	SAMP	1	Hexavalent Chromium	07/07/16 7:40 PM	Reported
61	N020229-001AMS	MS	1	Hexavalent Chromium	07/07/16 7:50 PM	Reported
62	CCV-5	CCV1	1	Hexavalent Chromium	07/07/16 7:59 PM	Reported
63	CCB-5	CCB	1	Hexavalent Chromium	07/07/16 8:09 PM	Reported

7/21/2016

Injection Log Summary

Sequence Details

Name:	**IC-07_160707B**	*Created On:*	**24/Jul/12 17:17:21**
Directory:	**Instrument Data\IC-7\2016**	*Created By:*	**ics 5000**
Data Vault:	**ChromeleonLocal**	*Updated On:*	**08/Jul/16 09:38:15**
No. of Injections:	**66**	*Updated By:*	**ics 5000**

Injection Details

No.	Injection Name	Position	Volume µL	Type	Level	Inject Time	Status	Comment
1	BLANK	3	1000	Unknown		07/07/2016 10:12	Finished	
2	iBLANK	4	1000	Unknown		07/07/2016 10:23	Finished	INSTRUMENT BLANK
3	STD1-0.2 ppb	5	1000	Calibration Standard	01	07/07/2016 10:32	Finished	0.2 ppb, IWST160401A
4	STD2-1.0 ppb	6	1000	Calibration Standard	02	07/07/2016 10:42	Finished	1.0 ppb, IWST160401A
5	STD3-5.0 ppb	7	1000	Calibration Standard	03	07/07/2016 10:51	Finished	5.0 ppb, IWST160401A
6	STD4-10.0 ppb	8	1000	Calibration Standard	04	07/07/2016 11:00	Finished	10 ppb, IWST160401A
7	STD5-15.0 ppb	9	1000	Calibration Standard	05	07/07/2016 11:10	Finished	15 ppb, IWST160401A
8	STD6-20.0 ppb	10	1000	Calibration Standard	06	07/07/2016 11:19	Finished	20 ppb, IWST160401A
9	ICV,ICV,1,	11	1000	Unknown		07/07/2016 11:29	Finished	ICV @5ppb, IWST-160401B
10	PQL@0.2ppb,CCV2,1	12	1000	Unknown		07/07/2016 11:38	Finished	PQL @ 0.2ppb
11	ICB,ICB,1,	13	1000	Unknown		07/07/2016 11:48	Finished	ICB R160629C
12	MB-H2O,MBLK,1	14	1000	Unknown		07/07/2016 11:59	Finished	MB R160629C
13	LCS-H2O,LCS,1	15	1000	Unknown		07/07/2016 12:09	Finished	LCS, IWST-160401B
14	N020228-001A,SAMP	16	1000	Unknown		07/07/2016 12:18	Finished	SAMP, 10 mL
15	N020228-001ADUP,D	17	1000	Unknown		07/07/2016 12:28	Finished	DUP, 10 mL
16	N020228-001AMS,MS	18	1000	Unknown		07/07/2016 12:37	Finished	MS (1ppb), IWST-160401B, 10
17	N020228-002A,SAMP	19	1000	Unknown		07/07/2016 12:47	Finished	SAMP, 10 mL
18	N020228-002AMS,MS	20	1000	Unknown		07/07/2016 12:56	Finished	MS (1ppb), IWST-160401B, 10
19	N020228-002AMSD,M	21	1000	Unknown		07/07/2016 13:06	Finished	MSD (1ppb), IWST-160401B, 1
20	N020228-003A,SAMP	22	1000	Unknown		07/07/2016 13:15	Finished	SAMP, 10 mL
21	N020228-003AMS,MS	23	1000	Unknown		07/07/2016 13:25	Finished	MS (1ppb), IWST-160401B, 10
22	CCV-1,CCV1,1,	24	1000	Unknown		07/07/2016 13:34	Finished	CCV @10ppb, IWST-160401A
23	CCB-1,CCB,1,	25	1000	Unknown		07/07/2016 13:44	Finished	CCB, R160629C
24	N020228-004A,SAMP	26	1000	Unknown		07/07/2016 13:53	Finished	SAMP, 10 mL
25	N020228-004AMS,MS	27	1000	Unknown		07/07/2016 14:02	Finished	MS (1ppb), IWST-160401B, 10
26	N020228-005A,SAMP	28	1000	Unknown		07/07/2016 14:12	Finished	SAMP, 10 mL
27	N020228-005AMS,MS	29	1000	Unknown		07/07/2016 14:21	Finished	MS (1ppb), IWST-160401B, 10
28	N020228-006A,SAMP	30	1000	Unknown		07/07/2016 14:31	Finished	SAMP, 10 mL
29	N020228-006AMS,MS	31	1000	Unknown		07/07/2016 14:40	Finished	MS (1ppb), IWST-160401B, 10
30	N020228-007A,SAMP	32	1000	Unknown		07/07/2016 14:50	Finished	SAMP, 10 mL
31	N020228-007AMS,MS	33	1000	Unknown		07/07/2016 14:59	Finished	MS (1ppb), IWST-160401B, 10
32	N020228-008A,SAMP	34	1000	Unknown		07/07/2016 15:09	Finished	SAMP, 10 mL
33	N020228-008AMS,MS	35	1000	Unknown		07/07/2016 15:18	Finished	MS (1ppb), IWST-160401B, 10
34	CCV-2,CCV,1,	36	1000	Unknown		07/07/2016 15:28	Finished	CCV @5ppb, IWST-160401A
35	CCB-2,CCB,1,	37	1000	Unknown		07/07/2016 15:37	Finished	CCB R160629C
36	N020228-005AMS,MS	38	1000	Unknown		07/07/2016 15:47	Finished	MS (1ppb), IWST-160401B, 10
37	N020228-009A,SAMP	39	1000	Unknown		07/07/2016 15:56	Finished	SAMP, 10 mL
38	N020228-009AMS,MS	40	1000	Unknown		07/07/2016 16:05	Finished	MS (1ppb), IWST-160401B, 10
39	N020228-010A,SAMP	41	1000	Unknown		07/07/2016 16:15	Finished	SAMP, 10 mL
40	N020228-010AMS,MS	42	1000	Unknown		07/07/2016 16:24	Finished	MS (1ppb), IWST-160401B, 10
41	N020228-011A,SAMP	43	1000	Unknown		07/07/2016 16:34	Finished	SAMP, 10 mL
42	N020228-011AMS,MS	44	1000	Unknown		07/07/2016 16:44	Finished	MS (1ppb), IWST-160401B, 10
43	N020228-012A,SAMP	45	1000	Unknown		07/07/2016 16:53	Finished	SAMP, 10 mL
44	N020228-012AMS,MS	46	1000	Unknown		07/07/2016 17:02	Finished	MS (1ppb), IWST-160401B, 10
45	N020228-013A,SAMP	1	1000	Unknown		07/07/2016 17:12	Finished	SAMP, 10 mL
46	CCV-3,CCV1,1,	2	1000	Unknown		07/07/2016 17:24	Finished	CCV @10ppb, IWST-160401A
47	CCB-3,CCB,1,	3	1000	Unknown		07/07/2016 17:33	Finished	CCB, R160629C
48	N020229-001A,SAMP	4	1000	Unknown		07/07/2016 17:43	Finished	SAMP, 10 mL
49	N020228-013AMS,MS	5	1000	Unknown		07/07/2016 17:52	Finished	MS (1ppb), IWST-160401B, 10
50	N020228-013AMS,MS	5	1000	Unknown		07/07/2016 18:04	Finished	MS (1ppb), IWST-160401B, 10
51	N020229-001AMS,MS	6	1000	Unknown		07/07/2016 18:15	Finished	MS (1ppb), IWST-160401B, 10
52	N020230-001A,SAMP	7	1000	Unknown		07/07/2016 18:25	Finished	SAMP, 10 mL
53	N020230-002A,SAMP	8	1000	Unknown		07/07/2016 18:34	Finished	SAMP, 10 mL
54	N020230-003A,SAMP	9	1000	Unknown		07/07/2016 18:44	Finished	SAMP, 10 mL
55	N020230-004A,SAMP	10	1000	Unknown		07/07/2016 18:53	Finished	SAMP, 10 mL
56	N020230-005A,SAMP	11	1000	Unknown		07/07/2016 19:03	Finished	SAMP, 10 mL
57	N020230-006A,SAMP	12	1000	Unknown		07/07/2016 19:12	Finished	SAMP, 10 mL
58	CCV-4,CCV,1,	13	1000	Unknown		07/07/2016 19:22	Finished	CCV @5ppb, IWST-160401A
59	CCB-4,CCB,1,	14	1000	Unknown		07/07/2016 19:31	Finished	CCB R160622B
60	N020229-001A,SAMP	15	1000	Unknown		07/07/2016 19:40	Finished	SAMP, 10 mL

61	N020229-001AMS,MS	16	1000	Unknown		07/07/2016 19:50	Finished	MS (1ppb), IWST-160401B, 10
62	CCV-5,CCV1,1,	17	1000	Unknown		07/07/2016 19:59	Finished	CCV @10ppb, IWST-160401A
63	CCB-5,CCB,1,	18	1000	Unknown		07/07/2016 20:09	Finished	CCB, R160629C
64	SHUTDOWN	19	1000	Unknown		07/07/2016 20:18	Finished	
65	Eluent: R160630C	20	1000	Unknown		n.a.	Finished	Eluent
66	PCR: R160706C	21	1000	Unknown		n.a.	Finished	Post-Column Reagent

INJECTION LOG: 160708A

Instrument ID: IC-07

Sample No	Sample Name	Type	DF	Peak Name	Injection Date/Time	Comments
1	BLANK	BLANK	1	Hexavalent Chromium	07/07/16 10:12 AM	Not Reported
2	iBLANK	iBLANK	1	Hexavalent Chromium	07/07/16 10:23 AM	Not Reported
3	STD-0.2 ppb	ICAL	1	Hexavalent Chromium	07/07/16 10:32 AM	Reported
4	STD-1.0 ppb	ICAL	1	Hexavalent Chromium	07/07/16 10:42 AM	Reported
5	STD-5.0 ppb	ICAL	1	Hexavalent Chromium	07/07/16 10:51 AM	Reported
6	STD-10.0 ppb	ICAL	1	Hexavalent Chromium	07/07/16 11:00 AM	Reported
7	STD-15.0 ppb	ICAL	1	Hexavalent Chromium	07/07/16 11:10 AM	Reported
8	STD-20.0 ppb	ICAL	1	Hexavalent Chromium	07/07/16 11:19 AM	Reported
9	BLANK	BLANK	1	Hexavalent Chromium	07/08/16 10:16 AM	Not Reported
10	BLANK	BLANK	1	Hexavalent Chromium	07/08/16 10:27 AM	Not Reported
11	CCV-1	CCV	1	Hexavalent Chromium	07/08/16 10:36 AM	Reported
12	PQL@0.2ppb	CCV2	1	Hexavalent Chromium	07/08/16 10:45 AM	Reported
13	CCB-1	CCB	1	Hexavalent Chromium	07/08/16 10:55 AM	Reported
14	MB-109328	MBLK	1	Hexavalent Chromium	07/08/16 11:04 AM	Reported
15	LCS-109328	LCS	1	Hexavalent Chromium	07/08/16 11:14 AM	Reported
16	N020230-007A	SAMP	1	Hexavalent Chromium	07/08/16 11:23 AM	Reported
17	N020230-008A	SAMP	1	Hexavalent Chromium	07/08/16 11:33 AM	Reported
18	N020230-009A	SAMP	1	Hexavalent Chromium	07/08/16 11:42 AM	Reported
19	N020230-010A	SAMP	1	Hexavalent Chromium	07/08/16 11:52 AM	Reported
20	N020230-011A	SAMP	1	Hexavalent Chromium	07/08/16 12:01 PM	Reported
21	N020230-012A	SAMP	1	Hexavalent Chromium	07/08/16 12:11 PM	Reported
22	N020230-013A	SAMP	1	Hexavalent Chromium	07/08/16 12:20 PM	Reported
23	N020230-013ADUP	DUP	1	Hexavalent Chromium	07/08/16 12:30 PM	Reported
24	CCV-2	CCV1	1	Hexavalent Chromium	07/08/16 12:39 PM	Reported
25	CCB-2	CCB	1	Hexavalent Chromium	07/08/16 12:48 PM	Reported
26	N020244-001A	SAMP	1	Hexavalent Chromium	07/08/16 12:58 PM	Reported
27	N020244-001AMS	MS	1	Hexavalent Chromium	07/08/16 1:07 PM	Reported
28	N020244-001AMSD	MSD	1	Hexavalent Chromium	07/08/16 1:17 PM	Reported
29	N020244-002A	SAMP	1	Hexavalent Chromium	07/08/16 1:26 PM	Reported
30	N020244-002AMS	MS	1	Hexavalent Chromium	07/08/16 1:36 PM	Reported
31	N020244-003A	SAMP	1	Hexavalent Chromium	07/08/16 1:45 PM	Reported
32	N020244-003AMS	MS	1	Hexavalent Chromium	07/08/16 1:55 PM	Reported
33	N020244-004A	SAMP	1	Hexavalent Chromium	07/08/16 2:04 PM	Reported
34	N020244-004AMS	MS	1	Hexavalent Chromium	07/08/16 2:14 PM	Reported
35	N020244-005A	SAMP	1	Hexavalent Chromium	07/08/16 2:23 PM	Reported
36	CCV-3	CCV	1	Hexavalent Chromium	07/08/16 2:33 PM	Reported
37	CCB-3	CCB	1	Hexavalent Chromium	07/08/16 2:42 PM	Reported
38	N020244-005AMS	MS	1	Hexavalent Chromium	07/08/16 2:51 PM	Reported
39	N020244-006A	SAMP	1	Hexavalent Chromium	07/08/16 3:01 PM	Reported
40	N020244-006AMS	MS	1	Hexavalent Chromium	07/08/16 3:10 PM	Reported
41	N020244-007A	SAMP	1	Hexavalent Chromium	07/08/16 3:20 PM	Reported
42	N020244-007AMS	MS	1	Hexavalent Chromium	07/08/16 3:29 PM	Reported

INJECTION LOG: 160708A

Instrument ID: IC-07

Sample No	Sample Name	Type	DF	Peak Name	Injection Date/Time	Comments
43	N020244-008A	SAMP	1	Hexavalent Chromium	07/08/16 3:39 PM	Reported
44	N020244-008AMS	MS	1	Hexavalent Chromium	07/08/16 3:48 PM	Reported
45	N020244-009A	SAMP	1	Hexavalent Chromium	07/08/16 3:58 PM	Reported
46	N020244-009AMS	MS	1	Hexavalent Chromium	07/08/16 4:07 PM	Reported
47	N020244-010A	SAMP	1	Hexavalent Chromium	07/08/16 4:17 PM	Reported
48	CCV-4	CCV1	1	Hexavalent Chromium	07/08/16 4:26 PM	Reported
49	CCB-4	CCB	1	Hexavalent Chromium	07/08/16 4:36 PM	Reported
50	N020244-010AMS	MS	1	Hexavalent Chromium	07/08/16 4:45 PM	Reported
51	N020244-011A	SAMP	1	Hexavalent Chromium	07/08/16 4:54 PM	Reported
52	N020244-011AMS	MS	1	Hexavalent Chromium	07/08/16 5:04 PM	Reported
53	N020245-001A	SAMP	1	Hexavalent Chromium	07/08/16 5:13 PM	Reported
54	N020245-001AMS	MS	1	Hexavalent Chromium	07/08/16 5:23 PM	Reported
55	N020245-002A	SAMP	1	Hexavalent Chromium	07/08/16 5:32 PM	Reported
56	N020245-002AMS	MS	1	Hexavalent Chromium	07/08/16 5:42 PM	Reported
57	BLANK	BLANK	1	Hexavalent Chromium	07/08/16 6:00 PM	Not Reported
58	CCV-5	CCV	1	Hexavalent Chromium	07/08/16 6:11 PM	Reported
59	CCB-5	CCB	1	Hexavalent Chromium	07/08/16 6:20 PM	Reported

7/21/2016

Injection Log Summary

Sequence Details

Name:	**IC-07_160708A**	*Created On:*	**24/Jul/12 17:17:21**
Directory:	**Instrument Data\IC-7\2016**	*Created By:*	**ics 5000**
Data Vault:	**ChromeleonLocal**	*Updated On:*	**09/Jul/16 10:48:13**
No. of Injections:	**62**	*Updated By:*	**ics 5000**

Injection Details

No.	Injection Name	Position	Volume µL	Type	Level	Inject Time	Status	Comment
1	BLANK	3	1000	Unknown		07/07/2016 10:12	Finished	
2	iBLANK	4	1000	Unknown		07/07/2016 10:23	Finished	INSTRUMENT BLANK
3	STD1-0.2 ppb	5	1000	Calibration Standard	01	07/07/2016 10:32	Finished	0.2 ppb, IWST160401A
4	STD2-1.0 ppb	6	1000	Calibration Standard	02	07/07/2016 10:42	Finished	1.0 ppb, IWST160401A
5	STD3-5.0 ppb	7	1000	Calibration Standard	03	07/07/2016 10:51	Finished	5.0 ppb, IWST160401A
6	STD4-10.0 ppb	8	1000	Calibration Standard	04	07/07/2016 11:00	Finished	10 ppb, IWST160401A
7	STD5-15.0 ppb	9	1000	Calibration Standard	05	07/07/2016 11:10	Finished	15 ppb, IWST160401A
8	STD6-20.0 ppb	10	1000	Calibration Standard	06	07/07/2016 11:19	Finished	20 ppb, IWST160401A
9	BLANK	1	1000	Unknown		07/08/2016 10:16	Finished	
10	BLANK	2	1000	Unknown		07/08/2016 10:27	Finished	
11	CCV-1,CCV,1,	3	1000	Unknown		07/08/2016 10:36	Finished	CCV @5ppb, IWST-160401A
12	PQL@0.2ppb,CCV2,1	4	1000	Unknown		07/08/2016 10:45	Finished	PQL @ 0.2ppb
13	CCB-1,CCB,1,	5	1000	Unknown		07/08/2016 10:55	Finished	CCB R160622B
14	MB-H2O,MBLK,1	6	1000	Unknown		07/08/2016 11:04	Finished	MB R160622B
15	LCS-H2O,LCS,1	7	1000	Unknown		07/08/2016 11:14	Finished	LCS, IWST-160401B
16	N020230-007A,SAMP	8	1000	Unknown		07/08/2016 11:23	Finished	SAMP, 10 mL
17	N020230-008A,SAMP	9	1000	Unknown		07/08/2016 11:33	Finished	SAMP, 10 mL
18	N020230-009A,SAMP	10	1000	Unknown		07/08/2016 11:42	Finished	SAMP, 10 mL
19	N020230-010A,SAMP	11	1000	Unknown		07/08/2016 11:52	Finished	SAMP, 10 mL
20	N020230-011A,SAMP	12	1000	Unknown		07/08/2016 12:01	Finished	SAMP, 10 mL
21	N020230-012A,SAMP	13	1000	Unknown		07/08/2016 12:11	Finished	SAMP, 10 mL
22	N020230-013A,SAMP	14	1000	Unknown		07/08/2016 12:20	Finished	SAMP, 10 mL
23	N020230-013ADUP,D	15	1000	Unknown		07/08/2016 12:30	Finished	DUP, 10 mL
24	CCV-2,CCV1,1,	16	1000	Unknown		07/08/2016 12:39	Finished	CCV @10ppb, IWST-160401A
25	CCB-2,CCB,1,	17	1000	Unknown		07/08/2016 12:48	Finished	CCB, R160622B
26	N020244-001A,SAMP	18	1000	Unknown		07/08/2016 12:58	Finished	SAMP, 10 mL
27	N020244-001AMS,MS	19	1000	Unknown		07/08/2016 13:07	Finished	MS (1ppb), IWST-160401B, 10
28	N020244-001AMSD,M	20	1000	Unknown		07/08/2016 13:17	Finished	MSD (1ppb), IWST-160401B, 1
29	N020244-002A,SAMP	21	1000	Unknown		07/08/2016 13:26	Finished	SAMP, 10 mL
30	N020244-002AMS,MS	22	1000	Unknown		07/08/2016 13:36	Finished	MS (1ppb), IWST-160401B, 10
31	N020244-003A,SAMP	23	1000	Unknown		07/08/2016 13:45	Finished	SAMP, 10 mL
32	N020244-003AMS,MS	24	1000	Unknown		07/08/2016 13:55	Finished	MS (1ppb), IWST-160401B, 10
33	N020244-004A,SAMP	25	1000	Unknown		07/08/2016 14:04	Finished	SAMP, 10 mL
34	N020244-004AMS,MS	26	1000	Unknown		07/08/2016 14:14	Finished	MS (1ppb), IWST-160401B, 10
35	N020244-005A,SAMP	27	1000	Unknown		07/08/2016 14:23	Finished	SAMP, 10 mL
36	CCV-3,CCV,1,	28	1000	Unknown		07/08/2016 14:33	Finished	CCV @5ppb, IWST-160401A
37	CCB-3,CCB,1,	29	1000	Unknown		07/08/2016 14:42	Finished	CCB R160629C
38	N020244-005AMS,MS	30	1000	Unknown		07/08/2016 14:51	Finished	MS (1ppb), IWST-160401B, 10
39	N020244-006A,SAMP	31	1000	Unknown		07/08/2016 15:01	Finished	SAMP, 10 mL
40	N020244-006AMS,MS	32	1000	Unknown		07/08/2016 15:10	Finished	MS (1ppb), IWST-160401B, 10
41	N020244-007A,SAMP	33	1000	Unknown		07/08/2016 15:20	Finished	SAMP, 10 mL
42	N020244-007AMS,MS	34	1000	Unknown		07/08/2016 15:29	Finished	MS (1ppb), IWST-160401B, 10
43	N020244-008A,SAMP	35	1000	Unknown		07/08/2016 15:39	Finished	SAMP, 10 mL
44	N020244-008AMS,MS	36	1000	Unknown		07/08/2016 15:48	Finished	MS (1ppb), IWST-160401B, 10
45	N020244-009A,SAMP	37	1000	Unknown		07/08/2016 15:58	Finished	SAMP, 10 mL
46	N020244-009AMS,MS	38	1000	Unknown		07/08/2016 16:07	Finished	MS (1ppb), IWST-160401B, 10
47	N020244-010A,SAMP	39	1000	Unknown		07/08/2016 16:17	Finished	SAMP, 10 mL
48	CCV-4,CCV1,1,	40	1000	Unknown		07/08/2016 16:26	Finished	CCV @10ppb, IWST-160401A
49	CCB-4,CCB,1,	41	1000	Unknown		07/08/2016 16:36	Finished	CCB, R160629C
50	N020244-010AMS,MS	42	1000	Unknown		07/08/2016 16:45	Finished	MS (1ppb), IWST-160401B, 10
51	N020244-011A,SAMP	43	1000	Unknown		07/08/2016 16:54	Finished	SAMP, 10 mL
52	N020244-011AMS,MS	44	1000	Unknown		07/08/2016 17:04	Finished	MS (1ppb), IWST-160401B, 10
53	N020245-001A,SAMP	45	1000	Unknown		07/08/2016 17:13	Finished	SAMP, 10 mL
54	N020245-001AMS,MS	46	1000	Unknown		07/08/2016 17:23	Finished	MS (1ppb), IWST-160401B, 10
55	N020245-002A,SAMP	47	1000	Unknown		07/08/2016 17:32	Finished	SAMP, 10 mL
56	N020245-002AMS,MS	48	1000	Unknown		07/08/2016 17:42	Finished	MS (1ppb), IWST-160401B, 10
57	BLANK	1	1000	Unknown		07/08/2016 18:00	Finished	
58	CCV-5,CCV,1,	2	1000	Unknown		07/08/2016 18:11	Finished	CCV @5ppb, IWST-160401A
59	CCB-5,CCB,1,	3	1000	Unknown		07/08/2016 18:20	Finished	CCB R160629C
60	SHUTDOWN	4	1000	Unknown		07/08/2016 18:30	Finished	

61	Eluent: R160708A	5	1000	Unknown		n.a.	Finished	Eluent
62	PCR: R160708B	6	1000	Unknown		n.a.	Finished	Post-Column Reagent

SAMPLE PREPARATION LOG

Hexavalent Chromium Preparation and Runlog

Sample Preparation

Date Prepared: 7/8/10
Time Prepared: 1045
Prepared By: Mark

slope - 95.6 %
ph 4 - 4.01 @ 24.2 °C
ph 7 - 7.00 @ 24.5 °C
ph 10 - 10.02 @ 24.5 °C
LCS - 7.02 @ 25.0 °C

Reagent ID:
Sulfuric Acid: #54457
Diphenylcarbazide: CINV-160125H
NH4OH + NH4SO4 eluent: R160708A
NH4OH + NH4SO4 buffer: R160629C

	Sample ID.	pH of sample	pH after treatment	Initial Volume of sample	Final Volume after buffer add'n	Volume of buffer added	Comments
1)	NO20244-001A	9.47	-	250 ml	~250 ml	-	R160629C
2)	001A2	9.48	-			-	
3)	001A3	9.49	-			-	
4)	002A	9.49	-			-	
5)	002A2	9.48	-			-	
6)	002A3	9.49	-			-	
7)	003A	9.57	-			-	
8)	003A2	9.53	-			-	
9)	003A3	9.50	-			-	
10)	004A	9.48	-			-	
11)	004A2	9.48	-			-	
12)	004A3	9.52	-			-	
13)	005A	9.50	-			-	
14)	005A2	9.51	-			-	
15)	005A3	9.50	-			-	
	006A	9.49	-			-	

Sample Preparation

Date Prepared: 7/8/10
Time Prepared: 1045
Prepared By: Mark

Reagent ID:
Sulfuric Acid: #54457
Diphenylcarbazide: CINV-160125H
NH4OH + NH4SO4 eluent: R160708A
NH4OH + NH4SO4 buffer: R160629C

	Sample ID.	pH of sample	pH after treatment	Initial Volume of sample	Final Volume after buffer add'n	Volume of buffer added	Comments
1)	NO20244-006A2	9.53	-	~250 ml	~250 ml	-	R160629C
2)	006A3	9.48	-			-	
3)	007A	9.57	-			-	
4)	007A2	9.48	-			-	
5)	007A3	9.46	-			-	
6)	008A	9.52	-			-	
7)	008A2	9.53	-			-	
8)	008A3	9.50	-			-	
9)	009A	9.44	-			-	
10)	009A2	9.41	-			-	
11)	009A3	9.43	-			-	
12)	010A	9.48	-			-	
13)	010A2	9.48	-			-	
14)	010A3	9.48	-			-	
15)	011A	9.46	-			-	
	011A2	9.43	-			-	

Logbook No. 10

Hexavalent Chromium Preparation and Runlog

Sample Preparation

Date Prepared: 7/8/16
Time Prepared: 1045
Prepared By: Mark

Reagent ID:
Sulfuric Acid: #8457
Diphenylcarbazide: CINV-160125H
NH4OH + NH4SO4 eluent: R160708A/F
NH4OH + NH4SO4 buffer: R160629C/R160622B

6N NaOH: R160613B

	Sample ID.	pH of sample	pH after treatment	Initial Volume of sample	Final Volume after buffer add'n	Volume of buffer added	Comments
1)	N020244-011A3	9.47	–	~250 ml	~250ml	–	R160629 C
2)	N020245-001A	9.45	–			–	R160629C
3)	001A2	9.46	–			–	
4)	001A3	9.45	–			–	
5)	002A	9.39	–			–	
6)	002A2	9.47	–			–	
7)	002A3	9.45	–			–	
8)	003A	9.40	–			–	
9)	004A	9.50	–			–	
10)	N020246-001A	9.41	–			–	R160622B
11)	002A	9.36	–			–	
12)	003A	9.44	–			–	
13)	004A	9.39	–			–	
14)	005A	9.36	–			–	
15)	006A	9.25	9.30			1drop 6N NaOH	
	007A	8.51	9.40			10drops 6N NaOH	

Sample Preparation

Date Prepared: 7/8/16
Time Prepared: 1045
Prepared By: Mark

Reagent ID:
Sulfuric Acid: #8457
Diphenylcarbazide: CINV-160125H
NH4OH + NH4SO4 eluent: R160708A/F
NH4OH + NH4SO4 buffer: R160622B

6N NaOH: R160613B

	Sample ID.	pH of sample	pH after treatment	Initial Volume of sample	Final Volume after buffer add'n	Volume of buffer added	Comments
1)	N020246-008A	9.44	–	~250 ml	~250ml	–	R160622B
2)	009A	9.37	–			–	
3)	010A	9.46	–			–	
4)	N020247-001A	9.26	9.30			1drop 6N NaOH	
5)	002A	9.23	9.32			1drop 6N NaOH	
6)	003A	9.20	9.32			2drops 6N NaOH	
7)	004A	9.28	9.32			1drop 6N NaOH	
8)	005A	9.24	9.30			1drop "	
9)	006A	9.20	9.30			2drops "	
0)	007A	9.30	–			–	
1)	008A	9.33	–			–	
2)	009A	9.43	–			–	
3)	010A	9.33	–			–	
4)	011A	9.21	9.31			2drops 6N NaOH	
5)	012A	9.33	–			–	
	013A	9.36	–			–	

Logbook No. 10

INITIAL CALIBRATION DATA SUMMARY

(EPA 218.6) - INITIAL CALIBRATION

Instrument ID: IC-07
Date Calibrated: 7/7/2016

Initial Calibration:

Hexavalent Chromium	STD1	STD2	STD3	STD4	STD5	STD6	
COMPOUND, in ug/L	0.2	1	5	10	15	20	R^2
Area,mAU*min	0.0628	0.2582	1.2706	2.5192	3.8249	5.0640	1.0000

	Stock	Working
Standard Concentration:	1,000,000 PPB	1,000 PPB
Standard ID:	ISST150306A	IWST160401A

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.

7/21/2016

INITIAL CALIBRATION AND CONTINUING CALIBRATION VERIFICATION SUMMARY

CLIENT: ARCADIS U.S., Inc. - California
Work Order: N020244
Project: PG&E Topock - RMP, RC000753.0801

ANALYTICAL QC SUMMARY REPORT

TestCode: 218.6_WPGE

Sample ID: **ICV**	SampType: **ICV**	TestCode: **218.6_WPGE**	Units: **µg/L**	Prep Date:	RunNo: **109328**
Client ID: **ICV**	Batch ID: **R109328**	TestNo: **EPA 218.6**		Analysis Date: **7/7/2016**	SeqNo: **2366821**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	5.035	0.20	5.000	0	101	90	110				

Sample ID: **PQL@0.2ppb**	SampType: **CCV2**	TestCode: **218.6_WPGE**	Units: **µg/L**	Prep Date:	RunNo: **109328**
Client ID: **ZZZZZZ**	Batch ID: **R109328**	TestNo: **EPA 218.6**		Analysis Date: **7/7/2016**	SeqNo: **2366822**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	0.228	0.20	0.2000	0	114	80	120				

Sample ID: **CCV-1**	SampType: **CCV**	TestCode: **218.6_WPGE**	Units: **µg/L**	Prep Date:	RunNo: **109328**
Client ID: **CCV**	Batch ID: **R109328**	TestNo: **EPA 218.6**		Analysis Date: **7/8/2016**	SeqNo: **2366824**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	5.058	0.20	5.000	0	101	95	105				

Sample ID: **PQL@0.2ppb**	SampType: **CCV2**	TestCode: **218.6_WPGE**	Units: **µg/L**	Prep Date:	RunNo: **109328**
Client ID: **ZZZZZZ**	Batch ID: **R109328**	TestNo: **EPA 218.6**		Analysis Date: **7/8/2016**	SeqNo: **2366825**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	0.226	0.20	0.2000	0	113	80	120				

Sample ID: **CCV-2**	SampType: **CCV1**	TestCode: **218.6_WPGE**	Units: **µg/L**	Prep Date:	RunNo: **109328**
Client ID: **ZZZZZZ**	Batch ID: **R109328**	TestNo: **EPA 218.6**		Analysis Date: **7/8/2016**	SeqNo: **2366837**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	9.905	0.20	10.00	0	99.1	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

ANALYTICAL QC SUMMARY REPORT

TestCode: 218.6_WPGE

Sample ID: **CCV-3** SampType: **CCV** TestCode: **218.6_WPGE** Units: **µg/L** Prep Date: RunNo: **109328**
Client ID: **CCV** Batch ID: **R109328** TestNo: **EPA 218.6** Analysis Date: **7/8/2016** SeqNo: **2366849**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	5.050	0.20	5.000	0	101	95	105				

Sample ID: **CCV-4** SampType: **CCV1** TestCode: **218.6_WPGE** Units: **µg/L** Prep Date: RunNo: **109328**
Client ID: **ZZZZZZ** Batch ID: **R109328** TestNo: **EPA 218.6** Analysis Date: **7/8/2016** SeqNo: **2366861**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	9.933	0.20	10.00	0	99.3	95	105				

Sample ID: **CCV-5** SampType: **CCV** TestCode: **218.6_WPGE** Units: **µg/L** Prep Date: RunNo: **109328**
Client ID: **CCV** Batch ID: **R109328** TestNo: **EPA 218.6** Analysis Date: **7/8/2016** SeqNo: **2366870**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	5.029	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
DO	Surrogate Diluted Out		Calculations are based on raw values		

SUMMARY OF INSTRUMENT BLANKS

CLIENT: ARCADIS U.S., Inc. - California
Work Order: N020244
Project: PG&E Topock - RMP, RC000753.0801

ANALYTICAL QC SUMMARY REPORT

TestCode: 218.6_WPGE

Sample ID: **ICB**	SampType: **ICB**	TestCode: **218.6_WPGE**	Units: **µg/L**	Prep Date:	RunNo: **109328**
Client ID: **ICB**	Batch ID: **R109328**	TestNo: **EPA 218.6**		Analysis Date: **7/7/2016**	SeqNo: **2366823**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	ND	0.20									

Sample ID: **CCB-1**	SampType: **CCB**	TestCode: **218.6_WPGE**	Units: **µg/L**	Prep Date:	RunNo: **109328**
Client ID: **CCB**	Batch ID: **R109328**	TestNo: **EPA 218.6**		Analysis Date: **7/8/2016**	SeqNo: **2366826**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	ND	0.20									

Sample ID: **CCB-2**	SampType: **CCB**	TestCode: **218.6_WPGE**	Units: **µg/L**	Prep Date:	RunNo: **109328**
Client ID: **CCB**	Batch ID: **R109328**	TestNo: **EPA 218.6**		Analysis Date: **7/8/2016**	SeqNo: **2366838**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	ND	0.20									

Sample ID: **CCB-3**	SampType: **CCB**	TestCode: **218.6_WPGE**	Units: **µg/L**	Prep Date:	RunNo: **109328**
Client ID: **CCB**	Batch ID: **R109328**	TestNo: **EPA 218.6**		Analysis Date: **7/8/2016**	SeqNo: **2366850**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	ND	0.20									

Sample ID: **CCB-4**	SampType: **CCB**	TestCode: **218.6_WPGE**	Units: **µg/L**	Prep Date:	RunNo: **109328**
Client ID: **CCB**	Batch ID: **R109328**	TestNo: **EPA 218.6**		Analysis Date: **7/8/2016**	SeqNo: **2366862**

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
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: ARCADIS U.S., Inc. - California
Work Order: N020244
Project: PG&E Topock - RMP, RC000753.0801

ANALYTICAL QC SUMMARY REPORT

TestCode: 218.6_WPGE

Sample ID: **CCB-5**	SampType: **CCB**	TestCode: **218.6_WPGE**	Units: **µg/L**	Prep Date:	RunNo: **109328**
Client ID: **CCB**	Batch ID: **R109328**	TestNo: **EPA 218.6**		Analysis Date: **7/8/2016**	SeqNo: **2366871**

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
DO	Surrogate Diluted Out		Calculations are based on raw values		

RETENTION TIME SUMMARY

RETENTION TIME (RT) SUMMARY

Instrument ID: IC-07

Analytical Sequence

Date Analyzed: 7/8/2016

Sample Name	Retention Time	Evaluation
CCV-1	5.057	
CCV-2	5.057	
CCV-3	5.065	
CCV-4	5.065	
CCV-5	5.057	
Average	5.060	
Actual RT Window	4.980 - 5.140	
Applied RT Window	4.860 - 5.260	
MB-109328	N.A.	N.A.
LCS-109328	5.057	PASS
N020230-007A	5.057	PASS
N020230-008A	5.057	PASS
N020230-009A	5.057	PASS
N020230-010A	5.057	PASS
N020230-011A	5.057	PASS
N020230-012A	5.057	PASS
N020230-013A	5.057	PASS
N020230-013ADUP	5.065	PASS
N020244-001A	5.057	PASS
N020244-001AMS	5.057	PASS
N020244-001AMSD	5.057	PASS
N020244-002A	5.057	PASS
N020244-002AMS	5.057	PASS
N020244-003A	5.048	PASS
N020244-003AMS	5.057	PASS
N020244-004A	5.048	PASS
N020244-004AMS	5.057	PASS
N020244-005A	5.048	PASS
N020244-005AMS	5.057	PASS
N020244-006A	5.057	PASS
N020244-006AMS	5.057	PASS
N020244-007A	5.048	PASS

7/21/2016

RETENTION TIME (RT) SUMMARY

Instrument ID: IC-07

Analytical Sequence

Date Analyzed: 7/8/2016

Sample Name	Retention Time	Evaluation
CCV-1	5.057	
CCV-2	5.057	
CCV-3	5.065	
CCV-4	5.065	
CCV-5	5.057	
Average	5.060	
Actual RT Window	4.980 - 5.140	
Applied RT Window	4.860 - 5.260	
N020244-007AMS	5.048	PASS
N020244-008A	5.048	PASS
N020244-008AMS	5.048	PASS
N020244-009A	5.057	PASS
N020244-009AMS	5.057	PASS
N020244-010A	5.048	PASS
N020244-010AMS	5.057	PASS
N020244-011A	5.073	PASS
N020244-011AMS	5.057	PASS
N020245-001A	5.048	PASS
N020245-001AMS	5.057	PASS
N020245-002A	5.040	PASS
N020245-002AMS	5.057	PASS

7/21/2016

MDL STUDY

METHOD DETECTION LIMIT 2016

Method Name: **HEXAVALENT CHROMIUM by Ion Chromatography**
Method Number: EPA 218.6/EPA 7199
Analysis Date(s): 2/12/2016, 2/23/2016, 2/24/2016, 2/25/2016, 3/7/2016, 3/9/2016 & 3/11/2016
Analyst: Ryan Balilu, Jannette Soria

Matrix: **WATER**
Unit: ug/L

Instrument Name: **IC-06**

Acceptance Criteria: MDL < spike < 10X MDL

Datafile:	160212	160223	160224	160225	160307	160309	160311						
Analyte	**#1**	**#2**	**#3**	**#4**	**#5**	**#6**	**#7**	**Spike Conc., mg/L**	**SD**	**$t_{(n-1)}$ value**	**MDL**	**PQL**	**Remarks**
ICAL:													
Hexavalent Chromiu	0.2195	0.2048	0.2167	0.1675	0.2194	0.1811	0.1826	0.20	0.0215	3.143	**0.0675**	**0.20**	OK,meets criteria

Students' **t** Values at 99% CL

#	$t_{(n-1)}$
10	2.821
9	2.896
8	2.998
7	3.143

METHOD DETECTION LIMIT 2016

Method Name: **HEXAVALENT CHROMIUM by Ion Chromatography**
Method Number: EPA 218.6/EPA 7199
Analysis Date(s): 3/16/2016; 3/18/2016; 3/21/2016, 3/22/2016, 3/25/2016 & 3/30/2016
Analyst: Jannette Soria

Matrix: **WATER**
Unit: ug/L

Instrument Name: **IC-07**

Acceptance Criteria: MDL < spike < 10X MDL

Datafile:	160316	160318	160321	160322	160323	160325	160330						
Analyte	**#1**	**#2**	**#3**	**#4**	**#5**	**#6**	**#7**	**Spike Conc., mg/L**	**SD**	**$t_{(n-1)}$ value**	**MDL**	**PQL**	**Remarks**
ICAL:													
Hexavalent Chromiu	0.1906	0.2326	0.2339	0.2002	0.2394	0.2147	0.1920	0.20	0.0208	3.143	**0.0655**	**0.20**	OK,meets criteria

Students' **t** Values at 99% CL

#	$t_{(n-1)}$
10	2.821
9	2.896
8	2.998
7	3.143

RAW DATA

INITIAL CALIBRATION

INJECTION LOG: 160707A

Instrument ID: IC-07

Sample No	Sample Name	Type	DF	Peak Name	Injection Date/Time	Comments
1	BLANK	BLANK	1	Hexavalent Chromium	07/07/16 10:12 AM	Not Reported
2	iBLANK	iBLANK	1	Hexavalent Chromium	07/07/16 10:23 AM	Not Reported
3	STD-0.2 ppb	ICAL	1	Hexavalent Chromium	07/07/16 10:32 AM	Reported
4	STD-1.0 ppb	ICAL	1	Hexavalent Chromium	07/07/16 10:42 AM	Reported
5	STD-5.0 ppb	ICAL	1	Hexavalent Chromium	07/07/16 10:51 AM	Reported
6	STD-10.0 ppb	ICAL	1	Hexavalent Chromium	07/07/16 11:00 AM	Reported
7	STD-15.0 ppb	ICAL	1	Hexavalent Chromium	07/07/16 11:10 AM	Reported
8	STD-20.0 ppb	ICAL	1	Hexavalent Chromium	07/07/16 11:19 AM	Reported
9	ICV	ICV	1	Hexavalent Chromium	07/07/16 11:29 AM	Reported
10	PQL@0.2ppb	CCV2	1	Hexavalent Chromium	07/07/16 11:38 AM	Reported
11	ICB	ICB	1	Hexavalent Chromium	07/07/16 11:48 AM	Reported
12	MB-109313	MBLK	1	Hexavalent Chromium	07/07/16 11:59 AM	Reported
13	LCS-109313	LCS	1	Hexavalent Chromium	07/07/16 12:09 PM	Reported
14	N020228-001A	SAMP	1	Hexavalent Chromium	07/07/16 12:18 PM	Reported
15	N020228-001ADUP	DUP	1	Hexavalent Chromium	07/07/16 12:28 PM	Reported
16	N020228-001AMS	MS	1	Hexavalent Chromium	07/07/16 12:37 PM	Reported
17	N020228-002A	SAMP	1	Hexavalent Chromium	07/07/16 12:47 PM	Reported
18	N020228-002AMS	MS	1	Hexavalent Chromium	07/07/16 12:56 PM	Reported
19	N020228-002AMSD	MSD	1	Hexavalent Chromium	07/07/16 1:06 PM	Reported
20	N020228-003A	SAMP	1	Hexavalent Chromium	07/07/16 1:15 PM	Reported
21	N020228-003AMS	MS	1	Hexavalent Chromium	07/07/16 1:25 PM	Reported
22	CCV-1	CCV1	1	Hexavalent Chromium	07/07/16 1:34 PM	Reported
23	CCB-1	CCB	1	Hexavalent Chromium	07/07/16 1:44 PM	Reported
24	N020228-004A	SAMP	1	Hexavalent Chromium	07/07/16 1:53 PM	Reported
25	N020228-004AMS	MS	1	Hexavalent Chromium	07/07/16 2:02 PM	Reported
26	N020228-005A	SAMP	1	Hexavalent Chromium	07/07/16 2:12 PM	Reported
27	N020228-005AMS	MS	1	Hexavalent Chromium	07/07/16 2:21 PM	Not Reported
28	N020228-006A	SAMP	1	Hexavalent Chromium	07/07/16 2:31 PM	Reported
29	N020228-006AMS	MS	1	Hexavalent Chromium	07/07/16 2:40 PM	Reported
30	N020228-007A	SAMP	1	Hexavalent Chromium	07/07/16 2:50 PM	Reported
31	N020228-007AMS	MS	1	Hexavalent Chromium	07/07/16 2:59 PM	Reported
32	N020228-008A	SAMP	1	Hexavalent Chromium	07/07/16 3:09 PM	Reported
33	N020228-008AMS	MS	1	Hexavalent Chromium	07/07/16 3:18 PM	Reported
34	CCV-2	CCV	1	Hexavalent Chromium	07/07/16 3:28 PM	Reported
35	CCB-2	CCB	1	Hexavalent Chromium	07/07/16 3:37 PM	Reported
36	N020228-005AMS	MS	1	Hexavalent Chromium	07/07/16 3:47 PM	Reported
37	N020228-009A	SAMP	1	Hexavalent Chromium	07/07/16 3:56 PM	Reported
38	N020228-009AMS	MS	1	Hexavalent Chromium	07/07/16 4:05 PM	Reported
39	N020228-010A	SAMP	1	Hexavalent Chromium	07/07/16 4:15 PM	Reported
40	N020228-010AMS	MS	1	Hexavalent Chromium	07/07/16 4:24 PM	Reported
41	N020228-011A	SAMP	1	Hexavalent Chromium	07/07/16 4:34 PM	Reported
42	N020228-011AMS	MS	1	Hexavalent Chromium	07/07/16 4:44 PM	Reported

7/15/2016

7/22/2016

INJECTION LOG: 160707A

Instrument ID: IC-07

Sample No	Sample Name	Type	DF	Peak Name	Injection Date/Time	Comments
43	N020228-012A	SAMP	1	Hexavalent Chromium	07/07/16 4:53 PM	Reported
44	N020228-012AMS	MS	1	Hexavalent Chromium	07/07/16 5:02 PM	Reported
45	N020228-013A	SAMP	1	Hexavalent Chromium	07/07/16 5:12 PM	Reported
46	CCV-3	CCV1	1	Hexavalent Chromium	07/07/16 5:24 PM	Reported
47	CCB-3	CCB	1	Hexavalent Chromium	07/07/16 5:33 PM	Reported
48	N020229-001A	SAMP	1	Hexavalent Chromium	07/07/16 5:43 PM	Not Reported
49	N020228-013AMS	MS	1	Hexavalent Chromium	07/07/16 5:52 PM	Not Reported
50	N020228-013AMS	MS	1	Hexavalent Chromium	07/07/16 6:04 PM	Reported
51	N020229-001AMS	MS	1	Hexavalent Chromium	07/07/16 6:15 PM	Not Reported
52	N020230-001A	SAMP	1	Hexavalent Chromium	07/07/16 6:25 PM	Reported
53	N020230-002A	SAMP	1	Hexavalent Chromium	07/07/16 6:34 PM	Reported
54	N020230-003A	SAMP	1	Hexavalent Chromium	07/07/16 6:44 PM	Reported
55	N020230-004A	SAMP	1	Hexavalent Chromium	07/07/16 6:53 PM	Reported
56	N020230-005A	SAMP	1	Hexavalent Chromium	07/07/16 7:03 PM	Reported
57	N020230-006A	SAMP	1	Hexavalent Chromium	07/07/16 7:12 PM	Reported
58	CCV-4	CCV	1	Hexavalent Chromium	07/07/16 7:22 PM	Reported
59	CCB-4	CCB	1	Hexavalent Chromium	07/07/16 7:31 PM	Reported
60	N020229-001A	SAMP	1	Hexavalent Chromium	07/07/16 7:40 PM	Reported
61	N020229-001AMS	MS	1	Hexavalent Chromium	07/07/16 7:50 PM	Reported
62	CCV-5	CCV1	1	Hexavalent Chromium	07/07/16 7:59 PM	Reported
63	CCB-5	CCB	1	Hexavalent Chromium	07/07/16 8:09 PM	Reported

7/15/2016

Injection Log Summary

Sequence Details

Name:	**IC-07_160707B**	*Created On:*	**24/Jul/12 17:17:21**
Directory:	**Instrument Data\IC-7\2016**	*Created By:*	**ics 5000**
Data Vault:	**ChromeleonLocal**	*Updated On:*	**08/Jul/16 09:38:15**
No. of Injections:	**66**	*Updated By:*	**ics 5000**

Injection Details

No.	Injection Name	Position	Volume µL	Type	Level	Inject Time	Status	Comment
1	BLANK	3	1000	Unknown		07/07/2016 10:12	Finished	
2	iBLANK	4	1000	Unknown		07/07/2016 10:23	Finished	INSTRUMENT BLANK
3	STD1-0.2 ppb	5	1000	Calibration Standard	01	07/07/2016 10:32	Finished	0.2 ppb, IWST160401A
4	STD2-1.0 ppb	6	1000	Calibration Standard	02	07/07/2016 10:42	Finished	1.0 ppb, IWST160401A
5	STD3-5.0 ppb	7	1000	Calibration Standard	03	07/07/2016 10:51	Finished	5.0 ppb, IWST160401A
6	STD4-10.0 ppb	8	1000	Calibration Standard	04	07/07/2016 11:00	Finished	10 ppb, IWST160401A
7	STD5-15.0 ppb	9	1000	Calibration Standard	05	07/07/2016 11:10	Finished	15 ppb, IWST160401A
8	STD6-20.0 ppb	10	1000	Calibration Standard	06	07/07/2016 11:19	Finished	20 ppb, IWST160401A
9	ICV,ICV,1,	11	1000	Unknown		07/07/2016 11:29	Finished	ICV @5ppb, IWST-160401B
10	PQL@0.2ppb,CCV2,1	12	1000	Unknown		07/07/2016 11:38	Finished	PQL @ 0.2ppb
11	ICB,ICB,1,	13	1000	Unknown		07/07/2016 11:48	Finished	ICB R160629C
12	MB-H2O,MBLK,1	14	1000	Unknown		07/07/2016 11:59	Finished	MB R160629C
13	LCS-H2O,LCS,1	15	1000	Unknown		07/07/2016 12:09	Finished	LCS, IWST-160401B
14	N020228-001A,SAMP	16	1000	Unknown		07/07/2016 12:18	Finished	SAMP, 10 mL
15	N020228-001ADUP,D	17	1000	Unknown		07/07/2016 12:28	Finished	DUP, 10 mL
16	N020228-001AMS,MS	18	1000	Unknown		07/07/2016 12:37	Finished	MS (1ppb), IWST-160401B, 10
17	N020228-002A,SAMP	19	1000	Unknown		07/07/2016 12:47	Finished	SAMP, 10 mL
18	N020228-002AMS,MS	20	1000	Unknown		07/07/2016 12:56	Finished	MS (1ppb), IWST-160401B, 10
19	N020228-002AMSD,M	21	1000	Unknown		07/07/2016 13:06	Finished	MSD (1ppb), IWST-160401B, 1
20	N020228-003A,SAMP	22	1000	Unknown		07/07/2016 13:15	Finished	SAMP, 10 mL
21	N020228-003AMS,MS	23	1000	Unknown		07/07/2016 13:25	Finished	MS (1ppb), IWST-160401B, 10
22	CCV-1,CCV1,1,	24	1000	Unknown		07/07/2016 13:34	Finished	CCV @10ppb, IWST-160401A
23	CCB-1,CCB,1,	25	1000	Unknown		07/07/2016 13:44	Finished	CCB, R160629C
24	N020228-004A,SAMP	26	1000	Unknown		07/07/2016 13:53	Finished	SAMP, 10 mL
25	N020228-004AMS,MS	27	1000	Unknown		07/07/2016 14:02	Finished	MS (1ppb), IWST-160401B, 10
26	N020228-005A,SAMP	28	1000	Unknown		07/07/2016 14:12	Finished	SAMP, 10 mL
27	N020228-005AMS,MS	29	1000	Unknown		07/07/2016 14:21	Finished	MS (1ppb), IWST-160401B, 10
28	N020228-006A,SAMP	30	1000	Unknown		07/07/2016 14:31	Finished	SAMP, 10 mL
29	N020228-006AMS,MS	31	1000	Unknown		07/07/2016 14:40	Finished	MS (1ppb), IWST-160401B, 10
30	N020228-007A,SAMP	32	1000	Unknown		07/07/2016 14:50	Finished	SAMP, 10 mL
31	N020228-007AMS,MS	33	1000	Unknown		07/07/2016 14:59	Finished	MS (1ppb), IWST-160401B, 10
32	N020228-008A,SAMP	34	1000	Unknown		07/07/2016 15:09	Finished	SAMP, 10 mL
33	N020228-008AMS,MS	35	1000	Unknown		07/07/2016 15:18	Finished	MS (1ppb), IWST-160401B, 10
34	CCV-2,CCV,1,	36	1000	Unknown		07/07/2016 15:28	Finished	CCV @5ppb, IWST-160401A
35	CCB-2,CCB,1,	37	1000	Unknown		07/07/2016 15:37	Finished	CCB R160629C
36	N020228-005AMS,MS	38	1000	Unknown		07/07/2016 15:47	Finished	MS (1ppb), IWST-160401B, 10
37	N020228-009A,SAMP	39	1000	Unknown		07/07/2016 15:56	Finished	SAMP, 10 mL
38	N020228-009AMS,MS	40	1000	Unknown		07/07/2016 16:05	Finished	MS (1ppb), IWST-160401B, 10
39	N020228-010A,SAMP	41	1000	Unknown		07/07/2016 16:15	Finished	SAMP, 10 mL
40	N020228-010AMS,MS	42	1000	Unknown		07/07/2016 16:24	Finished	MS (1ppb), IWST-160401B, 10
41	N020228-011A,SAMP	43	1000	Unknown		07/07/2016 16:34	Finished	SAMP, 10 mL
42	N020228-011AMS,MS	44	1000	Unknown		07/07/2016 16:44	Finished	MS (1ppb), IWST-160401B, 10
43	N020228-012A,SAMP	45	1000	Unknown		07/07/2016 16:53	Finished	SAMP, 10 mL
44	N020228-012AMS,MS	46	1000	Unknown		07/07/2016 17:02	Finished	MS (1ppb), IWST-160401B, 10
45	N020228-013A,SAMP	1	1000	Unknown		07/07/2016 17:12	Finished	SAMP, 10 mL
46	CCV-3,CCV1,1,	2	1000	Unknown		07/07/2016 17:24	Finished	CCV @10ppb, IWST-160401A
47	CCB-3,CCB,1,	3	1000	Unknown		07/07/2016 17:33	Finished	CCB, R160629C
48	N020229-001A,SAMP	4	1000	Unknown		07/07/2016 17:43	Finished	SAMP, 10 mL
49	N020228-013AMS,MS	5	1000	Unknown		07/07/2016 17:52	Finished	MS (1ppb), IWST-160401B, 10
50	N020228-013AMS,MS	5	1000	Unknown		07/07/2016 18:04	Finished	MS (1ppb), IWST-160401B, 10
51	N020229-001AMS,MS	6	1000	Unknown		07/07/2016 18:15	Finished	MS (1ppb), IWST-160401B, 10
52	N020230-001A,SAMP	7	1000	Unknown		07/07/2016 18:25	Finished	SAMP, 10 mL
53	N020230-002A,SAMP	8	1000	Unknown		07/07/2016 18:34	Finished	SAMP, 10 mL
54	N020230-003A,SAMP	9	1000	Unknown		07/07/2016 18:44	Finished	SAMP, 10 mL
55	N020230-004A,SAMP	10	1000	Unknown		07/07/2016 18:53	Finished	SAMP, 10 mL
56	N020230-005A,SAMP	11	1000	Unknown		07/07/2016 19:03	Finished	SAMP, 10 mL
57	N020230-006A,SAMP	12	1000	Unknown		07/07/2016 19:12	Finished	SAMP, 10 mL
58	CCV-4,CCV,1,	13	1000	Unknown		07/07/2016 19:22	Finished	CCV @5ppb, IWST-160401A
59	CCB-4,CCB,1,	14	1000	Unknown		07/07/2016 19:31	Finished	CCB R160622B
60	N020229-001A,SAMP	15	1000	Unknown		07/07/2016 19:40	Finished	SAMP, 10 mL

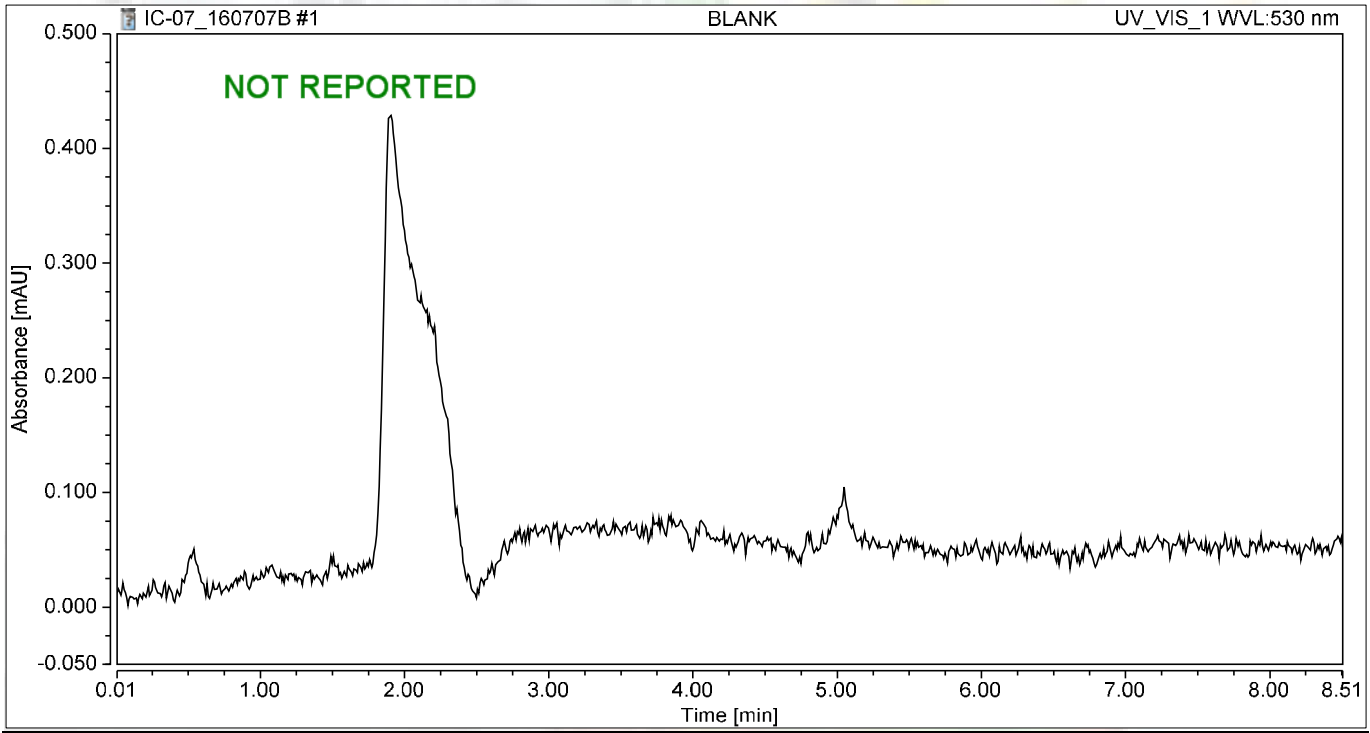
61	N020229-001AMS,MS	16	1000	Unknown		07/07/2016 19:50	Finished	MS (1ppb), IWST-160401B, 10
62	CCV-5,CCV1,1,	17	1000	Unknown		07/07/2016 19:59	Finished	CCV @10ppb, IWST-160401A
63	CCB-5,CCB,1,	18	1000	Unknown		07/07/2016 20:09	Finished	CCB, R160629C
64	SHUTDOWN	19	1000	Unknown		07/07/2016 20:18	Finished	
65	Eluent: R160630C	20	1000	Unknown		n.a.	Finished	Eluent
66	PCR: R160706C	21	1000	Unknown		n.a.	Finished	Post-Column Reagent

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:	**160707_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**07/Jul/16 10:12**	*Sample Weight:*	**1.0000**

Chromatogram



Integration Results

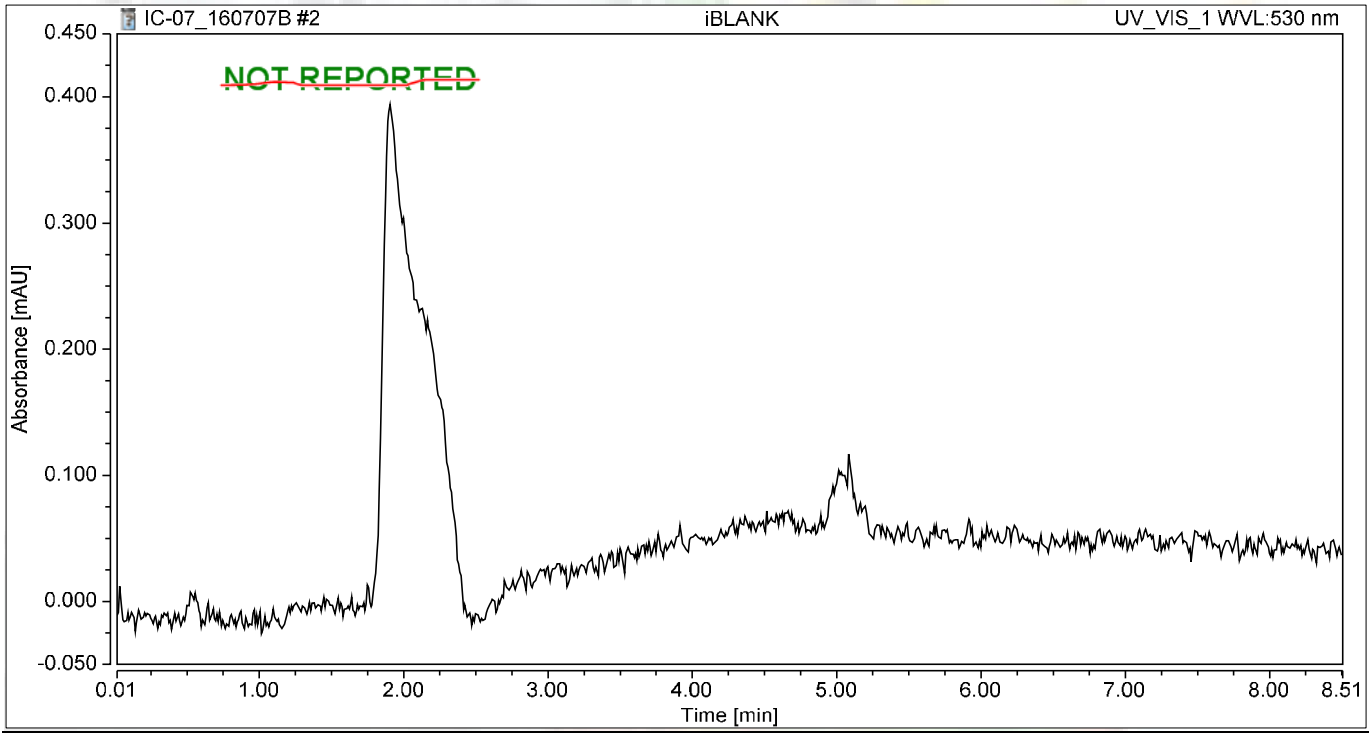
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
n.a.	Hexavalent Chromium	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Total:			**0.000**	**0.000**	**0.00**	**0.00**	

Chromatogram and Results

Injection Details

Injection Name:	**iBLANK**	*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:	**160707_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**07/Jul/16 10:23**	*Sample Weight:*	**1.0000**

Chromatogram



Integration Results

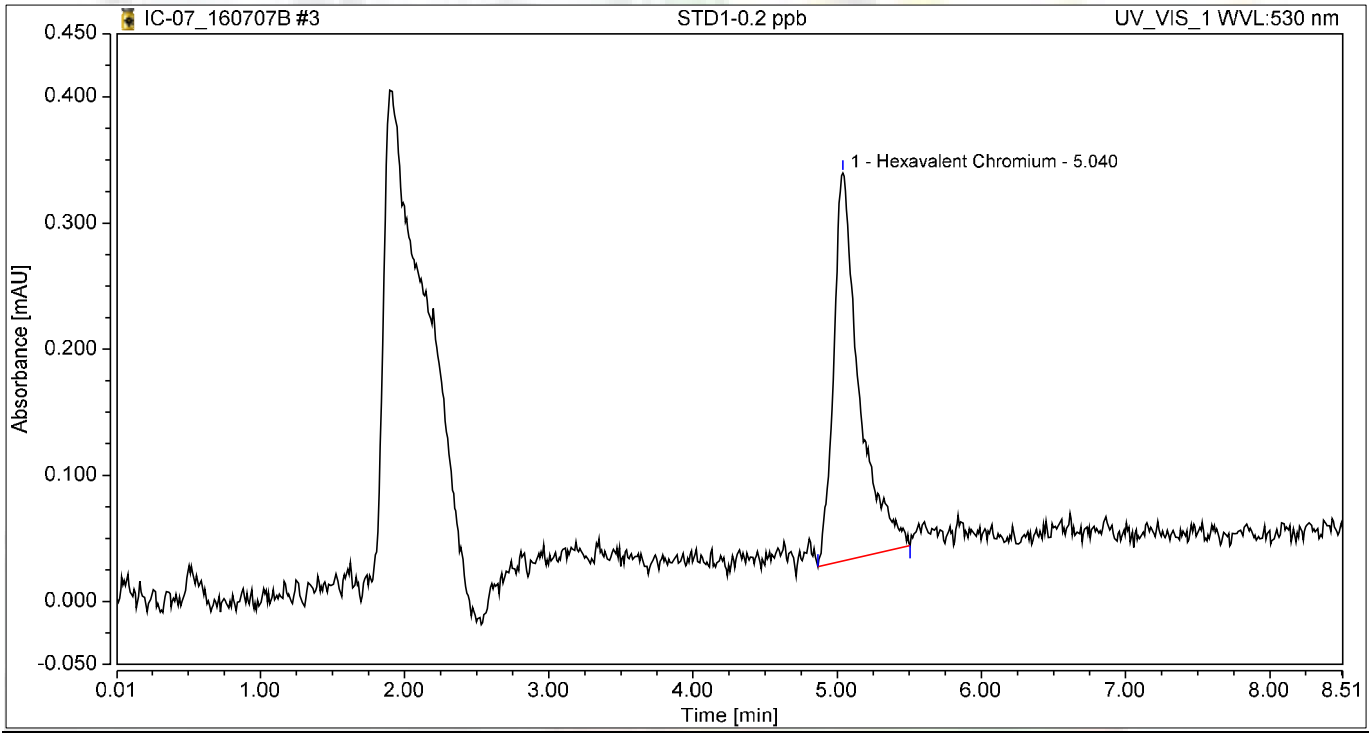
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
n.a.	Hexavalent Chromium	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Total:			**0.000**	**0.000**	**0.00**	**0.00**	

Chromatogram and Results

Injection Details

Injection Name:	**STD1-0.2 ppb**	*Run Time (min):*	**8.50**
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:	**160707_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**07/Jul/16 10:32**	*Sample Weight:*	**1.0000**

Chromatogram



Integration Results

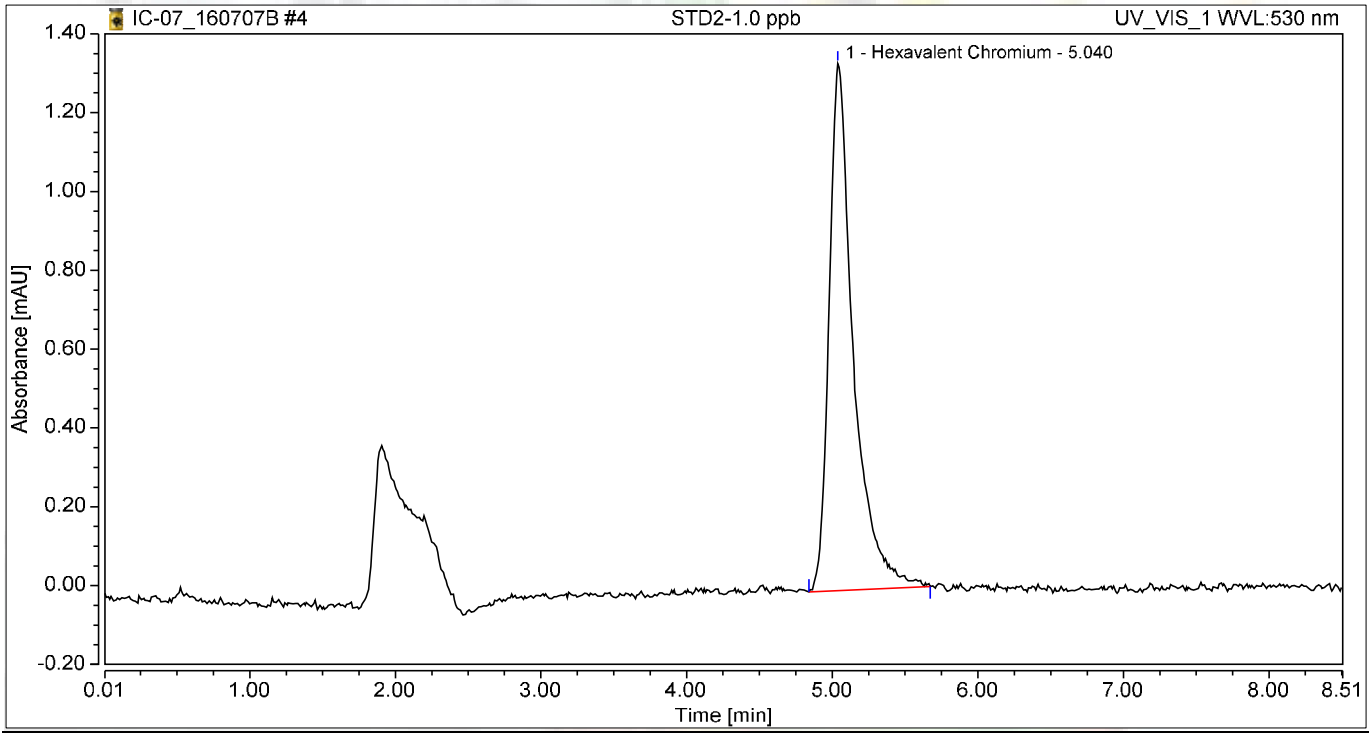
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	5.040	0.063	0.308	100.00	100.00	0.2475
Total:			**0.063**	**0.308**	**100.00**	**100.00**	

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:	**160707_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**07/Jul/16 10:42**	*Sample Weight:*	**1.0000**

Chromatogram



Integration Results

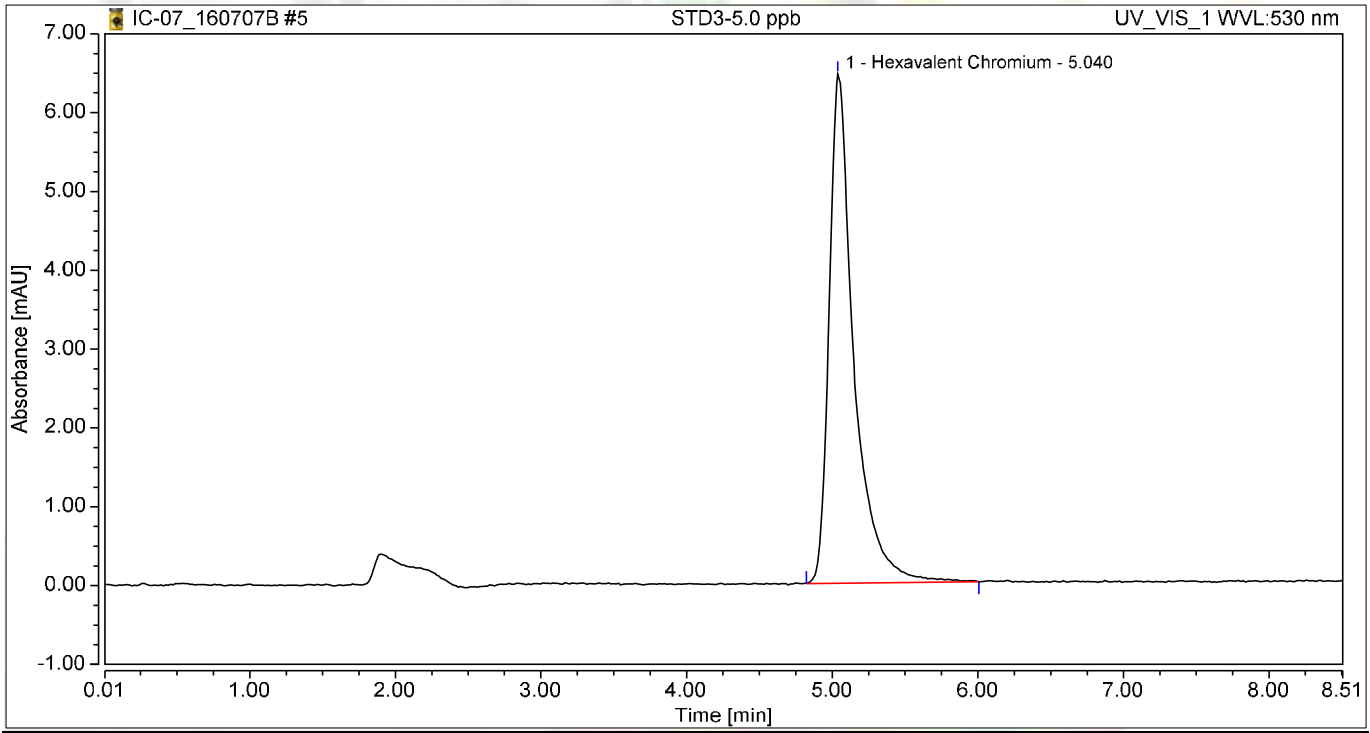
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	5.040	0.258	1.336	100.00	100.00	1.0183
Total:			**0.258**	**1.336**	**100.00**	**100.00**	

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:	**160707_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**07/Jul/16 10:51**	*Sample Weight:*	**1.0000**

Chromatogram



Integration Results

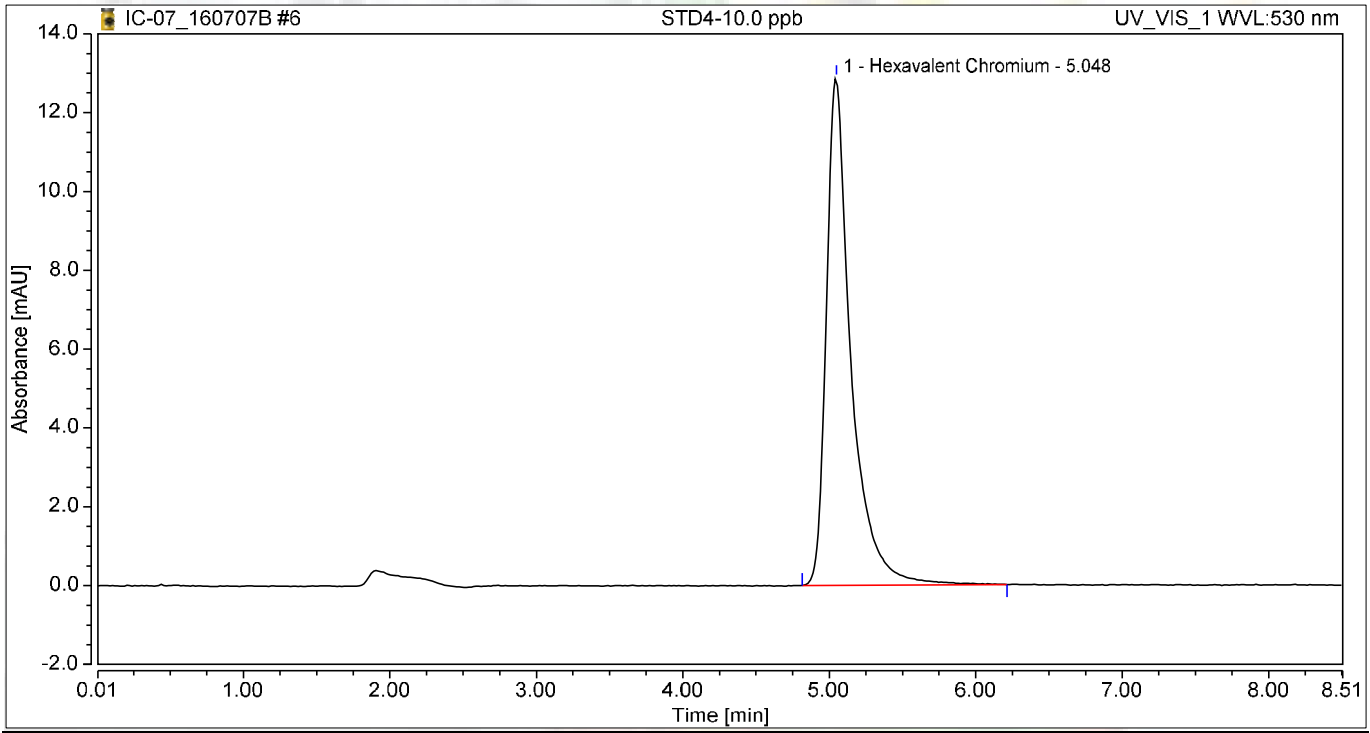
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	5.040	1.271	6.462	100.00	100.00	5.0100
Total:			**1.271**	**6.462**	**100.00**	**100.00**	

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:	**160707_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**07/Jul/16 11:00**	*Sample Weight:*	**1.0000**

Chromatogram



Integration Results

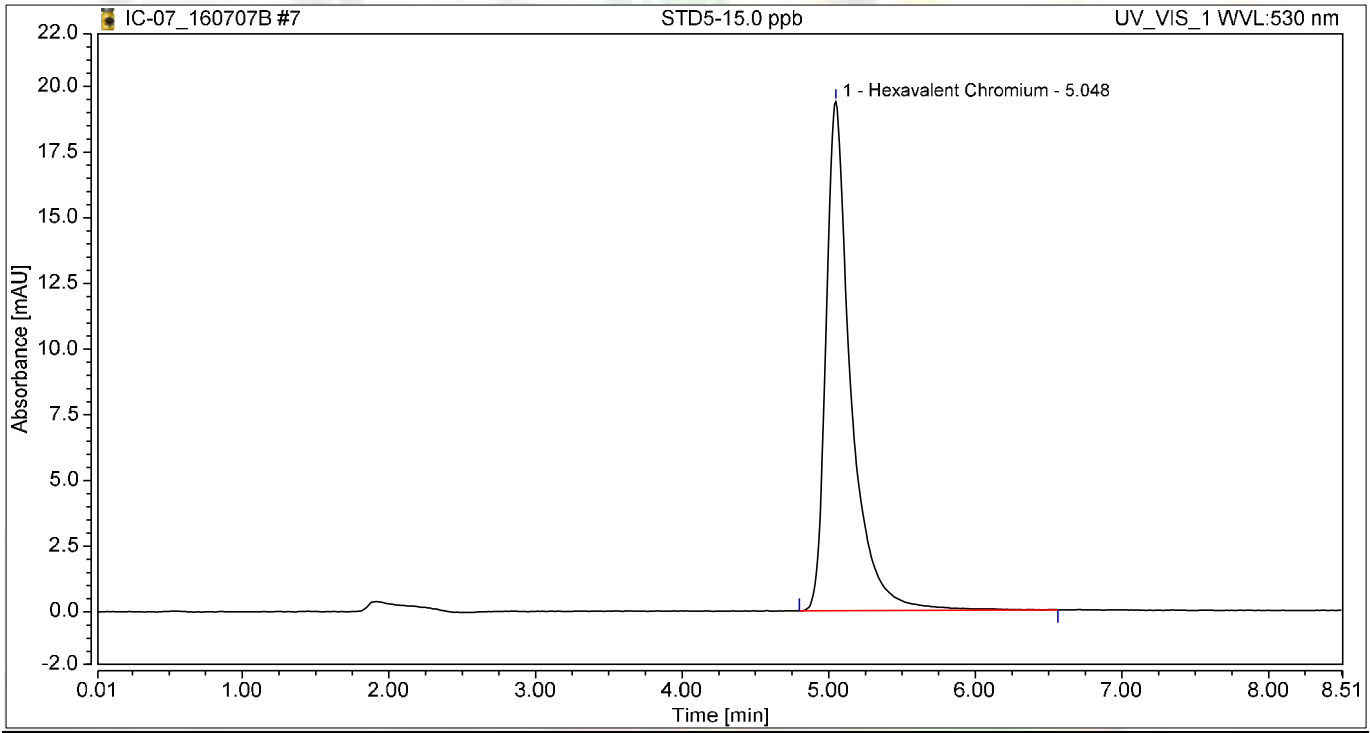
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	5.048	2.519	12.882	100.00	100.00	9.9335
Total:			**2.519**	**12.882**	**100.00**	**100.00**	

Chromatogram and Results

Injection Details

Injection Name:	**STD5-15.0 ppb**	*Run Time (min):*	**8.49**
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:	**160707_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**07/Jul/16 11:10**	*Sample Weight:*	**1.0000**

Chromatogram



Integration Results

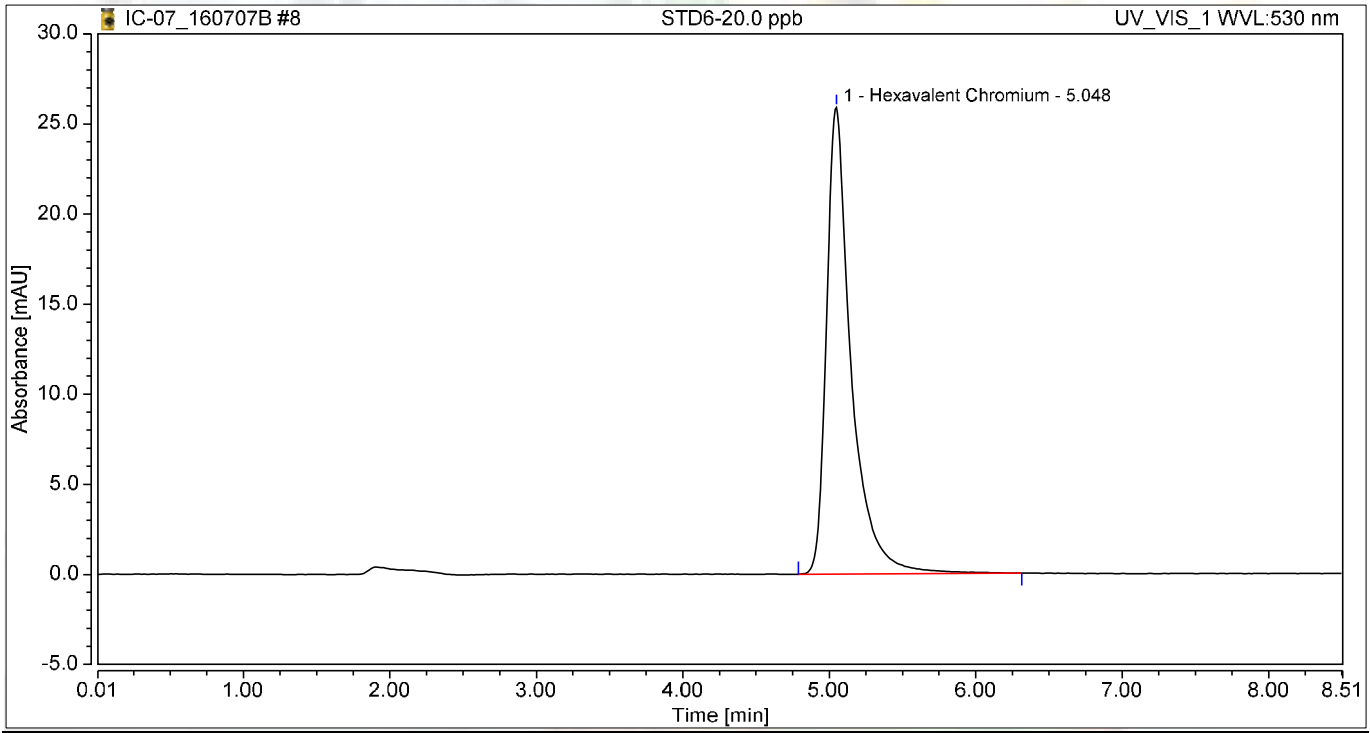
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	5.048	3.825	19.377	100.00	100.00	15.0822
Total:			**3.825**	**19.377**	**100.00**	**100.00**	

Chromatogram and Results

Injection Details

Injection Name:	**STD6-20.0 ppb**	*Run Time (min):*	**8.50**
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:	**160707_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**07/Jul/16 11:19**	*Sample Weight:*	**1.0000**

Chromatogram



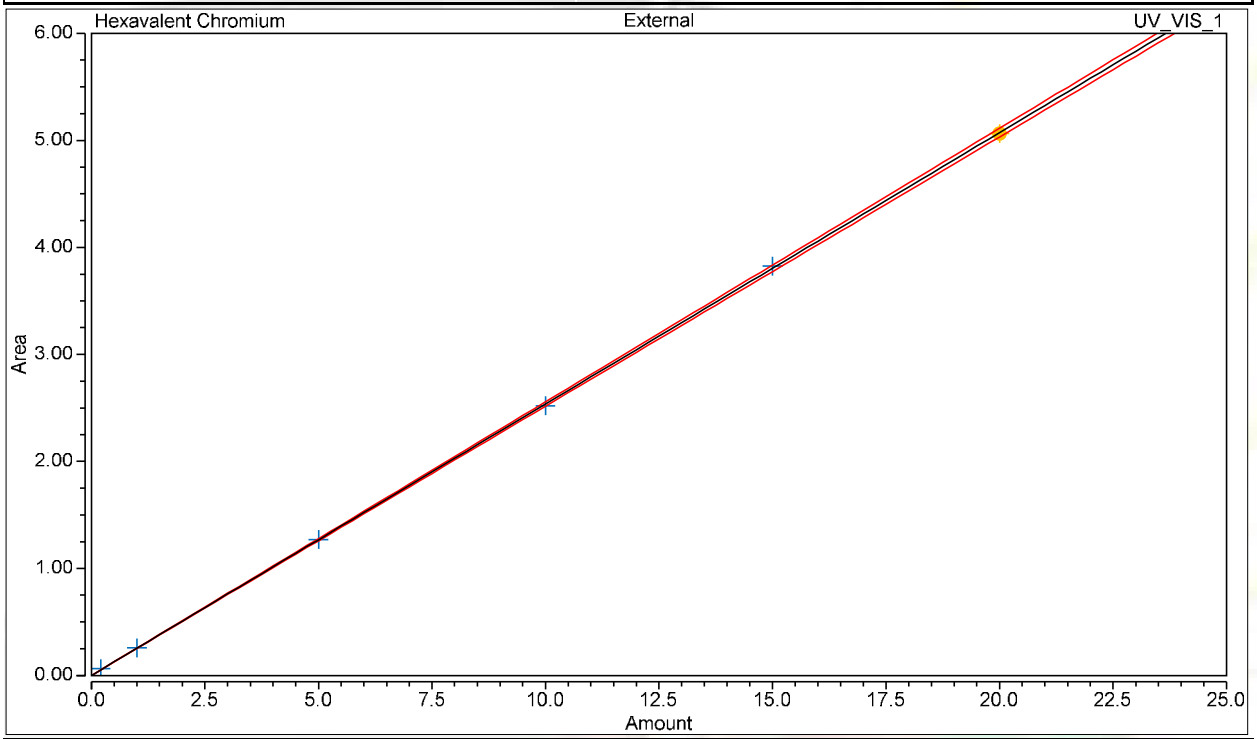
Integration Results

No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	5.048	5.064	25.901	100.00	100.00	19.9677
Total:			**5.064**	**25.901**	**100.00**	**100.00**	

Initial Calibration Summary

Calibration Details	Hexavalent Chromium		
Calibration Type	Lin	*Offset (C0)*	0.0000
Evaluation Type	Area	*Slope (C1)*	0.2536
Number of Calibration Points	6	*Curve (C2)*	0.0000
Number of disabled Calibration Points	0	*R-Square*	0.99995

Calibration Plot Hexavalent Chromium



Calibration Results Hexavalent Chromium

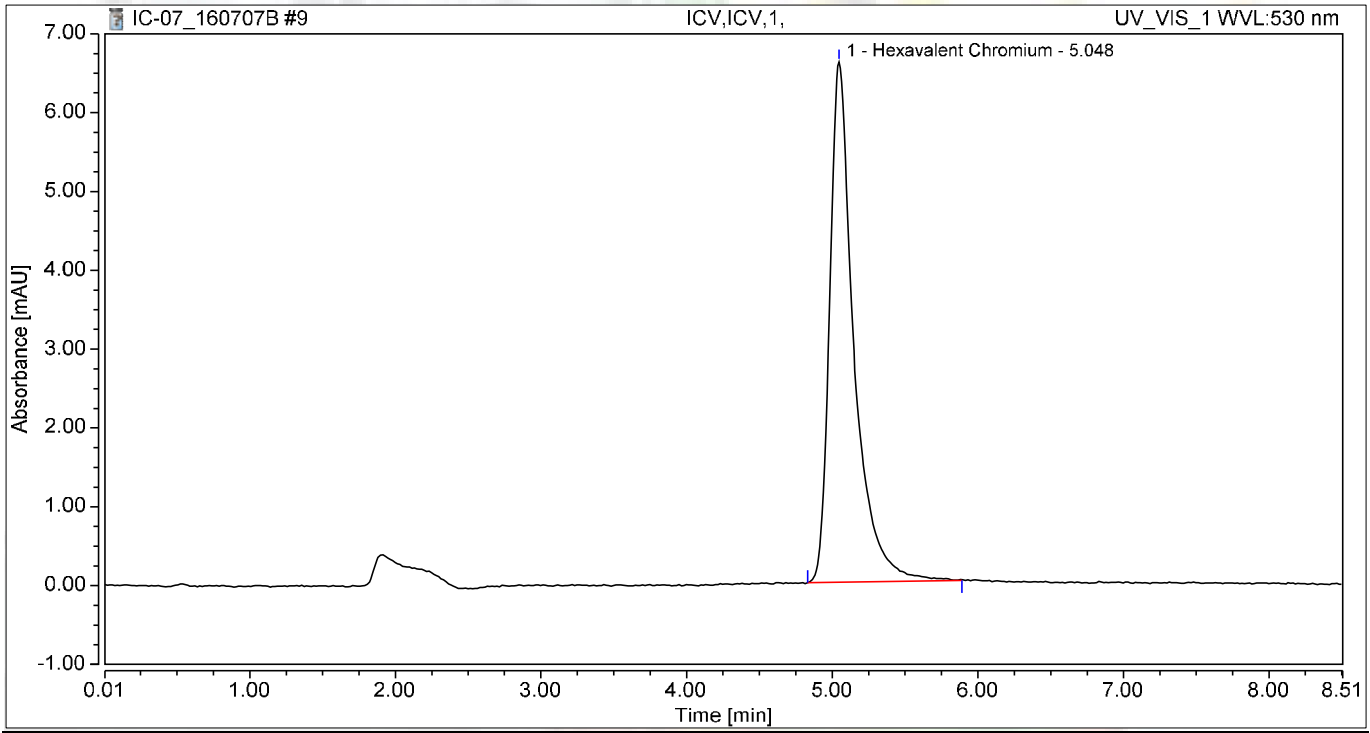
No.	Injection Name	Calibration Level	X Value	Y Value	Area mAU*min	Height mAU
3	STD1-0.2 ppb	01	0.2000	0.0628	0.063	0.308
4	STD2-1.0 ppb	02	1.0000	0.2582	0.258	1.336
5	STD3-5.0 ppb	03	5.0000	1.2706	1.271	6.462
6	STD4-10.0 ppb	04	10.0000	2.5192	2.519	12.882
7	STD5-15.0 ppb	05	15.0000	3.8249	3.825	19.377
8	STD6-20.0 ppb	06	20.0000	5.0640	5.064	25.901

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:	**160707_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**07/Jul/16 11:29**	*Sample Weight:*	**1.0000**

Chromatogram



Integration Results

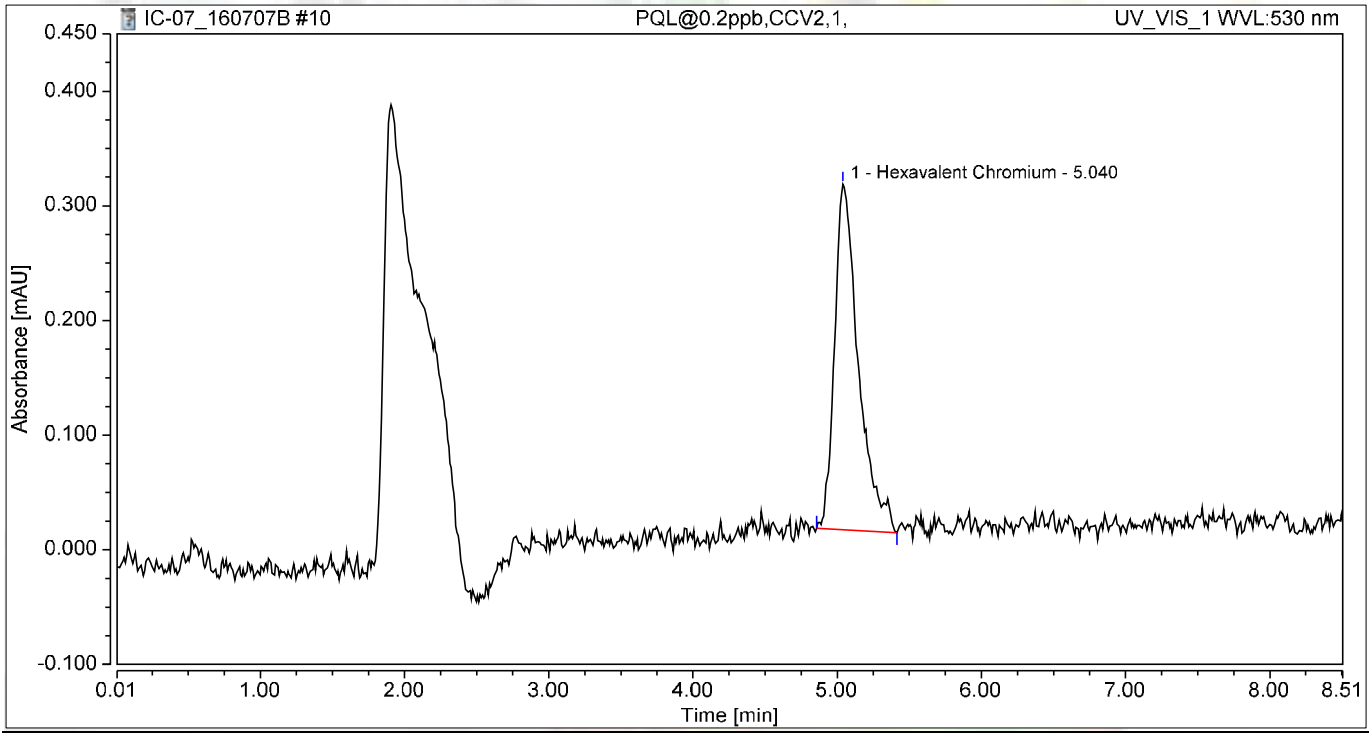
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	5.048	1.277	6.598	100.00	100.00	5.0352
Total:			**1.277**	**6.598**	**100.00**	**100.00**	

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:	**160707_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**07/Jul/16 11:38**	*Sample Weight:*	**1.0000**

Chromatogram



Integration Results

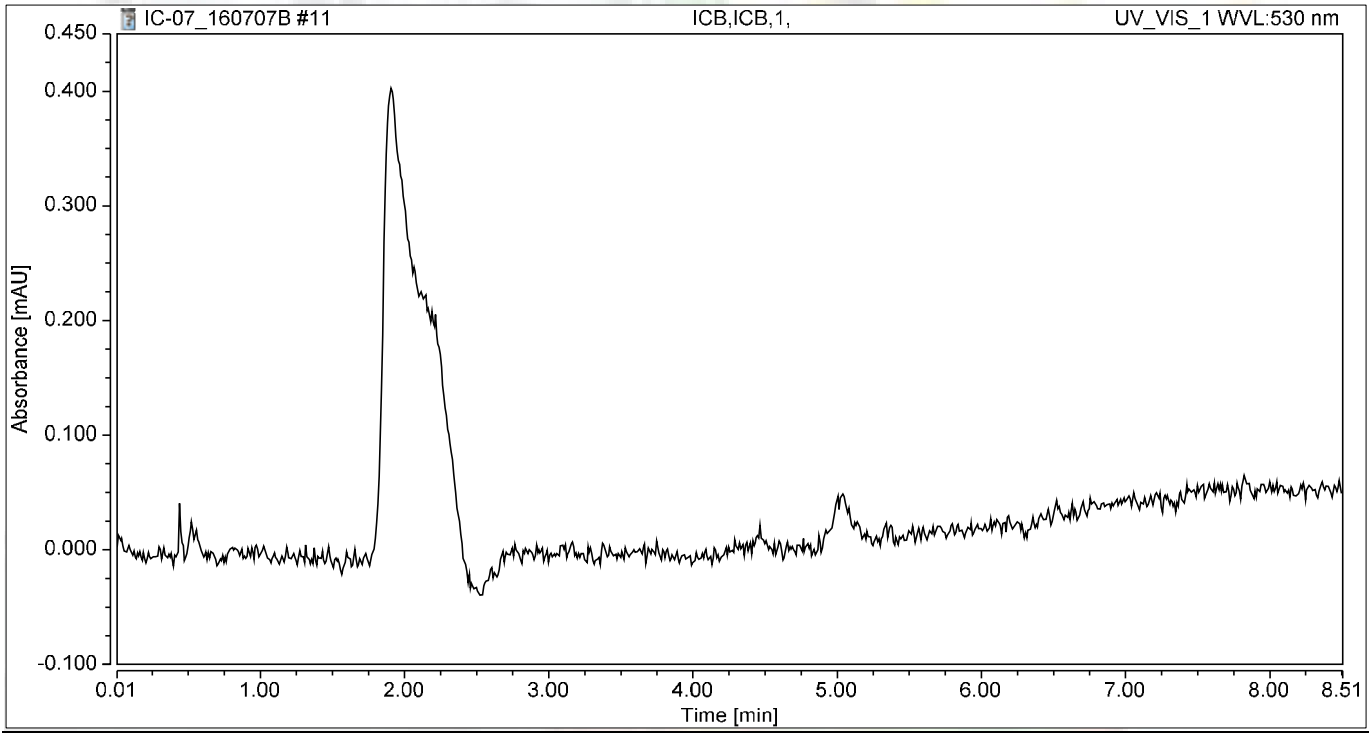
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	5.040	0.058	0.301	100.00	100.00	0.2276
Total:			**0.058**	**0.301**	**100.00**	**100.00**	

Chromatogram and Results

Injection Details

Injection Name:	**ICB,ICB,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:	**160707_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**07/Jul/16 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
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**	

RAW DATA

INJECTION LOG: 160708A

Instrument ID: IC-07

Sample No	Sample Name	Type	DF	Peak Name	Injection Date/Time	Comments
1	BLANK	BLANK	1	Hexavalent Chromium	07/07/16 10:12 AM	Not Reported
2	iBLANK	iBLANK	1	Hexavalent Chromium	07/07/16 10:23 AM	Not Reported
3	STD-0.2 ppb	ICAL	1	Hexavalent Chromium	07/07/16 10:32 AM	Reported
4	STD-1.0 ppb	ICAL	1	Hexavalent Chromium	07/07/16 10:42 AM	Reported
5	STD-5.0 ppb	ICAL	1	Hexavalent Chromium	07/07/16 10:51 AM	Reported
6	STD-10.0 ppb	ICAL	1	Hexavalent Chromium	07/07/16 11:00 AM	Reported
7	STD-15.0 ppb	ICAL	1	Hexavalent Chromium	07/07/16 11:10 AM	Reported
8	STD-20.0 ppb	ICAL	1	Hexavalent Chromium	07/07/16 11:19 AM	Reported
9	BLANK	BLANK	1	Hexavalent Chromium	07/08/16 10:16 AM	Not Reported
10	BLANK	BLANK	1	Hexavalent Chromium	07/08/16 10:27 AM	Not Reported
11	CCV-1	CCV	1	Hexavalent Chromium	07/08/16 10:36 AM	Reported
12	PQL@0.2ppb	CCV2	1	Hexavalent Chromium	07/08/16 10:45 AM	Reported
13	CCB-1	CCB	1	Hexavalent Chromium	07/08/16 10:55 AM	Reported
14	MB-109328	MBLK	1	Hexavalent Chromium	07/08/16 11:04 AM	Reported
15	LCS-109328	LCS	1	Hexavalent Chromium	07/08/16 11:14 AM	Reported
16	N020230-007A	SAMP	1	Hexavalent Chromium	07/08/16 11:23 AM	Reported
17	N020230-008A	SAMP	1	Hexavalent Chromium	07/08/16 11:33 AM	Reported
18	N020230-009A	SAMP	1	Hexavalent Chromium	07/08/16 11:42 AM	Reported
19	N020230-010A	SAMP	1	Hexavalent Chromium	07/08/16 11:52 AM	Reported
20	N020230-011A	SAMP	1	Hexavalent Chromium	07/08/16 12:01 PM	Reported
21	N020230-012A	SAMP	1	Hexavalent Chromium	07/08/16 12:11 PM	Reported
22	N020230-013A	SAMP	1	Hexavalent Chromium	07/08/16 12:20 PM	Reported
23	N020230-013ADUP	DUP	1	Hexavalent Chromium	07/08/16 12:30 PM	Reported
24	CCV-2	CCV1	1	Hexavalent Chromium	07/08/16 12:39 PM	Reported
25	CCB-2	CCB	1	Hexavalent Chromium	07/08/16 12:48 PM	Reported
26	N020244-001A	SAMP	1	Hexavalent Chromium	07/08/16 12:58 PM	Reported
27	N020244-001AMS	MS	1	Hexavalent Chromium	07/08/16 1:07 PM	Reported
28	N020244-001AMSD	MSD	1	Hexavalent Chromium	07/08/16 1:17 PM	Reported
29	N020244-002A	SAMP	1	Hexavalent Chromium	07/08/16 1:26 PM	Reported
30	N020244-002AMS	MS	1	Hexavalent Chromium	07/08/16 1:36 PM	Reported
31	N020244-003A	SAMP	1	Hexavalent Chromium	07/08/16 1:45 PM	Reported
32	N020244-003AMS	MS	1	Hexavalent Chromium	07/08/16 1:55 PM	Reported
33	N020244-004A	SAMP	1	Hexavalent Chromium	07/08/16 2:04 PM	Reported
34	N020244-004AMS	MS	1	Hexavalent Chromium	07/08/16 2:14 PM	Reported
35	N020244-005A	SAMP	1	Hexavalent Chromium	07/08/16 2:23 PM	Reported
36	CCV-3	CCV	1	Hexavalent Chromium	07/08/16 2:33 PM	Reported
37	CCB-3	CCB	1	Hexavalent Chromium	07/08/16 2:42 PM	Reported
38	N020244-005AMS	MS	1	Hexavalent Chromium	07/08/16 2:51 PM	Reported
39	N020244-006A	SAMP	1	Hexavalent Chromium	07/08/16 3:01 PM	Reported
40	N020244-006AMS	MS	1	Hexavalent Chromium	07/08/16 3:10 PM	Reported
41	N020244-007A	SAMP	1	Hexavalent Chromium	07/08/16 3:20 PM	Reported
42	N020244-007AMS	MS	1	Hexavalent Chromium	07/08/16 3:29 PM	Reported

7/22/2016

7/21/2016

IC-07 QBM 7/10/2016 10:00 PM

INJECTION LOG: 160708A

Instrument ID: IC-07

Sample No	Sample Name	Type	DF	Peak Name	Injection Date/Time	Comments
43	N020244-008A	SAMP	1	Hexavalent Chromium	07/08/16 3:39 PM	Reported
44	N020244-008AMS	MS	1	Hexavalent Chromium	07/08/16 3:48 PM	Reported
45	N020244-009A	SAMP	1	Hexavalent Chromium	07/08/16 3:58 PM	Reported
46	N020244-009AMS	MS	1	Hexavalent Chromium	07/08/16 4:07 PM	Reported
47	N020244-010A	SAMP	1	Hexavalent Chromium	07/08/16 4:17 PM	Reported
48	CCV-4	CCV1	1	Hexavalent Chromium	07/08/16 4:26 PM	Reported
49	CCB-4	CCB	1	Hexavalent Chromium	07/08/16 4:36 PM	Reported
50	N020244-010AMS	MS	1	Hexavalent Chromium	07/08/16 4:45 PM	Reported
51	N020244-011A	SAMP	1	Hexavalent Chromium	07/08/16 4:54 PM	Reported
52	N020244-011AMS	MS	1	Hexavalent Chromium	07/08/16 5:04 PM	Reported
53	N020245-001A	SAMP	1	Hexavalent Chromium	07/08/16 5:13 PM	Reported
54	N020245-001AMS	MS	1	Hexavalent Chromium	07/08/16 5:23 PM	Reported
55	N020245-002A	SAMP	1	Hexavalent Chromium	07/08/16 5:32 PM	Reported
56	N020245-002AMS	MS	1	Hexavalent Chromium	07/08/16 5:42 PM	Reported
57	BLANK	BLANK	1	Hexavalent Chromium	07/08/16 6:00 PM	Not Reported
58	CCV-5	CCV	1	Hexavalent Chromium	07/08/16 6:11 PM	Reported
59	CCB-5	CCB	1	Hexavalent Chromium	07/08/16 6:20 PM	Reported

7/21/2016

Injection Log Summary

Sequence Details

Name:	**IC-07_160708A**	*Created On:*	**24/Jul/12 17:17:21**
Directory:	**Instrument Data\IC-7\2016**	*Created By:*	**ics 5000**
Data Vault:	**ChromeleonLocal**	*Updated On:*	**09/Jul/16 10:48:13**
No. of Injections:	**62**	*Updated By:*	**ics 5000**

Injection Details

No.	Injection Name	Position	Volume µL	Type	Level	Inject Time	Status	Comment
1	BLANK	3	1000	Unknown		07/07/2016 10:12	Finished	
2	iBLANK	4	1000	Unknown		07/07/2016 10:23	Finished	INSTRUMENT BLANK
3	STD1-0.2 ppb	5	1000	Calibration Standard	01	07/07/2016 10:32	Finished	0.2 ppb, IWST160401A
4	STD2-1.0 ppb	6	1000	Calibration Standard	02	07/07/2016 10:42	Finished	1.0 ppb, IWST160401A
5	STD3-5.0 ppb	7	1000	Calibration Standard	03	07/07/2016 10:51	Finished	5.0 ppb, IWST160401A
6	STD4-10.0 ppb	8	1000	Calibration Standard	04	07/07/2016 11:00	Finished	10 ppb, IWST160401A
7	STD5-15.0 ppb	9	1000	Calibration Standard	05	07/07/2016 11:10	Finished	15 ppb, IWST160401A
8	STD6-20.0 ppb	10	1000	Calibration Standard	06	07/07/2016 11:19	Finished	20 ppb, IWST160401A
9	BLANK	1	1000	Unknown		07/08/2016 10:16	Finished	
10	BLANK	2	1000	Unknown		07/08/2016 10:27	Finished	
11	CCV-1,CCV,1,	3	1000	Unknown		07/08/2016 10:36	Finished	CCV @5ppb, IWST-160401A
12	PQL@0.2ppb,CCV2,1	4	1000	Unknown		07/08/2016 10:45	Finished	PQL @ 0.2ppb
13	CCB-1,CCB,1,	5	1000	Unknown		07/08/2016 10:55	Finished	CCB R160622B
14	MB-H2O,MBLK,1	6	1000	Unknown		07/08/2016 11:04	Finished	MB R160622B
15	LCS-H2O,LCS,1	7	1000	Unknown		07/08/2016 11:14	Finished	LCS, IWST-160401B
16	N020230-007A,SAMP	8	1000	Unknown		07/08/2016 11:23	Finished	SAMP, 10 mL
17	N020230-008A,SAMP	9	1000	Unknown		07/08/2016 11:33	Finished	SAMP, 10 mL
18	N020230-009A,SAMP	10	1000	Unknown		07/08/2016 11:42	Finished	SAMP, 10 mL
19	N020230-010A,SAMP	11	1000	Unknown		07/08/2016 11:52	Finished	SAMP, 10 mL
20	N020230-011A,SAMP	12	1000	Unknown		07/08/2016 12:01	Finished	SAMP, 10 mL
21	N020230-012A,SAMP	13	1000	Unknown		07/08/2016 12:11	Finished	SAMP, 10 mL
22	N020230-013A,SAMP	14	1000	Unknown		07/08/2016 12:20	Finished	SAMP, 10 mL
23	N020230-013ADUP,D	15	1000	Unknown		07/08/2016 12:30	Finished	DUP, 10 mL
24	CCV-2,CCV1,1,	16	1000	Unknown		07/08/2016 12:39	Finished	CCV @10ppb, IWST-160401A
25	CCB-2,CCB,1,	17	1000	Unknown		07/08/2016 12:48	Finished	CCB, R160622B
26	N020244-001A,SAMP	18	1000	Unknown		07/08/2016 12:58	Finished	SAMP, 10 mL
27	N020244-001AMS,MS	19	1000	Unknown		07/08/2016 13:07	Finished	MS (1ppb), IWST-160401B, 10
28	N020244-001AMSD,M	20	1000	Unknown		07/08/2016 13:17	Finished	MSD (1ppb), IWST-160401B, 1
29	N020244-002A,SAMP	21	1000	Unknown		07/08/2016 13:26	Finished	SAMP, 10 mL
30	N020244-002AMS,MS	22	1000	Unknown		07/08/2016 13:36	Finished	MS (1ppb), IWST-160401B, 10
31	N020244-003A,SAMP	23	1000	Unknown		07/08/2016 13:45	Finished	SAMP, 10 mL
32	N020244-003AMS,MS	24	1000	Unknown		07/08/2016 13:55	Finished	MS (1ppb), IWST-160401B, 10
33	N020244-004A,SAMP	25	1000	Unknown		07/08/2016 14:04	Finished	SAMP, 10 mL
34	N020244-004AMS,MS	26	1000	Unknown		07/08/2016 14:14	Finished	MS (1ppb), IWST-160401B, 10
35	N020244-005A,SAMP	27	1000	Unknown		07/08/2016 14:23	Finished	SAMP, 10 mL
36	CCV-3,CCV,1,	28	1000	Unknown		07/08/2016 14:33	Finished	CCV @5ppb, IWST-160401A
37	CCB-3,CCB,1,	29	1000	Unknown		07/08/2016 14:42	Finished	CCB R160629C
38	N020244-005AMS,MS	30	1000	Unknown		07/08/2016 14:51	Finished	MS (1ppb), IWST-160401B, 10
39	N020244-006A,SAMP	31	1000	Unknown		07/08/2016 15:01	Finished	SAMP, 10 mL
40	N020244-006AMS,MS	32	1000	Unknown		07/08/2016 15:10	Finished	MS (1ppb), IWST-160401B, 10
41	N020244-007A,SAMP	33	1000	Unknown		07/08/2016 15:20	Finished	SAMP, 10 mL
42	N020244-007AMS,MS	34	1000	Unknown		07/08/2016 15:29	Finished	MS (1ppb), IWST-160401B, 10
43	N020244-008A,SAMP	35	1000	Unknown		07/08/2016 15:39	Finished	SAMP, 10 mL
44	N020244-008AMS,MS	36	1000	Unknown		07/08/2016 15:48	Finished	MS (1ppb), IWST-160401B, 10
45	N020244-009A,SAMP	37	1000	Unknown		07/08/2016 15:58	Finished	SAMP, 10 mL
46	N020244-009AMS,MS	38	1000	Unknown		07/08/2016 16:07	Finished	MS (1ppb), IWST-160401B, 10
47	N020244-010A,SAMP	39	1000	Unknown		07/08/2016 16:17	Finished	SAMP, 10 mL
48	CCV-4,CCV1,1,	40	1000	Unknown		07/08/2016 16:26	Finished	CCV @10ppb, IWST-160401A
49	CCB-4,CCB,1,	41	1000	Unknown		07/08/2016 16:36	Finished	CCB, R160629C
50	N020244-010AMS,MS	42	1000	Unknown		07/08/2016 16:45	Finished	MS (1ppb), IWST-160401B, 10
51	N020244-011A,SAMP	43	1000	Unknown		07/08/2016 16:54	Finished	SAMP, 10 mL
52	N020244-011AMS,MS	44	1000	Unknown		07/08/2016 17:04	Finished	MS (1ppb), IWST-160401B, 10
53	N020245-001A,SAMP	45	1000	Unknown		07/08/2016 17:13	Finished	SAMP, 10 mL
54	N020245-001AMS,MS	46	1000	Unknown		07/08/2016 17:23	Finished	MS (1ppb), IWST-160401B, 10
55	N020245-002A,SAMP	47	1000	Unknown		07/08/2016 17:32	Finished	SAMP, 10 mL
56	N020245-002AMS,MS	48	1000	Unknown		07/08/2016 17:42	Finished	MS (1ppb), IWST-160401B, 10
57	BLANK	1	1000	Unknown		07/08/2016 18:00	Finished	
58	CCV-5,CCV,1,	2	1000	Unknown		07/08/2016 18:11	Finished	CCV @5ppb, IWST-160401A
59	CCB-5,CCB,1,	3	1000	Unknown		07/08/2016 18:20	Finished	CCB R160629C
60	SHUTDOWN	4	1000	Unknown		07/08/2016 18:30	Finished	

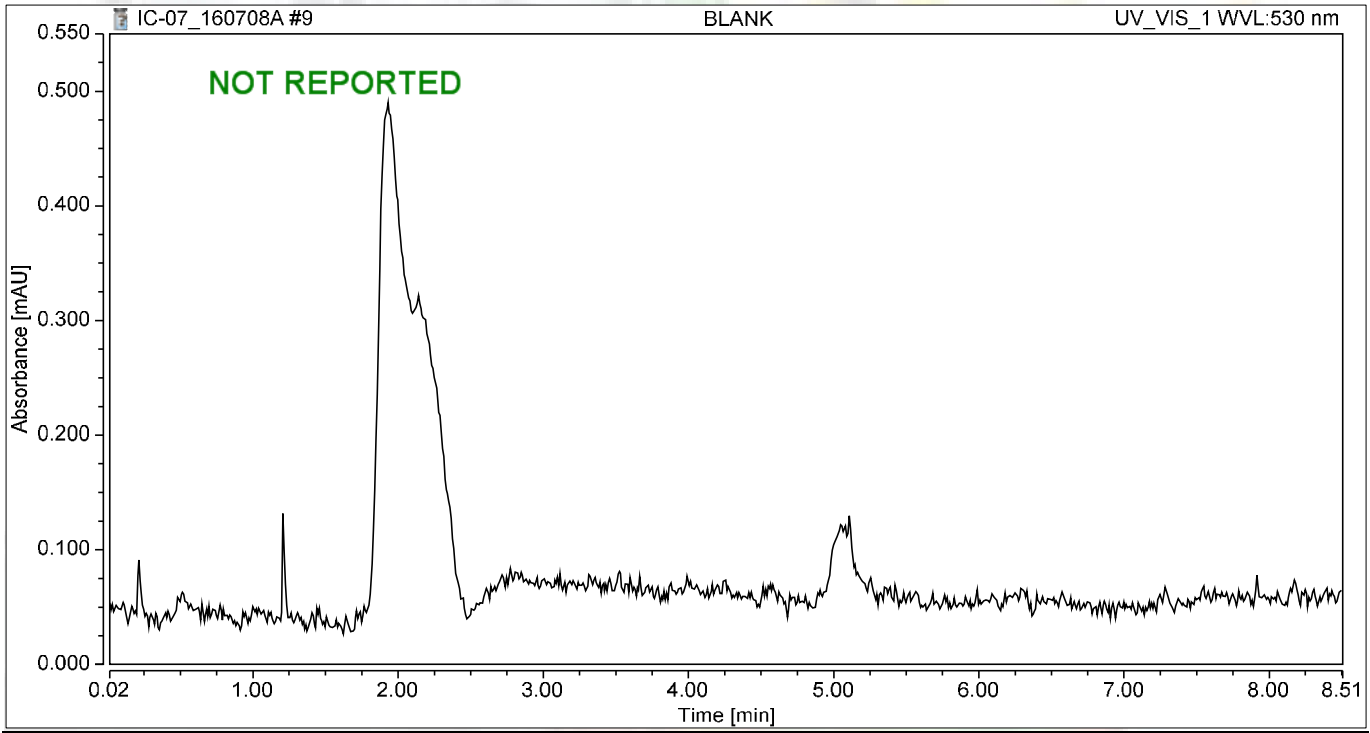
61	Eluent: R160708A	5	1000	Unknown		n.a.	Finished	Eluent
62	PCR: R160708B	6	1000	Unknown		n.a.	Finished	Post-Column Reagent

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:	**160707_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**08/Jul/16 10:16**	*Sample Weight:*	**1.0000**

Chromatogram



Integration Results

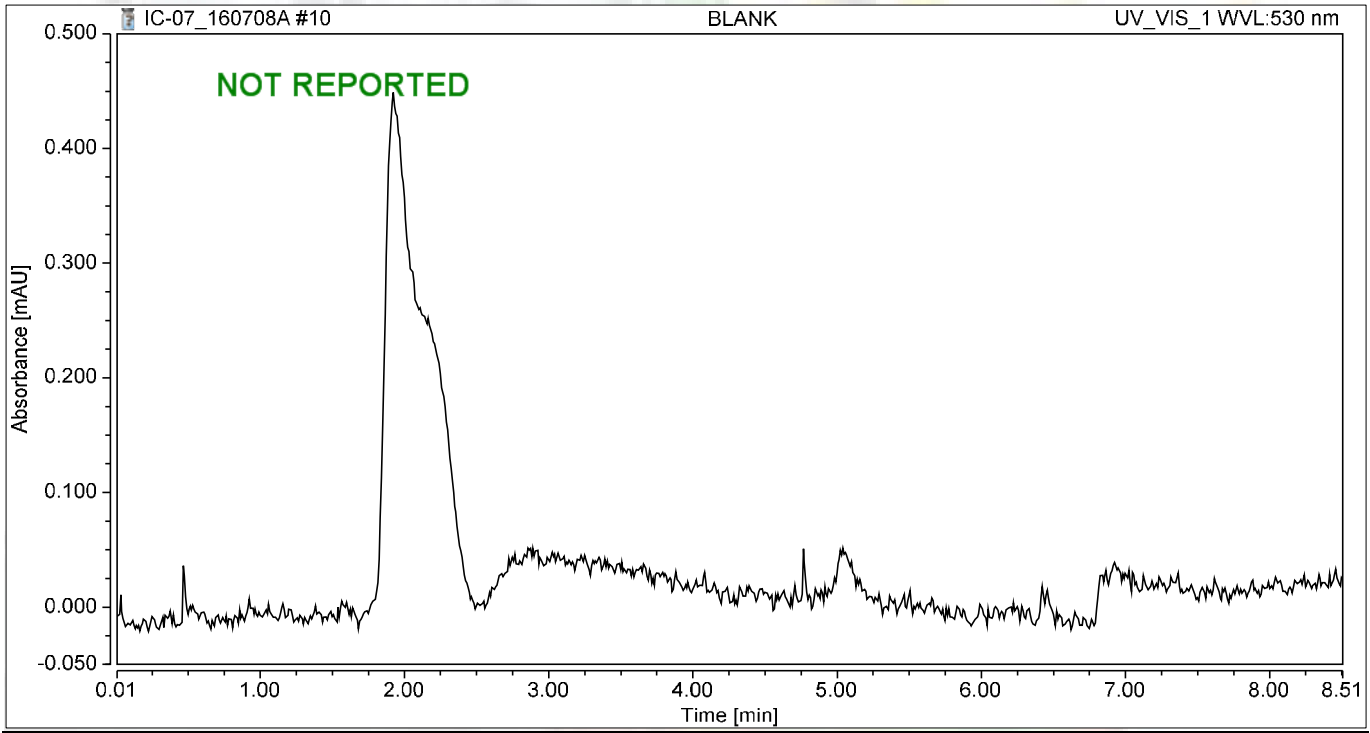
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
n.a.	Hexavalent Chromium	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Total:			**0.000**	**0.000**	**0.00**	**0.00**	

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:	**160707_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**08/Jul/16 10:27**	*Sample Weight:*	**1.0000**

Chromatogram



Integration Results

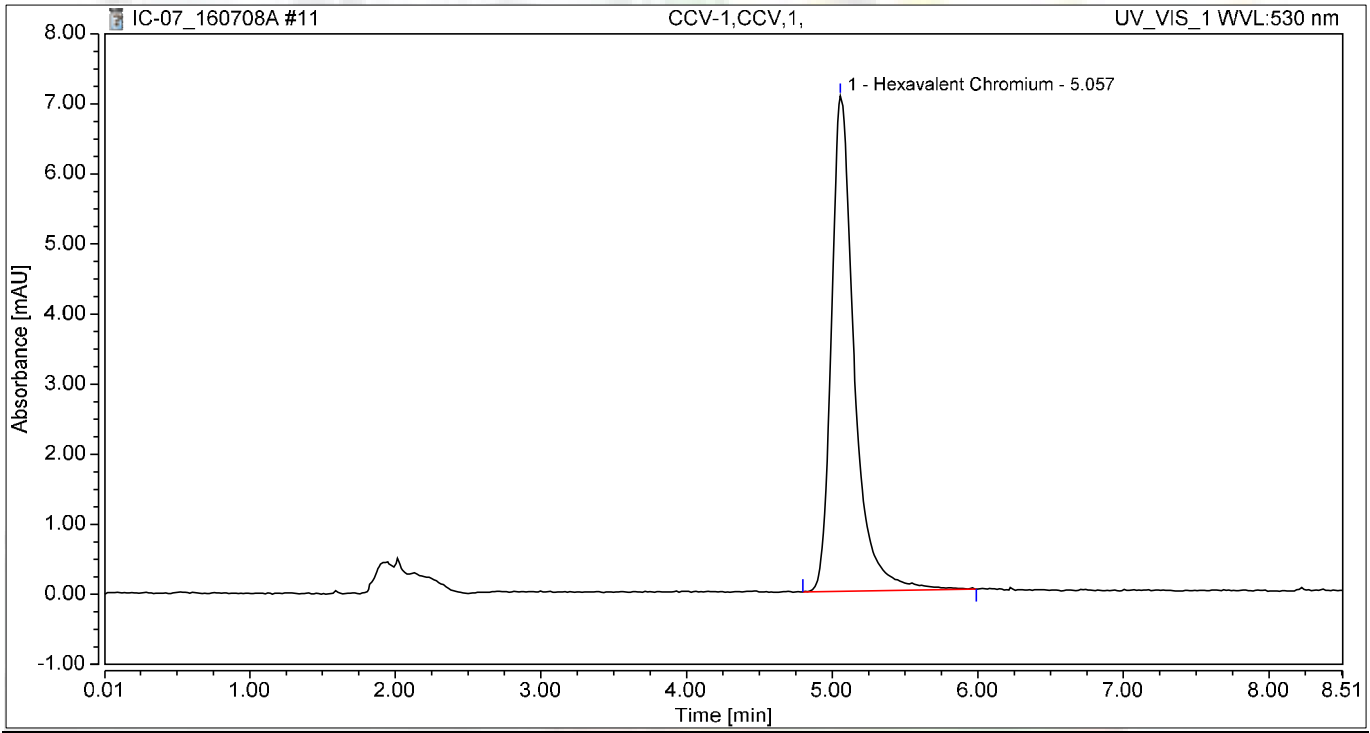
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
n.a.	Hexavalent Chromium	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Total:			**0.000**	**0.000**	**0.00**	**0.00**	

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:	**160707_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**08/Jul/16 10:36**	*Sample Weight:*	**1.0000**

Chromatogram



Integration Results

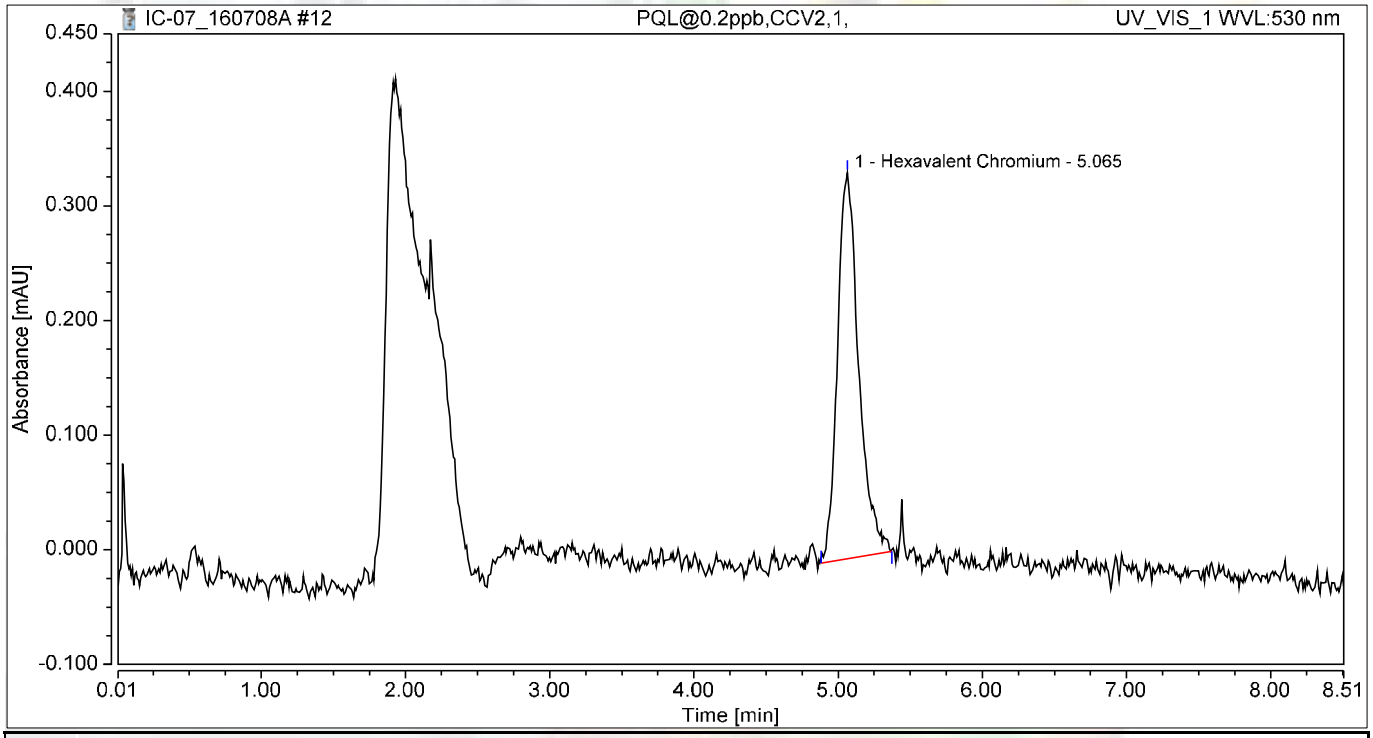
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	5.057	1.283	7.067	100.00	100.00	5.0581
Total:			**1.283**	**7.067**	**100.00**	**100.00**	

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:	**160707_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**08/Jul/16 10:45**	*Sample Weight:*	**1.0000**

Chromatogram



Integration Results

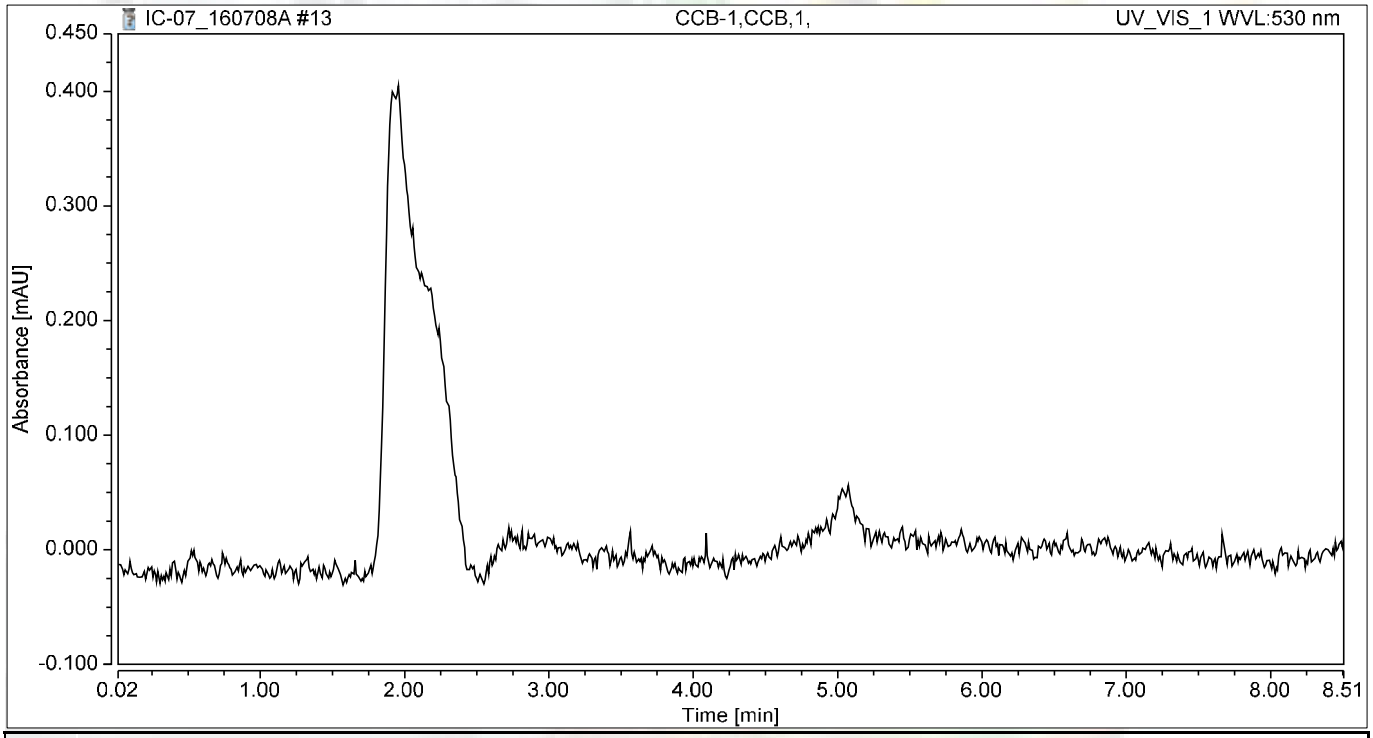
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	5.065	0.057	0.337	100.00	100.00	0.2258
Total:			**0.057**	**0.337**	**100.00**	**100.00**	

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:	**160707_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**08/Jul/16 10:55**	*Sample Weight:*	**1.0000**

Chromatogram



Integration Results

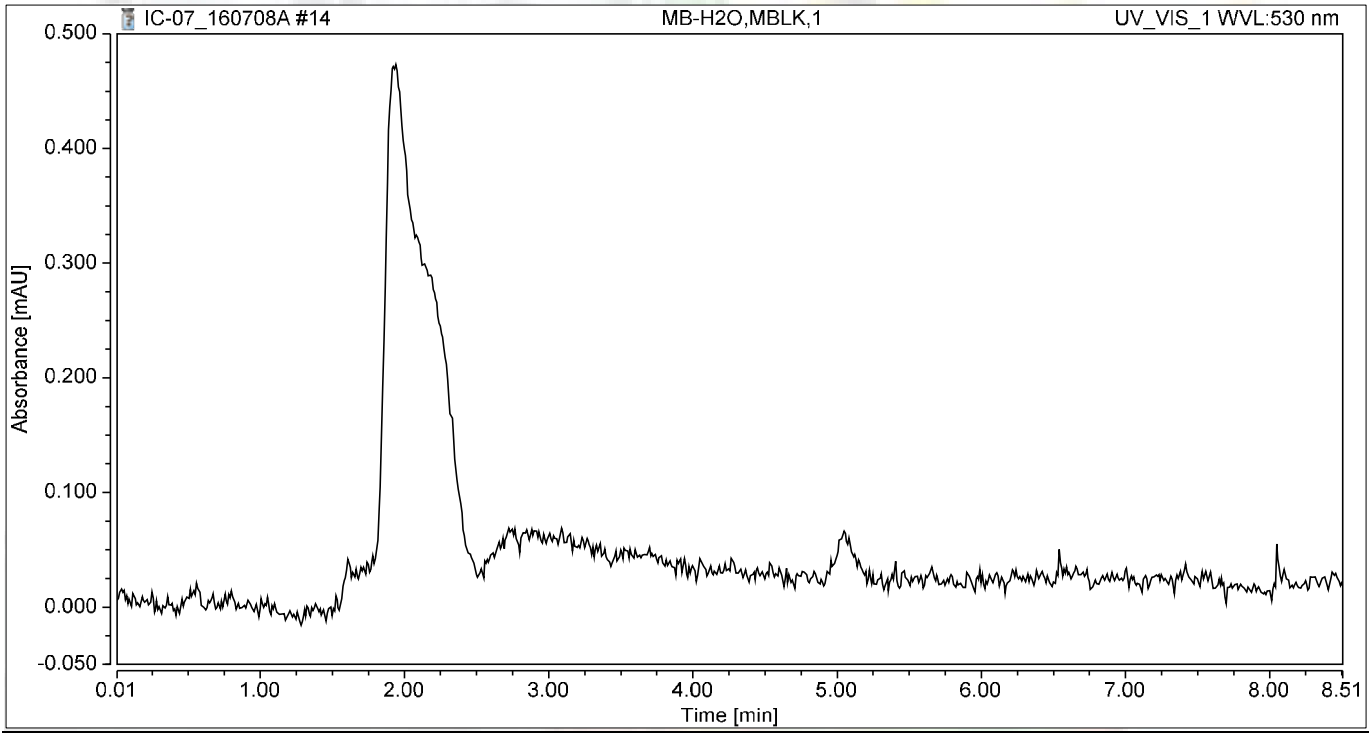
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
n.a.	Hexavalent Chromium	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Total:			**0.000**	**0.000**	**0.00**	**0.00**	

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:	**160707_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**08/Jul/16 11:04**	*Sample Weight:*	**1.0000**

Chromatogram



Integration Results

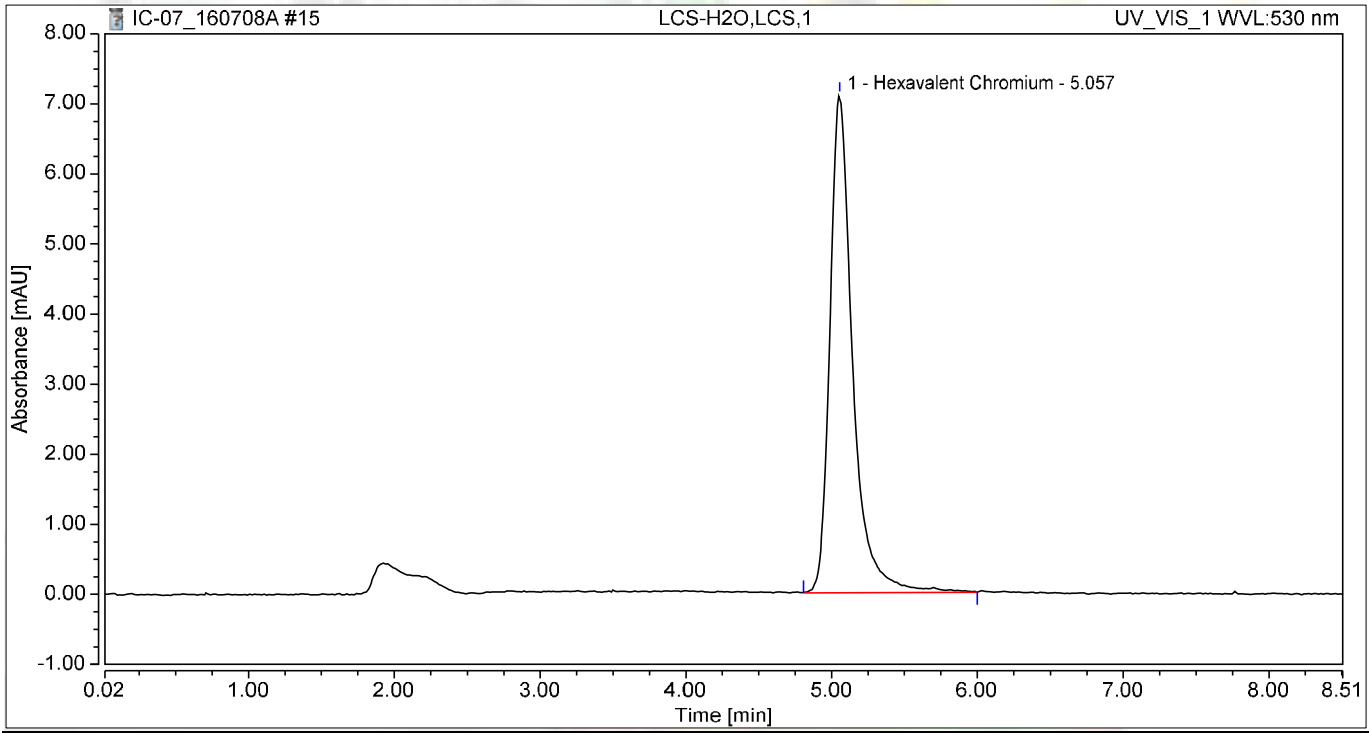
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
n.a.	Hexavalent Chromium	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Total:			**0.000**	**0.000**	**0.00**	**0.00**	

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:	**160707_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**08/Jul/16 11:14**	*Sample Weight:*	**1.0000**

Chromatogram



Integration Results

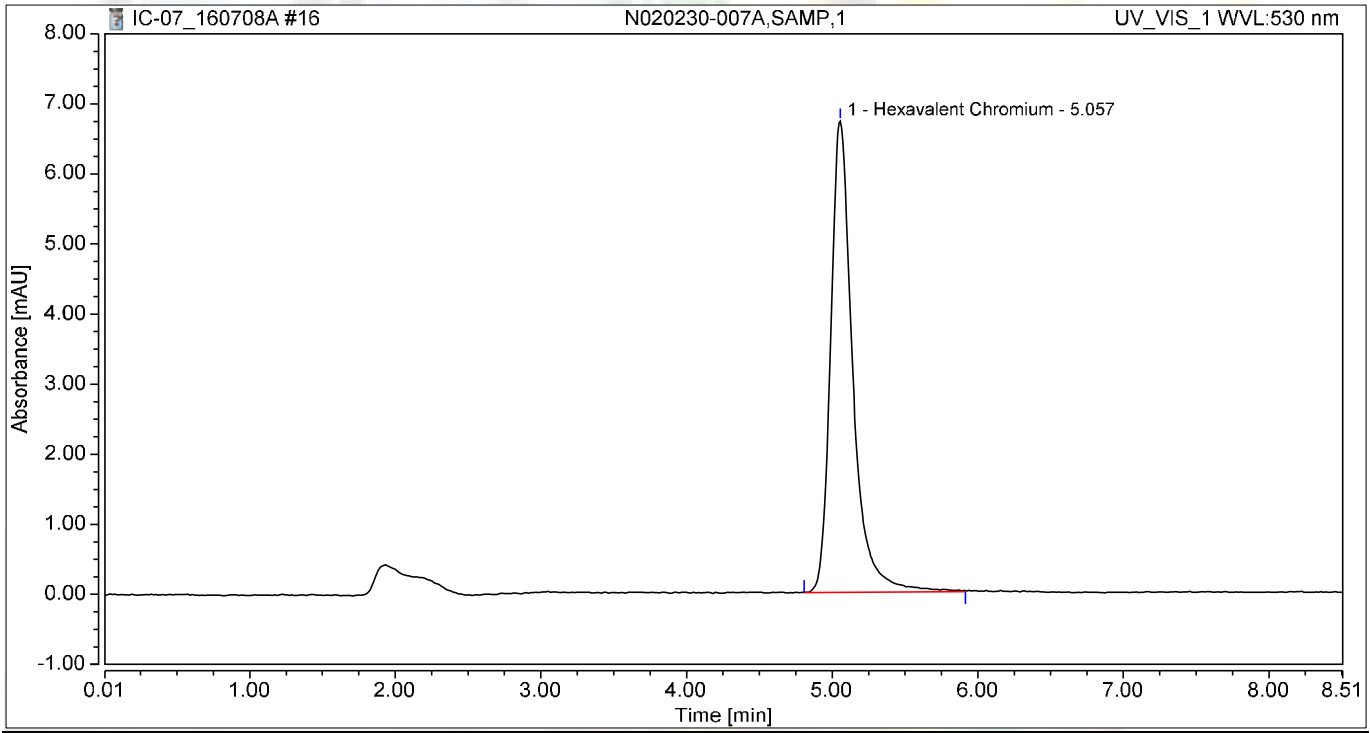
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	5.057	1.286	7.107	100.00	100.00	5.0699
Total:			**1.286**	**7.107**	**100.00**	**100.00**	

Chromatogram and Results

Injection Details

Injection Name:	**N020230-007A,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:	**160707_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**08/Jul/16 11:23**	*Sample Weight:*	**1.0000**

Chromatogram



Integration Results

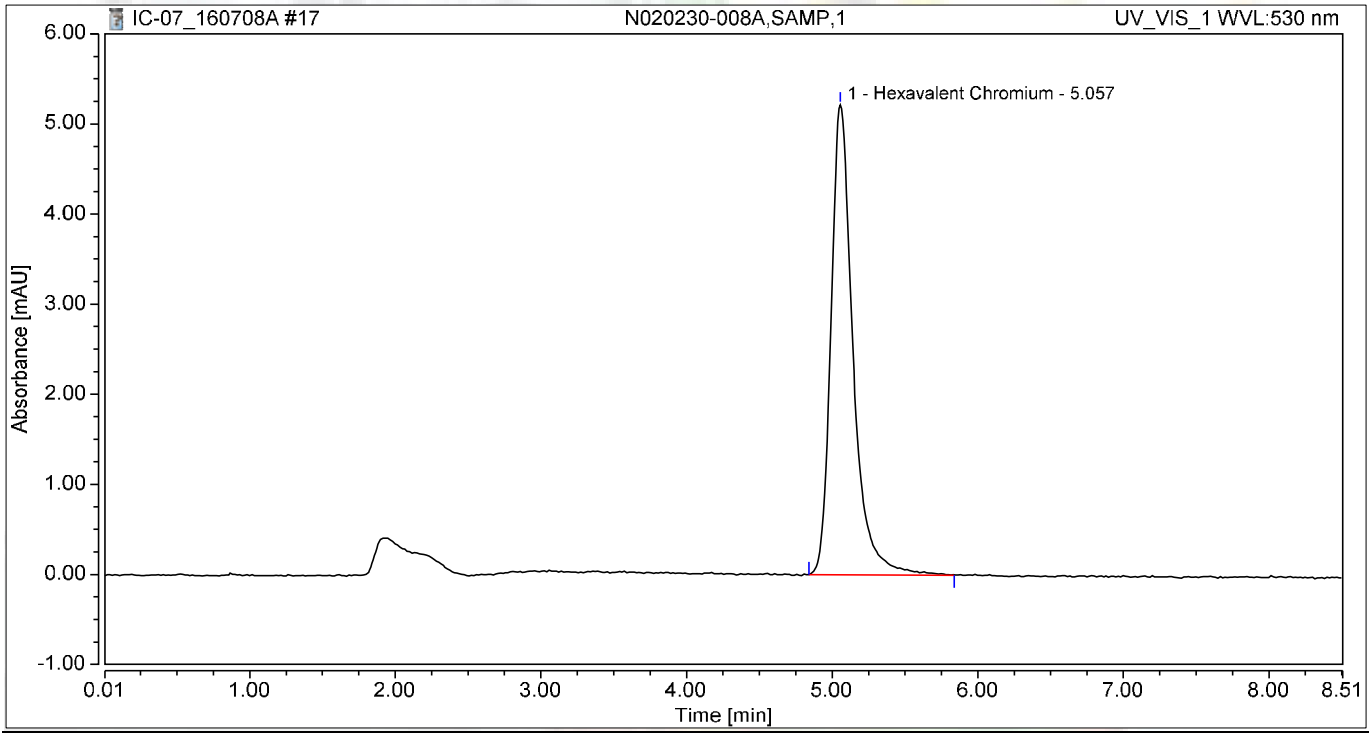
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	5.057	1.185	6.728	100.00	100.00	4.6734
Total:			**1.185**	**6.728**	**100.00**	**100.00**	

Chromatogram and Results

Injection Details

Injection Name:	**N020230-008A,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:	**160707_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**08/Jul/16 11:33**	*Sample Weight:*	**1.0000**

Chromatogram



Integration Results

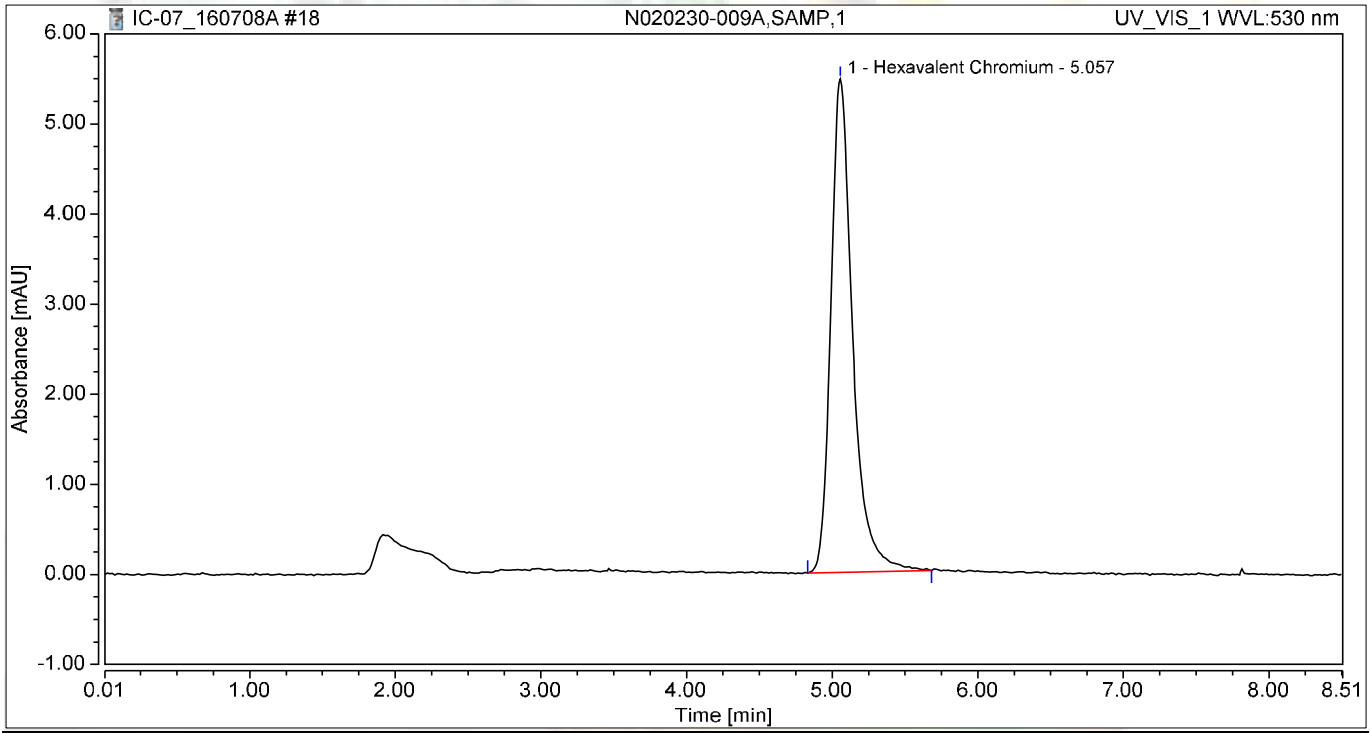
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	5.057	0.913	5.215	100.00	100.00	3.5982
Total:			**0.913**	**5.215**	**100.00**	**100.00**	

Chromatogram and Results

Injection Details

Injection Name:	**N020230-009A,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:	**160707_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**08/Jul/16 11:42**	*Sample Weight:*	**1.0000**

Chromatogram



Integration Results

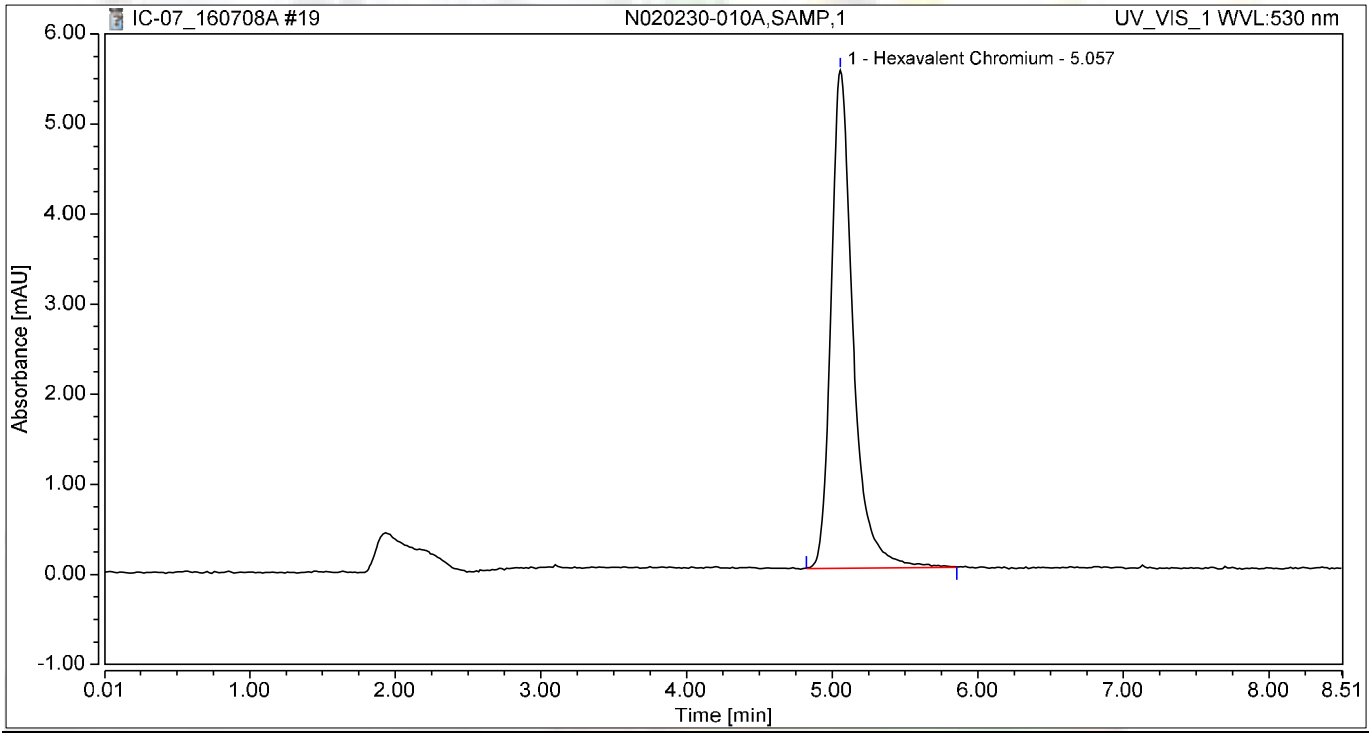
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	5.057	0.950	5.474	100.00	100.00	3.7467
Total:			**0.950**	**5.474**	**100.00**	**100.00**	

Chromatogram and Results

Injection Details

Injection Name:	**N020230-010A,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:	**160707_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**08/Jul/16 11:52**	*Sample Weight:*	**1.0000**

Chromatogram



Integration Results

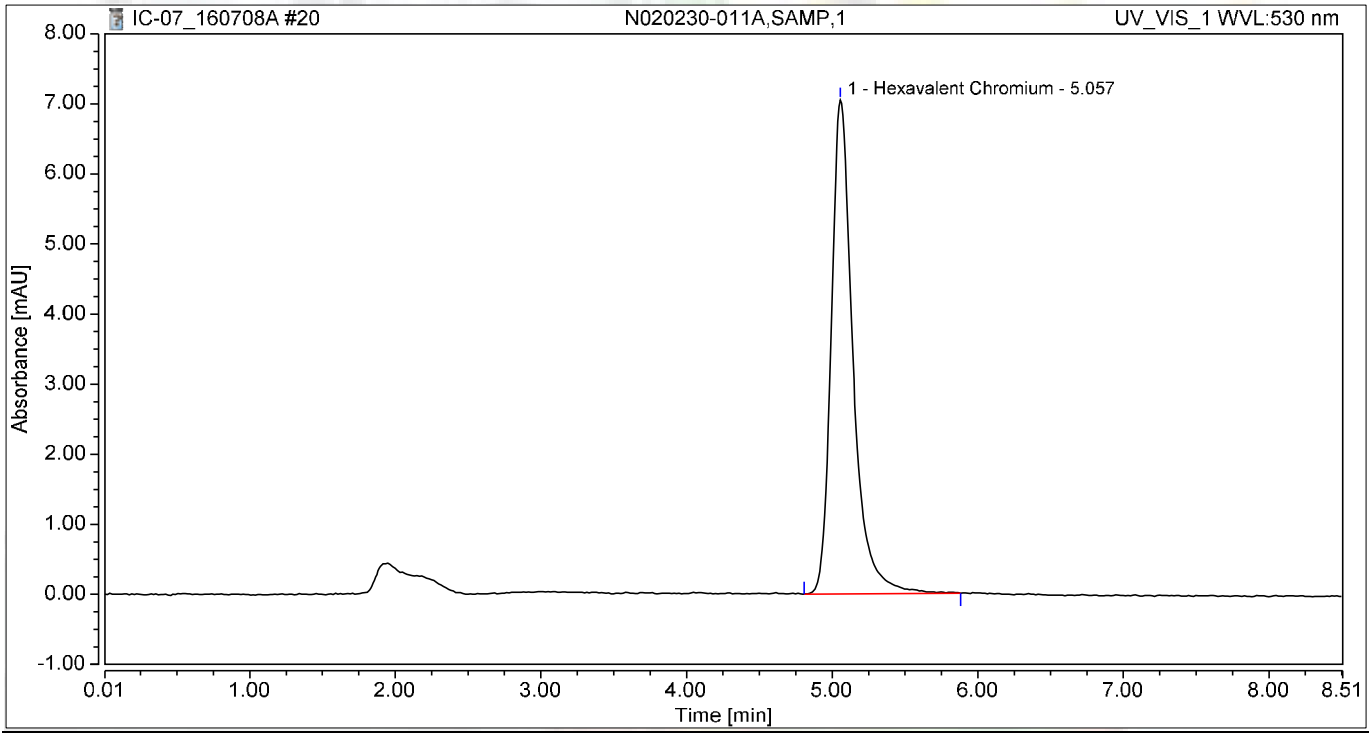
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	5.057	0.967	5.526	100.00	100.00	3.8120
Total:			**0.967**	**5.526**	**100.00**	**100.00**	

Chromatogram and Results

Injection Details

Injection Name:	**N020230-011A,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:	**160707_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**08/Jul/16 12:01**	*Sample Weight:*	**1.0000**

Chromatogram



Integration Results

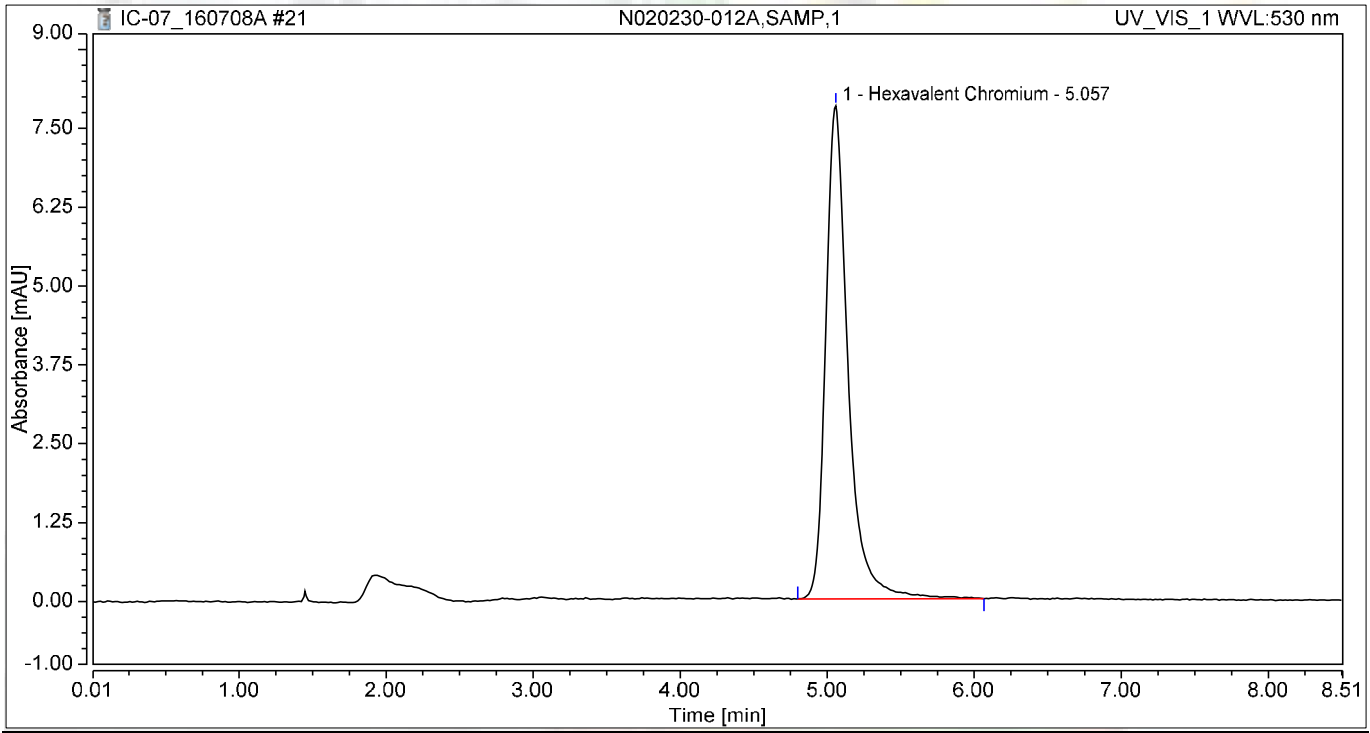
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	5.057	1.223	7.051	100.00	100.00	4.8210
Total:			**1.223**	**7.051**	**100.00**	**100.00**	

Chromatogram and Results

Injection Details

Injection Name:	**N020230-012A,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:	**160707_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**08/Jul/16 12:11**	*Sample Weight:*	**1.0000**

Chromatogram



Integration Results

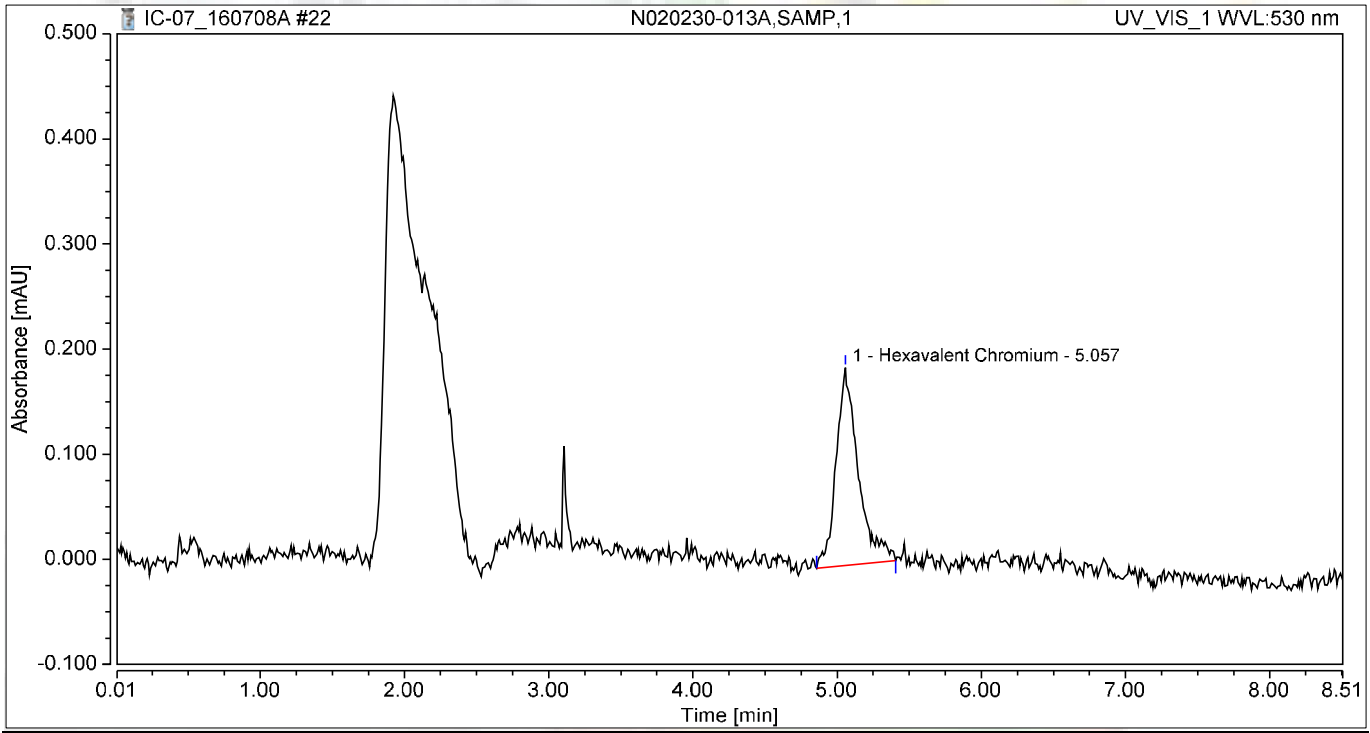
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	5.057	1.375	7.819	100.00	100.00	5.4198
Total:			**1.375**	**7.819**	**100.00**	**100.00**	

Chromatogram and Results

Injection Details

Injection Name:	**N020230-013A,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:	**160707_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**08/Jul/16 12:20**	*Sample Weight:*	**1.0000**

Chromatogram



Integration Results

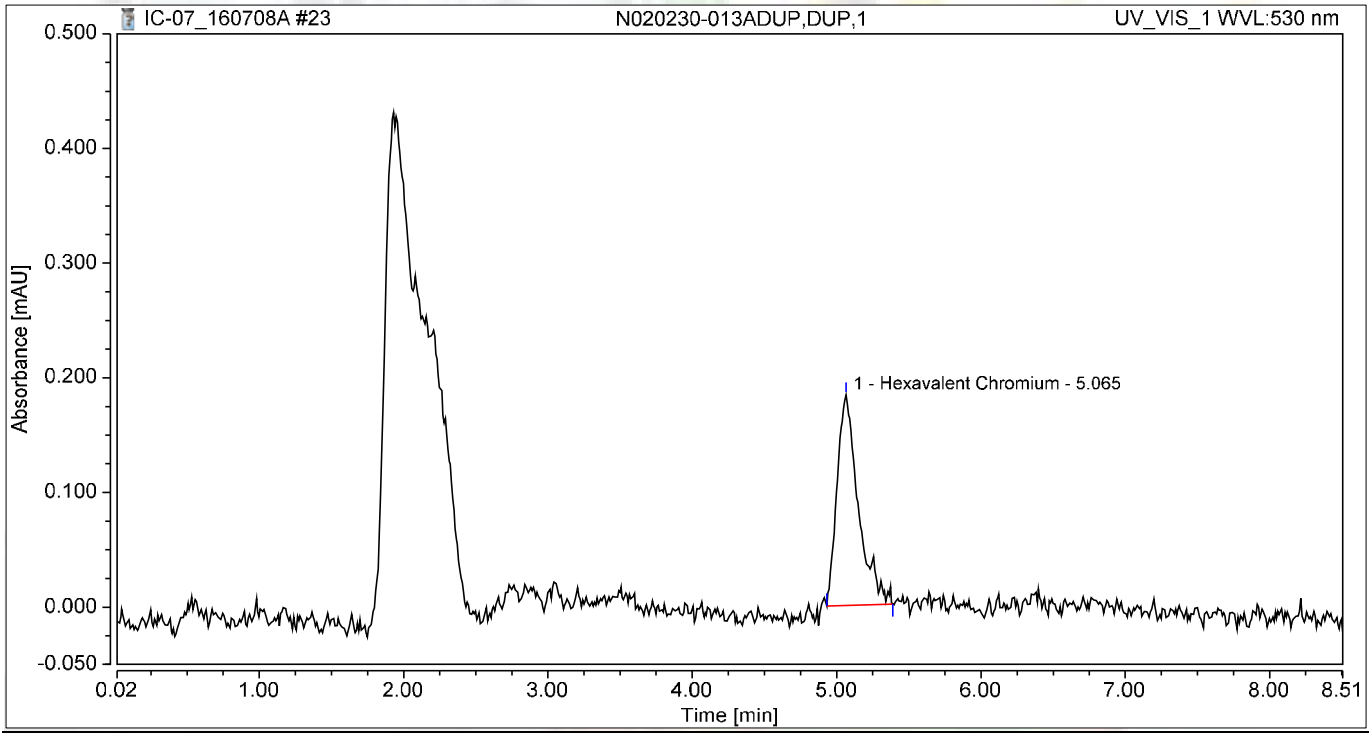
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	5.057	0.033	0.188	100.00	100.00	0.1318
Total:			**0.033**	**0.188**	**100.00**	**100.00**	

Chromatogram and Results

Injection Details

Injection Name:	**N020230-013ADUP,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:	**160707_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**08/Jul/16 12:30**	*Sample Weight:*	**1.0000**

Chromatogram



Integration Results

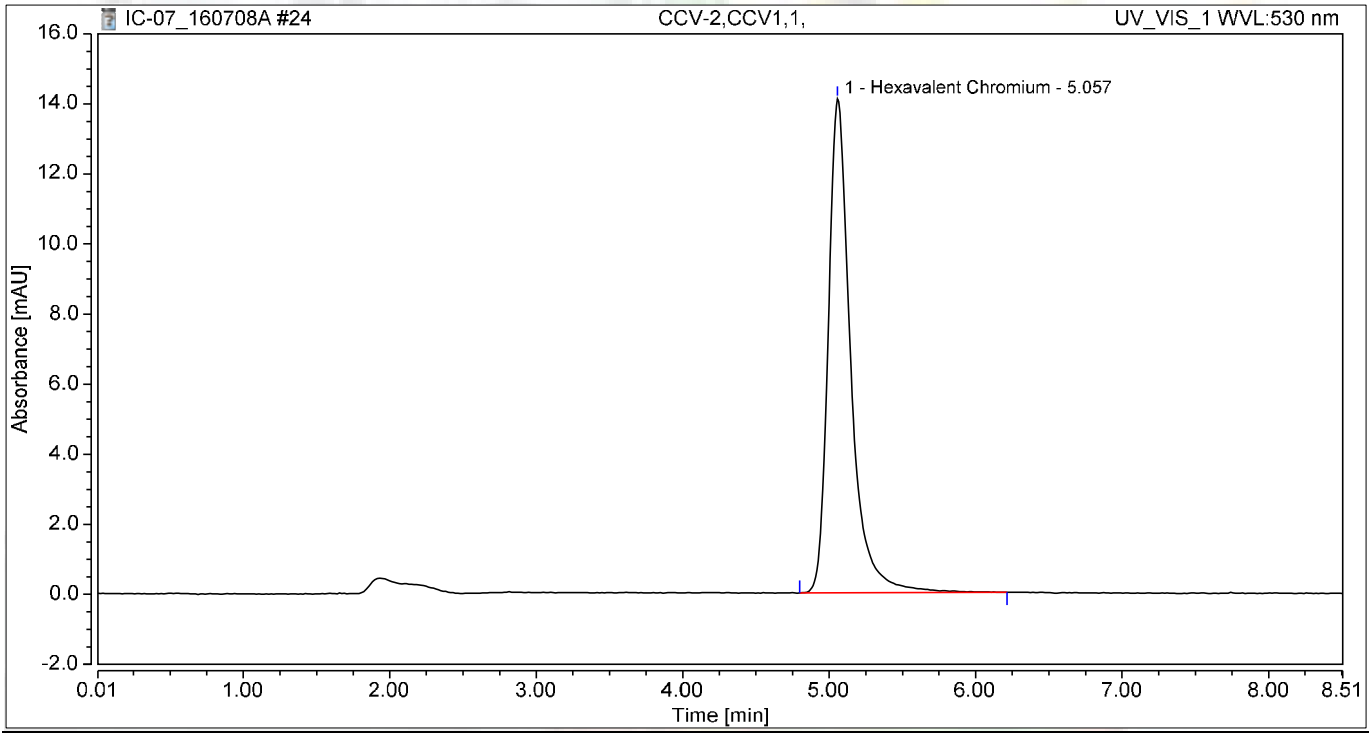
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	5.065	0.031	0.183	100.00	100.00	0.1231
Total:			**0.031**	**0.183**	**100.00**	**100.00**	

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:	**160707_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**08/Jul/16 12:39**	*Sample Weight:*	**1.0000**

Chromatogram



Integration Results

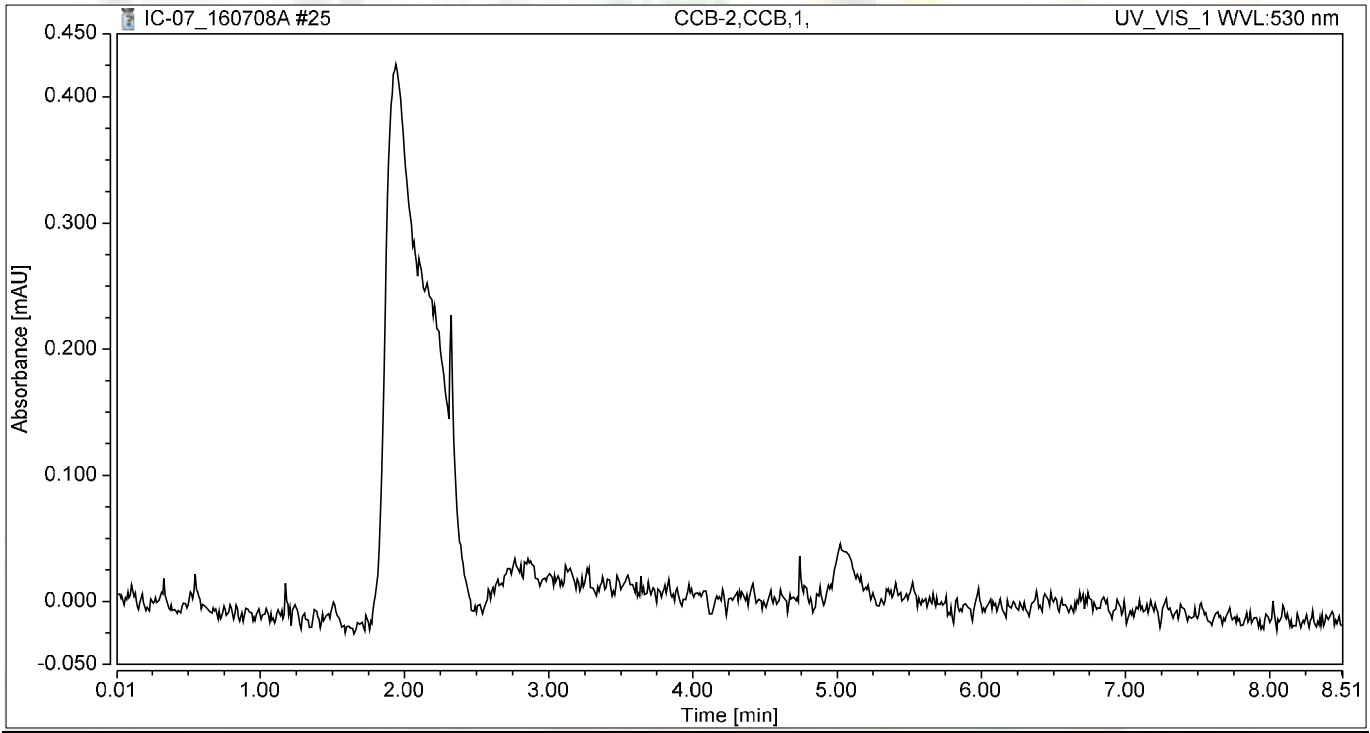
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	5.057	2.512	14.099	100.00	100.00	9.9053
Total:			**2.512**	**14.099**	**100.00**	**100.00**	

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:	**160707_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**08/Jul/16 12:48**	*Sample Weight:*	**1.0000**

Chromatogram



Integration Results

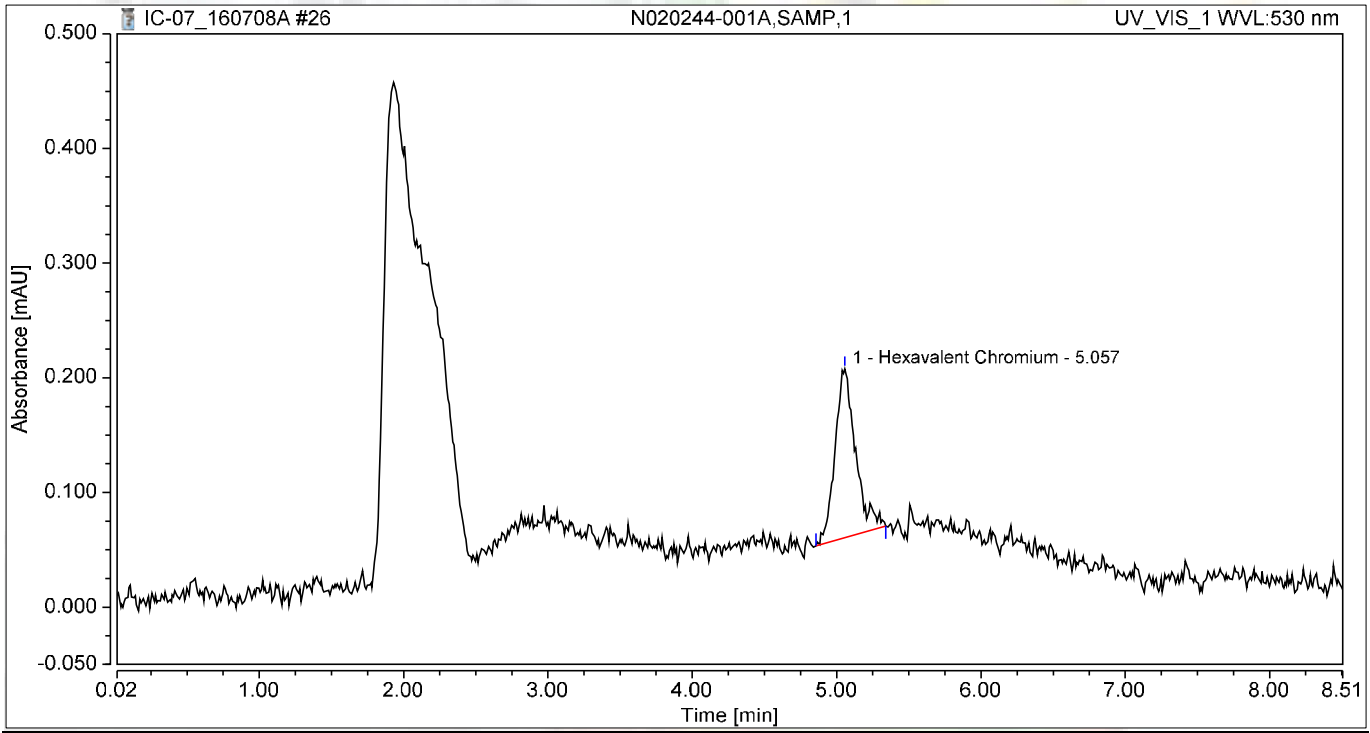
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
n.a.	Hexavalent Chromium	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Total:			**0.000**	**0.000**	**0.00**	**0.00**	

Chromatogram and Results

Injection Details

Injection Name:	**N020244-001A,SAMP,1**	*Run Time (min):*	**8.49**
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:	**160707_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**08/Jul/16 12:58**	*Sample Weight:*	**1.0000**

Chromatogram



Integration Results

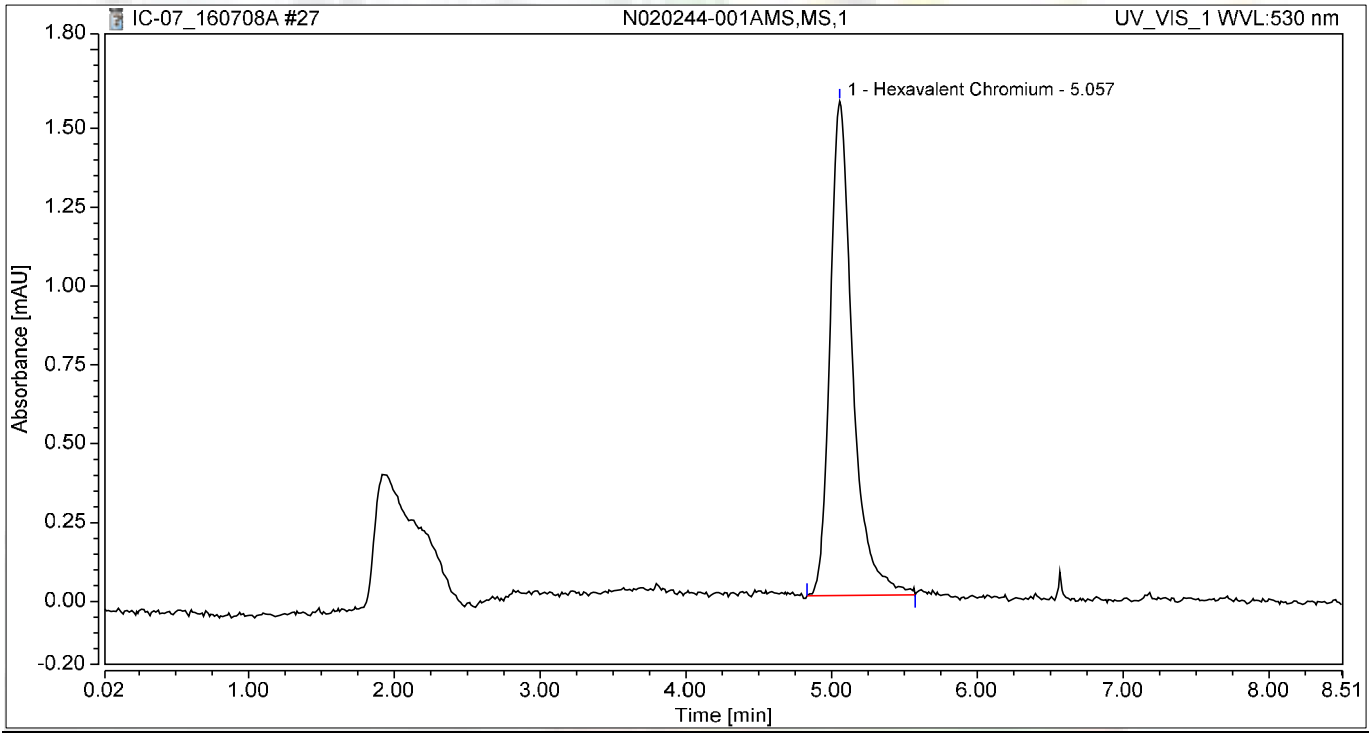
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	5.057	0.024	0.147	100.00	100.00	0.0960
Total:			**0.024**	**0.147**	**100.00**	**100.00**	

Chromatogram and Results

Injection Details

Injection Name:	**N020244-001AMS,MS,1**	*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:	**160707_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**08/Jul/16 13:07**	*Sample Weight:*	**1.0000**

Chromatogram



Integration Results

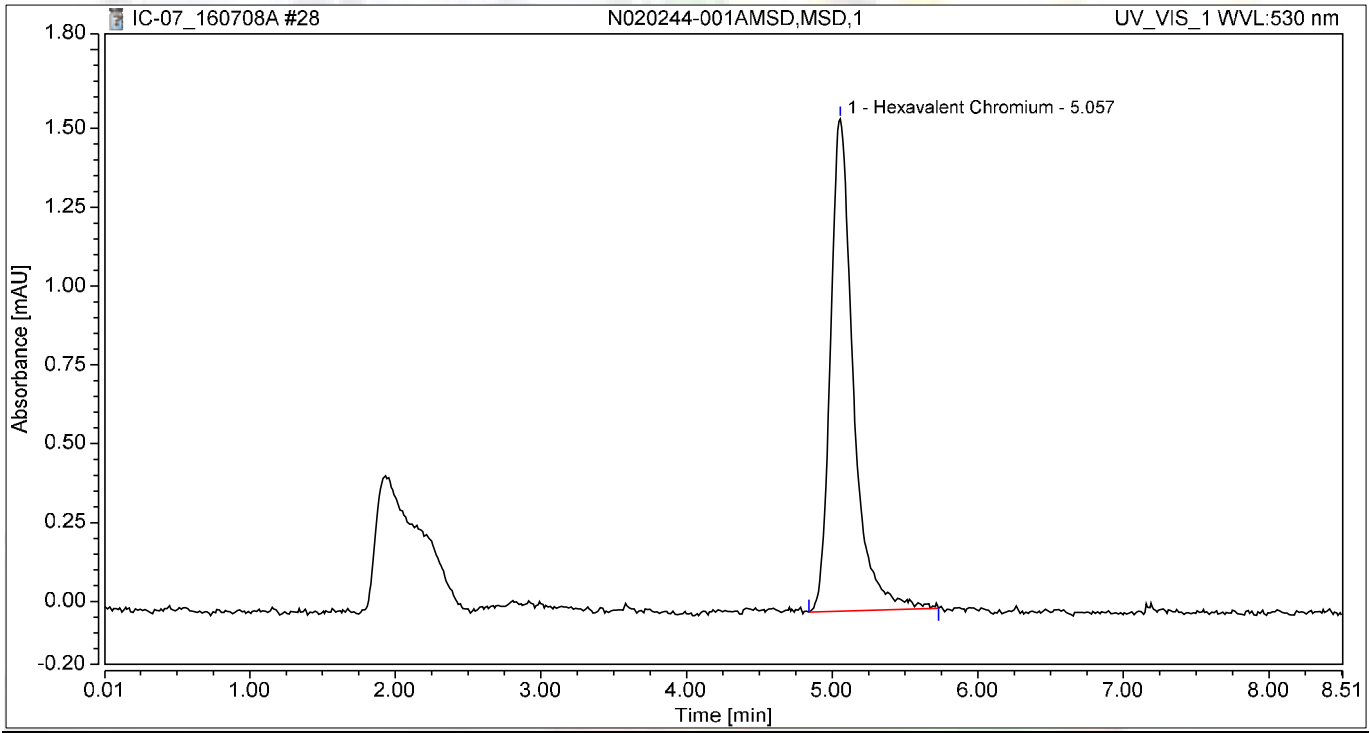
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	5.057	0.281	1.567	100.00	100.00	1.1092
Total:			**0.281**	**1.567**	**100.00**	**100.00**	

Chromatogram and Results

Injection Details

Injection Name:	**N020244-001AMSD,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:	**160707_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**08/Jul/16 13:17**	*Sample Weight:*	**1.0000**

Chromatogram



Integration Results

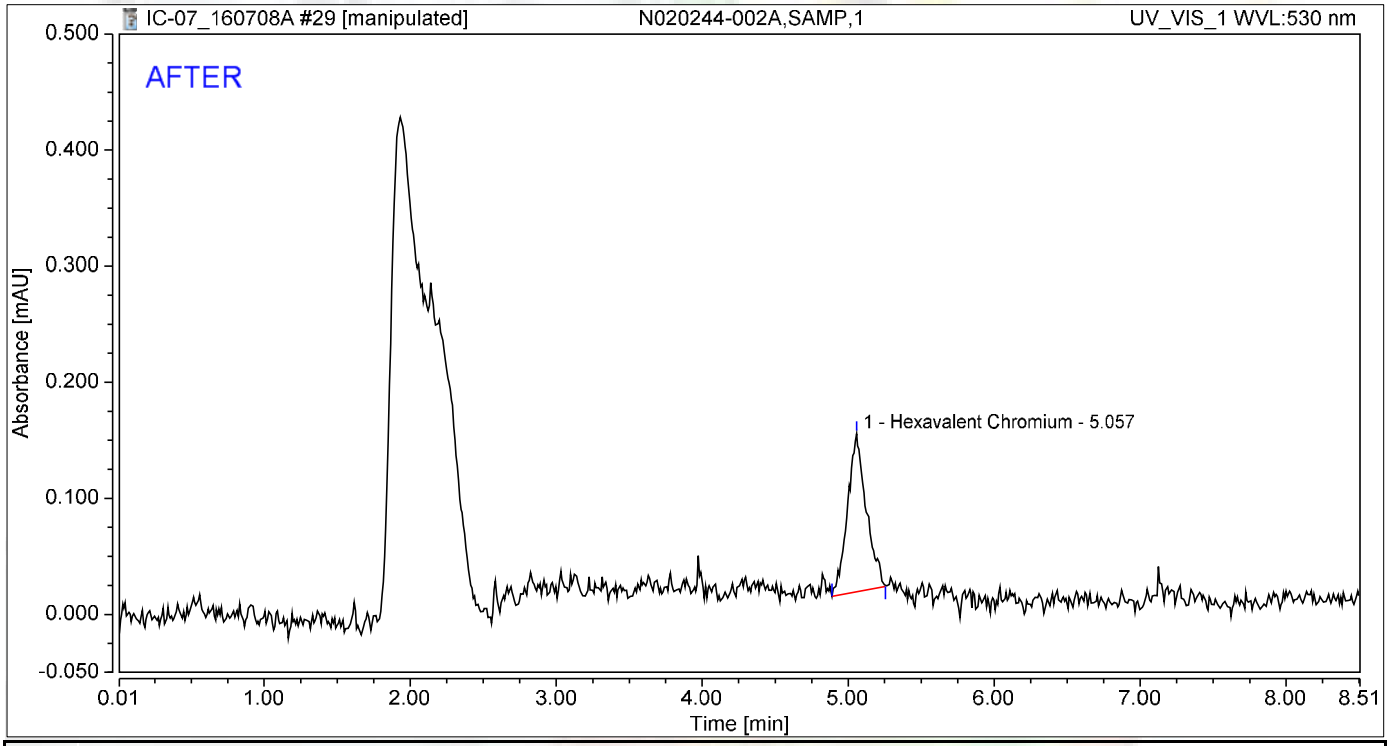
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	5.057	0.284	1.561	100.00	100.00	1.1182
Total:			**0.284**	**1.561**	**100.00**	**100.00**	

Chromatogram and Results

Injection Details

Injection Name:	**N020244-002A,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:	**160707_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**08/Jul/16 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	5.057	0.020	0.136	100.00	100.00	0.0798
Total:			**0.020**	**0.136**	**100.00**	**100.00**	

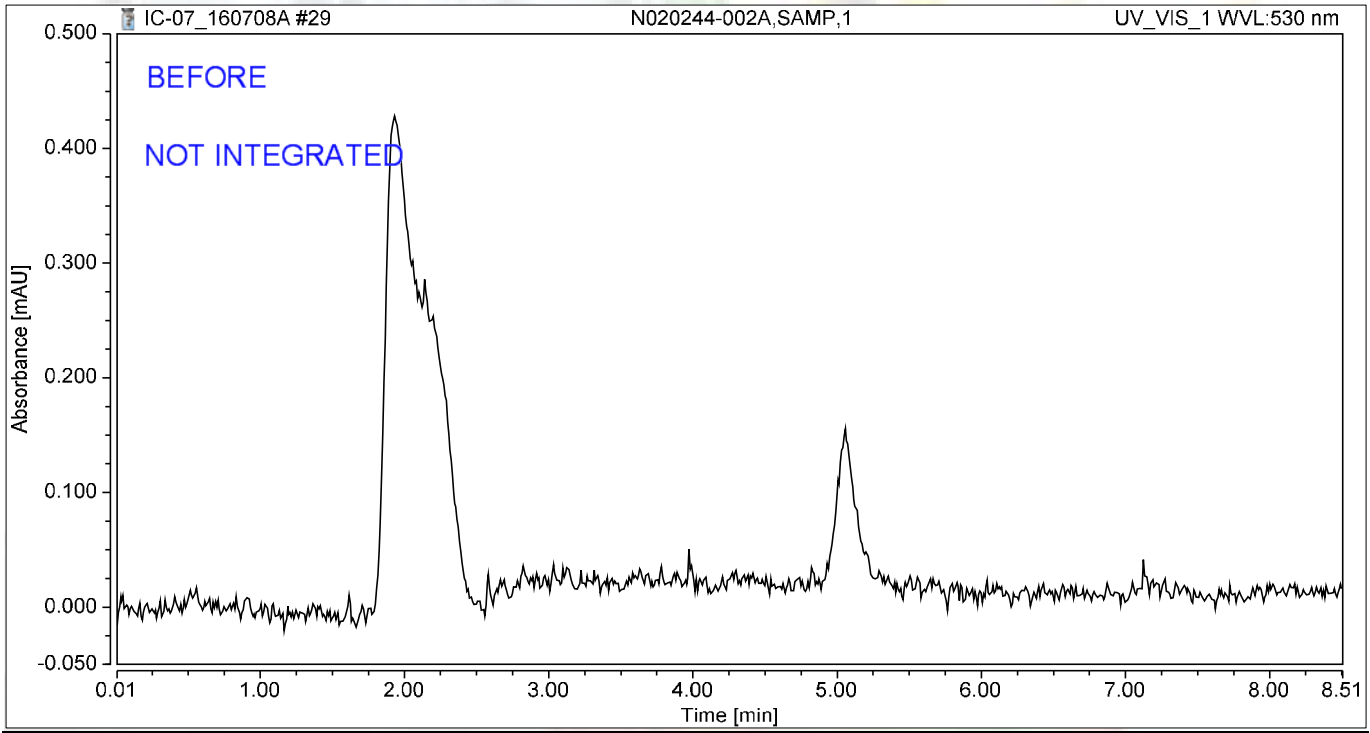
7/21/2016

Chromatogram and Results

Injection Details

Injection Name:	**N020244-002A,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:	**160707_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**08/Jul/16 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.
Total:			**0.000**	**0.000**	**0.00**	**0.00**	

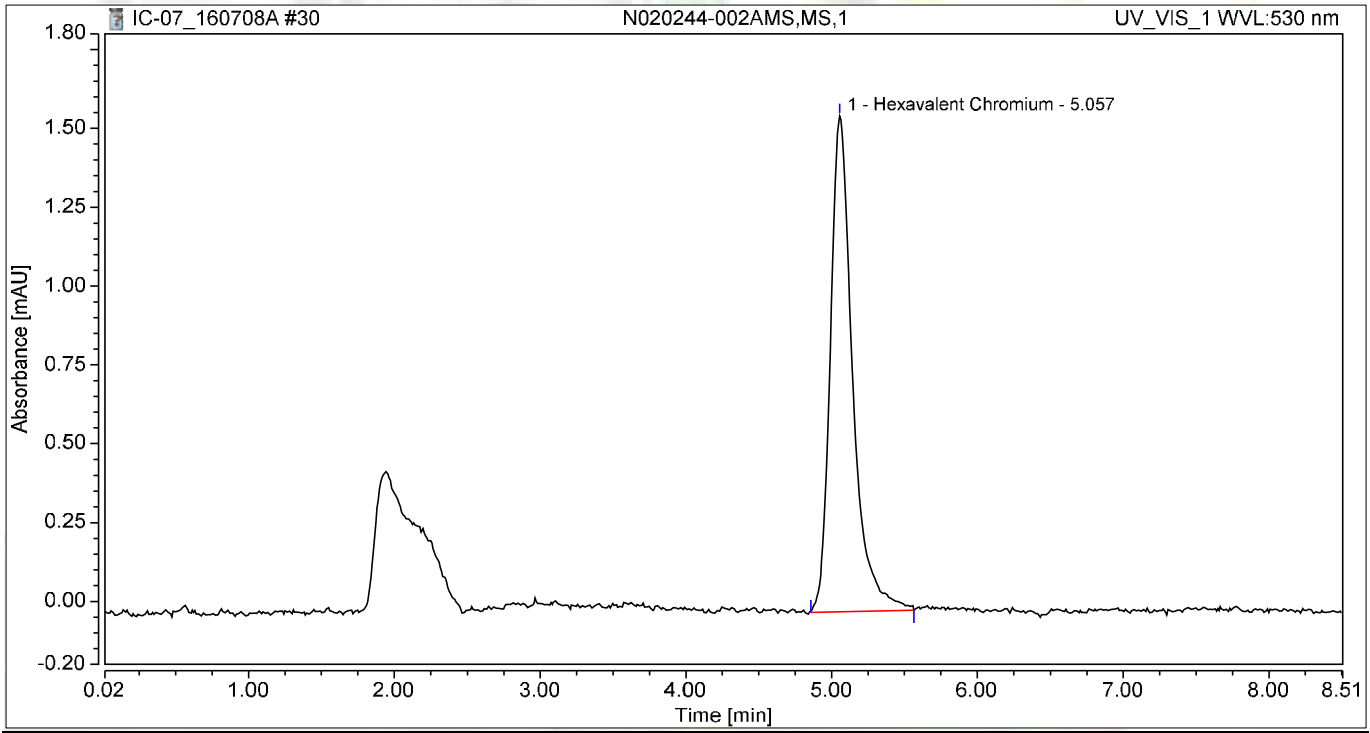
7/21/2016

Chromatogram and Results

Injection Details

Injection Name:	**N020244-002AMS,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:	**160707_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**08/Jul/16 13:36**	*Sample Weight:*	**1.0000**

Chromatogram



Integration Results

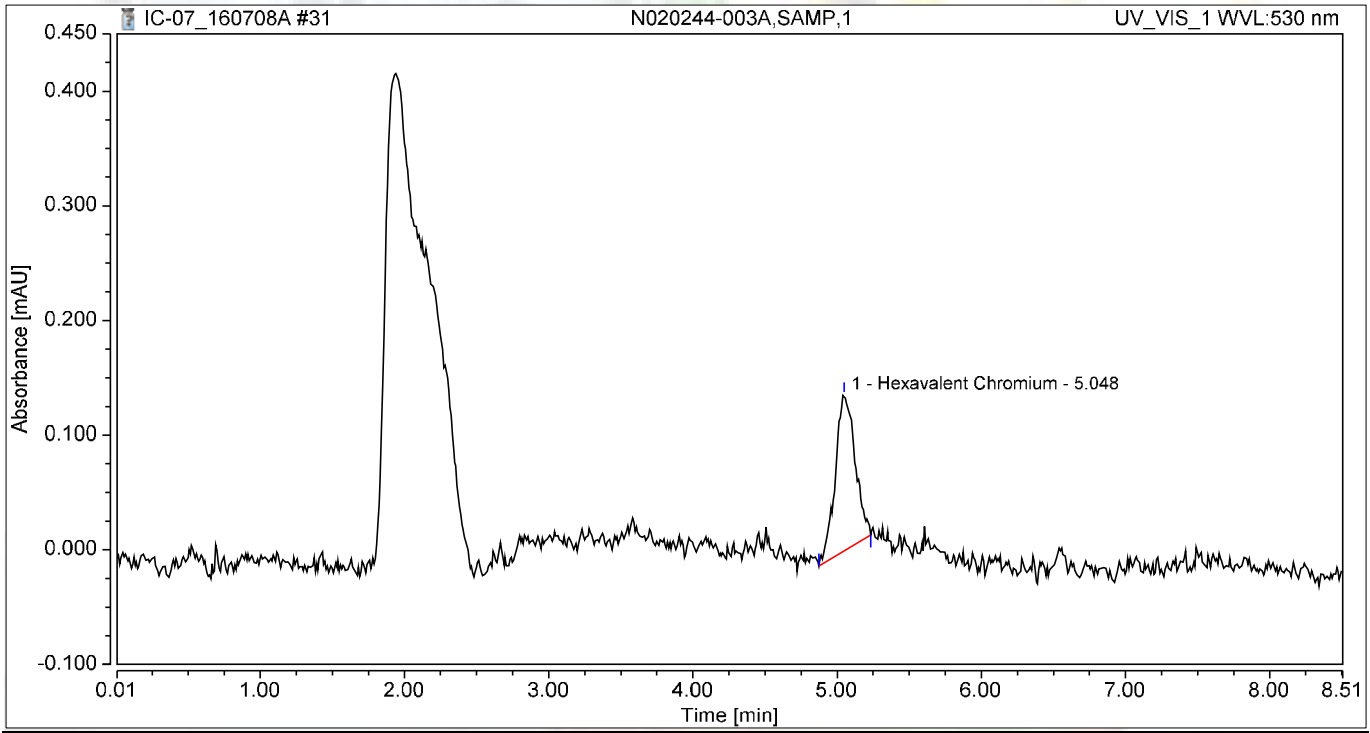
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	5.057	0.279	1.572	100.00	100.00	1.1002
Total:			**0.279**	**1.572**	**100.00**	**100.00**	

Chromatogram and Results

Injection Details

Injection Name:	**N020244-003A,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:	**160707_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**08/Jul/16 13:45**	*Sample Weight:*	**1.0000**

Chromatogram



Integration Results

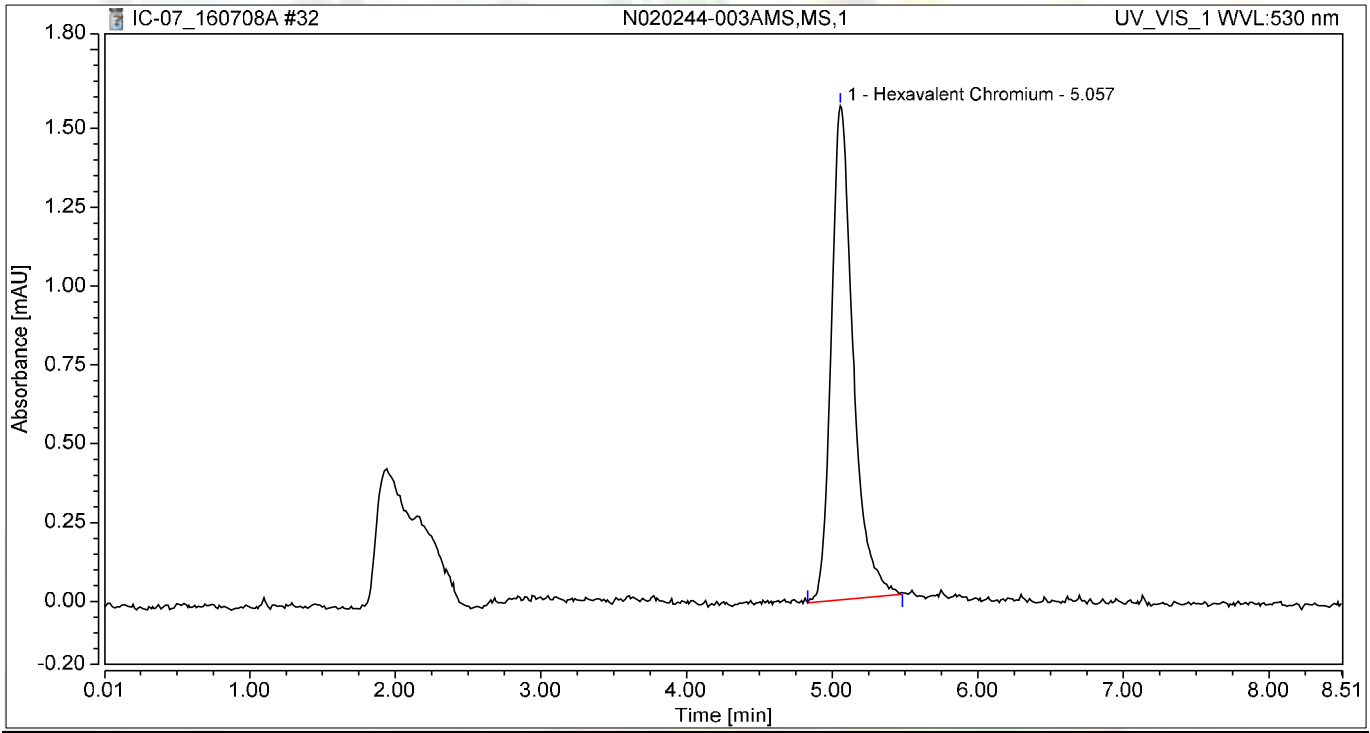
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	5.048	0.022	0.136	100.00	100.00	0.0853
Total:			**0.022**	**0.136**	**100.00**	**100.00**	

Chromatogram and Results

Injection Details

Injection Name:	**N020244-003AMS,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:	**160707_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**08/Jul/16 13:55**	*Sample Weight:*	**1.0000**

Chromatogram



Integration Results

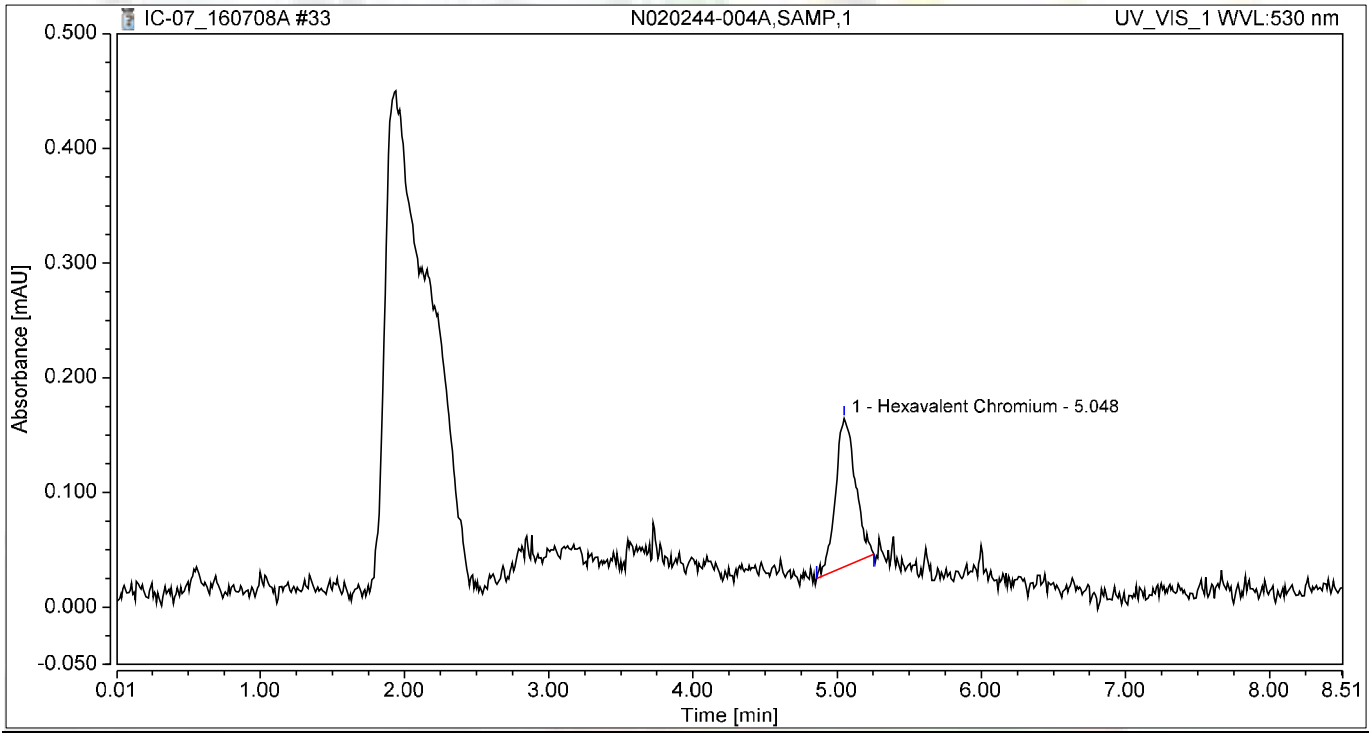
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	5.057	0.273	1.567	100.00	100.00	1.0764
Total:			**0.273**	**1.567**	**100.00**	**100.00**	

Chromatogram and Results

Injection Details

Injection Name:	**N020244-004A,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:	**160707_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**08/Jul/16 14:04**	*Sample Weight:*	**1.0000**

Chromatogram



Integration Results

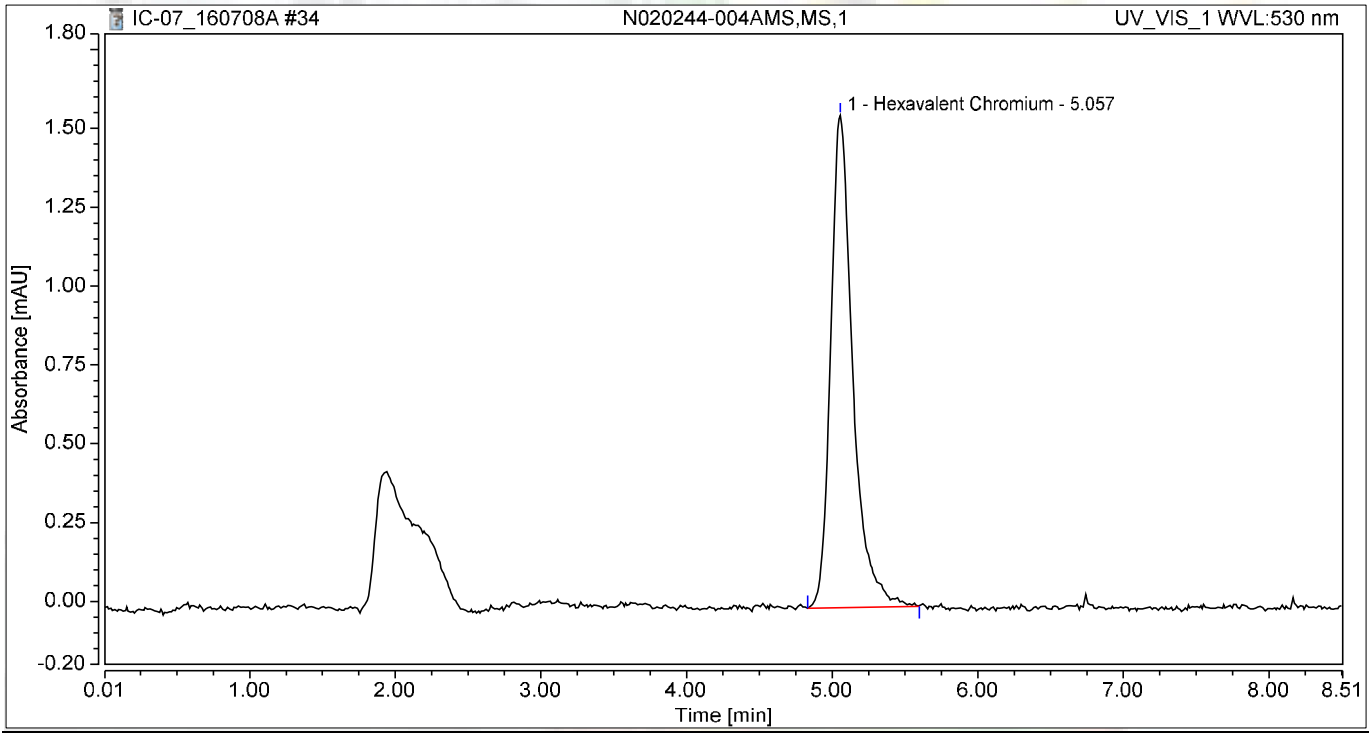
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	5.048	0.021	0.130	100.00	100.00	0.0820
Total:			**0.021**	**0.130**	**100.00**	**100.00**	

Chromatogram and Results

Injection Details

Injection Name:	**N020244-004AMS,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:	**160707_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**08/Jul/16 14:14**	*Sample Weight:*	**1.0000**

Chromatogram



Integration Results

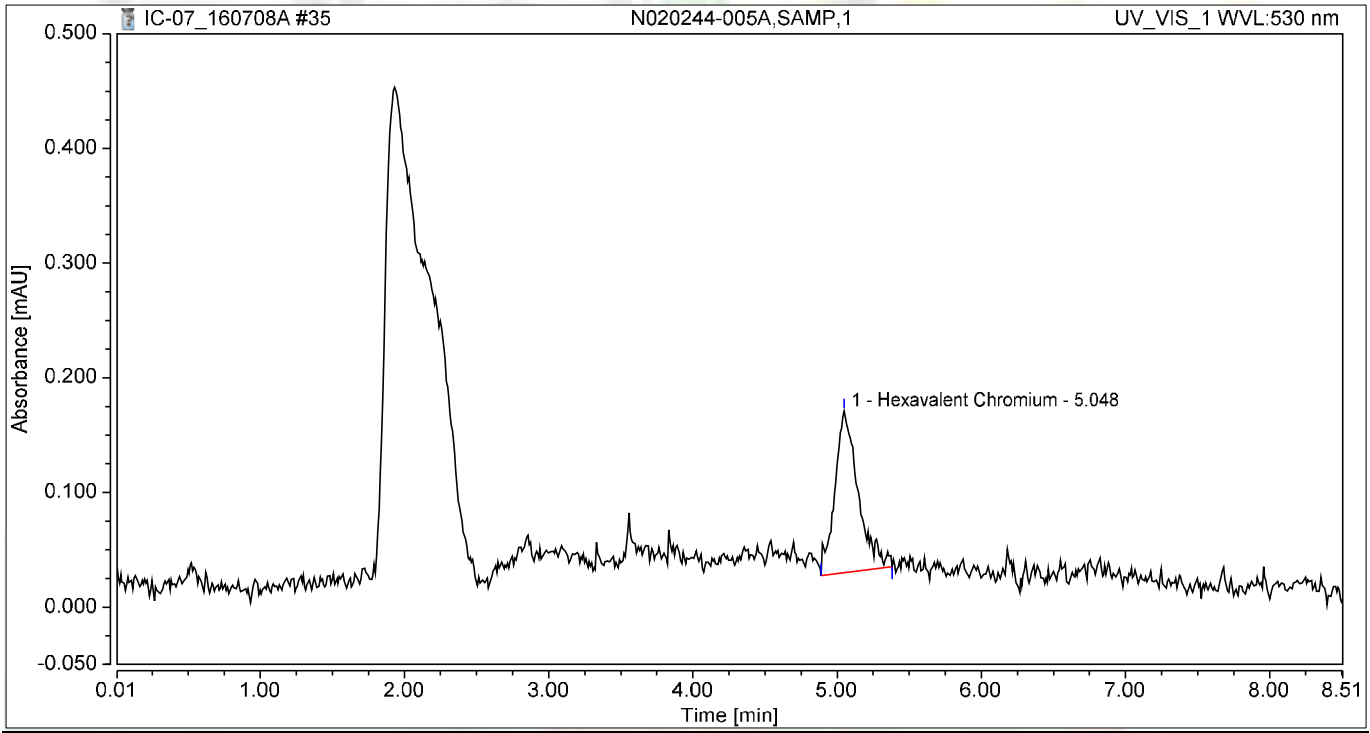
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	5.057	0.274	1.560	100.00	100.00	1.0812
Total:			**0.274**	**1.560**	**100.00**	**100.00**	

Chromatogram and Results

Injection Details

Injection Name:	**N020244-005A,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:	**160707_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**08/Jul/16 14:23**	*Sample Weight:*	**1.0000**

Chromatogram



Integration Results

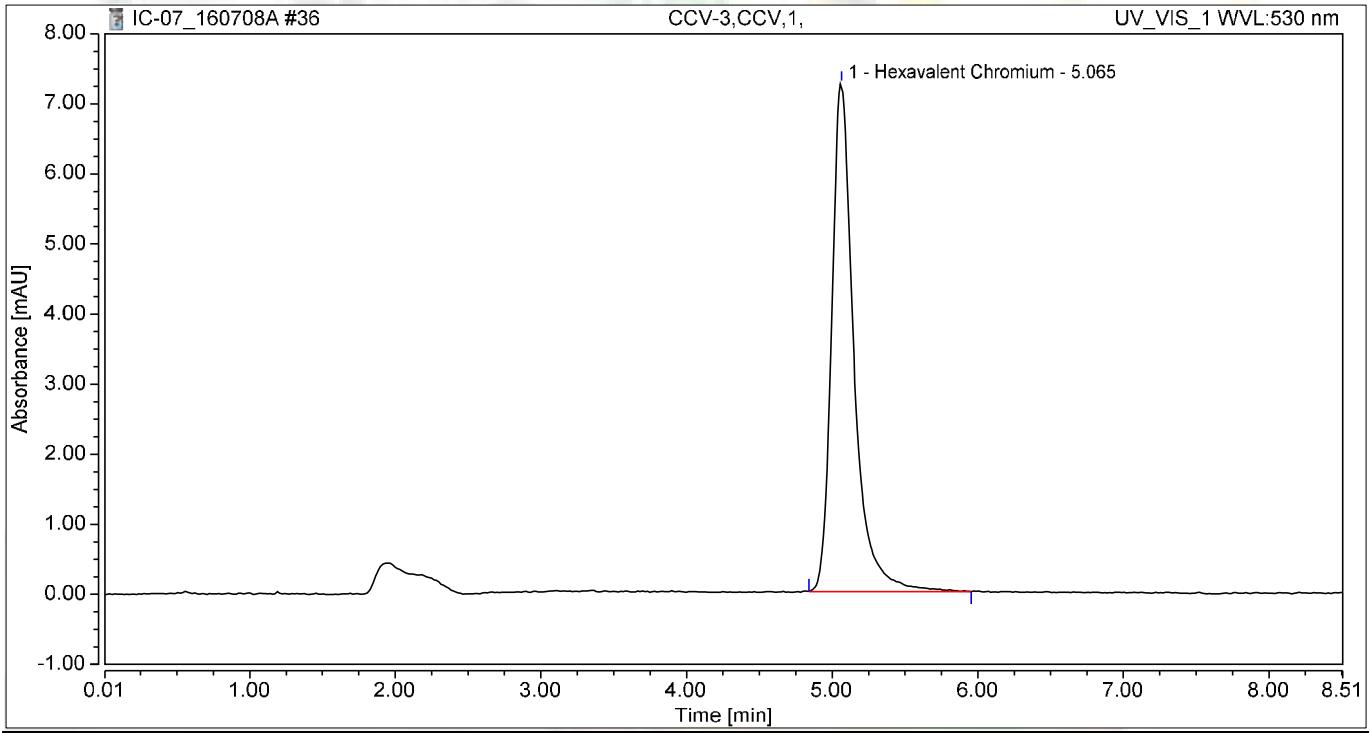
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	5.048	0.026	0.141	100.00	100.00	0.1041
Total:			**0.026**	**0.141**	**100.00**	**100.00**	

Chromatogram and Results

Injection Details

Injection Name:	**CCV-3,CCV,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:	**160707_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**08/Jul/16 14:33**	*Sample Weight:*	**1.0000**

Chromatogram



Integration Results

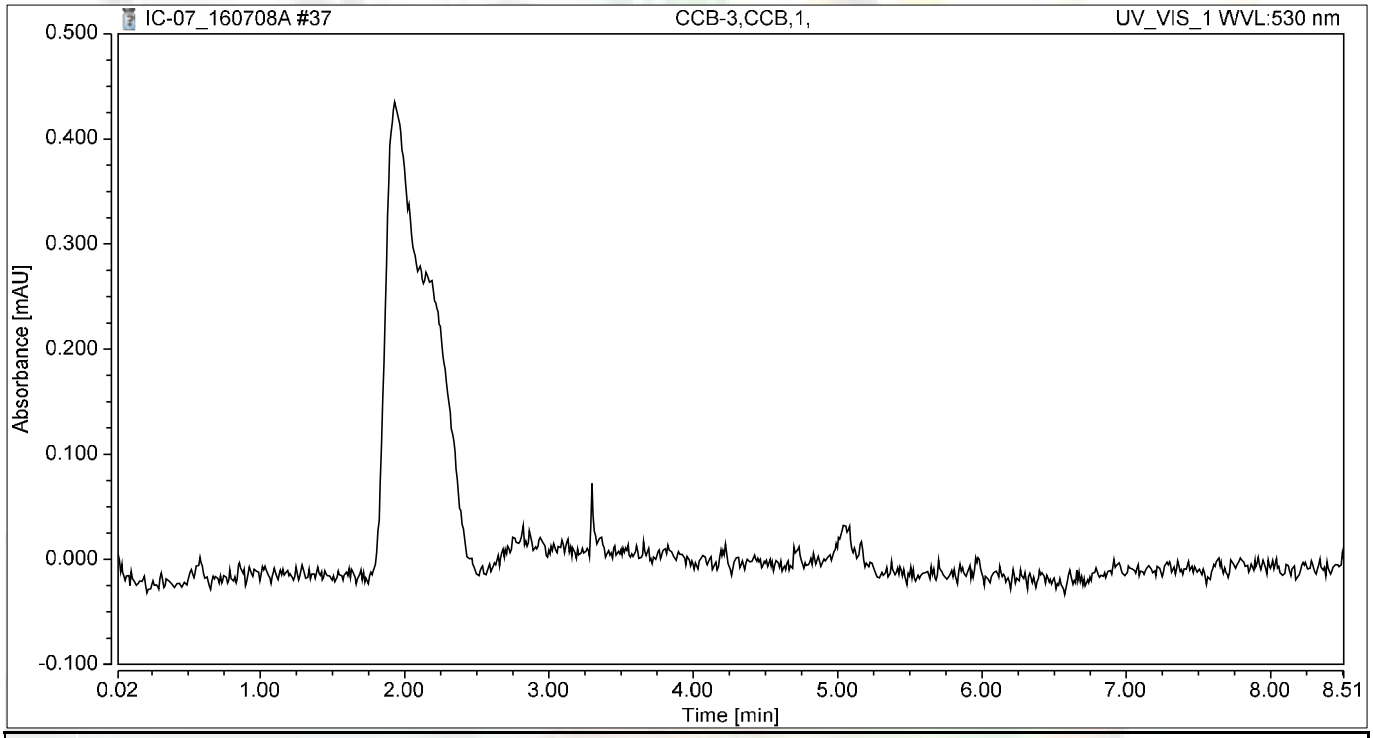
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	5.065	1.281	7.247	100.00	100.00	5.0496
Total:			**1.281**	**7.247**	**100.00**	**100.00**	

Chromatogram and Results

Injection Details

Injection Name:	**CCB-3,CCB,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:	**160707_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**08/Jul/16 14:42**	*Sample Weight:*	**1.0000**

Chromatogram



Integration Results

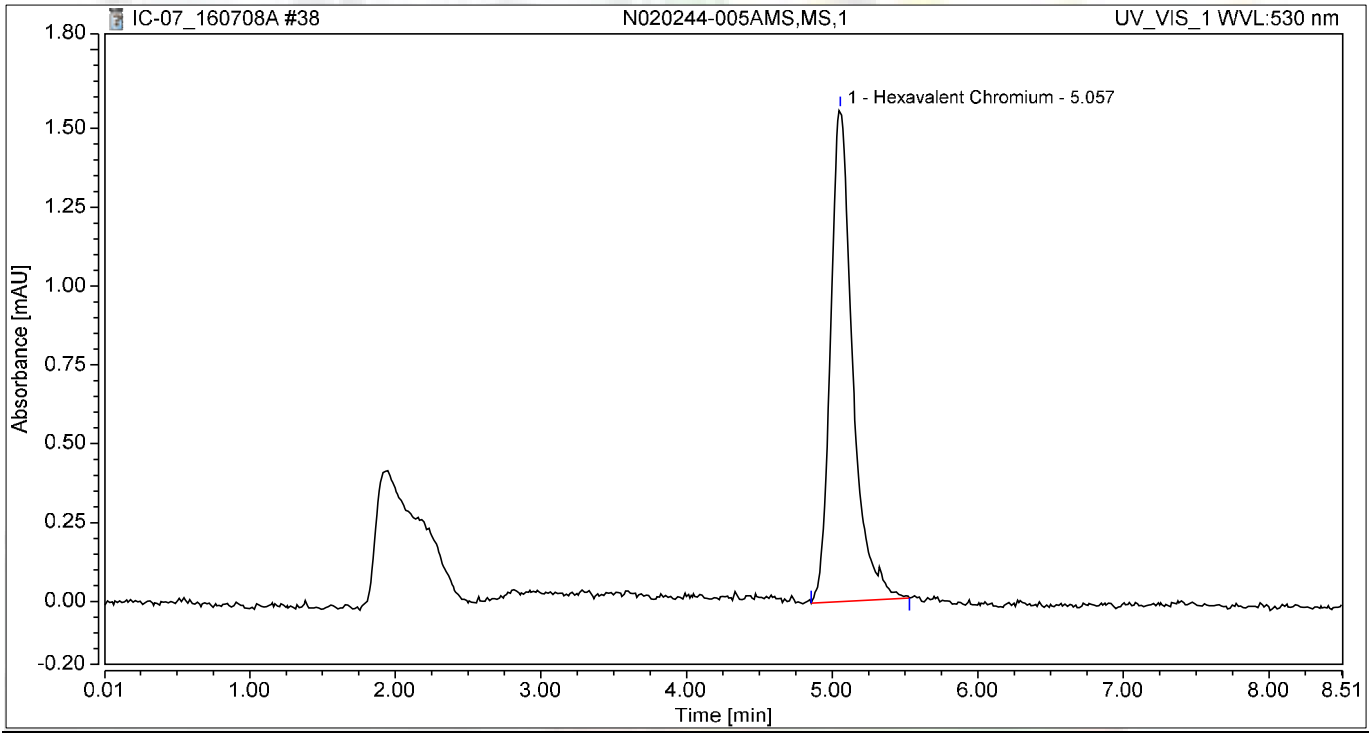
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
n.a.	Hexavalent Chromium	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Total:			**0.000**	**0.000**	**0.00**	**0.00**	

Chromatogram and Results

Injection Details

Injection Name:	**N020244-005AMS,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:	**160707_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**08/Jul/16 14:51**	*Sample Weight:*	**1.0000**

Chromatogram



Integration Results

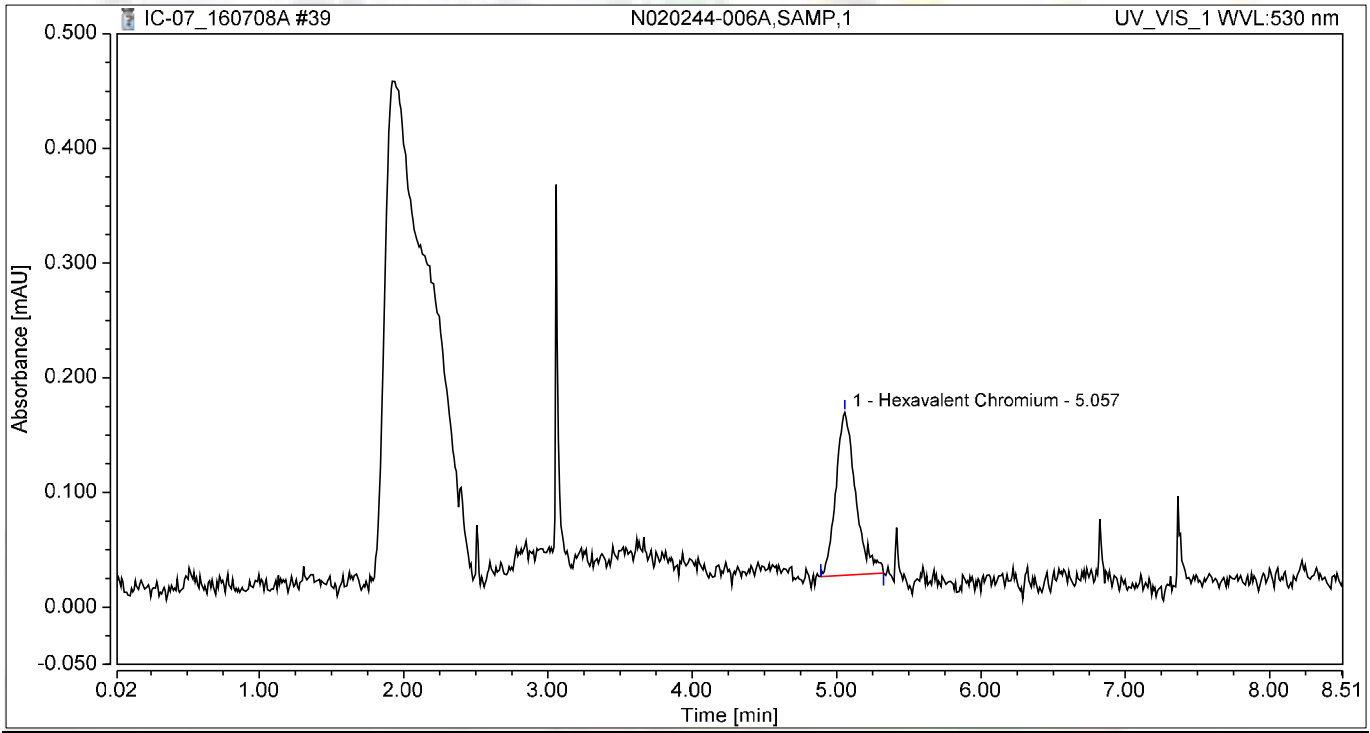
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	5.057	0.275	1.561	100.00	100.00	1.0862
Total:			**0.275**	**1.561**	**100.00**	**100.00**	

Chromatogram and Results

Injection Details

Injection Name:	**N020244-006A,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:	**160707_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**08/Jul/16 15:01**	*Sample Weight:*	**1.0000**

Chromatogram



Integration Results

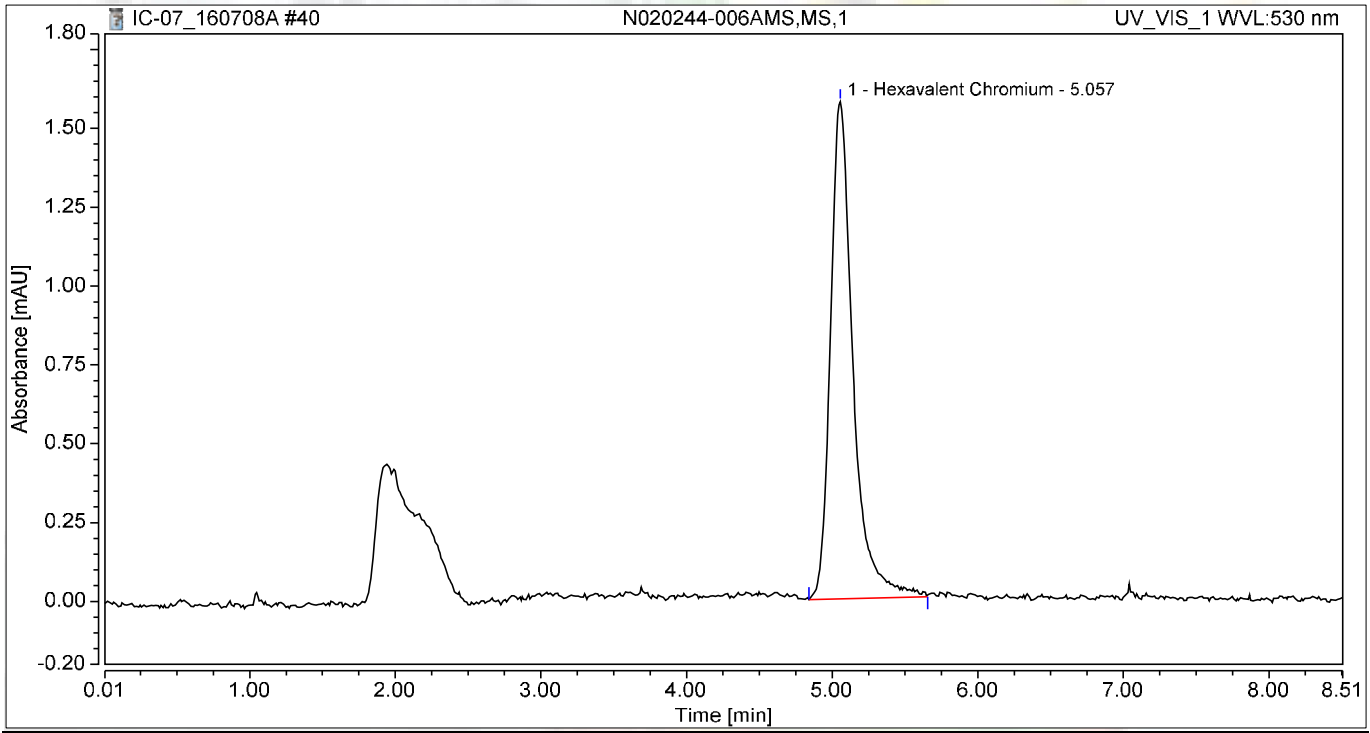
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	5.057	0.023	0.142	100.00	100.00	0.0891
Total:			**0.023**	**0.142**	**100.00**	**100.00**	

Chromatogram and Results

Injection Details

Injection Name:	**N020244-006AMS,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:	**160707_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**08/Jul/16 15:10**	*Sample Weight:*	**1.0000**

Chromatogram



Integration Results

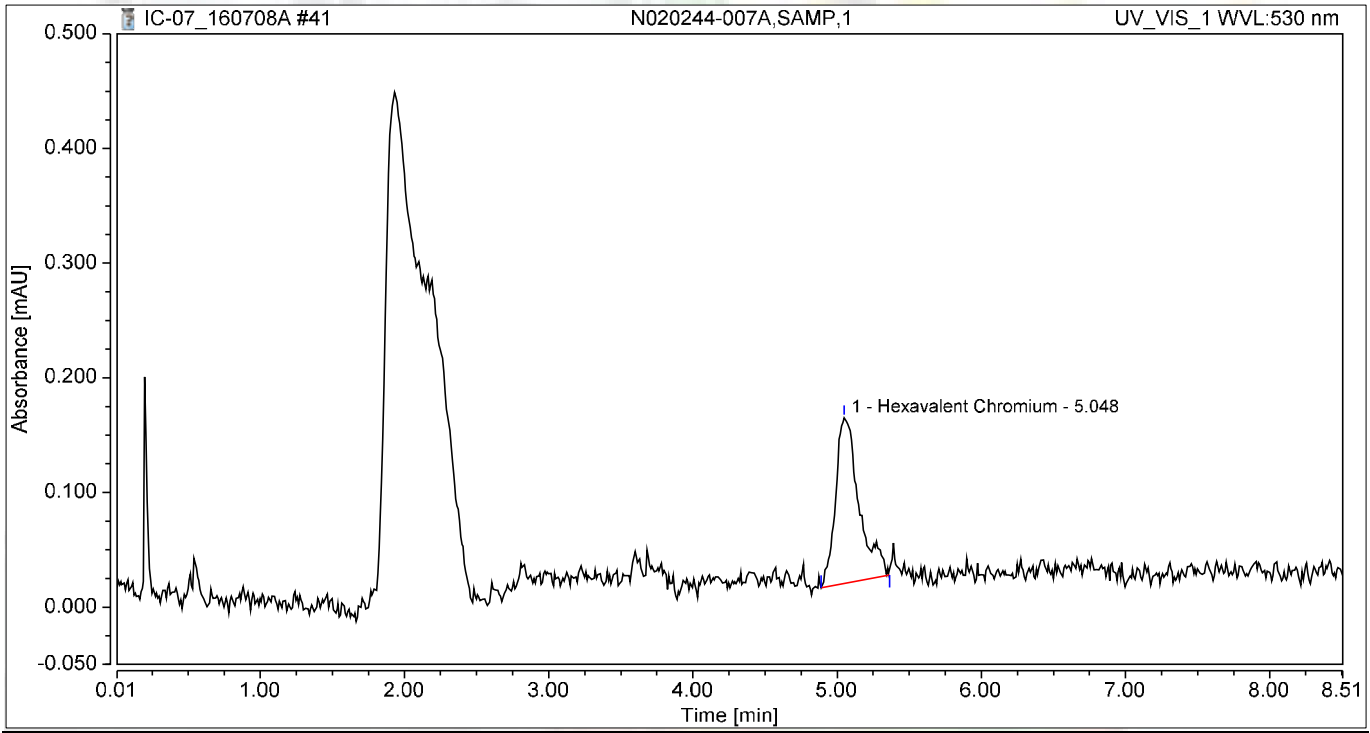
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	5.057	0.283	1.577	100.00	100.00	1.1172
Total:			**0.283**	**1.577**	**100.00**	**100.00**	

Chromatogram and Results

Injection Details

Injection Name:	**N020244-007A,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:	**160707_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**08/Jul/16 15:20**	*Sample Weight:*	**1.0000**

Chromatogram



Integration Results

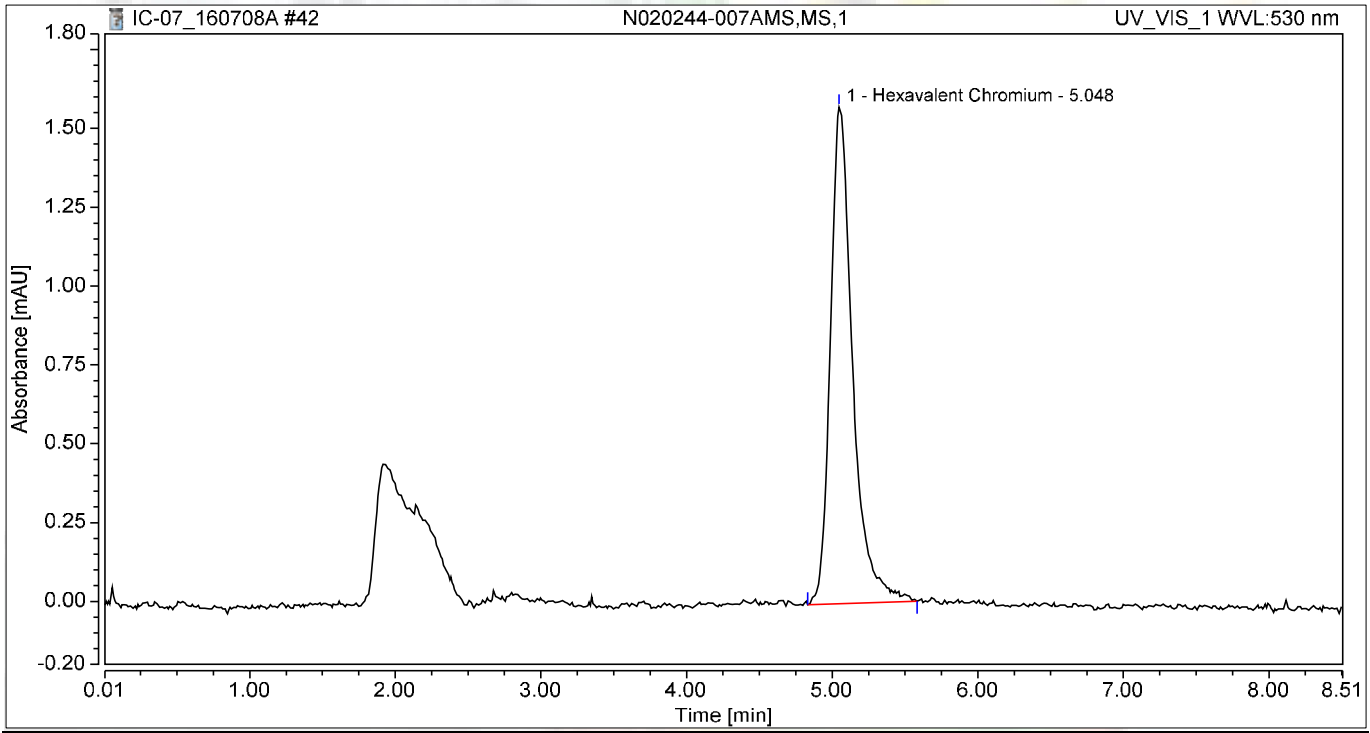
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	5.048	0.027	0.144	100.00	100.00	0.1070
Total:			**0.027**	**0.144**	**100.00**	**100.00**	

Chromatogram and Results

Injection Details

Injection Name:	**N020244-007AMS,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:	**160707_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**08/Jul/16 15:29**	*Sample Weight:*	**1.0000**

Chromatogram



Integration Results

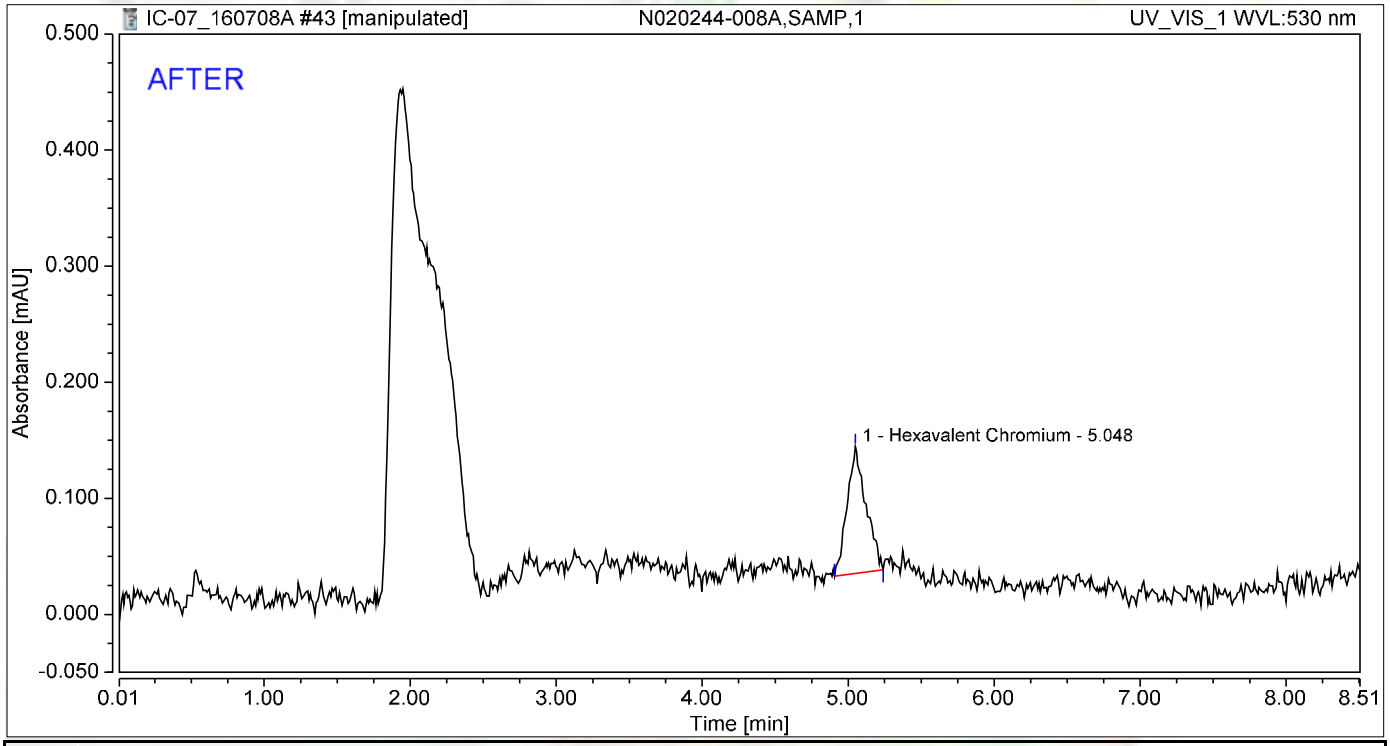
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	5.048	0.279	1.575	100.00	100.00	1.0999
Total:			**0.279**	**1.575**	**100.00**	**100.00**	

Chromatogram and Results

Injection Details

Injection Name:	**N020244-008A,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:	**160707_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**08/Jul/16 15:39**	*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	5.048	0.016	0.109	100.00	100.00	0.0640
Total:			**0.016**	**0.109**	**100.00**	**100.00**	

7/21/2016

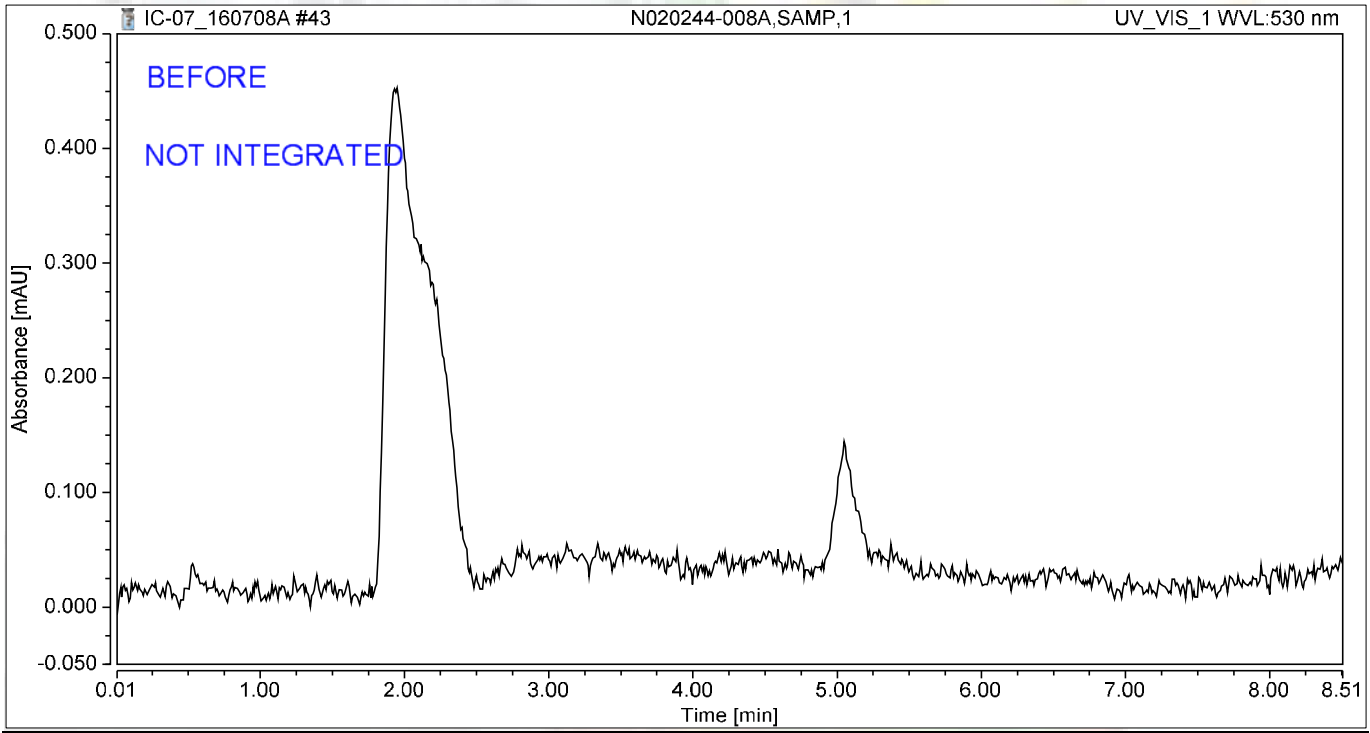
Reviewed by:

Chromatogram and Results

Injection Details

Injection Name:	**N020244-008A,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:	**160707_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**08/Jul/16 15:39**	*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
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**	

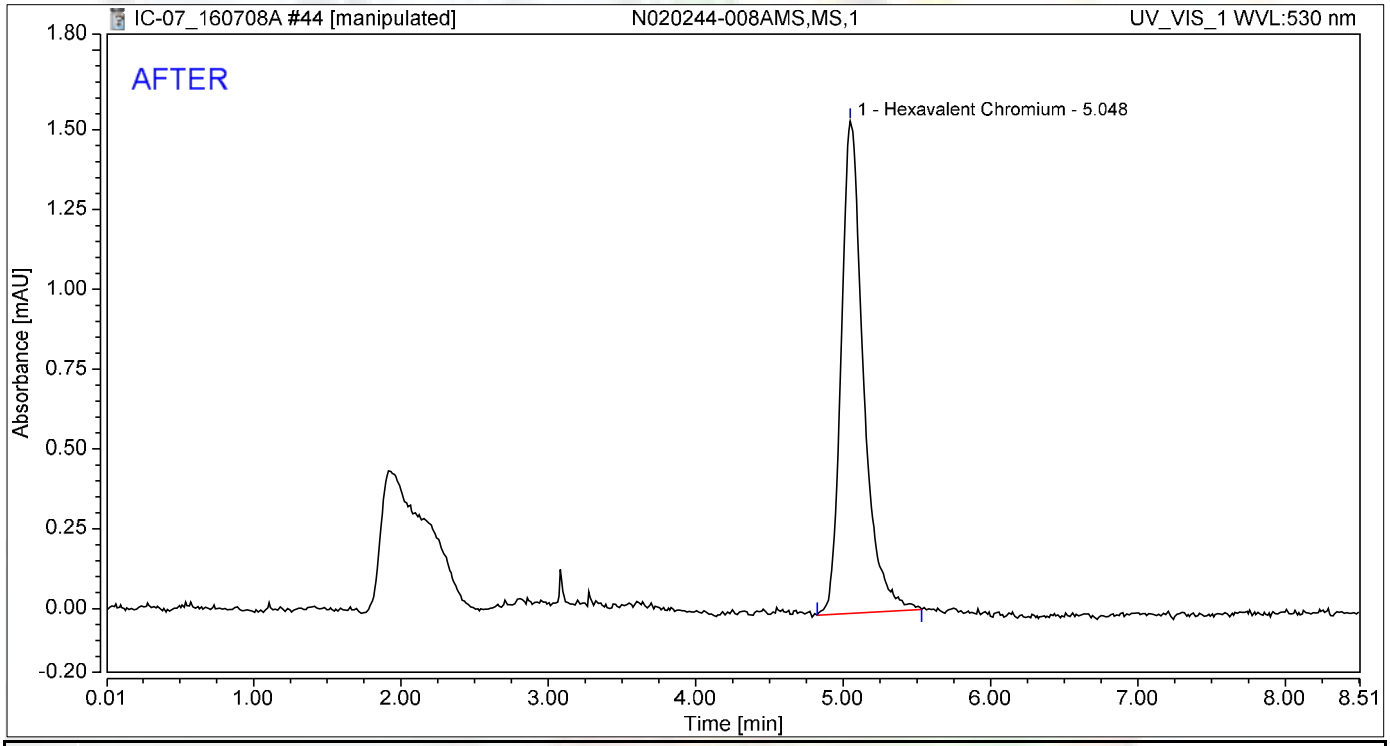
7/21/2016

Chromatogram and Results

Injection Details

Injection Name:	**N020244-008AMS,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:	**160707_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**08/Jul/16 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	5.048	0.269	1.541	100.00	100.00	1.0593
Total:			**0.269**	**1.541**	**100.00**	**100.00**	

7/21/2016

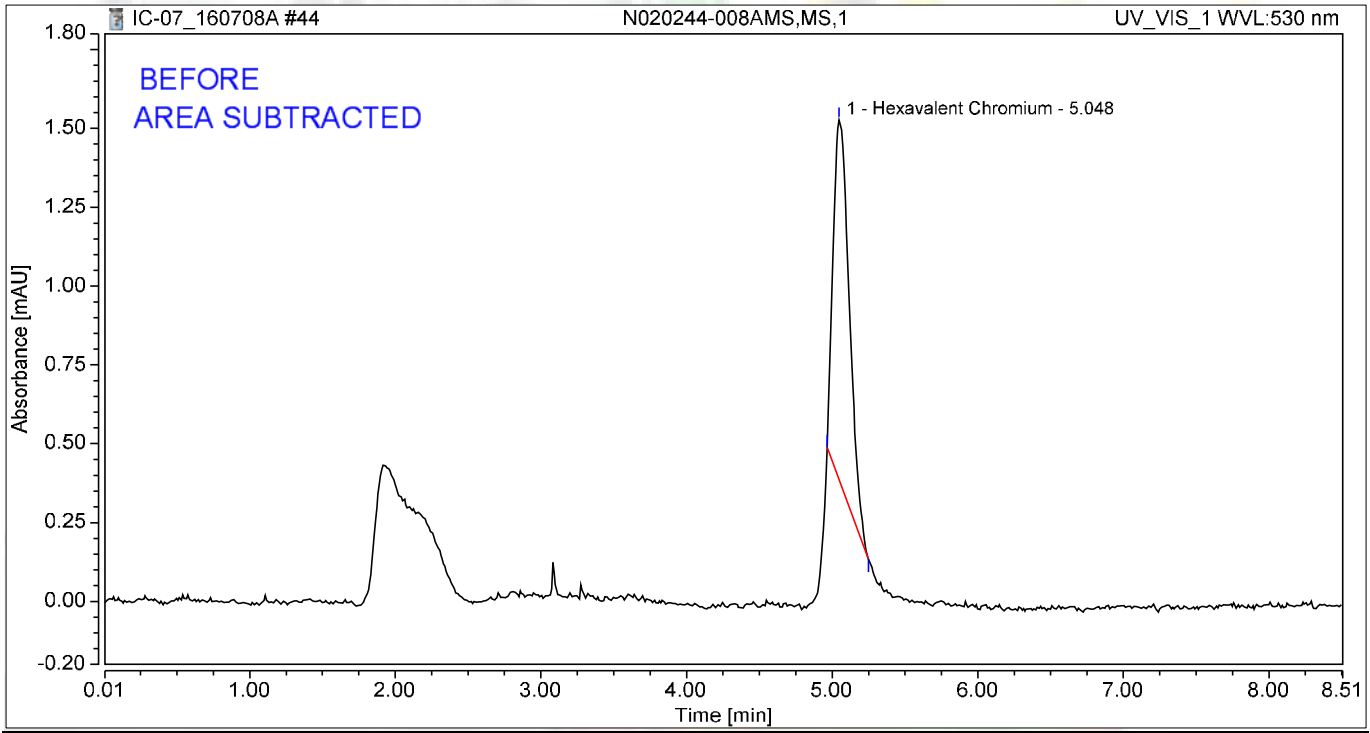
Reviewed by:
Chromeleon (c) Dionex
Version 7.1.1.1127
7/22/16

Chromatogram and Results

Injection Details

Injection Name:	**N020244-008AMS,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:	**160707_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**08/Jul/16 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	5.048	0.148	1.143	100.00	100.00	0.5847
Total:			**0.148**	**1.143**	**100.00**	**100.00**	

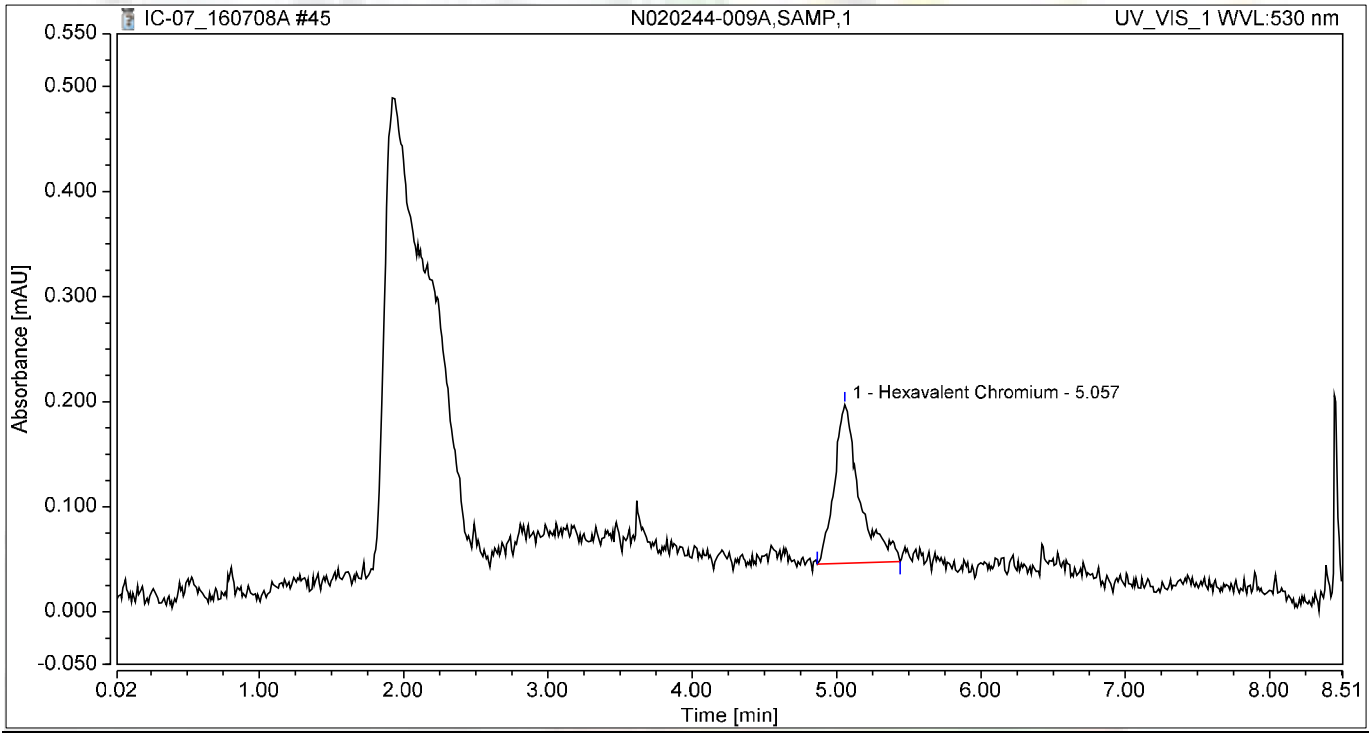
7/21/2016

Chromatogram and Results

Injection Details

Injection Name:	**N020244-009A,SAMP,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:	**160707_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**08/Jul/16 15:58**	*Sample Weight:*	**1.0000**

Chromatogram



Integration Results

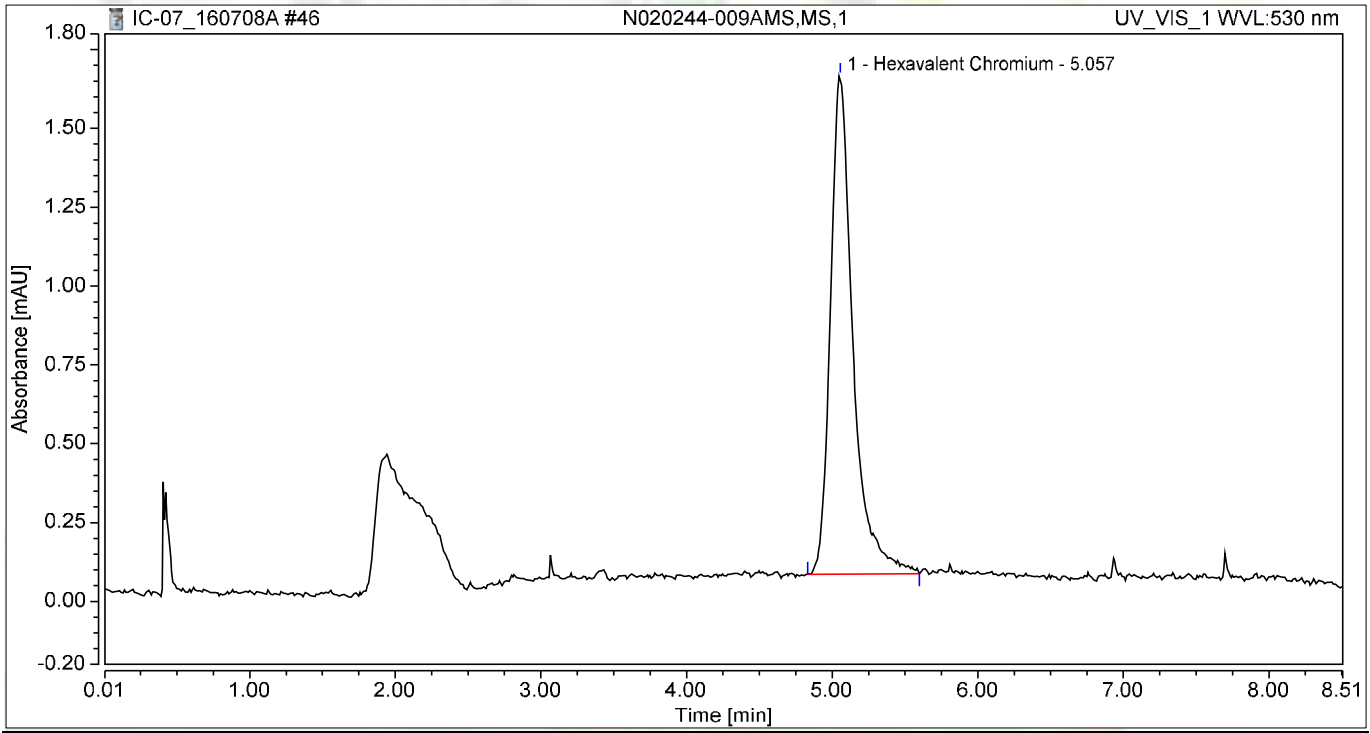
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	5.057	0.030	0.151	100.00	100.00	0.1202
Total:			**0.030**	**0.151**	**100.00**	**100.00**	

Chromatogram and Results

Injection Details

Injection Name:	**N020244-009AMS,MS,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:	**160707_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**08/Jul/16 16:07**	*Sample Weight:*	**1.0000**

Chromatogram



Integration Results

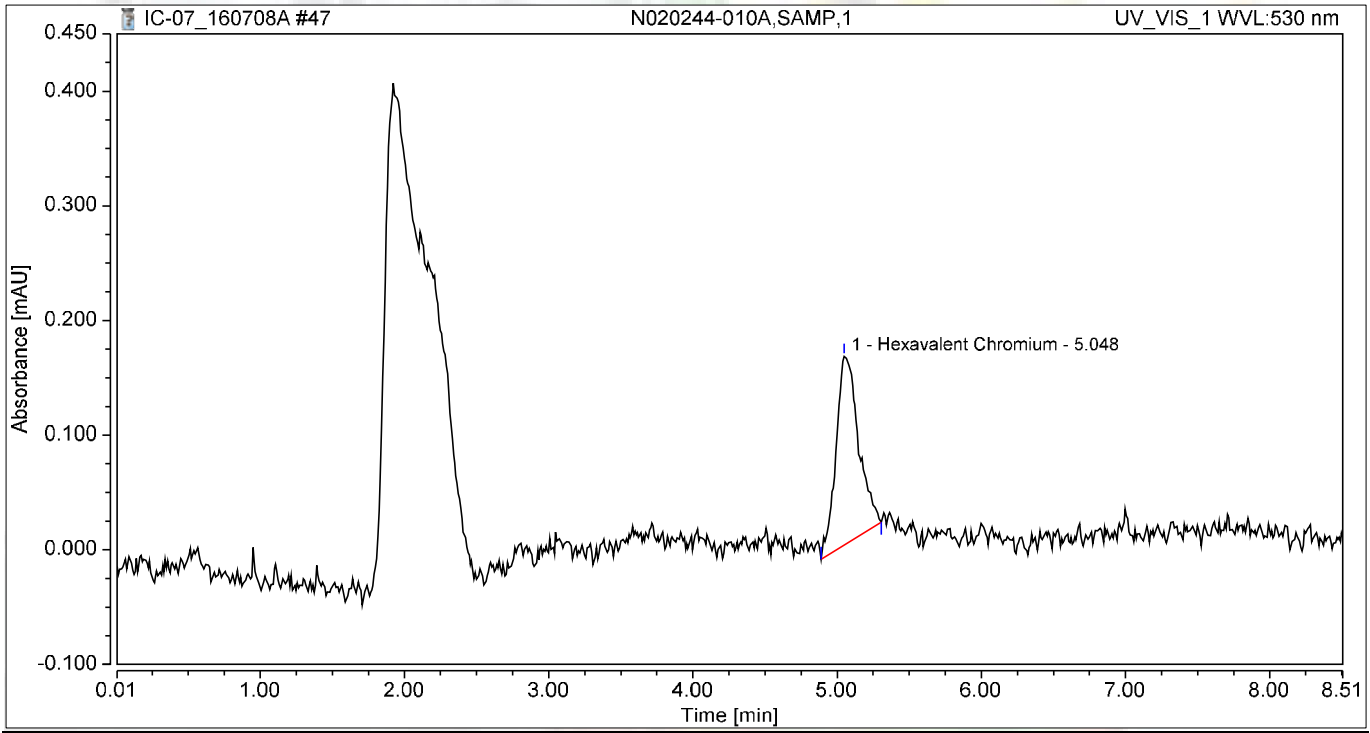
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	5.057	0.283	1.581	100.00	100.00	1.1158
Total:			**0.283**	**1.581**	**100.00**	**100.00**	

Chromatogram and Results

Injection Details

Injection Name:	**N020244-010A,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:	**160707_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**08/Jul/16 16:17**	*Sample Weight:*	**1.0000**

Chromatogram



Integration Results

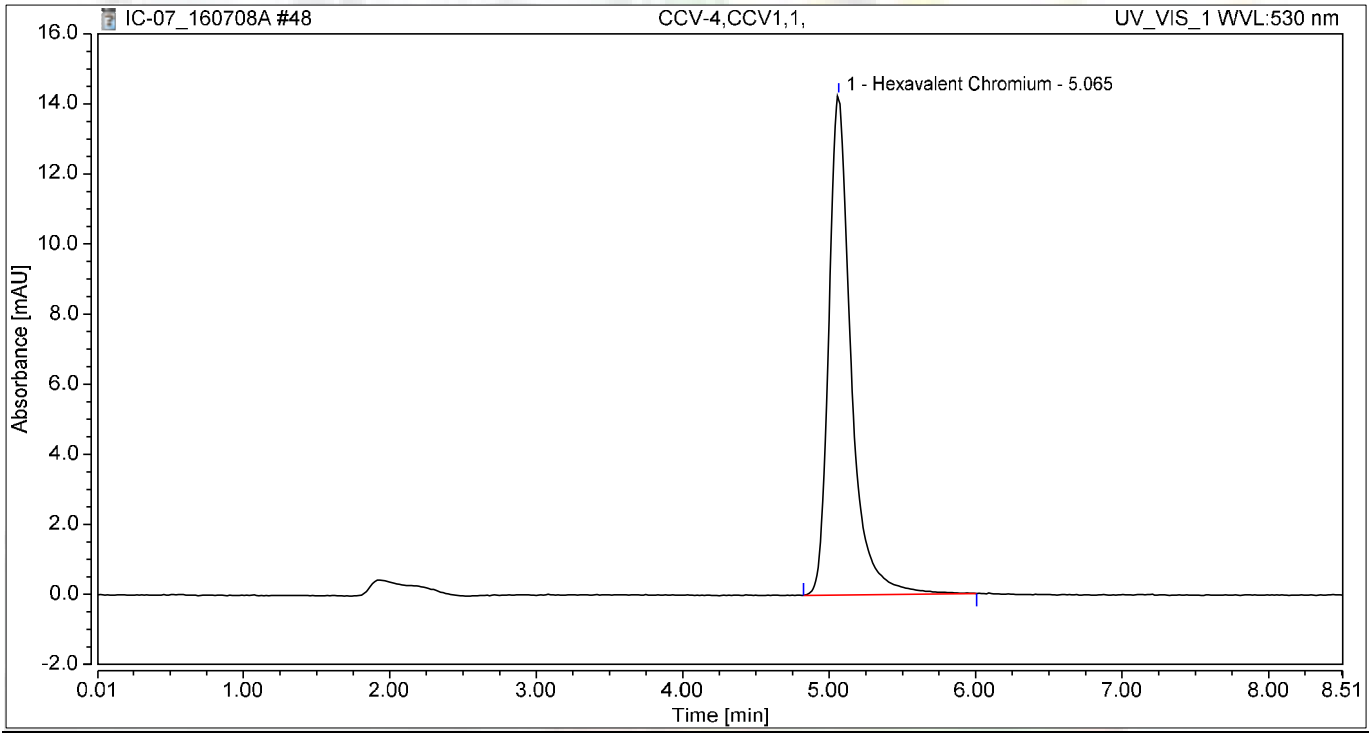
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	5.048	0.030	0.165	100.00	100.00	0.1176
Total:			**0.030**	**0.165**	**100.00**	**100.00**	

Chromatogram and Results

Injection Details

Injection Name:	**CCV-4,CCV1,1,**	*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:	**160707_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**08/Jul/16 16:26**	*Sample Weight:*	**1.0000**

Chromatogram



Integration Results

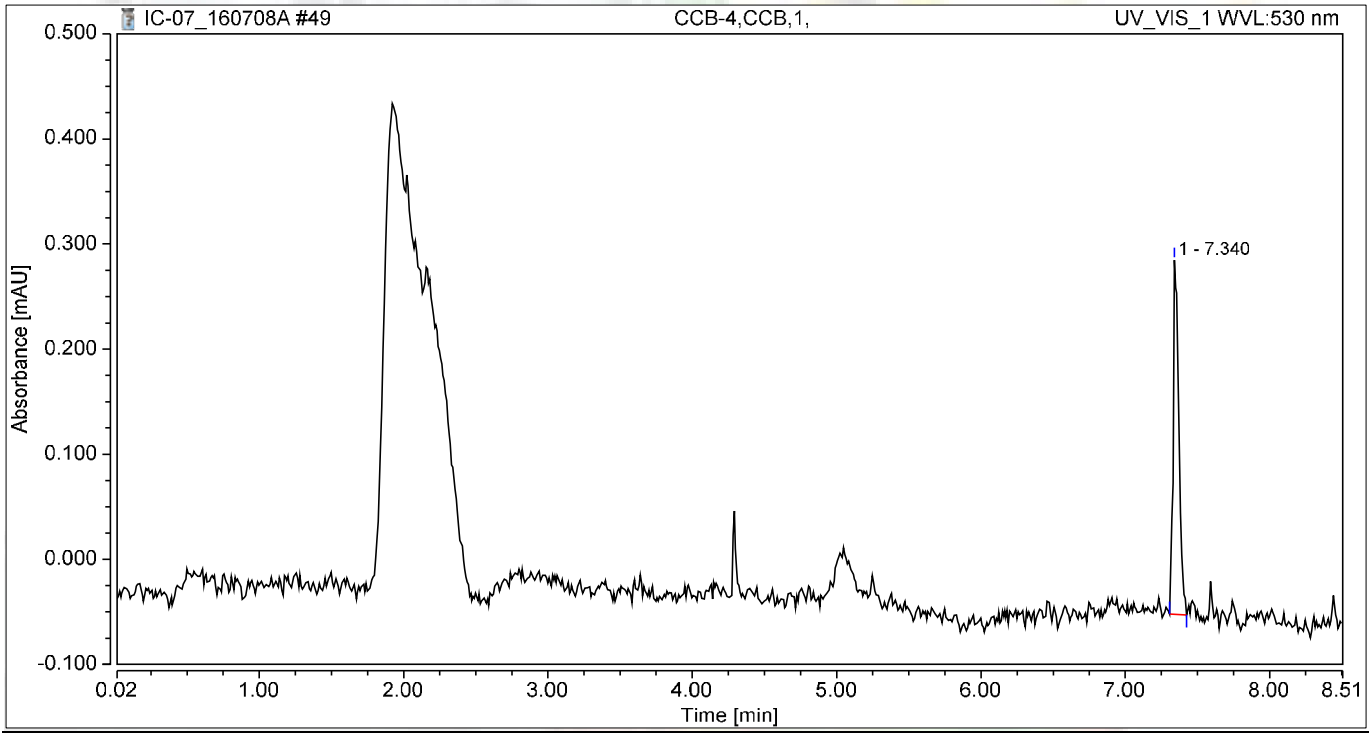
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	5.065	2.519	14.255	100.00	100.00	9.9327
Total:			**2.519**	**14.255**	**100.00**	**100.00**	

Chromatogram and Results

Injection Details

Injection Name:	**CCB-4,CCB,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:	**160707_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**08/Jul/16 16:36**	*Sample Weight:*	**1.0000**

Chromatogram



Integration Results

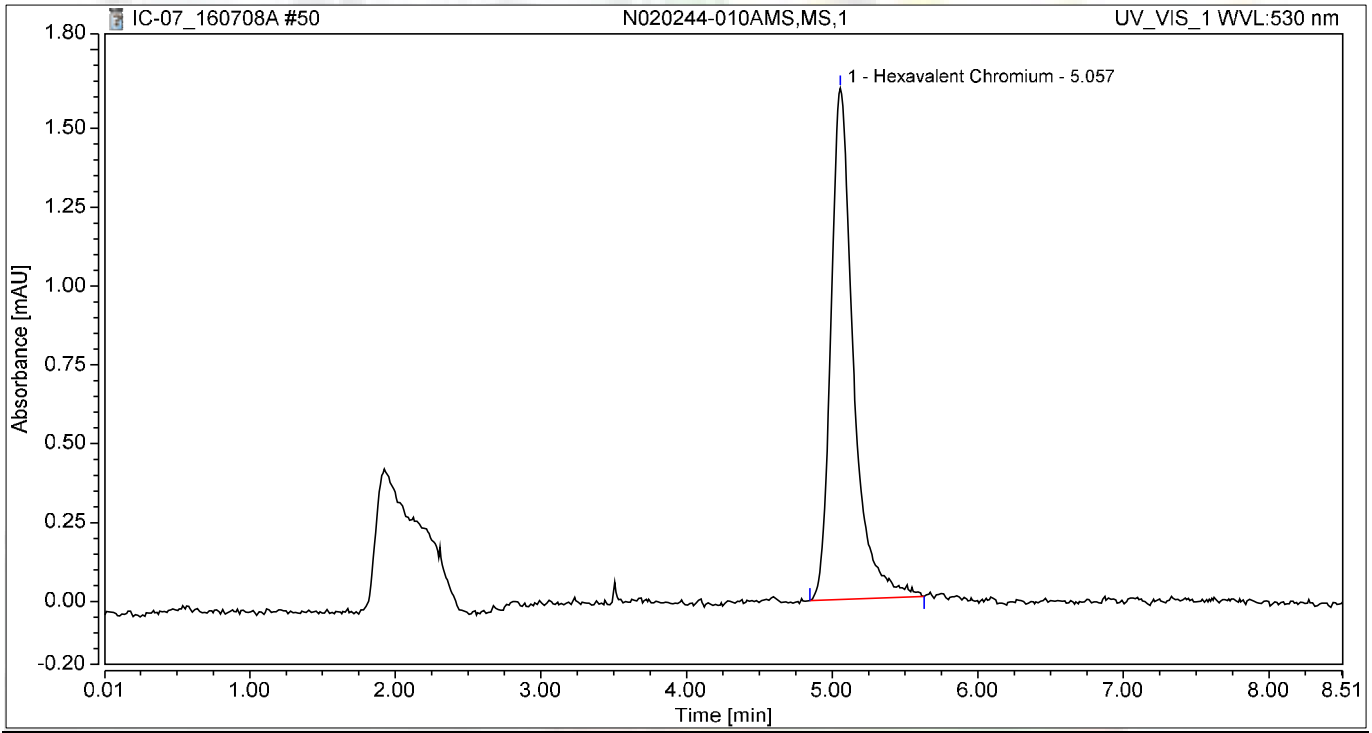
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
n.a.	Hexavalent Chromium	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
1		7.340	0.015	0.337	100.00	100.00	n.a.
Total:			**0.015**	**0.337**	**100.00**	**100.00**	

Chromatogram and Results

Injection Details

Injection Name:	**N020244-010AMS,MS,1**	*Run Time (min):*	**8.50**
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:	**160707_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**08/Jul/16 16:45**	*Sample Weight:*	**1.0000**

Chromatogram



Integration Results

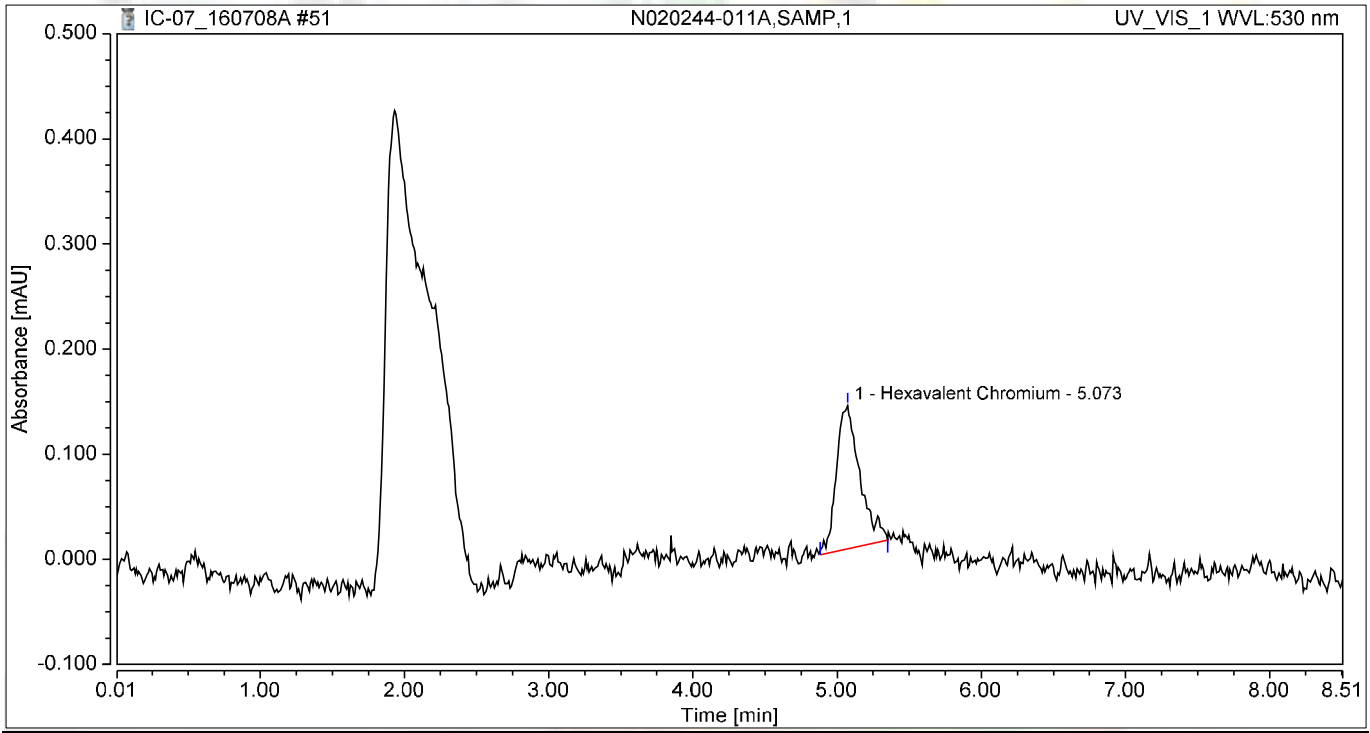
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	5.057	0.290	1.622	100.00	100.00	1.1451
Total:			**0.290**	**1.622**	**100.00**	**100.00**	

Chromatogram and Results

Injection Details

Injection Name:	**N020244-011A,SAMP,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:	**160707_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**08/Jul/16 16:54**	*Sample Weight:*	**1.0000**

Chromatogram



Integration Results

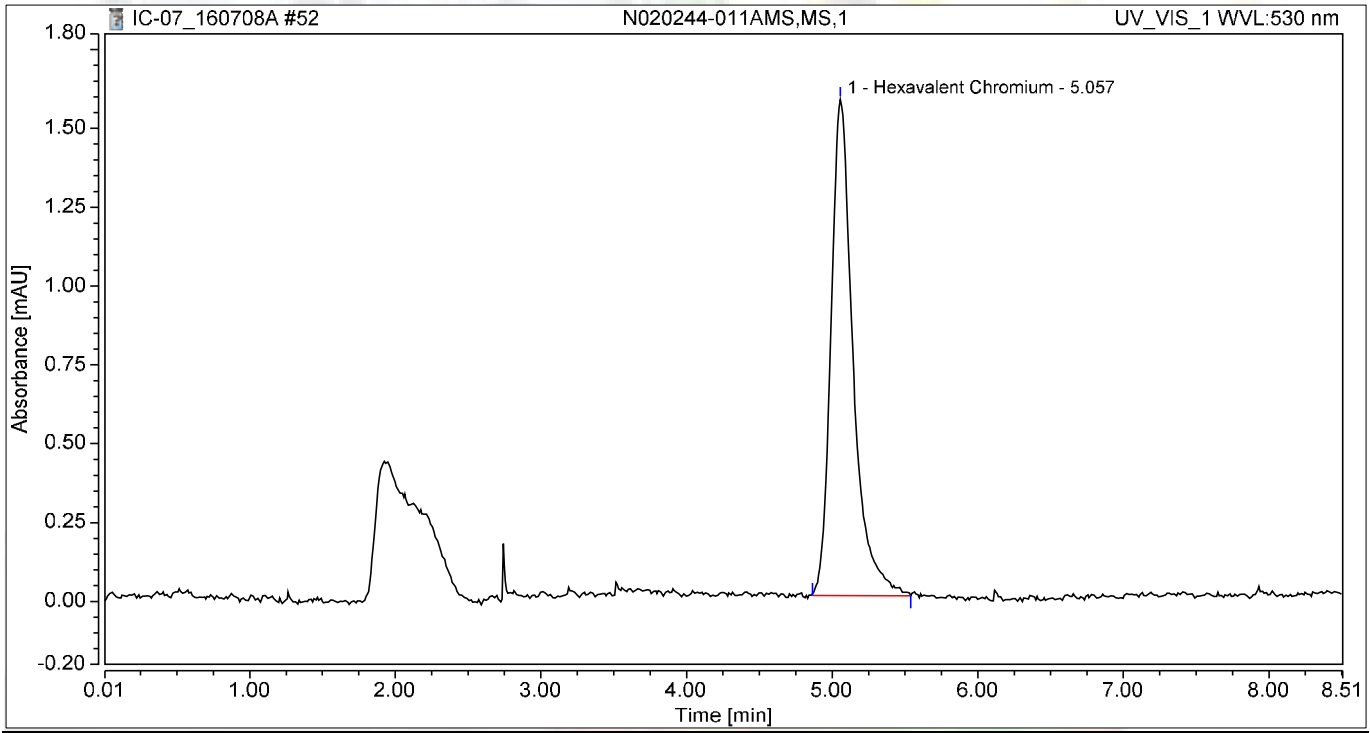
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	5.073	0.025	0.136	100.00	100.00	0.1004
Total:			**0.025**	**0.136**	**100.00**	**100.00**	

Chromatogram and Results

Injection Details

Injection Name:	**N020244-011AMS,MS,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:	**160707_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**08/Jul/16 17:04**	*Sample Weight:*	**1.0000**

Chromatogram



Integration Results

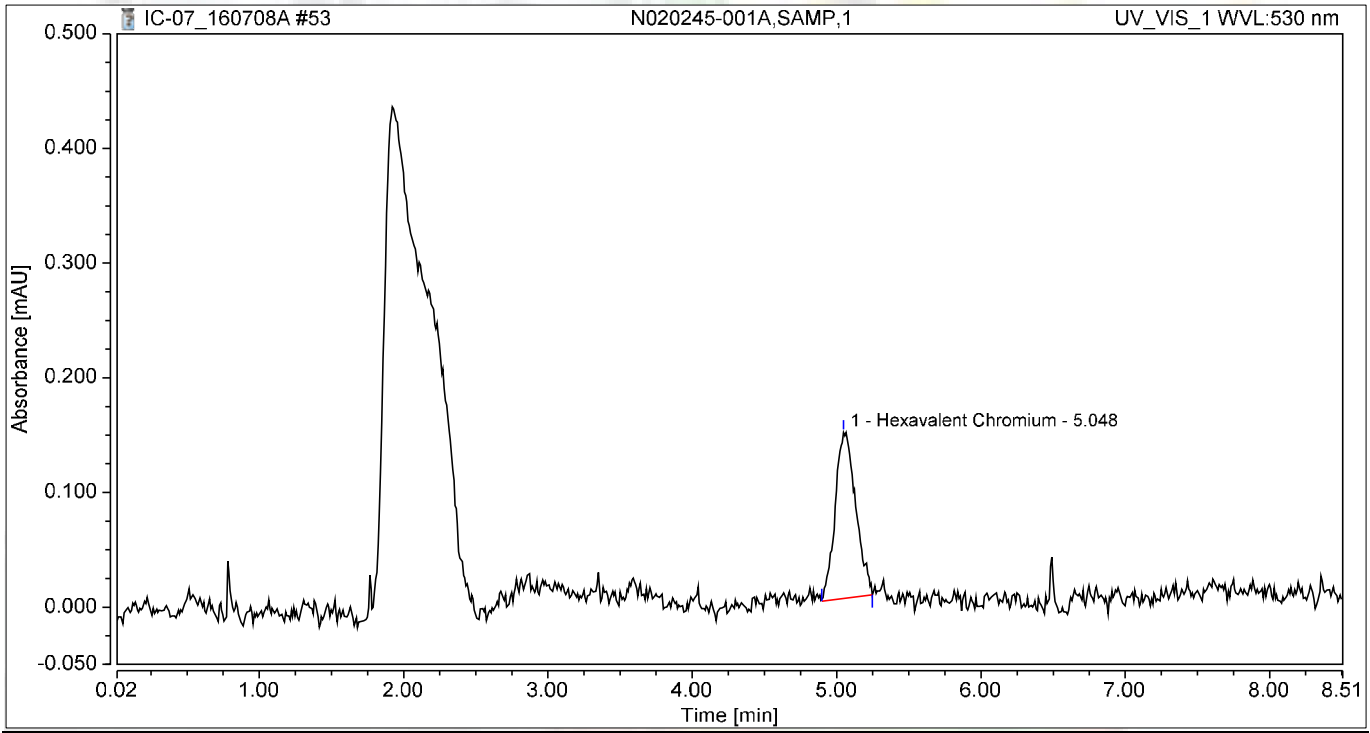
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	5.057	0.277	1.574	100.00	100.00	1.0928
Total:			**0.277**	**1.574**	**100.00**	**100.00**	

Chromatogram and Results

Injection Details

Injection Name:	**N020245-001A,SAMP,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:	**160707_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**08/Jul/16 17:13**	*Sample Weight:*	**1.0000**

Chromatogram



Integration Results

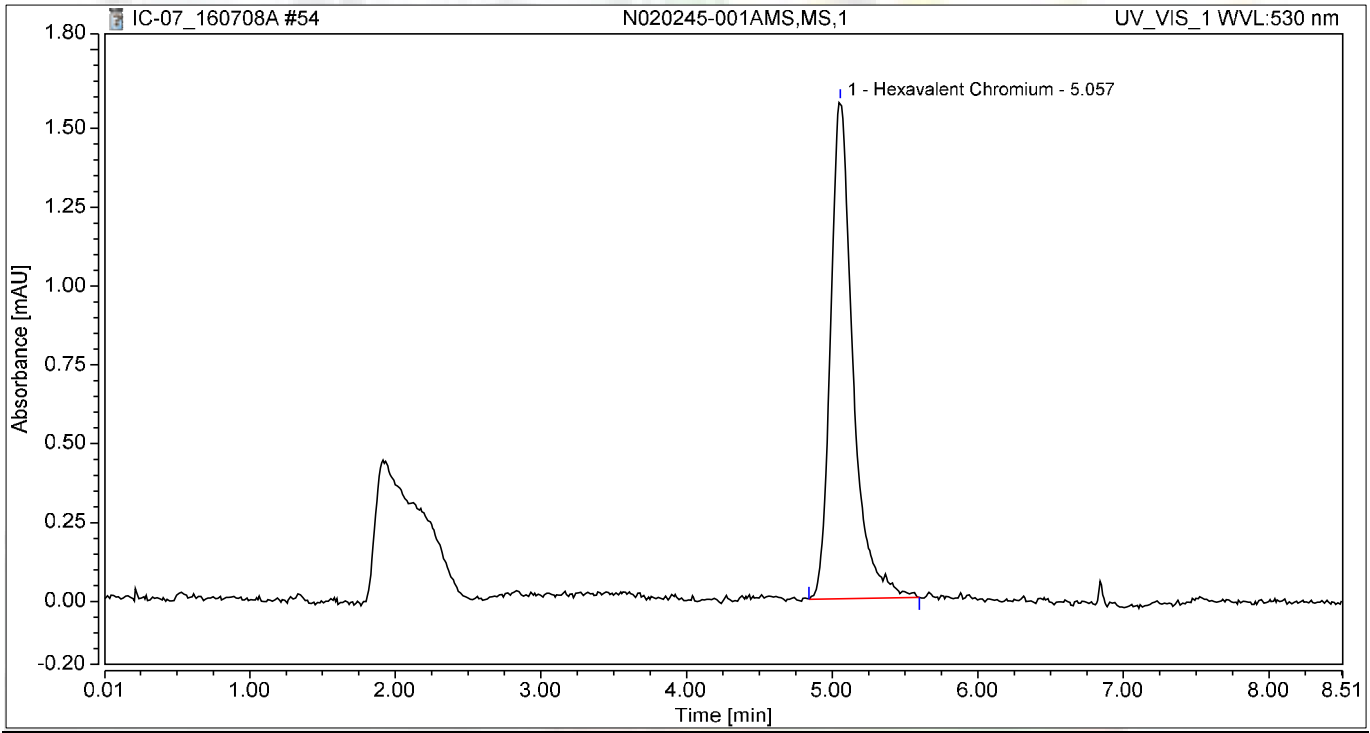
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	5.048	0.024	0.145	100.00	100.00	0.0939
Total:			**0.024**	**0.145**	**100.00**	**100.00**	

Chromatogram and Results

Injection Details

Injection Name:	**N020245-001AMS,MS,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:	**160707_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**08/Jul/16 17:23**	*Sample Weight:*	**1.0000**

Chromatogram



Integration Results

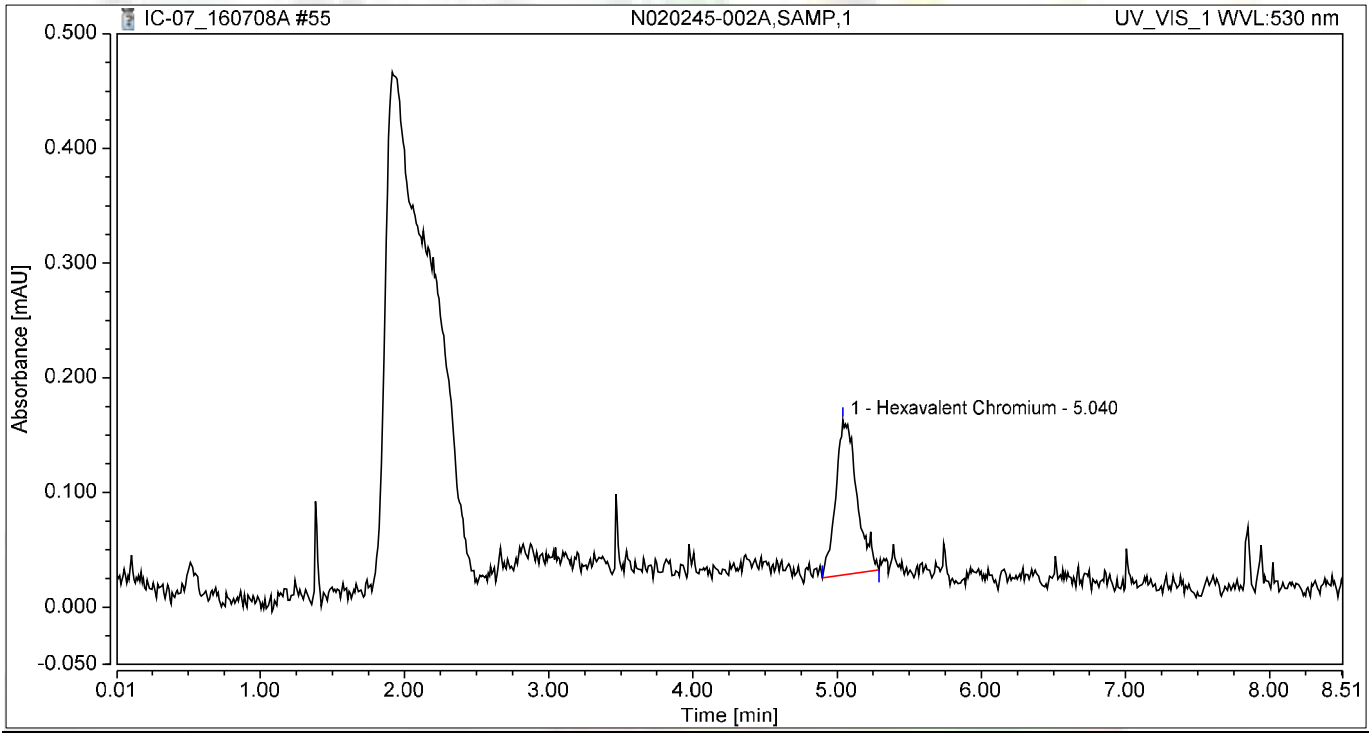
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	5.057	0.281	1.577	100.00	100.00	1.1081
Total:			**0.281**	**1.577**	**100.00**	**100.00**	

Chromatogram and Results

Injection Details

Injection Name:	**N020245-002A,SAMP,1**	*Run Time (min):*	**8.50**
Vial Number:	**47**	*Injection Volume:*	**1000.00**
Injection Type:	**Unknown**	*Channel:*	**UV_VIS_1**
Calibration Level:		*Wavelength:*	**530.0**
Instrument Method:	**Hex Chrom 4 mm**	*Bandwidth:*	**n.a.**
Processing Method:	**160707_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**08/Jul/16 17:32**	*Sample Weight:*	**1.0000**

Chromatogram



Integration Results

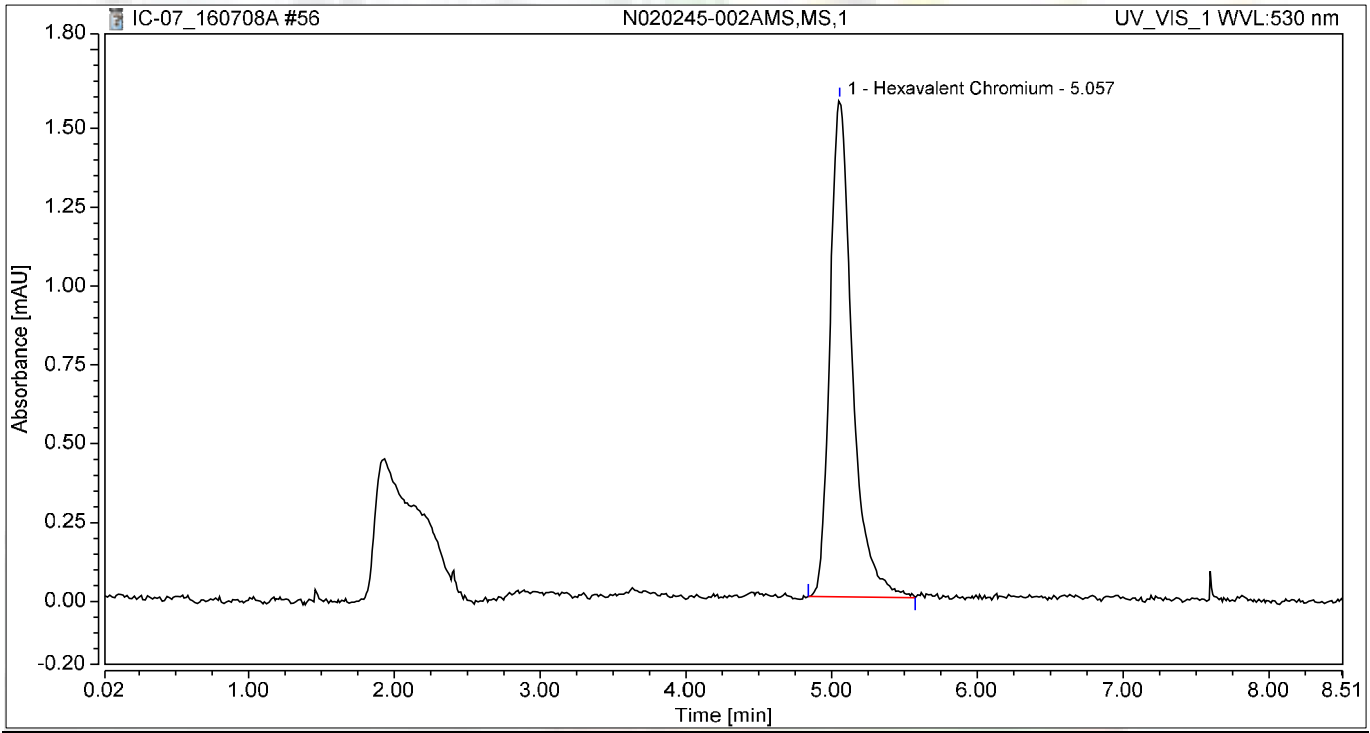
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	5.040	0.023	0.135	100.00	100.00	0.0903
Total:			**0.023**	**0.135**	**100.00**	**100.00**	

Chromatogram and Results

Injection Details

Injection Name:	**N020245-002AMS,MS,1**	*Run Time (min):*	**8.49**
Vial Number:	**48**	*Injection Volume:*	**1000.00**
Injection Type:	**Unknown**	*Channel:*	**UV_VIS_1**
Calibration Level:		*Wavelength:*	**530.0**
Instrument Method:	**Hex Chrom 4 mm**	*Bandwidth:*	**n.a.**
Processing Method:	**160707_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**08/Jul/16 17:42**	*Sample Weight:*	**1.0000**

Chromatogram



Integration Results

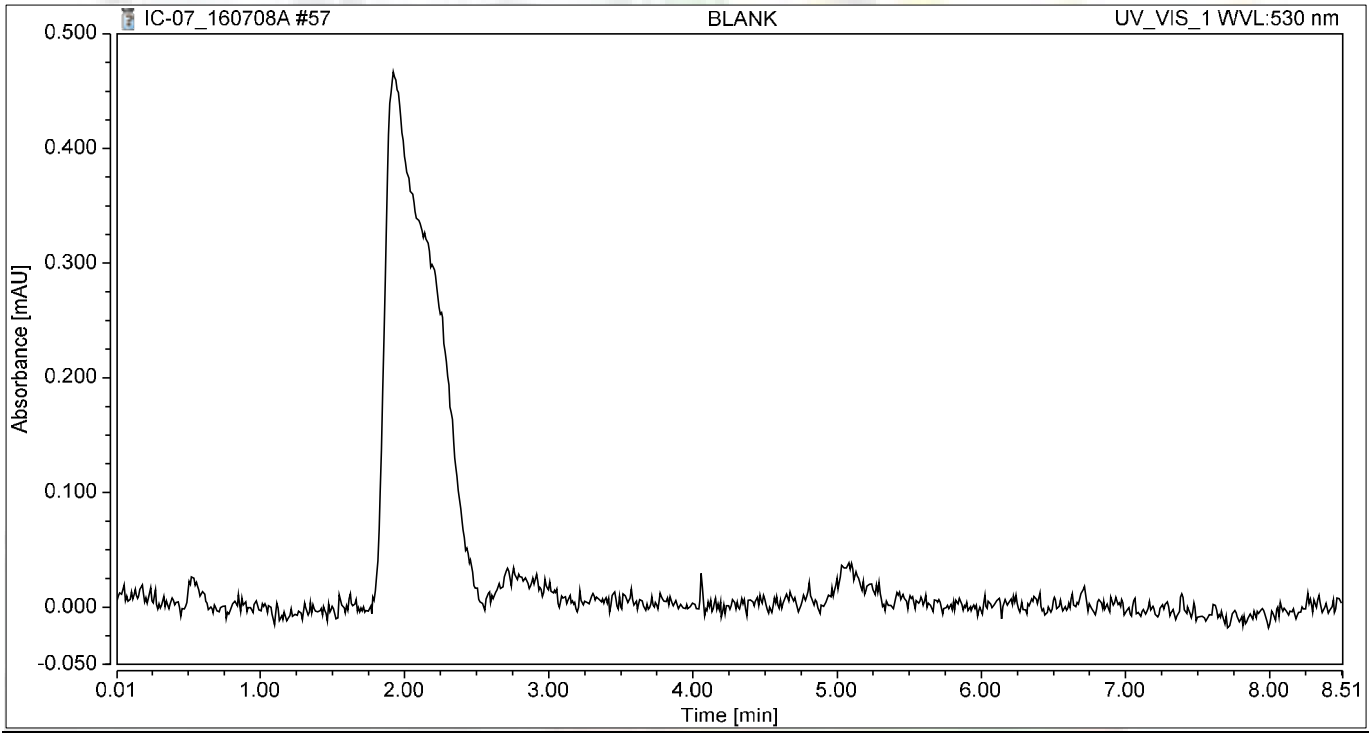
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	5.057	0.279	1.576	100.00	100.00	1.1008
Total:			**0.279**	**1.576**	**100.00**	**100.00**	

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:	**160707_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**08/Jul/16 18:00**	*Sample Weight:*	**1.0000**

Chromatogram



Integration Results

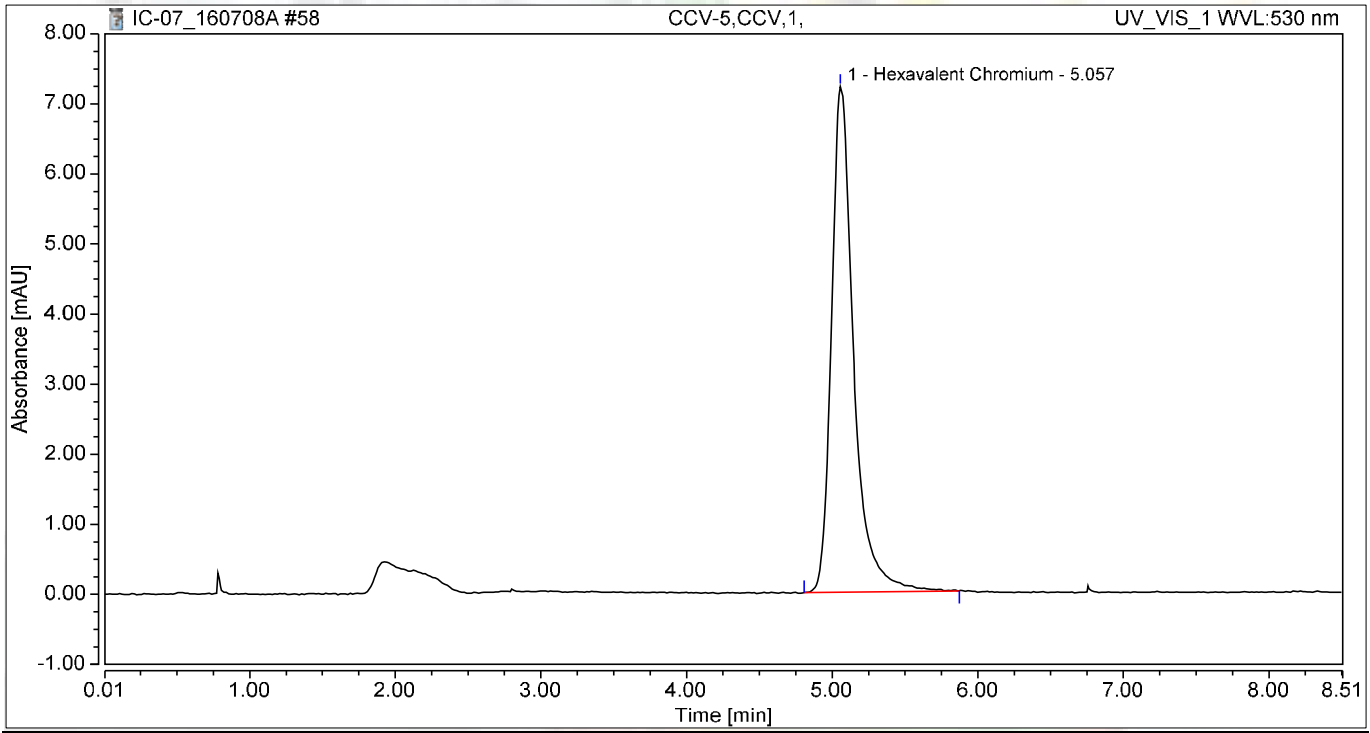
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
n.a.	Hexavalent Chromium	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Total:			**0.000**	**0.000**	**0.00**	**0.00**	

Chromatogram and Results

Injection Details

Injection Name:	**CCV-5,CCV,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:	**160707_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**08/Jul/16 18:11**	*Sample Weight:*	**1.0000**

Chromatogram



Integration Results

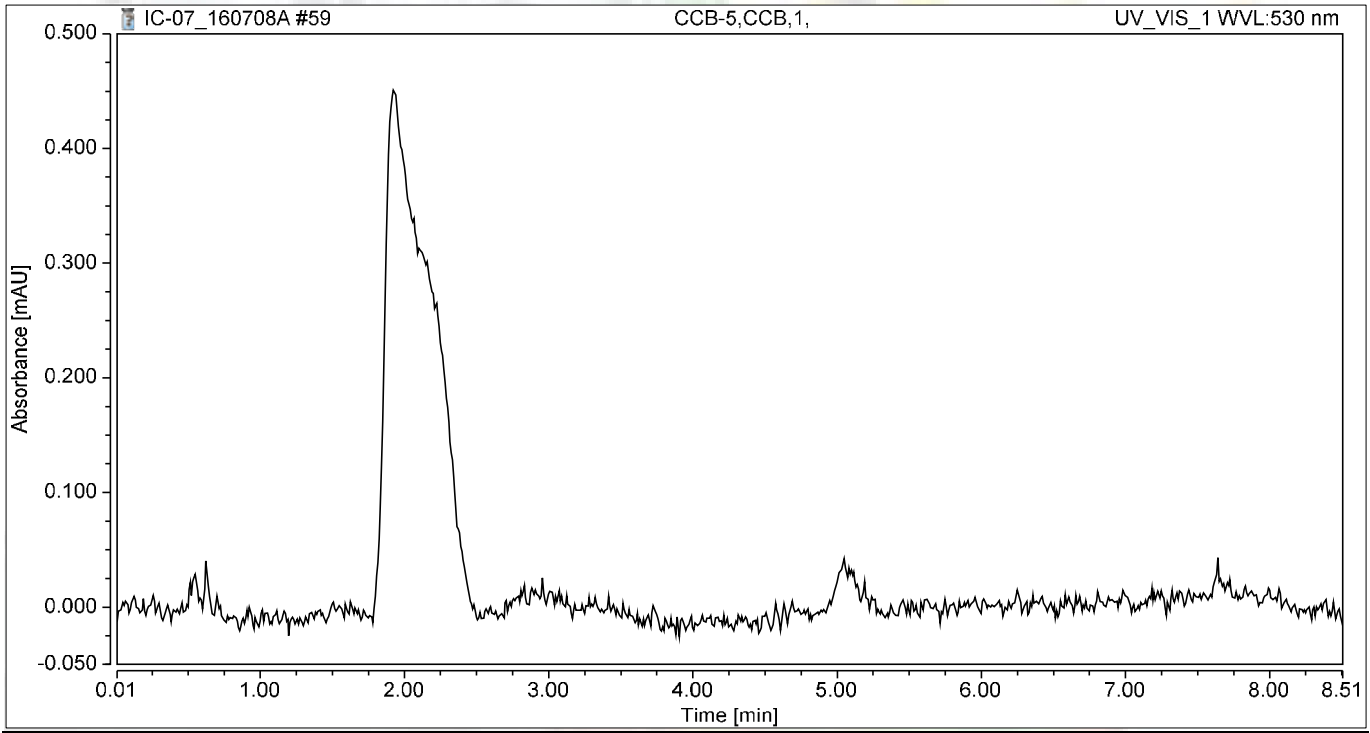
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	5.057	1.275	7.220	100.00	100.00	5.0286
Total:			**1.275**	**7.220**	**100.00**	**100.00**	

Chromatogram and Results

Injection Details

Injection Name:	**CCB-5,CCB,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:	**160707_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**08/Jul/16 18:20**	*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.
Total:			**0.000**	**0.000**	**0.00**	**0.00**	

SM 4500-NO3F

Wet Chemistry Technical Batch Review Checklist (ARCUS02)

ASSET LABORATORIES - LAS VEGAS

FIRST LEVEL REVIEW:

QC Batch Number: R109386 **Analyst:** REB

ASSET #: N020244 **Date Analyzed:** 7/12/2016

Method: 4500_NO3

Initial Calibration	1st Level Review Y	N	N/A	2nd Level Review 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:

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 Reb 07/21/2016 Date: —

2nd Level Reviewer Nancy 7/23/2016 Date: —

SAMPLE CALCULATION

Sample Calculation

METHOD: EPA 4500NO3F
TEST NAME: Nitrate/Nitrite-N by Automated Cadmium Reduction
MATRIX: ~~Water~~ Groundwater

FORMULA:

Calculate the Nitrate/Nitrite-N concentration, in mg/L, in the original sample as follows:

Nitrate/Nitrite-N, mg/L = A * DF

where:

A = mg/L, Nitrate/Nitrite-N instrument calculated concentration
DF = dilution factor

For **N020244-001E**, concentration in mg/L is calculated as follows:

Nitrate/Nitrite-N, mg/L = 0.4262*1

= 0.4262 mg/L

Reporting results in two significant figures:

Nitrate/Nitrite-N, mg/L = 0.43

Reb 07/21/2016

INITIAL CALIBRATION DATA SUMMARY

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

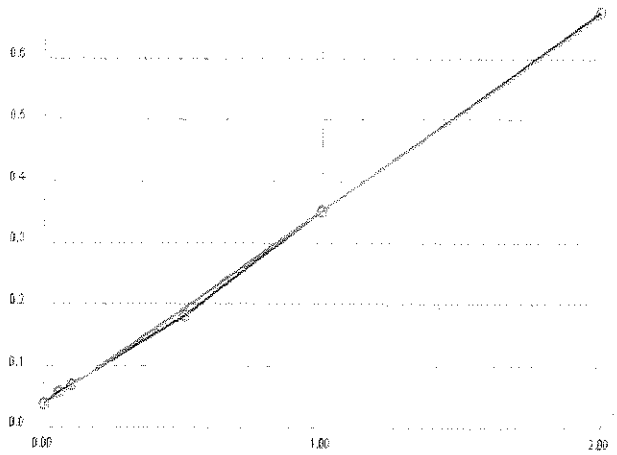
N.	Value	Tolerance
1	1	0.1

Calibration

Curve type	Linear (Calibrants)
Curve forced to zero	No
Blank inclusion	No

Formula	y = 0.3182x + 0.0352
Correlation	.999685

Calibrant	Energy	Set	Conc
1	0.0385	0.0000	0.0104
2	0.0561	0.0500	0.0657
3	0.0687	0.1000	0.1053
4	0.1825	0.5000	0.4630
5	0.3515	1.0000	0.9941
6	0.6752	2.0000	2.0115



Notes:

2% CuSO4- R160619A
R1 Buffer- R160619B
R2 Coloring reagent- R160620B

STD 1°- ISST160211J
STD 2°- ISST150730E

Rob 07/21/2016

INITIAL CALIBRATION AND CONTINUING CALIBRATION VERIFICATION SUMMARY

CLIENT: ARCADIS U.S., Inc. - California
Work Order: N020244
Project: PG&E Topock - RMP, RC000753.0801

ANALYTICAL QC SUMMARY REPORT

TestCode: 4500N03F_W

Sample ID **ICV**	SampType: **ICV**	TestCode: **4500N03F_W**	Units: **mg/L**	Prep Date:	RunNo: **109386**
Client ID: **ICV**	Batch ID: **R109386**	TestNo: **SM4500-NO3**		Analysis Date: **7/12/2016**	SeqNo: **2370899**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrate/Nitrite as N	0.502	0.050	0.5000	0	100	90	110				

Sample ID **CCV-1**	SampType: **CCV**	TestCode: **4500N03F_W**	Units: **mg/L**	Prep Date:	RunNo: **109386**
Client ID: **CCV**	Batch ID: **R109386**	TestNo: **SM4500-NO3**		Analysis Date: **7/12/2016**	SeqNo: **2370911**

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 **CCV-2**	SampType: **CCV**	TestCode: **4500N03F_W**	Units: **mg/L**	Prep Date:	RunNo: **109386**
Client ID: **CCV**	Batch ID: **R109386**	TestNo: **SM4500-NO3**		Analysis Date: **7/12/2016**	SeqNo: **2370922**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrate/Nitrite as N	0.482	0.050	0.5000	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
DO	Surrogate Diluted Out		Calculations are based on raw values		

INITIAL CALIBRATION AND CONTINUING CALIBRATION BLANK SUMMARY

CLIENT: ARCADIS U.S., Inc. - California
Work Order: N020244
Project: PG&E Topock - RMP, RC000753.0801

ANALYTICAL QC SUMMARY REPORT

TestCode: 4500N03F_W

Sample ID **ICB**	SampType: **ICB**	TestCode: **4500N03F_W**	Units: **mg/L**	Prep Date:	RunNo: **109386**
Client ID: **ICB**	Batch ID: **R109386**	TestNo: **SM4500-NO3**		Analysis Date: **7/12/2016**	SeqNo: **2370900**

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 **CCB-1**	SampType: **CCB**	TestCode: **4500N03F_W**	Units: **mg/L**	Prep Date:	RunNo: **109386**
Client ID: **CCB**	Batch ID: **R109386**	TestNo: **SM4500-NO3**		Analysis Date: **7/12/2016**	SeqNo: **2370912**

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 **CCB-2**	SampType: **CCB**	TestCode: **4500N03F_W**	Units: **mg/L**	Prep Date:	RunNo: **109386**
Client ID: **CCB**	Batch ID: **R109386**	TestNo: **SM4500-NO3**		Analysis Date: **7/12/2016**	SeqNo: **2370923**

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
DO	Surrogate Diluted Out		Calculations are based on raw values		

LOGBOOK DATA, QUANTITATION REPORT and/or SPECTRA

Advanced Technology Laboratories, Inc.

3151 W. Post Rd.
Las Vegas, NV. 89118
702-307-2659
702-307-2691
www.atl-labs.com

Time start: 07-12-2016 15:16
Time end: 07-12-2016 17:26

			EPA 353.2 NO3 as N		
			ppm	Flags	OD
1	<BLANK>	16:57:36	0.0173		0.0407
2	<BLANK>	16:58:31	0.0129		0.0393
3	<CAL1>	16:59:31	0.0104	[0]	0.0385
4	<CAL2>	17:00:26	0.0657	[0.05]	0.0561
5	<CAL3>	17:01:22	0.1053	[0.1]	0.0687
6	<CAL4>	17:02:17	0.4630	[0.5]	0.1825
7	<CAL5>	17:03:17	0.9941	[1]	0.3515
8	<CAL6>	17:04:12	2.0115	[2]	0.6752
9	,BLANK,BLANK,1,	17:05:14	0.0424		0.0487
10	,ICV,ICV,1,	17:06:08	0.5019		0.1949
11	,ICB,ICB,1,	17:07:03	0.0217		0.0421
12	,MB-H2O,MBLK,1,	17:08:04	0.0119		0.0390
13	,LCS-H2O,LCS,1,	17:09:00	0.4702		0.1848
14	,N020244-001E,SAMP,1,	17:10:00	0.4262		0.1708
15	,N020244-001EDUP,DUP,1,	17:10:43	0.3982		0.1619
16	,N020244-001EMS,MS,1,	17:11:33	0.9919		0.3508
17	,N020244-001EMSD,MSD,1,	17:12:15	1.0086		0.3561
18	,N020244-002E,SAMP,1,	17:12:58	0.4451		0.1768
19	,N020244-003E,SAMP,1,	17:13:46	0.4441		0.1765
20	,N020244-004E,SAMP,1,	17:14:29	0.3841		0.1574
21	,BLANK,BLANK,1	17:15:17	0.0176		0.0408
22	,CCV-1,CCV,1,	17:16:01	0.4781		0.1873
23	,CCB-1,CCB,1,	17:16:42	0.0176		0.0408
24	,N020244-005E,SAMP,1,	17:17:32	0.4108		0.1659
25	,N020244-006E,SAMP,1,	17:18:15	0.3762		0.1549
26	,N020244-007E,SAMP,1,	17:18:57	0.4243		0.1702

Reb 07/21/2016

			EPA 353.2 NO3 as N		
			ppm	Flags	OD
27	,N020244-008E,SAMP,1,	17:19:46	0.4051		0.1641
28	,N020244-009E,SAMP,1,	17:20:28	0.3775		0.1553
29	,N020245-001E,SAMP,1,	17:21:12	0.3828		0.1570
30	,N020245-002E,SAMP,1,	17:22:00	0.4394		0.1750
31	,BLANK,BLANK,1	17:22:43	0.0119		0.0390
32	,CCV-2,CCV,1,	17:23:26	0.4815		0.1884
33	,CCB-2,CCB,1,	17:24:14	0.0132		0.0394

Reb 07/21/2016

Nitrate/Nitrite as N by Cadmium Reduction Preparation and Runlog

Matrix:

Method: SM 4500-NO3-F/ EPA 353.2
Insturument: Easy Chem Analyzer

Slope: 95.0%
pH4: 4.00
pH7: 7.00
pH10: 10.04

LCS- 7.01 @ pH7

Reagent ID #
Ammonium Chloride reagent/Buffer: R160619B
Color reagent: R160620B
2% Copper Sulfate: R160619A
Ammonium Hydroxide: CINV-160615A

Date Analyzed: 07/12/2016
Time Analyzed: 15:16PM
Analyzed By: REB

	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)
1)	N020244-001E		7.91						
2)	N020244-002E		8.30						
3)	N020244-003E		7.70						
4)	N020244-004E		8.43						
5)	N020244-005E		8.66						
6)	N020244-006E		8.22						
7)	N020244-007E		8.19						
8)	N020244-008E		8.72						
9)	N020244-009E		8.31						
10)	N020245-001E		8.12						
11)	N020245-002E		8.04						
12)									
13)									
14)									
15)									
16)									
17)									
18)									
19)									
20)									
21)									
22)									
23)									

Reb 07/21/2016

EPA 6010B
Dissolved

Metals Technical Batch Review Checklist (ARCUS02)

ASSET LABORATORIES - LAS VEGAS

FIRST LEVEL REVIEW:

QC Batch Number: 58946
ASSET #: N020244

Instrument ID: ICPMS-02
Analyst: CEI
Date Analyzed: 7/12/2016

Method:

- [X] EPA 6010B / 200.7 _Dissolved
- [X] EPA 6020 / 200.8
- [ ] EPA 7470A / 7471A/245.1
- [ ] Other _____

Initial Calibration and Initial Calibration Verification	1st Level Review Y	N	N/A	2nd Level Review 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					
Interference Check						
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					
Continuing Calibration						
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 ICVand CCV analysis.	X					
11. Do all calibration blanks (ICB and CCBs) meet criteria? (< PQL)	X					
12 Is low level check twice during 8 hr period or at end within ± 30% of expected value? (ICP/ICPMS only)	X					
Sample Information						
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			
QC Items						
22. IS are within control limits (70-125% for ICPMS).	X					
23. Method blank values are below the PQL .	X					
24. LCS compounds within control limits.	X					
25. MS/MSD, RPD's are within control limits	X					
Raw Data and Miscellaneous Information						
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					
Preliminary Report						
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:

	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 7/22/2016 Date: _____

2nd Level Reviewer 7/23/2016 Date: _____

SAMPLE CALCULATION

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:

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 **N020244-006B** , the concentration ir ug/L is calculated as follows:

Iron , ug/L = 0.02567 * 1 * (25/25) * 1000

Iron , ug/L = 25.67

Reporting results in two significant figures,

Iron , ug/L = 26

% RSD SUMMARY

RSD SUMMARY: 160712A

Instrument ID: ICP-02

Sample Name	Type	DF	Analyte	Reported Conc	RSD	Criteria	Comment
CalBlk	IBLK	1	Fe	0	198.14	15	<PQL
Standard1	ICAL	1	Fe	0.02	1.86	15	PASS
Standard2	ICAL	1	Fe	0.05	1.12	15	PASS
Standard3	ICAL	1	Fe	2	0.28	15	PASS
Standard4	ICAL	1	Fe	5	0.1	15	PASS
Standard5	ICAL	1	Fe	7.5	0.098	15	PASS
Standard6	ICAL	1	Fe	10	0.12	15	PASS
Standard7	ICAL	1	Fe	20	0.14	15	PASS
ICV	ICV	1	Fe	9.99	0.14	15	PASS
ICB	ICB	1	Fe	-0.0066	2.89	15	PASS
LLICV	CCV1	1	Fe	0.014	0.6	20	PASS
ICSA1	ICSA	1	Fe	183.15	0.73	15	PASS
ICSAB1	ICSAB	1	Fe	186.26	0.3	15	PASS
LLICV	CCV1	1	Fe	0.016	1.22	20	PASS
MB-58946	MBLK	1	Fe	0.00045	145.24	15	<PQL
LCS-58946	LCS	1	Fe	0.11	0.29	15	PASS
N020244-001B	SAMP	1	Fe	0.0022	16.51	15	<PQL
N020244-001B	SAMP	5	Fe	-0.0054	5.012	15	PASS
N020244-001B-PS	PS	1	Fe	0.11	0.29	15	PASS
N020244-001B-MS	MS	1	Fe	0.1	0.26	15	PASS
N020244-001B-MSD	MSD	1	Fe	0.1	0.69	15	PASS
N020244-002B	SAMP	1	Fe	0.0048	39.34	15	<PQL
N020244-003B	SAMP	1	Fe	0.0044	27.37	15	<PQL
N020244-004B	SAMP	1	Fe	0.014	9.21	15	PASS
CCV1	CCV	1	Fe	9.63	0.059	15	PASS
CCB1	CCB	1	Fe	-0.0069	10.0099	15	PASS
N020244-005B	SAMP	1	Fe	0.017	1.7	15	PASS
N020244-006B	SAMP	1	Fe	0.026	1.96	15	PASS
N020244-007B	SAMP	1	Fe	0.025	2.85	15	PASS
N020244-008B	SAMP	1	Fe	0.0072	8.47	15	PASS
N020244-009B	SAMP	1	Fe	-0.00032	130.33	15	<PQL
N020245-001B	SAMP	1	Fe	0.033	1.48	15	PASS
N020245-002B	SAMP	1	Fe	0.022	4.31	15	PASS
N020245-002B-MS	MS	1	Fe	0.12	0.74	15	PASS
CCV2	CCV	1	Fe	9.59	0.15	15	PASS
CCB2	CCB	1	Fe	-0.0072	9.89	15	PASS
CCV3	CCV	1	Fe	9.62	0.088	15	PASS
CCB3	CCB	1	Fe	-0.0072	7.38	15	PASS
CCV4	CCV	1	Fe	9.58	0.058	15	PASS
CCB4	CCB	1	Fe	-0.0076	3.72	15	PASS
LLCCV1	CCV2	1	Fe	0.016	1.96	20	PASS
ICSA2	ICSA	1	Fe	174.91	0.65	15	PASS

RSD SUMMARY: 160712A

Instrument ID: ICP-02

Sample Name	Type	DF	Analyte	Reported Conc	RSD	Criteria	Comment
ICSA2	ICSA	1	Fe	176.26	0.39	15	PASS
ICSAB2	ICSAB	1	Fe	179.61	0.12	15	PASS

ANALYSIS RUN LOG

INJECTION LOG: 160712A

Instrument ID: ICP-02

STANDARD CODE	
Standard1	MWST-160608A,0.5<50mL
Standard2	MWST-160608F
Standard3	MWST-160608J,5<50mL
Standard4	MWST-160608J,12.5<50mL
Standard5	MWST-160608J,15<40mL
Standard6	MWST-160608J,25<50mL
Standard7	MWST-160608J
ICV	MWST-160701B
CCV	MWST-160608J,25<50mL
ICSA/ICSAB	MWST-160523A/MWST-160608K
Int. Std. (Y)	MSST-160323C
PS Spike	MWST-160201H/MWST-160531G/MWST-160701E

A/S Loc	Sample Name	Type	DF	Acq Date	Acq Time
3	CalBlk	IBLK	1	07/12/2016	03:55:16 AM
2	Standard1	ICAL	1	07/12/2016	04:00:59 AM
10	Standard2	ICAL	1	07/12/2016	04:06:40 AM
11	Standard3	ICAL	1	07/12/2016	04:12:21 AM
12	Standard4	ICAL	1	07/12/2016	04:18:03 AM
13	Standard5	ICAL	1	07/12/2016	04:23:18 AM
7	Standard6	ICAL	1	07/12/2016	04:28:35 AM
8	Standard7	ICAL	1	07/12/2016	04:33:48 AM
14	ICV	ICV	1	07/12/2016	04:40:03 AM
3	ICB	ICB	1	07/12/2016	04:45:17 AM
2	LLICV	CCV1	1	07/12/2016	04:53:43 AM
4	ICSA1	ICSA	1	07/12/2016	04:59:24 AM
5	ICSAB1	ICSAB	1	07/12/2016	05:06:16 AM
2	LLICV	CCV1	1	07/12/2016	05:17:35 AM
122	MB-58946	MBLK	1	07/12/2016	05:23:41 AM
123	LCS-58946	LCS	1	07/12/2016	05:28:54 AM
124	N020244-001B	SAMP	1	07/12/2016	05:34:37 AM
125	N020244-001B	SAMP	5	07/12/2016	05:40:21 AM
126	N020244-001B-PS	PS	1	07/12/2016	05:46:04 AM
127	N020244-001B-MS	MS	1	07/12/2016	05:51:48 AM
128	N020244-001B-MSD	MSD	1	07/12/2016	05:57:31 AM
129	N020244-002B	SAMP	1	07/12/2016	06:03:15 AM
130	N020244-003B	SAMP	1	07/12/2016	06:08:58 AM
131	N020244-004B	SAMP	1	07/12/2016	06:14:42 AM
7	CCV1	CCV	1	07/12/2016	06:20:26 AM
3	CCB1	CCB	1	07/12/2016	06:25:50 AM
132	N020244-005B	SAMP	1	07/12/2016	06:31:01 AM

A/S Loc	Sample Name	Type	DF	Acq Date	Acq Time
133	N020244-006B	SAMP	1	07/12/2016	06:36:44 AM
134	N020244-007B	SAMP	1	07/12/2016	06:42:28 AM
135	N020244-008B	SAMP	1	07/12/2016	06:48:11 AM
136	N020244-009B	SAMP	1	07/12/2016	06:53:55 AM
137	N020245-001B	SAMP	1	07/12/2016	06:59:39 AM
138	N020245-002B	SAMP	1	07/12/2016	07:05:22 AM
139	N020245-002B-MS	MS	1	07/12/2016	07:11:06 AM
140	MB-58945	MBLK	1	07/12/2016	07:16:21 AM
141	LCS-58945	LCS	1	07/12/2016	07:21:33 AM
7	CCV2	CCV	1	07/12/2016	07:27:16 AM
3	CCB2	CCB	1	07/12/2016	07:32:30 AM
142	N020244-001C	SAMP	1	07/12/2016	07:37:41 AM
143	N020244-001C	SAMP	5	07/12/2016	07:43:25 AM
144	N020244-001C-PS	PS	1	07/12/2016	07:49:08 AM
145	N020244-001C-MS	MS	1	07/12/2016	07:54:52 AM
146	N020244-001C-MSD	MSD	1	07/12/2016	08:00:36 AM
147	N020244-002C	SAMP	1	07/12/2016	08:06:20 AM
148	N020244-003C	SAMP	1	07/12/2016	08:12:04 AM
149	N020244-004C	SAMP	1	07/12/2016	08:17:49 AM
150	N020244-005C	SAMP	1	07/12/2016	08:23:33 AM
151	N020244-006C	SAMP	1	07/12/2016	08:29:16 AM
7	CCV3	CCV	1	07/12/2016	08:35:01 AM
3	CCB3	CCB	1	07/12/2016	08:40:14 AM
152	N020244-007C	SAMP	1	07/12/2016	08:45:24 AM
153	N020244-008C	SAMP	1	07/12/2016	08:51:07 AM
154	N020244-009C	SAMP	1	07/12/2016	08:56:50 AM
155	N020245-001C	SAMP	1	07/12/2016	09:02:33 AM
156	N020245-002C	SAMP	1	07/12/2016	09:08:16 AM
157	N020245-002C-MS	MS	1	07/12/2016	09:14:00 AM
7	CCV4	CCV	1	07/12/2016	09:19:44 AM
3	CCB4	CCB	1	07/12/2016	09:24:58 AM
2	LLCCV1	CCV2	1	07/12/2016	10:02:51 AM
4	ICSA2	ICSA	1	07/12/2016	10:08:30 AM
4	ICSA2	ICSA	1	07/12/2016	10:19:59 AM
5	ICSAB2	ICSAB	1	07/12/2016	10:26:51 AM

SAMPLE PREPARATION LOG

ASSET Laboratories

PREP BATCH REPORT

Prep Start Date: **7/8/2016 12:05:00 P**
Prep End Date: **7/8/2016 4:30:00 P**
Prep Batch **58946** Prep Code: **3010_W_DISS**

Reviewed/ Date: _____
Initials/ Date: 7/22/2016
Technician: **Claire Ignacio**

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-58946	Aqueous		25	☐	0	0	25	1.000		
MB-58946	Aqueous		25	☐	0	0	25	1.000		
N020244-001B	Groundwater	<2	25	☐	0	0	25	1.000		
N020244-001B-MS	Groundwater	<2	25	☐	0	0	25	1.000		
N020244-001B-MS	Groundwater	<2	25	☐	0	0	25	1.000		
N020244-002B	Groundwater	<2	25	☐	0	0	25	1.000		
N020244-003B	Groundwater	<2	25	☐	0	0	25	1.000		
N020244-004B	Groundwater	<2	25	☐	0	0	25	1.000		
N020244-005B	Groundwater	<2	25	☐	0	0	25	1.000		
N020244-006B	Groundwater	<2	25	☐	0	0	25	1.000		
N020244-007B	Groundwater	<2	25	☐	0	0	25	1.000		
N020244-008B	Groundwater	<2	25	☐	0	0	25	1.000		
N020244-009B	Groundwater	<2	25	☐	0	0	25	1.000		
N020245-001B	Groundwater	<2	25	☐	0	0	25	1.000		

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

Number	Reagent Name
8446	NITRIC ACID
8493	HYDROCHLORIC ACID

Spk ID	Spike Name	SampType	AmtAdd
MWST-160201H	ICP Solution B	LCS,MS,MSD	0.5
MWST-160531G	ICP Solution C	LCS,MS,MSD	0.5
MWST-160701E	ICP Solution A	LCS,MS,MSD	0.5

ASSET Laboratories

PREP BATCH REPORT

Prep Start Date: **7/8/2016 12:05:00 P**
Prep End Date: **7/8/2016 4:30:00 P**
Prep Batch **58946** Prep Code: **3010_W_DISS**

Reviewed/ Date: _____
Initials/ Date: _____ 7/22/2016
Technician: **Claire Ignacio**

Prep Factor Units: **mL / mL**

Sample ID	Matrix	pH	SampAmt	3 Replicates	Sol Added	Sol Recov	Fin Vol	factor	Clean Up Code	TURB Check
N020245-002B	Groundwater	<2	25	☐	0	0	25	1.000		
N020245-002B-MS	Groundwater	<2	25	☐	0	0	25	1.000		

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

Number	Reagent Name
8446	NITRIC ACID
8493	HYDROCHLORIC ACID

Spk ID	Spike Name	SampType	AmtAdd
MWST-160201H	ICP Solution B	LCS,MS,MSD	0.5
MWST-160531G	ICP Solution C	LCS,MS,MSD	0.5
MWST-160701E	ICP Solution A	LCS,MS,MSD	0.5

INITIAL CALIBRATION DATA SUMMARY

INITIAL CALIBRATION SUMMARY: 160712A

Instrument ID: ICP-02

Sample ID	Date	Time	Elem	Wavelength	Corrected Intensity	Concentration	Units	R
Iron								
CalBlk	07/12/2016	03:55:16 AM	Fe	273.953	96	0.00	mg/L	
Standard1	07/12/2016	04:00:59 AM	Fe	273.953	547	0.0200	mg/L	
Standard2	07/12/2016	04:06:40 AM	Fe	273.953	1668	0.050	mg/L	
Standard3	07/12/2016	04:12:21 AM	Fe	273.953	72110	2.000	mg/L	
Standard4	07/12/2016	04:18:03 AM	Fe	273.953	186357	5.000	mg/L	
Standard5	07/12/2016	04:23:18 AM	Fe	273.953	260194	7.500	mg/L	
Standard6	07/12/2016	04:28:35 AM	Fe	273.953	364187	10.000	mg/L	
Standard7	07/12/2016	04:33:48 AM	Fe	273.953	731714	20.000	mg/L	0.9999

INITIAL CALIBRATION AND CONTINUING CALIBRATION VERIFICATION SUMMARY

CLIENT: ARCADIS U.S., Inc. - California
Work Order: N020244
Project: PG&E Topock - RMP, RC000753.0801

ANALYTICAL QC SUMMARY REPORT

TestCode: 6010_WDPGEPPB

Sample ID **ICV**	SampType: **ICV**	TestCode: **6010_WDPG**	Units: **ug/L**	Prep Date:	RunNo: **109377**
Client ID: **ICV**	Batch ID: **R109377**	TestNo: **EPA 6010B**		Analysis Date: **7/12/2016**	SeqNo: **2370439**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Iron	9994.446	20	10000	0	99.9	90	110				

Sample ID **LLICV**	SampType: **CCV1**	TestCode: **6010_WDPG**	Units: **ug/L**	Prep Date:	RunNo: **109377**
Client ID: **ZZZZZZ**	Batch ID: **R109377**	TestNo: **EPA 6010B**		Analysis Date: **7/12/2016**	SeqNo: **2370444**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Iron	16.352	20	20.00	0	81.8	80	120				

Sample ID **CCV1**	SampType: **CCV**	TestCode: **6010_WDPG**	Units: **ug/L**	Prep Date:	RunNo: **109377**
Client ID: **CCV**	Batch ID: **R109377**	TestNo: **EPA 6010B**		Analysis Date: **7/12/2016**	SeqNo: **2370455**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Iron	9634.280	20	10000	0	96.3	90	110				

Sample ID **CCV2**	SampType: **CCV**	TestCode: **6010_WDPG**	Units: **ug/L**	Prep Date:	RunNo: **109377**
Client ID: **CCV**	Batch ID: **R109377**	TestNo: **EPA 6010B**		Analysis Date: **7/12/2016**	SeqNo: **2370467**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Iron	9585.295	20	10000	0	95.9	90	110				

Sample ID **CCV3**	SampType: **CCV**	TestCode: **6010_WDPG**	Units: **ug/L**	Prep Date:	RunNo: **109377**
Client ID: **CCV**	Batch ID: **R109377**	TestNo: **EPA 6010B**		Analysis Date: **7/12/2016**	SeqNo: **2370479**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Iron	9615.094	20	10000	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
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: ARCADIS U.S., Inc. - California
Work Order: N020244
Project: PG&E Topock - RMP, RC000753.0801

ANALYTICAL QC SUMMARY REPORT

TestCode: 6010_WDPGEPPB

Sample ID **CCV4**	SampType: **CCV**	TestCode: **6010_WDPG**	Units: **ug/L**	Prep Date:	RunNo: **109377**
Client ID: **CCV**	Batch ID: **R109377**	TestNo: **EPA 6010B**		Analysis Date: **7/12/2016**	SeqNo: **2370487**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Iron	9583.725	20	10000	0	95.8	90	110				

Sample ID **LLCCV1**	SampType: **CCV2**	TestCode: **6010_WDPG**	Units: **ug/L**	Prep Date:	RunNo: **109377**
Client ID: **ZZZZZZ**	Batch ID: **R109377**	TestNo: **EPA 6010B**		Analysis Date: **7/12/2016**	SeqNo: **2370489**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Iron	16.473	20	20.00	0	82.4	70	130				

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis 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

CLIENT: ARCADIS U.S., Inc. - California
Work Order: N020244
Project: PG&E Topock - RMP, RC000753.0801

ANALYTICAL QC SUMMARY REPORT

TestCode: 6010_WDPGEPPB

Sample ID **ICB**	SampType: **ICB**	TestCode: **6010_WDPG**	Units: **ug/L**	Prep Date:	RunNo: **109377**
Client ID: **ICB**	Batch ID: **R109377**	TestNo: **EPA 6010B**		Analysis Date: **7/12/2016**	SeqNo: **2370440**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Iron	-6.583806	20									

Sample ID **CCB1**	SampType: **CCB**	TestCode: **6010_WDPG**	Units: **ug/L**	Prep Date:	RunNo: **109377**
Client ID: **CCB**	Batch ID: **R109377**	TestNo: **EPA 6010B**		Analysis Date: **7/12/2016**	SeqNo: **2370456**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Iron	-6.89617	20									

Sample ID **CCB2**	SampType: **CCB**	TestCode: **6010_WDPG**	Units: **ug/L**	Prep Date:	RunNo: **109377**
Client ID: **CCB**	Batch ID: **R109377**	TestNo: **EPA 6010B**		Analysis Date: **7/12/2016**	SeqNo: **2370468**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Iron	-7.18646	20									

Sample ID **CCB3**	SampType: **CCB**	TestCode: **6010_WDPG**	Units: **ug/L**	Prep Date:	RunNo: **109377**
Client ID: **CCB**	Batch ID: **R109377**	TestNo: **EPA 6010B**		Analysis Date: **7/12/2016**	SeqNo: **2370480**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Iron	-7.233435	20									

Sample ID **CCB4**	SampType: **CCB**	TestCode: **6010_WDPG**	Units: **ug/L**	Prep Date:	RunNo: **109377**
Client ID: **CCB**	Batch ID: **R109377**	TestNo: **EPA 6010B**		Analysis Date: **7/12/2016**	SeqNo: **2370488**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Iron	-7.566048	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

SUMMARY OF INSTRUMENT CHECK (ICSA & ICSAB)

CLIENT: ARCADIS U.S., Inc. - California
Work Order: N020244
Project: PG&E Topock - RMP, RC000753.0801

ANALYTICAL QC SUMMARY REPORT

TestCode: 6010_WDPGEPPB

Sample ID **ICSA1**	SampType: **ICSA**	TestCode: **6010_WDPG**	Units: **ug/L**	Prep Date:	RunNo: **109377**
Client ID: **ICSA**	Batch ID: **R109377**	TestNo: **EPA 6010B**		Analysis Date: **7/12/2016**	SeqNo: **2370442**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aluminum	545391.490	50	500000	0	109	80	120				
Calcium	526942.640	500	500000	0	105	80	120				
Iron	183152.449	20	200000	0	91.6	80	120				
Magnesium	486309.524	100	500000	0	97.3	80	120				

Sample ID **ICSAB1**	SampType: **ICSAB**	TestCode: **6010_WDPG**	Units: **ug/L**	Prep Date:	RunNo: **109377**
Client ID: **ICSAB**	Batch ID: **R109377**	TestNo: **EPA 6010B**		Analysis Date: **7/12/2016**	SeqNo: **2370443**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aluminum	557662.338	50	500000	0	112	80	120				
Calcium	535246.792	500	500000	0	107	80	120				
Iron	186264.222	20	200000	0	93.1	80	120				
Magnesium	484938.178	100	500000	0	97.0	80	120				

Sample ID **ICSA2**	SampType: **ICSA**	TestCode: **6010_WDPG**	Units: **ug/L**	Prep Date:	RunNo: **109377**
Client ID: **ICSA**	Batch ID: **R109377**	TestNo: **EPA 6010B**		Analysis Date: **7/12/2016**	SeqNo: **2370491**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aluminum	534180.516	50	500000	0	107	80	120				
Calcium	450101.752	500	500000	0	90.0	80	120				
Iron	176261.004	20	200000	0	88.1	80	120				
Magnesium	425661.178	100	500000	0	85.1	80	120				

Sample ID **ICSAB2**	SampType: **ICSAB**	TestCode: **6010_WDPG**	Units: **ug/L**	Prep Date:	RunNo: **109377**
Client ID: **ICSAB**	Batch ID: **R109377**	TestNo: **EPA 6010B**		Analysis Date: **7/12/2016**	SeqNo: **2370492**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aluminum	544340.743	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
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: ARCADIS U.S., Inc. - California
Work Order: N020244
Project: PG&E Topock - RMP, RC000753.0801

ANALYTICAL QC SUMMARY REPORT

TestCode: 6010_WDPGEPPB

Sample ID **ICSAB2**	SampType: **ICSAB**	TestCode: **6010_WDPG**	Units: **ug/L**	Prep Date:	RunNo: **109377**
Client ID: **ICSAB**	Batch ID: **R109377**	TestNo: **EPA 6010B**		Analysis Date: **7/12/2016**	SeqNo: **2370492**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Calcium	457450.229	500	500000	0	91.5	80	120				
Iron	179607.382	20	200000	0	89.8	80	120				
Magnesium	429786.484	100	500000	0	86.0	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
DO	Surrogate Diluted Out		Calculations are based on raw values		

INTERNAL STANDARD SUMMARY

INTERNAL STANDARD: 160712A

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	99.31	65-125	PASS
Standard2	ICAL	1	0.98	97.94	65-125	PASS
Standard3	ICAL	1	1.01	101.04	65-125	PASS
Standard4	ICAL	1	0.99	99.13	65-125	PASS
Standard5	ICAL	1	1.012	101.18	65-125	PASS
Standard6	ICAL	1	0.98	97.6	65-125	PASS
Standard7	ICAL	1	0.95	94.64	65-125	PASS
ICV	ICV	1	0.95	95.067	65-125	PASS
ICB	ICB	1	0.99	99.32	65-125	PASS
LLICV	CCV1	1	1.0002	100.02	65-125	PASS
ICSA1	ICSA	1	0.93	93.12	65-125	PASS
ICSAB1	ICSAB	1	0.92	92.035	65-125	PASS
LLICV	CCV1	1	1.0024	100.24	65-125	PASS
MB-58946	MBLK	1	1.047	104.69	65-125	PASS
LCS-58946	LCS	1	1.027	102.66	65-125	PASS
N020244-001B	SAMP	1	0.98	98.31	65-125	PASS
N020244-001B	SAMP	5	0.99	98.55	65-125	PASS
N020244-001B-PS	PS	1	0.97	96.62	65-125	PASS
N020244-001B-MS	MS	1	0.99	99.071	65-125	PASS
N020244-001B-MSD	MSD	1	0.99	99.12	65-125	PASS
N020244-002B	SAMP	1	0.99	98.8	65-125	PASS
N020244-003B	SAMP	1	1.0044	100.44	65-125	PASS
N020244-004B	SAMP	1	1.0067	100.67	65-125	PASS
CCV1	CCV	1	0.98	98.32	65-125	PASS
CCB1	CCB	1	1.0025	100.25	65-125	PASS
N020244-005B	SAMP	1	1.12	111.71	65-125	PASS
N020244-006B	SAMP	1	1.0092	100.92	65-125	PASS
N020244-007B	SAMP	1	1.0051	100.51	65-125	PASS
N020244-008B	SAMP	1	1.0069	100.69	65-125	PASS
N020244-009B	SAMP	1	1.0018	100.18	65-125	PASS
N020245-001B	SAMP	1	1.0068	100.68	65-125	PASS
N020245-002B	SAMP	1	1.0048	100.48	65-125	PASS
N020245-002B-MS	MS	1	1.011	101.06	65-125	PASS
CCV2	CCV	1	0.99	99.22	65-125	PASS
CCB2	CCB	1	1.01	101.05	65-125	PASS
CCV3	CCV	1	1	99.69	65-125	PASS
CCB3	CCB	1	1.017	101.73	65-125	PASS
CCV4	CCV	1	1.0048	100.48	65-125	PASS
CCB4	CCB	1	1.024	102.39	65-125	PASS
LLCCV1	CCV2	1	1.0011	100.11	65-125	PASS

INTERNAL STANDARD: 160712A

Instrument ID: ICP-02

Sample Name	Type	DF	Yttrium, 1.0 mg/L			
			Reported Conc	%REC	Criteria	Comment
ICSA2	ICSA	1	0.98	98.42	65-125	PASS
ICSA2	ICSA	1	0.87	87.2	65-125	PASS
ICSAB2	ICSAB	1	0.88	88.016	65-125	PASS

SERIAL DILUTION/
POST DIGESTION SPIKE

ASSET Laboratories

ICP-Metals in Water

Dilution Test Summary

Work Order No.: N020244
Test Method: EPA 6010B
Analysis Date: 7/12/2016

Matrix: Groundwater
Batch No.: 58946

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
N020244-001B DT 5X	Iron	ug/L	0	NA	2.150222	100.00%	10

Note: NA - Not applicable

CLIENT: ARCADIS U.S., Inc. - California
Work Order: N020244
Project: PG&E Topock - RMP, RC000753.0801

ANALYTICAL QC SUMMARY REPORT

TestCode: 6010_WDPGEPPB

Sample ID	**N020244-001B-PS**	SampType: **PS**	TestCode: **6010_WDPG**	Units: **ug/L**	Prep Date:	RunNo: **109377**
Client ID:	**ZZZZZZ**	Batch ID: **58946**	TestNo: **EPA 6010B**	**EPA 3010A**	Analysis Date: **7/12/2016**	SeqNo: **2370449**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Iron	111.496	20	100.0	2.150	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
DO	Surrogate Diluted Out		Calculations are based on raw values		

MDL STUDY

METHOD DETECTION LIMIT 2016

Method Name: **Metals by ICP**
Method Number: EPA 200.7/ 6010
Analysis Date(s): 4/1/2016, 4/4/2016
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	0.0021	0.0020	0.0020	0.0020	0.0019	0.0020	0.0020	0.00125	0.00005062	**0.00016**	**0.0025**
Al	237.312	0.0272	0.0288	0.0288	0.0267	0.0269	0.0277	0.0276	0.025	0.00085451	**0.00269**	**0.050**
As	188.983	0.0054	0.0049	0.0037	0.0044	0.0060	0.0041	0.0048	0.005	0.00075065	**0.00236**	**0.010**
B	249.679	0.0735	0.0561	0.0463	0.0445	0.0396	0.0464	0.0398	0.05	0.01193786	**0.03752**	**0.10**
Ba	233.529	0.0007	0.0007	0.0006	0.0006	0.0006	0.0007	0.0007	0.000625	0.00003047	**0.00010**	**0.0025**
Be	313.104	0.0007	0.0006	0.0006	0.0006	0.0006	0.0006	0.0007	0.0005	0.00004386	**0.00014**	**0.0010**
Ca	227.546	0.0967	0.1086	0.0893	0.0864	0.0826	0.0978	0.0988	0.1	0.00880307	**0.02767**	**0.20**
Cd	214.437	0.0006	0.0006	0.0007	0.0006	0.0007	0.0006	0.0006	0.000313	0.00003910	**0.00012**	**0.0025**
Co	228.614	0.0011	0.0011	0.0010	0.0010	0.0009	0.0010	0.0011	0.00125	0.00005473	**0.00017**	**0.0025**
Cr	267.719	0.0004	0.0003	0.0004	0.0004	0.0004	0.0003	0.0004	0.0005	0.00004860	**0.00015**	**0.0010**
Cu	324.753	0.0013	0.0015	0.0015	0.0022	0.0022	0.0016	0.0015	0.0025	0.00034907	**0.00110**	**0.0050**
Fe	273.953	0.0115	0.0117	0.0112	0.0102	0.0105	0.0114	0.0114	0.01	0.00057502	**0.00181**	**0.020**
Mg	279.079	0.0227	0.0231	0.0204	0.0225	0.0221	0.0222	0.0250	0.025	0.00138863	**0.00436**	**0.10**
Mn	257.607	0.0013	0.0013	0.0013	0.0012	0.0012	0.0012	0.0012	0.00125	0.00004429	**0.00014**	**0.010**
Mo	202.03	0.0031	0.0032	0.0031	0.0030	0.0026	0.0029	0.0029	0.0025	0.00018274	**0.00057**	**0.0050**
Ni	231.604	0.0019	0.0020	0.0020	0.0022	0.0022	0.0021	0.0021	0.0025	0.00012429	**0.00039**	**0.0050**
Pb	220.351	0.0049	0.0049	0.0048	0.0044	0.0048	0.0048	0.0050	0.005	0.00018831	**0.00059**	**0.010**
Sb	206.836	0.0035	0.0038	0.0020	0.0034	0.0033	0.0032	0.0046	0.005	0.00076686	**0.00241**	**0.010**
Se	196.025	0.0017	0.0033	0.0025	0.0025	0.0015	0.0034	0.0025	0.005	0.00070697	**0.00222**	**0.010**
Sn	189.927	0.0051	0.0048	0.0052	0.0051	0.0044	0.0045	0.0050	0.005	0.00031282	**0.00098**	**0.010**
Ti	334.943	0.0011	0.0011	0.0011	0.0010	0.0011	0.0010	0.0010	0.00125	0.00005159	**0.00016**	**0.010**
Tl	190.794	0.0067	0.0060	0.0064	0.0047	0.0062	0.0067	0.0062	0.0075	0.00070505	**0.00222**	**0.015**
V	292.404	0.0007	0.0007	0.0007	0.0006	0.0006	0.0007	0.0007	0.00125	0.00006264	**0.00020**	**0.0025**
Zn	206.201	0.0024	0.0026	0.0024	0.0024	0.0024	0.0024	0.0033	0.0025	0.00034911	**0.00110**	**0.010**

EPA 6010B

Metals Technical Batch Review Checklist (ARCUS02)

ASSET LABORATORIES - LAS VEGAS

FIRST LEVEL REVIEW:

QC Batch Number: 58945
ASSET #: N020244

Instrument ID: ICPMS-02
Analyst: CEI
Date Analyzed: 7/12/2016

Method:

- [x] EPA 6010B / 200.7 _Total
- [x] EPA 6020 / 200.8
- [ ] EPA 7470A / 7471A/245.1
- [ ] 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					
Interference Check						
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					
Continuing Calibration						
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 ICVand CCV analysis.	X					
11. Do all calibration blanks (ICB and CCBs) meet criteria? (< PQL)	X					
12 Is low level check twice during 8 hr period or at end within ± 30% of expected value? (ICP/ICPMS only)	X					
Sample Information						
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			
QC Items						
22. IS are within control limits (70-125% for ICPMS).	X					
23. Method blank values are below the PQL .	X					
24. LCS compounds within control limits.	X					
25. MS/MSD, RPD's are within control limits		X				
Raw Data and Miscellaneous Information						
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					
Preliminary Report						
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 Fe in N020245-002C MS & N020244-001C PS 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 7/22/2016 Date: —

2nd Level Reviewer 7/23/2016 Date: —

SAMPLE CALCULATION

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:

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 **N020244-001C** , the concentration ir ug/L is calculated as follows:

Iron , ug/L = 0.14218 * 1 * (25/25) * 1000

Iron , ug/L = 142.18

Reporting results in two significant figures,

Iron , ug/L = 140

% RSD SUMMARY

RSD SUMMARY: 160712A

Instrument ID: ICP-02

Sample Name	Type	DF	Analyte	Reported Conc	RSD	Criteria	Comment
CalBlk	IBLK	1	Fe	0	198.14	15	<PQL
Standard1	ICAL	1	Fe	0.02	1.86	15	PASS
Standard2	ICAL	1	Fe	0.05	1.12	15	PASS
Standard3	ICAL	1	Fe	2	0.28	15	PASS
Standard4	ICAL	1	Fe	5	0.1	15	PASS
Standard5	ICAL	1	Fe	7.5	0.098	15	PASS
Standard6	ICAL	1	Fe	10	0.12	15	PASS
Standard7	ICAL	1	Fe	20	0.14	15	PASS
ICV	ICV	1	Fe	9.99	0.14	15	PASS
ICB	ICB	1	Fe	-0.0066	2.89	15	PASS
LLICV	CCV1	1	Fe	0.014	0.6	20	PASS
ICSA1	ICSA	1	Fe	183.15	0.73	15	PASS
ICSAB1	ICSAB	1	Fe	186.26	0.3	15	PASS
LLICV	CCV1	1	Fe	0.016	1.22	20	PASS
CCV1	CCV	1	Fe	9.63	0.059	15	PASS
CCB1	CCB	1	Fe	-0.0069	10.0099	15	PASS
MB-58945	MBLK	1	Fe	-0.0025	6.18	15	PASS
LCS-58945	LCS	1	Fe	0.097	1.42	15	PASS
CCV2	CCV	1	Fe	9.59	0.15	15	PASS
CCB2	CCB	1	Fe	-0.0072	9.89	15	PASS
N020244-001C	SAMP	1	Fe	0.14	0.61	15	PASS
N020244-001C	SAMP	5	Fe	0.022	1.18	15	PASS
N020244-001C-PS	PS	1	Fe	0.22	0.95	15	PASS
N020244-001C-MS	MS	1	Fe	0.22	0.28	15	PASS
N020244-001C-MSD	MSD	1	Fe	0.22	0.48	15	PASS
N020244-002C	SAMP	1	Fe	0.099	0.34	15	PASS
N020244-003C	SAMP	1	Fe	0.1	1.14	15	PASS
N020244-004C	SAMP	1	Fe	0.058	0.28	15	PASS
N020244-005C	SAMP	1	Fe	0.12	1.027	15	PASS
N020244-006C	SAMP	1	Fe	0.062	0.61	15	PASS
CCV3	CCV	1	Fe	9.62	0.088	15	PASS
CCB3	CCB	1	Fe	-0.0072	7.38	15	PASS
N020244-007C	SAMP	1	Fe	0.091	0.74	15	PASS
N020244-008C	SAMP	1	Fe	0.049	1.16	15	PASS
N020244-009C	SAMP	1	Fe	0.047	1.27	15	PASS
N020245-001C	SAMP	1	Fe	0.071	0.26	15	PASS
N020245-002C	SAMP	1	Fe	0.083	1.13	15	PASS
N020245-002C-MS	MS	1	Fe	0.15	1.085	15	PASS
CCV4	CCV	1	Fe	9.58	0.058	15	PASS
CCB4	CCB	1	Fe	-0.0076	3.72	15	PASS
LLCCV1	CCV2	1	Fe	0.016	1.96	20	PASS
ICSA2	ICSA	1	Fe	174.91	0.65	15	PASS

RSD SUMMARY: 160712A

Instrument ID: ICP-02

Sample Name	Type	DF	Analyte	Reported Conc	RSD	Criteria	Comment
ICSA2	ICSA	1	Fe	176.26	0.39	15	PASS
ICSAB2	ICSAB	1	Fe	179.61	0.12	15	PASS

ANALYSIS RUN LOG

INJECTION LOG: 160712A

Instrument ID: ICP-02

STANDARD CODE	
Standard1	MWST-160608A,0.5<50mL
Standard2	MWST-160608F
Standard3	MWST-160608J,5<50mL
Standard4	MWST-160608J,12.5<50mL
Standard5	MWST-160608J,15<40mL
Standard6	MWST-160608J,25<50mL
Standard7	MWST-160608J
ICV	MWST-160701**B**
CCV	MWST-160608J,25<50mL
ICSA/ICSAB	MWST-160523A/MWST-160608K
Int. Std. (Y)	MSST-160323C
PS Spike	MWST-160201H/MWST-160531G/MWST-160701E

A/S Loc	Sample Name	Type	DF	Acq Date	Acq Time
3	CalBlk	IBLK	1	07/12/2016	03:55:16 AM
2	Standard1	ICAL	1	07/12/2016	04:00:59 AM
10	Standard2	ICAL	1	07/12/2016	04:06:40 AM
11	Standard3	ICAL	1	07/12/2016	04:12:21 AM
12	Standard4	ICAL	1	07/12/2016	04:18:03 AM
13	Standard5	ICAL	1	07/12/2016	04:23:18 AM
7	Standard6	ICAL	1	07/12/2016	04:28:35 AM
8	Standard7	ICAL	1	07/12/2016	04:33:48 AM
14	ICV	ICV	1	07/12/2016	04:40:03 AM
3	ICB	ICB	1	07/12/2016	04:45:17 AM
2	LLICV	CCV1	1	07/12/2016	04:53:43 AM
4	ICSA1	ICSA	1	07/12/2016	04:59:24 AM
5	ICSAB1	ICSAB	1	07/12/2016	05:06:16 AM
2	LLICV	CCV1	1	07/12/2016	05:17:35 AM
122	MB-58946	MBLK	1	07/12/2016	05:23:41 AM
123	LCS-58946	LCS	1	07/12/2016	05:28:54 AM
124	N020244-001B	SAMP	1	07/12/2016	05:34:37 AM
125	N020244-001B	SAMP	5	07/12/2016	05:40:21 AM
126	N020244-001B-PS	PS	1	07/12/2016	05:46:04 AM
127	N020244-001B-MS	MS	1	07/12/2016	05:51:48 AM
128	N020244-001B-MSD	MSD	1	07/12/2016	05:57:31 AM
129	N020244-002B	SAMP	1	07/12/2016	06:03:15 AM
130	N020244-003B	SAMP	1	07/12/2016	06:08:58 AM
131	N020244-004B	SAMP	1	07/12/2016	06:14:42 AM
7	CCV1	CCV	1	07/12/2016	06:20:26 AM
3	CCB1	CCB	1	07/12/2016	06:25:50 AM
132	N020244-005B	SAMP	1	07/12/2016	06:31:01 AM

A/S Loc	Sample Name	Type	DF	Acq Date	Acq Time
133	N020244-006B	SAMP	1	07/12/2016	06:36:44 AM
134	N020244-007B	SAMP	1	07/12/2016	06:42:28 AM
135	N020244-008B	SAMP	1	07/12/2016	06:48:11 AM
136	N020244-009B	SAMP	1	07/12/2016	06:53:55 AM
137	N020245-001B	SAMP	1	07/12/2016	06:59:39 AM
138	N020245-002B	SAMP	1	07/12/2016	07:05:22 AM
139	N020245-002B-MS	MS	1	07/12/2016	07:11:06 AM
140	MB-58945	MBLK	1	07/12/2016	07:16:21 AM
141	LCS-58945	LCS	1	07/12/2016	07:21:33 AM
7	CCV2	CCV	1	07/12/2016	07:27:16 AM
3	CCB2	CCB	1	07/12/2016	07:32:30 AM
142	N020244-001C	SAMP	1	07/12/2016	07:37:41 AM
143	N020244-001C	SAMP	5	07/12/2016	07:43:25 AM
144	N020244-001C-PS	PS	1	07/12/2016	07:49:08 AM
145	N020244-001C-MS	MS	1	07/12/2016	07:54:52 AM
146	N020244-001C-MSD	MSD	1	07/12/2016	08:00:36 AM
147	N020244-002C	SAMP	1	07/12/2016	08:06:20 AM
148	N020244-003C	SAMP	1	07/12/2016	08:12:04 AM
149	N020244-004C	SAMP	1	07/12/2016	08:17:49 AM
150	N020244-005C	SAMP	1	07/12/2016	08:23:33 AM
151	N020244-006C	SAMP	1	07/12/2016	08:29:16 AM
7	CCV3	CCV	1	07/12/2016	08:35:01 AM
3	CCB3	CCB	1	07/12/2016	08:40:14 AM
152	N020244-007C	SAMP	1	07/12/2016	08:45:24 AM
153	N020244-008C	SAMP	1	07/12/2016	08:51:07 AM
154	N020244-009C	SAMP	1	07/12/2016	08:56:50 AM
155	N020245-001C	SAMP	1	07/12/2016	09:02:33 AM
156	N020245-002C	SAMP	1	07/12/2016	09:08:16 AM
157	N020245-002C-MS	MS	1	07/12/2016	09:14:00 AM
7	CCV4	CCV	1	07/12/2016	09:19:44 AM
3	CCB4	CCB	1	07/12/2016	09:24:58 AM
2	LLCCV1	CCV2	1	07/12/2016	10:02:51 AM
4	ICSA2	ICSA	1	07/12/2016	10:08:30 AM
4	ICSA2	ICSA	1	07/12/2016	10:19:59 AM
5	ICSAB2	ICSAB	1	07/12/2016	10:26:51 AM

SAMPLE PREPARATION LOG

ASSET Laboratories

PREP BATCH REPORT

Prep Start Date: **7/8/2016 12:00:00 P**
Prep End Date: **7/8/2016 4:15:00 P**
Prep Batch **58945** Prep Code: **3010_W**

Reviewed/ Date: _____
Initials/ Date: 7/22/2016
Technician: **Claire Ignacio**

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-58945	Aqueous		25	☐	0	0	25	1.000		
MB-58945	Aqueous		25	☐	0	0	25	1.000		
N020244-001C	Groundwater	<2	25	☐	0	0	25	1.000		
N020244-001C-MS	Groundwater	<2	25	☐	0	0	25	1.000		
N020244-001C-MS	Groundwater	<2	25	☐	0	0	25	1.000		
N020244-002C	Groundwater	<2	25	☐	0	0	25	1.000		
N020244-003C	Groundwater	<2	25	☐	0	0	25	1.000		
N020244-004C	Groundwater	<2	25	☐	0	0	25	1.000		
N020244-005C	Groundwater	<2	25	☐	0	0	25	1.000		
N020244-006C	Groundwater	<2	25	☐	0	0	25	1.000		
N020244-007C	Groundwater	<2	25	☐	0	0	25	1.000		
N020244-008C	Groundwater	<2	25	☐	0	0	25	1.000		
N020244-009C	Groundwater	<2	25	☐	0	0	25	1.000		
N020245-001C	Groundwater	<2	25	☐	0	0	25	1.000		

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

Number	Reagent Name
8446	NITRIC ACID
8493	HYDROCHLORIC ACID

Spk ID	Spike Name	SampType	AmtAdd
MWST-160201H	ICP Solution B	LCS,MS,MSD	0.5
MWST-160531G	ICP Solution C	LCS,MS,MSD	0.5
MWST-160701E	ICP Solution A	LCS,MS,MSD	0.5

ASSET Laboratories

PREP BATCH REPORT

Prep Start Date: **7/8/2016 12:00:00 P**
Prep End Date: **7/8/2016 4:15:00 P**
Prep Batch **58945** Prep Code: **3010_W**

Reviewed/ Date: _____
Initials/ Date: _____ 7/22/2016
Technician: **Claire Ignacio**

Prep Factor Units: **mL / mL**

Sample ID	Matrix	pH	SampAmt	3 Replicates	Sol Added	Sol Recov	Fin Vol	factor	Clean Up Code	TURB Check
N020245-002C	Groundwater	<2	25	☐	0	0	25	1.000		
N020245-002C-MS	Groundwater	<2	25	☐	0	0	25	1.000		

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

Number	Reagent Name
8446	NITRIC ACID
8493	HYDROCHLORIC ACID

Spk ID	Spike Name	SampType	AmtAdd
MWST-160201H	ICP Solution B	LCS,MS,MSD	0.5
MWST-160531G	ICP Solution C	LCS,MS,MSD	0.5
MWST-160701E	ICP Solution A	LCS,MS,MSD	0.5

INITIAL CALIBRATION DATA SUMMARY

INITIAL CALIBRATION SUMMARY: 160712A

Instrument ID: ICP-02

Sample ID	Date	Time	Elem	Wavelength	Corrected Intensity	Concentration	Units	R
Iron								
CalBlk	07/12/2016	03:55:16 AM	Fe	273.953	96	0.00	mg/L	
Standard1	07/12/2016	04:00:59 AM	Fe	273.953	547	0.0200	mg/L	
Standard2	07/12/2016	04:06:40 AM	Fe	273.953	1668	0.050	mg/L	
Standard3	07/12/2016	04:12:21 AM	Fe	273.953	72110	2.000	mg/L	
Standard4	07/12/2016	04:18:03 AM	Fe	273.953	186357	5.000	mg/L	
Standard5	07/12/2016	04:23:18 AM	Fe	273.953	260194	7.500	mg/L	
Standard6	07/12/2016	04:28:35 AM	Fe	273.953	364187	10.000	mg/L	
Standard7	07/12/2016	04:33:48 AM	Fe	273.953	731714	20.000	mg/L	0.9999

INITIAL CALIBRATION AND CONTINUING CALIBRATION VERIFICATION SUMMARY

CLIENT: ARCADIS U.S., Inc. - California
Work Order: N020244
Project: PG&E Topock - RMP, RC000753.0801

ANALYTICAL QC SUMMARY REPORT

TestCode: 6010_WPGEPPB

Sample ID **ICV**	SampType: **ICV**	TestCode: **6010_WPGE**	Units: **ug/L**	Prep Date:	RunNo: **109377**
Client ID: **ICV**	Batch ID: **R109377**	TestNo: **EPA 6010B**		Analysis Date: **7/12/2016**	SeqNo: **2370493**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Iron	9994.446	20	10000	0	99.9	90	110				

Sample ID **LLICV**	SampType: **CCV1**	TestCode: **6010_WPGE**	Units: **ug/L**	Prep Date:	RunNo: **109377**
Client ID: **ZZZZZZ**	Batch ID: **R109377**	TestNo: **EPA 6010B**		Analysis Date: **7/12/2016**	SeqNo: **2370498**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Iron	16.352	20	20.00	0	81.8	80	120				

Sample ID **CCV1**	SampType: **CCV**	TestCode: **6010_WPGE**	Units: **ug/L**	Prep Date:	RunNo: **109377**
Client ID: **CCV**	Batch ID: **R109377**	TestNo: **EPA 6010B**		Analysis Date: **7/12/2016**	SeqNo: **2370509**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Iron	9634.280	20	10000	0	96.3	90	110				

Sample ID **CCV2**	SampType: **CCV**	TestCode: **6010_WPGE**	Units: **ug/L**	Prep Date:	RunNo: **109377**
Client ID: **CCV**	Batch ID: **R109377**	TestNo: **EPA 6010B**		Analysis Date: **7/12/2016**	SeqNo: **2370521**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Iron	9585.295	20	10000	0	95.9	90	110				

Sample ID **CCV3**	SampType: **CCV**	TestCode: **6010_WPGE**	Units: **ug/L**	Prep Date:	RunNo: **109377**
Client ID: **CCV**	Batch ID: **R109377**	TestNo: **EPA 6010B**		Analysis Date: **7/12/2016**	SeqNo: **2370533**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Iron	9615.094	20	10000	0	96.2	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: N020244
Project: PG&E Topock - RMP, RC000753.0801

ANALYTICAL QC SUMMARY REPORT

TestCode: 6010_WPGEPPB

Sample ID **CCV4**	SampType: **CCV**	TestCode: **6010_WPGE**	Units: **ug/L**	Prep Date:	RunNo: **109377**
Client ID: **CCV**	Batch ID: **R109377**	TestNo: **EPA 6010B**		Analysis Date: **7/12/2016**	SeqNo: **2370541**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Iron	9583.725	20	10000	0	95.8	90	110				

Sample ID **LLCCV1**	SampType: **CCV2**	TestCode: **6010_WPGE**	Units: **ug/L**	Prep Date:	RunNo: **109377**
Client ID: **ZZZZZZ**	Batch ID: **R109377**	TestNo: **EPA 6010B**		Analysis Date: **7/12/2016**	SeqNo: **2370543**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Iron	16.473	20	20.00	0	82.4	70	130				

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

CLIENT: ARCADIS U.S., Inc. - California
Work Order: N020244
Project: PG&E Topock - RMP, RC000753.0801

ANALYTICAL QC SUMMARY REPORT

TestCode: 6010_WPGEPPB

Sample ID **ICB**	SampType: **ICB**	TestCode: **6010_WPGE**	Units: **ug/L**	Prep Date:	RunNo: **109377**
Client ID: **ICB**	Batch ID: **R109377**	TestNo: **EPA 6010B**		Analysis Date: **7/12/2016**	SeqNo: **2370494**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Iron	-6.583806	20									

Sample ID **CCB1**	SampType: **CCB**	TestCode: **6010_WPGE**	Units: **ug/L**	Prep Date:	RunNo: **109377**
Client ID: **CCB**	Batch ID: **R109377**	TestNo: **EPA 6010B**		Analysis Date: **7/12/2016**	SeqNo: **2370510**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Iron	-6.89617	20									

Sample ID **CCB2**	SampType: **CCB**	TestCode: **6010_WPGE**	Units: **ug/L**	Prep Date:	RunNo: **109377**
Client ID: **CCB**	Batch ID: **R109377**	TestNo: **EPA 6010B**		Analysis Date: **7/12/2016**	SeqNo: **2370522**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Iron	-7.18646	20									

Sample ID **CCB3**	SampType: **CCB**	TestCode: **6010_WPGE**	Units: **ug/L**	Prep Date:	RunNo: **109377**
Client ID: **CCB**	Batch ID: **R109377**	TestNo: **EPA 6010B**		Analysis Date: **7/12/2016**	SeqNo: **2370534**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Iron	-7.233435	20									

Sample ID **CCB4**	SampType: **CCB**	TestCode: **6010_WPGE**	Units: **ug/L**	Prep Date:	RunNo: **109377**
Client ID: **CCB**	Batch ID: **R109377**	TestNo: **EPA 6010B**		Analysis Date: **7/12/2016**	SeqNo: **2370542**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Iron	-7.566048	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
DO	Surrogate Diluted Out		Calculations are based on raw values		

SUMMARY OF INSTRUMENT CHECK (ICSA & ICSAB)

CLIENT: ARCADIS U.S., Inc. - California
Work Order: N020244
Project: PG&E Topock - RMP, RC000753.0801

ANALYTICAL QC SUMMARY REPORT

TestCode: 6010_WPGEPPB

Sample ID **ICSA1** SampType: **ICSA** TestCode: **6010_WPGE** Units: **ug/L** Prep Date: RunNo: **109377**
Client ID: **ICSA** Batch ID: **R109377** TestNo: **EPA 6010B** Analysis Date: **7/12/2016** SeqNo: **2370496**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aluminum	545391.490	50	500000	0	109	80	120				
Calcium	526942.640	500	500000	0	105	80	120				
Iron	183152.449	20	200000	0	91.6	80	120				
Magnesium	486309.524	100	500000	0	97.3	80	120				

Sample ID **ICSAB1** SampType: **ICSAB** TestCode: **6010_WPGE** Units: **ug/L** Prep Date: RunNo: **109377**
Client ID: **ICSAB** Batch ID: **R109377** TestNo: **EPA 6010B** Analysis Date: **7/12/2016** SeqNo: **2370497**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aluminum	557662.338	50	500000	0	112	80	120				
Calcium	535246.792	500	500000	0	107	80	120				
Iron	186264.222	20	200000	0	93.1	80	120				
Magnesium	484938.178	100	500000	0	97.0	80	120				

Sample ID **ICSA2** SampType: **ICSA** TestCode: **6010_WPGE** Units: **ug/L** Prep Date: RunNo: **109377**
Client ID: **ICSA** Batch ID: **R109377** TestNo: **EPA 6010B** Analysis Date: **7/12/2016** SeqNo: **2370545**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aluminum	534180.516	50	500000	0	107	80	120				
Calcium	450101.752	500	500000	0	90.0	80	120				
Iron	176261.004	20	200000	0	88.1	80	120				
Magnesium	425661.178	100	500000	0	85.1	80	120				

Sample ID **ICSAB2** SampType: **ICSAB** TestCode: **6010_WPGE** Units: **ug/L** Prep Date: RunNo: **109377**
Client ID: **ICSAB** Batch ID: **R109377** TestNo: **EPA 6010B** Analysis Date: **7/12/2016** SeqNo: **2370546**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aluminum	544340.743	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: N020244
Project: PG&E Topock - RMP, RC000753.0801

ANALYTICAL QC SUMMARY REPORT

TestCode: 6010_WPGEPPB

Sample ID **ICSAB2**	SampType: **ICSAB**	TestCode: **6010_WPGE**	Units: **ug/L**	Prep Date:	RunNo: **109377**
Client ID: **ICSAB**	Batch ID: **R109377**	TestNo: **EPA 6010B**		Analysis Date: **7/12/2016**	SeqNo: **2370546**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Calcium	457450.229	500	500000	0	91.5	80	120				
Iron	179607.382	20	200000	0	89.8	80	120				
Magnesium	429786.484	100	500000	0	86.0	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
DO	Surrogate Diluted Out		Calculations are based on raw values		

INTERNAL STANDARD SUMMARY

INTERNAL STANDARD: 160712A

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	99.31	65-125	PASS
Standard2	ICAL	1	0.98	97.94	65-125	PASS
Standard3	ICAL	1	1.01	101.04	65-125	PASS
Standard4	ICAL	1	0.99	99.13	65-125	PASS
Standard5	ICAL	1	1.012	101.18	65-125	PASS
Standard6	ICAL	1	0.98	97.6	65-125	PASS
Standard7	ICAL	1	0.95	94.64	65-125	PASS
ICV	ICV	1	0.95	95.067	65-125	PASS
ICB	ICB	1	0.99	99.32	65-125	PASS
LLICV	CCV1	1	1.0002	100.02	65-125	PASS
ICSA1	ICSA	1	0.93	93.12	65-125	PASS
ICSAB1	ICSAB	1	0.92	92.035	65-125	PASS
LLICV	CCV1	1	1.0024	100.24	65-125	PASS
CCV1	CCV	1	0.98	98.32	65-125	PASS
CCB1	CCB	1	1.0025	100.25	65-125	PASS
MB-58945	MBLK	1	1.065	106.5	65-125	PASS
LCS-58945	LCS	1	1.059	105.91	65-125	PASS
CCV2	CCV	1	0.99	99.22	65-125	PASS
CCB2	CCB	1	1.01	101.05	65-125	PASS
N020244-001C	SAMP	1	1.0056	100.56	65-125	PASS
N020244-001C	SAMP	5	1.019	101.86	65-125	PASS
N020244-001C-PS	PS	1	1.038	103.78	65-125	PASS
N020244-001C-MS	MS	1	1.018	101.84	65-125	PASS
N020244-001C-MSD	MSD	1	1.011	101.06	65-125	PASS
N020244-002C	SAMP	1	1.015	101.54	65-125	PASS
N020244-003C	SAMP	1	1.055	105.52	65-125	PASS
N020244-004C	SAMP	1	1.036	103.6	65-125	PASS
N020244-005C	SAMP	1	1.015	101.48	65-125	PASS
N020244-006C	SAMP	1	1.019	101.89	65-125	PASS
CCV3	CCV	1	1	99.69	65-125	PASS
CCB3	CCB	1	1.017	101.73	65-125	PASS
N020244-007C	SAMP	1	1.026	102.58	65-125	PASS
N020244-008C	SAMP	1	1.039	103.88	65-125	PASS
N020244-009C	SAMP	1	1.04	103.95	65-125	PASS
N020245-001C	SAMP	1	1.061	106.09	65-125	PASS
N020245-002C	SAMP	1	1.0051	100.51	65-125	PASS
N020245-002C-MS	MS	1	1.011	101.08	65-125	PASS
CCV4	CCV	1	1.0048	100.48	65-125	PASS
CCB4	CCB	1	1.024	102.39	65-125	PASS
LLCCV1	CCV2	1	1.0011	100.11	65-125	PASS

INTERNAL STANDARD: 160712A

Instrument ID: ICP-02

Sample Name	Type	DF	Yttrium, 1.0 mg/L			
			Reported Conc	%REC	Criteria	Comment
ICSA2	ICSA	1	0.98	98.42	65-125	PASS
ICSA2	ICSA	1	0.87	87.2	65-125	PASS
ICSAB2	ICSAB	1	0.88	88.016	65-125	PASS

SERIAL DILUTION/
POST DIGESTION SPIKE

ASSET Laboratories

ICP-Metals in Water

Dilution Test Summary

Work Order No.: N020244
Test Method: EPA 6010B
Analysis Date: 7/12/2016

Matrix: Groundwater
Batch No.: 58945

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
N020244-001C DT 5X	Iron	ug/L	112.39	NA	142.1784	20.95%	10

Note: NA - Not applicable

CLIENT: ARCADIS U.S., Inc. - California
Work Order: N020244
Project: PG&E Topock - RMP, RC000753.0801

ANALYTICAL QC SUMMARY REPORT

TestCode: 6010_WPGEPPB

Sample ID	**N020244-001C-PS**	SampType: **PS**	TestCode: **6010_WPGE**	Units: **ug/L**	Prep Date:	RunNo: **109377**
Client ID:	**ZZZZZZ**	Batch ID: **58945**	TestNo: **EPA 6010B**	**EPA 3010A**	Analysis Date: **7/12/2016**	SeqNo: **2370525**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Iron	219.626	20	100.0	142.2	77.4	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
DO	Surrogate Diluted Out		Calculations are based on raw values		

MDL STUDY

METHOD DETECTION LIMIT 2016

Method Name: **Metals by ICP**
Method Number: EPA 200.7/ 6010
Analysis Date(s): 4/1/2016, 4/4/2016
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	0.0021	0.0020	0.0020	0.0020	0.0019	0.0020	0.0020	0.00125	0.00005062	**0.00016**	**0.0025**
Al	237.312	0.0272	0.0288	0.0288	0.0267	0.0269	0.0277	0.0276	0.025	0.00085451	**0.00269**	**0.050**
As	188.983	0.0054	0.0049	0.0037	0.0044	0.0060	0.0041	0.0048	0.005	0.00075065	**0.00236**	**0.010**
B	249.679	0.0735	0.0561	0.0463	0.0445	0.0396	0.0464	0.0398	0.05	0.01193786	**0.03752**	**0.10**
Ba	233.529	0.0007	0.0007	0.0006	0.0006	0.0006	0.0007	0.0007	0.000625	0.00003047	**0.00010**	**0.0025**
Be	313.104	0.0007	0.0006	0.0006	0.0006	0.0006	0.0006	0.0007	0.0005	0.00004386	**0.00014**	**0.0010**
Ca	227.546	0.0967	0.1086	0.0893	0.0864	0.0826	0.0978	0.0988	0.1	0.00880307	**0.02767**	**0.20**
Cd	214.437	0.0006	0.0006	0.0007	0.0006	0.0007	0.0006	0.0006	0.000313	0.00003910	**0.00012**	**0.0025**
Co	228.614	0.0011	0.0011	0.0010	0.0010	0.0009	0.0010	0.0011	0.00125	0.00005473	**0.00017**	**0.0025**
Cr	267.719	0.0004	0.0003	0.0004	0.0004	0.0004	0.0003	0.0004	0.0005	0.00004860	**0.00015**	**0.0010**
Cu	324.753	0.0013	0.0015	0.0015	0.0022	0.0022	0.0016	0.0015	0.0025	0.00034907	**0.00110**	**0.0050**
Fe	273.953	0.0115	0.0117	0.0112	0.0102	0.0105	0.0114	0.0114	0.01	0.00057502	**0.00181**	**0.020**
Mg	279.079	0.0227	0.0231	0.0204	0.0225	0.0221	0.0222	0.0250	0.025	0.00138863	**0.00436**	**0.10**
Mn	257.607	0.0013	0.0013	0.0013	0.0012	0.0012	0.0012	0.0012	0.00125	0.00004429	**0.00014**	**0.010**
Mo	202.03	0.0031	0.0032	0.0031	0.0030	0.0026	0.0029	0.0029	0.0025	0.00018274	**0.00057**	**0.0050**
Ni	231.604	0.0019	0.0020	0.0020	0.0022	0.0022	0.0021	0.0021	0.0025	0.00012429	**0.00039**	**0.0050**
Pb	220.351	0.0049	0.0049	0.0048	0.0044	0.0048	0.0048	0.0050	0.005	0.00018831	**0.00059**	**0.010**
Sb	206.836	0.0035	0.0038	0.0020	0.0034	0.0033	0.0032	0.0046	0.005	0.00076686	**0.00241**	**0.010**
Se	196.025	0.0017	0.0033	0.0025	0.0025	0.0015	0.0034	0.0025	0.005	0.00070697	**0.00222**	**0.010**
Sn	189.927	0.0051	0.0048	0.0052	0.0051	0.0044	0.0045	0.0050	0.005	0.00031282	**0.00098**	**0.010**
Ti	334.943	0.0011	0.0011	0.0011	0.0010	0.0011	0.0010	0.0010	0.00125	0.00005159	**0.00016**	**0.010**
Tl	190.794	0.0067	0.0060	0.0064	0.0047	0.0062	0.0067	0.0062	0.0075	0.00070505	**0.00222**	**0.015**
V	292.404	0.0007	0.0007	0.0007	0.0006	0.0006	0.0007	0.0007	0.00125	0.00006264	**0.00020**	**0.0025**
Zn	206.201	0.0024	0.0026	0.0024	0.0024	0.0024	0.0024	0.0033	0.0025	0.00034911	**0.00110**	**0.010**

EPA 6020
Dissolved

Metals Technical Batch Review Checklist (ARCUS02)

ASSET LABORATORIES - LAS VEGAS

FIRST LEVEL REVIEW:

QC Batch Number: 58947
ASSET #: N020244

Instrument ID: ICPMS-02
Analyst: CEI
Date Analyzed: 7/10/2016

Method:

[ ] EPA 6010B / 200.7
[ ] EPA 7470A / 7471A/245.1
[X] 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					
Interference Check						
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					
Continuing Calibration						
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 ICVand CCV analysis.	X					
11. Do all calibration blanks (ICB and CCBs) meet criteria? (< PQL)	X					
12 Is low level check twice during 8 hr period or at end within ± 30% of expected value? (ICP/ICPMS only)	X					
Sample Information						
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			
QC Items						
22. IS are within control limits (70-130% for ICPMS).	X					
23. Method blank values are below the PQL .	X					
24. LCS compounds within control limits.	X					
25. MS/MSD, RPD's are within control limits	X					
Raw Data and Miscellaneous Information						
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					
Preliminary Report						
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:

Ba in N020244-002B MS is over linear range. 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 7/22/2016 Date: —

2nd Level Reviewer 7/23/2016 Date: —

Metals Technical Batch Review Checklist (ARCUS02)

ASSET LABORATORIES - LAS VEGAS

FIRST LEVEL REVIEW:

QC Batch Number: 58947
ASSET #: N020244

Instrument ID: ICPMS-02
Analyst: CEI
Date Analyzed: 7/11/2016

Method:

[ ] EPA 6010B / 200.7
[ ] EPA 7470A / 7471A/245.1
[X] 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					
Interference Check						
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					
Continuing Calibration						
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 ICVand CCV analysis.	X					
11. Do all calibration blanks (ICB and CCBs) meet criteria? (< PQL)	X					
12 Is low level check twice during 8 hr period or at end within ± 30% of expected value? (ICP/ICPMS only)	X					
Sample Information						
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			
QC Items						
22. IS are within control limits (70-130% for ICPMS).	X					
23. Method blank values are below the PQL .			X			
24. LCS compounds within control limits.			X			
25. MS/MSD, RPD's are within control limits	X					
Raw Data and Miscellaneous Information						
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					
Preliminary Report						
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:

For dilution of Ba in N020244-002B MS 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 7/22/2016 Date: —

2nd Level Reviewer 7/23/2016 Date: —

SAMPLE CALCULATION

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:

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 **N020244-001B** , the concentration in ug/L is calculated as follows:

Arsenic , ug/L = 2.38704 * 1 * (25/25)

Arsenic , ug/L = 2.38704

Reporting results in two significant figures,

Arsenic , ug/L = 2.4

% RSD SUMMARY

PERCENT RSD SUMMARY: 160710A

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	0.21	0.99	15	PASS	0.11	12.91	15	PASS
Std2-0.5/5 ppb	ICAL	1	0.59	1.35	15	PASS	0.51	1.41	15	PASS
Std3-5/50 ppb	ICAL	1	5.41	0.15	15	PASS	5.15	0.17	15	PASS
Std4-10/100 ppb	ICAL	1	10.55	0.52	15	PASS	10.31	1.17	15	PASS
Std5-20/200 ppb	ICAL	1	20.99	0.2	15	PASS	20.69	0.6	15	PASS
Std6-40/400 ppb	ICAL	1	41.79	0.61	15	PASS	41.14	1.14	15	PASS
Std7-100/1000 ppb	ICAL	1	100.78	0.9	15	PASS	101.59	0.96	15	PASS
Std8-200/2000 ppb	ICAL	1	199.11	0.67	15	PASS	198.89	0.49	15	PASS
ICV	ICV	1	100.43	0.39	15	PASS	10.17	0.67	15	PASS
ICB	ICB	1	0.03	5.56	15	PASS	<0.000	N/A	15	<PQL
LLICV	CCV1	1	1.2	1.63	20	PASS	0.97	2.2	20	PASS
ICSA1	ICSA	1	<0.000	N/A	15	<PQL	0.25	11.14	15	PASS
ICSAB1	ICSAB	1	21.35	0.39	15	PASS	20.3	1.64	15	PASS
MB-58947	MBLK	1	<0.000	N/A	15	<PQL	<0.000	N/A	15	<PQL
LCS-58947	LCS	1	103.85	0.14	15	PASS	9.85	0.94	15	PASS
N020246-001B	SAMP	1	28.57	0.45	15	PASS	2.61	1.78	15	PASS
N020246-001B	SAMP	5	5.28	0.57	15	PASS	0.55	2.57	15	PASS
N020246-001B-PS	PS	1	124.76	0.5	15	PASS	11.74	0.81	15	PASS
N020246-001B-MS	MS	1	128.22	0.65	15	PASS	12.13	1.68	15	PASS
N020246-001B-MSD	MSD	1	127.95	0.43	15	PASS	12.071	0.082	15	PASS
N020246-002B	SAMP	1	42.68	0.58	15	PASS	1.036	0.84	15	PASS
N020246-003B	SAMP	1	38.83	0.62	15	PASS	0.25	2.33	15	PASS
N020246-004B	SAMP	1	24.62	0.17	15	PASS	1.38	1.23	15	PASS
CCV1	CCV	1	21.034	0.47	15	PASS	20.37	0.12	15	PASS
CCB1	CCB	1	<0.000	N/A	15	<PQL	<0.000	N/A	15	<PQL
N020246-005B	SAMP	1	67.83	0.63	15	PASS	0.54	1.98	15	PASS
N020246-006B	SAMP	1	49.56	0.46	15	PASS	2.54	1.014	15	PASS
N020246-007B	SAMP	1	32.32	0.14	15	PASS	2.93	0.81	15	PASS
N020246-008B	SAMP	1	28.28	0.13	15	PASS	2.52	1.42	15	PASS
N020246-009B	SAMP	1	23.92	0.2	15	PASS	3.14	1.19	15	PASS
N020244-001B	SAMP	1	133.91	0.17	15	PASS	<0.000	N/A	15	<PQL
N020244-002B	SAMP	1	130.054	0.56	15	PASS	<0.000	N/A	15	<PQL
N020244-002B-MS	MS	1	225.13	0.18	15	PASS	9.49	1.018	15	PASS
N020244-003B	SAMP	1	135.6	0.96	15	PASS	<0.000	N/A	15	<PQL
N020244-004B	SAMP	1	130.36	0.75	15	PASS	0.0081	71.94	15	<PQL
CCV2	CCV	1	21.16	0.35	15	PASS	20.48	0.64	15	PASS
CCB2	CCB	1	<0.000	N/A	15	<PQL	<0.000	N/A	15	<PQL
N020244-005B	SAMP	1	127.59	0.29	15	PASS	0.036	22.011	15	<PQL
N020244-006B	SAMP	1	131.9	0.43	15	PASS	0.025	18.29	15	<PQL
N020244-007B	SAMP	1	132.26	0.48	15	PASS	0.018	26.35	15	<PQL

PERCENT RSD SUMMARY: 160710A

Instrument ID: ICPMS-02

Sample Name	Type	DF	137 Ba [3]				52 Cr [2]			
			Conc. [ppb]	RSD	Criteria	Comment	Conc. [ppb]	RSD	Criteria	Comment
N020244-008B	SAMP	1	130.062	0.25	15	PASS	0.026	22.54	15	<PQL
N020244-009B	SAMP	1	130.69	0.26	15	PASS	0.035	20.45	15	<PQL
N020244-010B	SAMP	1	128.11	0.033	15	PASS	<0.000	N/A	15	<PQL
N020244-011B	SAMP	1	138.69	0.67	15	PASS	0.02	6.74	15	PASS
CCV3	CCV	1	21.65	0.55	15	PASS	20.45	0.89	15	PASS
CCB3	CCB	1	<0.000	N/A	15	<PQL	<0.000	N/A	15	<PQL
CCV4	CCV	1	21.5	0.54	15	PASS	20.54	0.94	15	PASS
CCB4	CCB	1	<0.000	N/A	15	<PQL	<0.000	N/A	15	<PQL
CCV5	CCV	1	21.42	0.64	15	PASS	20.49	0.39	15	PASS
CCB5	CCB	1	<0.000	N/A	15	<PQL	<0.000	N/A	15	<PQL
CCV6	CCV	1	21.45	0.45	15	PASS	20.31	1.067	15	PASS
CCB6	CCB	1	<0.000	N/A	15	<PQL	<0.000	N/A	15	<PQL
LLCCV1	CCV2	1	1.24	1.16	20	PASS	1.065	1.89	20	PASS
ICSA2	ICSA	1	<0.000	N/A	15	<PQL	0.23	1.12	15	PASS
ICSAB2	ICSAB	1	19.74	0.29	15	PASS	19.22	1.8	15	PASS

PERCENT RSD SUMMARY: 160710A

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	0.13	15.76	15	<PQL	0.11	2.87	15	PASS
Std2-0.5/5 ppb	ICAL	1	0.54	3.16	15	PASS	0.49	2.84	15	PASS
Std3-5/50 ppb	ICAL	1	5.21	0.82	15	PASS	4.99	0.66	15	PASS
Std4-10/100 ppb	ICAL	1	10.45	0.7	15	PASS	10.12	1.053	15	PASS
Std5-20/200 ppb	ICAL	1	20.79	0.6	15	PASS	20.034	1.31	15	PASS
Std6-40/400 ppb	ICAL	1	40.96	0.61	15	PASS	39.68	0.88	15	PASS
Std7-100/1000 ppb	ICAL	1	102.36	0.97	15	PASS	99.88	0.16	15	PASS
Std8-200/2000 ppb	ICAL	1	198.52	0.9	15	PASS	200.12	0.88	15	PASS
ICV	ICV	1	101.036	0.2	15	PASS	10.073	0.46	15	PASS
ICB	ICB	1	<0.000	N/A	15	<PQL	0.0059	90.15	15	<PQL
LLICV	CCV1	1	0.57	5.34	20	PASS	0.12	10.023	20	PASS
ICSA1	ICSA	1	<0.000	N/A	15	<PQL	0.023	10.52	15	PASS
ICSAB1	ICSAB	1	18.87	1.098	15	PASS	20.49	1.35	15	PASS
MB-58947	MBLK	1	<0.000	N/A	15	<PQL	0.00016	515.62	15	<PQL
LCS-58947	LCS	1	98.41	0.53	15	PASS	9.6	0.73	15	PASS
N020246-001B	SAMP	1	1.015	4.46	15	PASS	26.6	0.28	15	PASS
N020246-001B	SAMP	5	0.2	2.66	15	PASS	5.46	0.7	15	PASS
N020246-001B-PS	PS	1	94.074	0.52	15	PASS	34.92	1.73	15	PASS
N020246-001B-MS	MS	1	96.31	0.83	15	PASS	36.47	0.29	15	PASS
N020246-001B-MSD	MSD	1	96.49	0.39	15	PASS	36.43	0.37	15	PASS
N020246-002B	SAMP	1	0.36	7.59	15	PASS	16.028	0.34	15	PASS
N020246-003B	SAMP	1	8.88	0.65	15	PASS	11.54	1.21	15	PASS
N020246-004B	SAMP	1	0.56	5.37	15	PASS	182.28	0.51	15	PASS
CCV1	CCV	1	20.63	1.32	15	PASS	19.91	1.14	15	PASS
CCB1	CCB	1	<0.000	N/A	15	<PQL	0.005	46.42	15	<PQL
N020246-005B	SAMP	1	0.078	11.091	15	PASS	8.36	2.26	15	PASS
N020246-006B	SAMP	1	<0.000	N/A	15	<PQL	28.73	0.46	15	PASS
N020246-007B	SAMP	1	<0.000	N/A	15	<PQL	0.72	1.64	15	PASS
N020246-008B	SAMP	1	<0.000	N/A	15	<PQL	25.69	0.38	15	PASS
N020246-009B	SAMP	1	<0.000	N/A	15	<PQL	33.22	0.77	15	PASS
N020244-001B	SAMP	1	0.42	6.78	15	PASS	2.39	2.42	15	PASS
N020244-002B	SAMP	1	0.39	9.72	15	PASS	2.3	1.099	15	PASS
N020244-002B-MS	MS	1	94.44	0.54	15	PASS	12.046	0.47	15	PASS
N020244-003B	SAMP	1	0.66	6.28	15	PASS	2.38	1.85	15	PASS
N020244-004B	SAMP	1	0.77	4.096	15	PASS	2.3	3.52	15	PASS
CCV2	CCV	1	20.62	0.81	15	PASS	19.92	0.39	15	PASS
CCB2	CCB	1	<0.000	N/A	15	<PQL	<0.000	N/A	15	<PQL
N020244-005B	SAMP	1	1.17	2.11	15	PASS	2.2	0.91	15	PASS
N020244-006B	SAMP	1	0.88	1.58	15	PASS	2.38	4.32	15	PASS
N020244-007B	SAMP	1	0.62	7.99	15	PASS	2.34	1.78	15	PASS

PERCENT RSD SUMMARY: 160710A

Instrument ID: ICPMS-02

Sample Name	Type	DF	55 Mn [2]				75 As [2]			
			Conc. [ppb]	RSD	Criteria	Comment	Conc. [ppb]	RSD	Criteria	Comment
N020244-008B	SAMP	1	0.21	7.048	15	PASS	2.25	2.37	15	PASS
N020244-009B	SAMP	1	2.49	1.96	15	PASS	2.25	1.12	15	PASS
N020244-010B	SAMP	1	10.34	0.41	15	PASS	2.18	0.46	15	PASS
N020244-011B	SAMP	1	4.46	0.61	15	PASS	2.24	1.35	15	PASS
CCV3	CCV	1	21.11	1.07	15	PASS	19.84	1.68	15	PASS
CCB3	CCB	1	<0.000	N/A	15	<PQL	<0.000	N/A	15	<PQL
CCV4	CCV	1	20.85	1.5	15	PASS	19.95	0.76	15	PASS
CCB4	CCB	1	<0.000	N/A	15	<PQL	<0.000	N/A	15	<PQL
CCV5	CCV	1	21.025	0.15	15	PASS	19.57	0.68	15	PASS
CCB5	CCB	1	<0.000	N/A	15	<PQL	0.0034	202.7	15	<PQL
CCV6	CCV	1	20.72	0.68	15	PASS	19.64	1.35	15	PASS
CCB6	CCB	1	<0.000	N/A	15	<PQL	0.0057	42.57	15	<PQL
LLCCV1	CCV2	1	0.59	4.22	20	PASS	0.13	18.9	20	PASS
ICSA2	ICSA	1	<0.000	N/A	15	<PQL	0.013	64.9	15	<PQL
ICSAB2	ICSAB	1	17.37	1.31	15	PASS	18.96	0.4	15	PASS

PERCENT RSD SUMMARY: 160710A

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	0.091	9.42	15	PASS	0.1	2.49	15	PASS
Std2-0.5/5 ppb	ICAL	1	0.47	8.68	15	PASS	0.51	2.21	15	PASS
Std3-5/50 ppb	ICAL	1	4.95	1.13	15	PASS	5.063	1.36	15	PASS
Std4-10/100 ppb	ICAL	1	10.28	1.45	15	PASS	10.25	0.42	15	PASS
Std5-20/200 ppb	ICAL	1	19.85	0.99	15	PASS	20.51	0.88	15	PASS
Std6-40/400 ppb	ICAL	1	39.86	1.48	15	PASS	40.81	0.9	15	PASS
Std7-100/1000 ppb	ICAL	1	99.81	0.95	15	PASS	103.63	0.21	15	PASS
Std8-200/2000 ppb	ICAL	1	200.12	0.54	15	PASS	197.95	1.31	15	PASS
ICV	ICV	1	9.85	1.87	15	PASS	10.34	1.24	15	PASS
ICB	ICB	1	0.013	75.57	15	<PQL	0.079	7.13	15	PASS
LLICV	CCV1	1	0.48	11.75	20	PASS	0.5	1.91	20	PASS
ICSA1	ICSA	1	0.031	14.52	15	PASS	0.057	9.53	15	PASS
ICSAB1	ICSAB	1	17.81	4.24	15	PASS	23.75	0.33	15	PASS
MB-58947	MBLK	1	0.0048	160.56	15	<PQL	0.036	13.41	15	PASS
LCS-58947	LCS	1	8.87	2.31	15	PASS	10.08	0.93	15	PASS
N020246-001B	SAMP	1	0.33	13.88	15	PASS	19.082	0.82	15	PASS
N020246-001B	SAMP	5	0.071	26.31	15	<PQL	3.67	1.64	15	PASS
N020246-001B-PS	PS	1	8.92	0.47	15	PASS	29.36	0.56	15	PASS
N020246-001B-MS	MS	1	8.84	2.83	15	PASS	30.72	0.43	15	PASS
N020246-001B-MSD	MSD	1	9.11	2.53	15	PASS	30.74	0.16	15	PASS
N020246-002B	SAMP	1	0.61	3.66	15	PASS	10.68	0.82	15	PASS
N020246-003B	SAMP	1	0.45	12.78	15	PASS	15.24	0.9	15	PASS
N020246-004B	SAMP	1	0.54	14.69	15	PASS	77.78	0.37	15	PASS
CCV1	CCV	1	19.96	1.92	15	PASS	20.45	0.83	15	PASS
CCB1	CCB	1	0.0069	120.41	15	<PQL	0.054	5.097	15	PASS
N020246-005B	SAMP	1	0.29	25.089	15	<PQL	8.72	0.75	15	PASS
N020246-006B	SAMP	1	0.52	7.64	15	PASS	9.3	0.61	15	PASS
N020246-007B	SAMP	1	0.99	13.1	15	PASS	0.4	2.45	15	PASS
N020246-008B	SAMP	1	0.43	7.4	15	PASS	18.75	0.42	15	PASS
N020246-009B	SAMP	1	0.31	6.32	15	PASS	27.61	0.57	15	PASS
N020244-001B	SAMP	1	1.65	7.59	15	PASS	5.57	2.078	15	PASS
N020244-002B	SAMP	1	1.59	7.27	15	PASS	5.34	0.23	15	PASS
N020244-002B-MS	MS	1	10.16	0.35	15	PASS	16.47	1.28	15	PASS
N020244-003B	SAMP	1	1.59	2.85	15	PASS	5.66	0.65	15	PASS
N020244-004B	SAMP	1	1.59	7.71	15	PASS	5.3	0.68	15	PASS
CCV2	CCV	1	20.11	2.19	15	PASS	20.36	0.83	15	PASS
CCB2	CCB	1	0.008	104.45	15	<PQL	0.035	15.79	15	<PQL
N020244-005B	SAMP	1	1.42	5.7	15	PASS	5.23	0.44	15	PASS
N020244-006B	SAMP	1	1.47	11.091	15	PASS	5.42	1.47	15	PASS
N020244-007B	SAMP	1	1.63	8.046	15	PASS	5.47	1.0015	15	PASS

PERCENT RSD SUMMARY: 160710A

Instrument ID: ICPMS-02

Sample Name	Type	DF	78 Se [1]				95 Mo [2]			
			Conc. [ppb]	RSD	Criteria	Comment	Conc. [ppb]	RSD	Criteria	Comment
N020244-008B	SAMP	1	1.55	5.94	15	PASS	5.34	0.91	15	PASS
N020244-009B	SAMP	1	1.46	5.65	15	PASS	5.38	1.76	15	PASS
N020244-010B	SAMP	1	1.16	6.68	15	PASS	5.31	1.52	15	PASS
N020244-011B	SAMP	1	1.33	7.82	15	PASS	5.39	1.41	15	PASS
CCV3	CCV	1	18.58	1.069	15	PASS	20.15	0.75	15	PASS
CCB3	CCB	1	0.0067	120.15	15	<PQL	0.0059	76.26	15	<PQL
CCV4	CCV	1	18.74	3.58	15	PASS	20.18	1.017	15	PASS
CCB4	CCB	1	0.0028	257.36	15	<PQL	0.0047	50.13	15	<PQL
CCV5	CCV	1	18.59	0.73	15	PASS	20.23	0.71	15	PASS
CCB5	CCB	1	0.0014	169.57	15	<PQL	0.012	21.11	15	<PQL
CCV6	CCV	1	18.68	2.13	15	PASS	19.86	1.17	15	PASS
CCB6	CCB	1	<0.000	0	15	PASS	0.013	20.94	15	<PQL
LLCCV1	CCV2	1	0.55	7.78	20	PASS	0.55	1.64	20	PASS
ICSA2	ICSA	1	0.018	46.93	15	<PQL	0.048	7.92	15	PASS
ICSAB2	ICSAB	1	16.95	2.34	15	PASS	21.64	1.21	15	PASS

PERCENT RSD SUMMARY: 160711A

Instrument ID: ICPMS-02

Sample Name	Type	DF	137 Ba [3]			
			Conc. [ppb]	RSD	Criteria	Comment
Cal Blank	IBLK	1	0	N/A	15	<PQL
Std1-0.1/1 ppb	ICAL	1	0.13	3.5	15	PASS
Std2-0.5/5 ppb	ICAL	1	0.55	1.36	15	PASS
Std3-5/50 ppb	ICAL	1	5.25	0.45	15	PASS
Std4-10/100 ppb	ICAL	1	10.46	0.26	15	PASS
Std5-20/200 ppb	ICAL	1	20.8	0.52	15	PASS
Std6-40/400 ppb	ICAL	1	41.4	0.47	15	PASS
Std7-100/1000 ppb	ICAL	1	101.15	0.43	15	PASS
Std8-200/2000 ppb	ICAL	1	199.036	0.71	15	PASS
ICV	ICV	1	100.97	0.43	15	PASS
ICB	ICB	1	0.012	10.18	15	PASS
LLICV	CCV1	1	1.13	1.89	20	PASS
ICSA1	ICSA	1	<0.000	N/A	15	<PQL
ICSAB1	ICSAB	1	19.3	0.27	15	PASS
CCV1	CCV	1	20.92	1.19	15	PASS
CCB1	CCB	1	0.0064	20.38	15	<PQL
CCV2	CCV	1	20.72	0.14	15	PASS
CCB2	CCB	1	0.0076	14.98	15	PASS
CCV3	CCV	1	20.94	0.35	15	PASS
CCB3	CCB	1	0.0081	22.56	15	<PQL
N020244-002B	SAMP	5	27.22	0.23	15	PASS
N020244-002B-MS	MS	5	47.93	0.24	15	PASS
CCV4	CCV	1	20.83	0.44	15	PASS
CCB4	CCB	1	0.0086	34.34	15	<PQL
LLCCV1	CCV2	1	1.21	1	20	PASS
ICSA2	ICSA	1	<0.000	N/A	15	<PQL
ICSAB2	ICSAB	1	19.53	0.47	15	PASS

ANALYSIS RUN LOG

INJECTION LOG: 160710A

Instrument ID: ICPMS-02

Data File	Sample Name	Type	DF	Acq. Date-Time
A0710001.D	RINSE	RINSE	1	07/10/16 10:38 AM
A0710002.D	Cal Blank	IBLK	1	07/10/16 10:44 AM
A0710003.D	Std1-0.1/1 ppb	ICAL	1	07/10/16 10:49 AM
A0710004.D	Std2-0.5/5 ppb	ICAL	1	07/10/16 10:55 AM
A0710005.D	Std3-5/50 ppb	ICAL	1	07/10/16 11:00 AM
A0710006.D	Std4-10/100 ppb	ICAL	1	07/10/16 11:06 AM
A0710007.D	Std5-20/200 ppb	ICAL	1	07/10/16 11:11 AM
A0710008.D	Std6-40/400 ppb	ICAL	1	07/10/16 11:17 AM
A0710009.D	Std7-100/1000 ppb	ICAL	1	07/10/16 11:23 AM
A0710010.D	Std8-200/2000 ppb	ICAL	1	07/10/16 11:28 AM
A0710011.D	ICV	ICV	1	07/10/16 11:34 AM
A0710012.D	ICB	ICB	1	07/10/16 11:39 AM
A0710013.D	LLICV	CCV1	1	07/10/16 11:44 AM
A0710014.D	ICSA1	ICSA	1	07/10/16 11:50 AM
A0710015.D	ICSAB1	ICSAB	1	07/10/16 11:55 AM
A0710016.D	MB-58947	MBLK	1	07/10/16 12:01 PM
A0710017.D	LCS-58947	LCS	1	07/10/16 12:07 PM
A0710018.D	N020246-001B	SAMP	1	07/10/16 12:12 PM
A0710019.D	N020246-001B	SAMP	5	07/10/16 12:18 PM
A0710020.D	N020246-001B-PS	PS	1	07/10/16 12:23 PM
A0710021.D	N020246-001B-MS	MS	1	07/10/16 12:29 PM
A0710022.D	N020246-001B-MSD	MSD	1	07/10/16 12:34 PM
A0710023.D	N020246-002B	SAMP	1	07/10/16 12:40 PM
A0710024.D	N020246-003B	SAMP	1	07/10/16 12:45 PM
A0710025.D	N020246-004B	SAMP	1	07/10/16 12:51 PM
A0710026.D	CCV1	CCV	1	07/10/16 12:56 PM
A0710027.D	CCB1	CCB	1	07/10/16 1:02 PM
A0710028.D	N020246-005B	SAMP	1	07/10/16 1:07 PM
A0710029.D	N020246-006B	SAMP	1	07/10/16 1:13 PM
A0710030.D	N020246-007B	SAMP	1	07/10/16 1:18 PM
A0710031.D	N020246-008B	SAMP	1	07/10/16 1:24 PM
A0710032.D	N020246-009B	SAMP	1	07/10/16 1:29 PM
A0710033.D	N020244-001B	SAMP	1	07/10/16 1:35 PM
A0710034.D	N020244-002B	SAMP	1	07/10/16 1:40 PM
A0710035.D	N020244-002B-MS	MS	1	07/10/16 1:46 PM
A0710036.D	N020244-003B	SAMP	1	07/10/16 1:51 PM
A0710037.D	N020244-004B	SAMP	1	07/10/16 1:57 PM
A0710038.D	CCV2	CCV	1	07/10/16 2:02 PM
A0710039.D	CCB2	CCB	1	07/10/16 2:08 PM
A0710040.D	N020244-005B	SAMP	1	07/10/16 2:13 PM
A0710041.D	N020244-006B	SAMP	1	07/10/16 2:19 PM
A0710042.D	N020244-007B	SAMP	1	07/10/16 2:24 PM

INJECTION LOG: 160710A

Instrument ID: ICPMS-02

Data File	Sample Name	Type	DF	Acq. Date-Time
A0710043.D	N020244-008B	SAMP	1	07/10/16 2:30 PM
A0710044.D	N020244-009B	SAMP	1	07/10/16 2:35 PM
A0710045.D	N020244-010B	SAMP	1	07/10/16 2:41 PM
A0710046.D	N020244-011B	SAMP	1	07/10/16 2:46 PM
A0710047.D	MB-58948	MBLK	1	07/10/16 2:52 PM
A0710048.D	LCS-58948	LCS	1	07/10/16 2:57 PM
A0710049.D	N020247-001B	SAMP	1	07/10/16 3:03 PM
A0710050.D	CCV3	CCV	1	07/10/16 3:07 PM
A0710051.D	CCB3	CCB	1	07/10/16 3:14 PM
A0710052.D	N020247-001B	SAMP	5	07/10/16 3:19 PM
A0710053.D	N020247-001B-PS	PS	1	07/10/16 3:25 PM
A0710054.D	N020247-001B-MS	MS	1	07/10/16 3:30 PM
A0710055.D	N020247-001B-MSD	MSD	1	07/10/16 3:36 PM
A0710056.D	N020247-002B	SAMP	1	07/10/16 3:41 PM
A0710057.D	N020247-003B	SAMP	1	07/10/16 3:47 PM
A0710058.D	N020247-004B	SAMP	1	07/10/16 3:52 PM
A0710059.D	N020247-005B	SAMP	1	07/10/16 3:58 PM
A0710060.D	N020247-006B	SAMP	1	07/10/16 4:03 PM
A0710061.D	N020247-007B	SAMP	1	07/10/16 4:09 PM
A0710062.D	CCV4	CCV	1	07/10/16 4:12 PM
A0710063.D	CCB4	CCB	1	07/10/16 4:20 PM
A0710064.D	N020247-008B	SAMP	1	07/10/16 4:25 PM
A0710065.D	N020247-010B	SAMP	1	07/10/16 4:31 PM
A0710066.D	N020247-011B	SAMP	1	07/10/16 4:36 PM
A0710067.D	N020247-012B	SAMP	1	07/10/16 4:42 PM
A0710068.D	N020247-012B-MS	MS	1	07/10/16 4:47 PM
A0710069.D	N020247-013B	SAMP	1	07/10/16 4:53 PM
A0710070.D	N020247-014B	SAMP	1	07/10/16 4:58 PM
A0710071.D	N020247-015B	SAMP	1	07/10/16 5:04 PM
A0710072.D	N020248-001B	SAMP	1	07/10/16 5:09 PM
A0710073.D	N020248-002B	SAMP	1	07/10/16 5:15 PM
A0710074.D	CCV5	CCV	1	07/10/16 5:20 PM
A0710075.D	CCB5	CCB	1	07/10/16 5:26 PM
A0710076.D	N020247-001B-MSD	MSD	1	07/10/16 5:31 PM
A0710077.D	N020248-003B	SAMP	1	07/10/16 5:35 PM
A0710078.D	N020248-004B	SAMP	1	07/10/16 5:42 PM
A0710079.D	N020248-005B	SAMP	1	07/10/16 5:48 PM
A0710080.D	CCV6	CCV	1	07/10/16 5:58 PM
A0710081.D	CCB6	CCB	1	07/10/16 5:59 PM
A0710082.D	LLCCV1	CCV2	1	07/10/16 6:04 PM
A0710083.D	ICSA2	ICSA	1	07/10/16 6:10 PM
A0710084.D	ICSAB2	ICSAB	1	07/10/16 6:14 PM

INJECTION LOG: 160710A

Instrument ID: ICPMS-02

Data File	Sample Name	Type	DF	Acq. Date-Time
A0710085.D	RINSE	RINSE	1	07/10/16 6:21 PM
A0710086.D	RINSE	RINSE	1	07/10/16 6:26 PM

INJECTION LOG: 160711A

Instrument ID: ICPMS-02

Data File	Sample Name	Type	DF	Acq. Date-Time
A0711001.D	RINSE	RINSE	1	07/11/16 10:14 AM
A0711002.D	Cal Blank	IBLK	1	07/11/16 10:20 AM
A0711003.D	Std1-0.1/1 ppb	ICAL	1	07/11/16 10:25 AM
A0711004.D	Std2-0.5/5 ppb	ICAL	1	07/11/16 10:31 AM
A0711005.D	Std3-5/50 ppb	ICAL	1	07/11/16 10:36 AM
A0711006.D	Std4-10/100 ppb	ICAL	1	07/11/16 10:42 AM
A0711007.D	Std5-20/200 ppb	ICAL	1	07/11/16 10:47 AM
A0711008.D	Std6-40/400 ppb	ICAL	1	07/11/16 10:53 AM
A0711009.D	Std7-100/1000 ppb	ICAL	1	07/11/16 10:57 AM
A0711010.D	Std8-200/2000 ppb	ICAL	1	07/11/16 11:03 AM
A0711011.D	ICV	ICV	1	07/11/16 11:08 AM
A0711012.D	ICB	ICB	1	07/11/16 11:14 AM
A0711013.D	LLICV	CCV1	1	07/11/16 11:22 AM
A0711014.D	ICSA1	ICSA	1	07/11/16 11:28 AM
A0711015.D	ICSAB1	ICSAB	1	07/11/16 11:33 AM
A0711016.D	MB-58959	MBLK	1	07/11/16 11:39 AM
A0711017.D	LCS-58959	LCS	1	07/11/16 11:44 AM
A0711018.D	N020245-001B	SAMP	1	07/11/16 11:50 AM
A0711019.D	N020245-001B	SAMP	5	07/11/16 11:55 AM
A0711020.D	N020245-001B-PS	PS	1	07/11/16 12:01 PM
A0711021.D	N020245-001B-MS	MS	1	07/11/16 12:06 PM
A0711022.D	N020245-001B-MSD	MSD	1	07/11/16 12:12 PM
A0711023.D	N020245-002B	SAMP	1	07/11/16 12:17 PM
A0711024.D	N020252-001B	SAMP	1	07/11/16 12:23 PM
A0711025.D	N020252-002B	SAMP	1	07/11/16 12:28 PM
A0711026.D	CCV1	CCV	1	07/11/16 12:34 PM
A0711027.D	CCB1	CCB	1	07/11/16 12:39 PM
A0711028.D	N020252-003B	SAMP	1	07/11/16 12:45 PM
A0711029.D	N020252-005B	SAMP	1	07/11/16 12:51 PM
A0711030.D	N020253-001B	SAMP	1	07/11/16 12:56 PM
A0711031.D	N020253-002B	SAMP	1	07/11/16 1:02 PM
A0711032.D	N020253-003B	SAMP	1	07/11/16 1:07 PM
A0711033.D	N020253-004B	SAMP	1	07/11/16 1:13 PM
A0711034.D	N020253-005B	SAMP	1	07/11/16 1:18 PM
A0711035.D	N020253-005B-MS	MS	1	07/11/16 1:24 PM
A0711036.D	N020253-006B	SAMP	1	07/11/16 1:29 PM
A0711037.D	N020253-008B	SAMP	1	07/11/16 1:35 PM
A0711038.D	CCV2	CCV	1	07/11/16 1:40 PM
A0711039.D	CCB2	CCB	1	07/11/16 1:46 PM
A0711040.D	N020253-009B	SAMP	1	07/11/16 1:51 PM
A0711041.D	N020253-010B	SAMP	1	07/11/16 1:57 PM
A0711042.D	N020253-011B	SAMP	1	07/11/16 2:02 PM

INJECTION LOG: 160711A

Instrument ID: ICPMS-02

Data File	Sample Name	Type	DF	Acq. Date-Time
A0711043.D	N020253-012B	SAMP	1	07/11/16 2:08 PM
A0711044.D	N020253-013B	SAMP	1	07/11/16 2:14 PM
A0711045.D	N020245-001B	SAMP	25	07/11/16 2:20 PM
A0711046.D	N020245-001B-PS	PS	5	07/11/16 2:25 PM
A0711047.D	N020245-001B-MS	MS	5	07/11/16 2:30 PM
A0711048.D	N020245-001B-MSD	MSD	5	07/11/16 2:36 PM
A0711049.D	N020253-002B	SAMP	1	07/11/16 2:41 PM
A0711050.D	CCV3	CCV	1	07/11/16 2:47 PM
A0711051.D	CCB3	CCB	1	07/11/16 2:52 PM
A0711052.D	MB-58959	MBLK	1	07/11/16 2:58 PM
A0711053.D	N020245-001B-MS	MS	1	07/11/16 3:03 PM
A0711054.D	N020245-001B-MSD	MSD	1	07/11/16 3:09 PM
A0711055.D	N020244-002B	SAMP	5	07/11/16 3:20 PM
A0711056.D	N020244-002B-MS	MS	5	07/11/16 3:25 PM
A0711057.D	CCV4	CCV	1	07/11/16 3:31 PM
A0711058.D	CCB4	CCB	1	07/11/16 3:37 PM
A0711059.D	LLCCV1	CCV2	1	07/11/16 3:42 PM
A0711060.D	ICSA2	ICSA	1	07/11/16 3:48 PM
A0711061.D	ICSAB2	ICSAB	1	07/11/16 3:53 PM

SAMPLE PREPARATION LOG

ASSET Laboratories

PREP BATCH REPORT

Prep Start Date: **7/8/2016 2:00:00 P**
Prep End Date: **7/8/2016 7:00:00 P**
Reviewed/ Date: _____
Initials/ Date: _____ 7/22/2016
Prep Batch **58947** Prep Code: **3010_W_MSDI** Technician **Claire Ignacio**

Prep Factor Units	Temp. (°C):	Location:
mL / mL	**94.5**	**02-1**

Sample ID	Matrix	pH	SampAmt	3 Replicates	Sol Added	Sol Recov	Fin Vol	factor	Clean Up Code	TURB Check
LCS-58947	Aqueous		25	☐	0	0	25	1.000		
MB-58947	Aqueous		25	☐	0	0	25	1.000		
N020244-001B	Groundwater	<2	25	☐	0	0	25	1.000		
N020244-002B	Groundwater	<2	25	☐	0	0	25	1.000		
N020244-002B-MS	Groundwater	<2	25	☐	0	0	25	1.000		
N020244-003B	Groundwater	<2	25	☐	0	0	25	1.000		
N020244-004B	Groundwater	<2	25	☐	0	0	25	1.000		
N020244-005B	Groundwater	<2	25	☐	0	0	25	1.000		
N020244-006B	Groundwater	<2	25	☐	0	0	25	1.000		
N020244-007B	Groundwater	<2	25	☐	0	0	25	1.000		
N020244-008B	Groundwater	<2	25	☐	0	0	25	1.000		
N020244-009B	Groundwater	<2	25	☐	0	0	25	1.000		
N020244-010B	Groundwater	<2	25	☐	0	0	25	1.000		
N020244-011B	Groundwater	<2	25	☐	0	0	25	1.000		

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

Number	Reagent Name
8441	HYDROCHLORIC ACID
8442	NITRIC ACID

Spk ID	Spike Name	SampType	AmtAdd
2MWST-160201	ICV/MS/MSD/LCS/LCSD Solution B		0.25
2MWST-160606	ICV/MS/MSD/LCS/LCSD Solution A		0.25
2MWST-160606	ICV/MS/MSD/LCS/LCSD Solution C		0.25
2MWST-160606	ICV/MS/MSD/LCS/LCSD Solution D		0.25

ASSET Laboratories

PREP BATCH REPORT

Prep Start Date: **7/8/2016 2:00:00 P**
Prep End Date: **7/8/2016 7:00:00 P**
Prep Batch **58947** Prep Code: **3010_W_MSDI**

Reviewed/ Date: _____
Initials/ Date: 7/22/2016
Technician **Claire Ignacio**

Prep Factor Units	Temp. (°C):	Location:
mL / mL	**94.5**	**02-1**

Sample ID	Matrix	pH	SampAmt	3 Replicates	Sol Added	Sol Recov	Fin Vol	factor	Clean Up Code	TURB Check
N020246-001B	Groundwater	<2	25	☐	0	0	25	1.000		
N020246-001B-MS	Groundwater	<2	25	☐	0	0	25	1.000		
N020246-001B-MS	Groundwater	<2	25	☐	0	0	25	1.000		
N020246-002B	Groundwater	<2	25	☐	0	0	25	1.000		
N020246-003B	Groundwater	<2	25	☐	0	0	25	1.000		
N020246-004B	Groundwater	<2	25	☐	0	0	25	1.000		
N020246-005B	Groundwater	<2	25	☐	0	0	25	1.000		
N020246-006B	Groundwater	<2	25	☐	0	0	25	1.000		
N020246-007B	Groundwater	<2	25	☐	0	0	25	1.000		
N020246-008B	Groundwater	<2	25	☐	0	0	25	1.000		
N020246-009B	Groundwater	<2	25	☐	0	0	25	1.000		

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

Number	Reagent Name
8441	HYDROCHLORIC ACID
8442	NITRIC ACID

Spk ID	Spike Name	SampType	AmtAdd
2MWST-160201	ICV/MS/MSD/LCS/LCSD Solution B		0.25
2MWST-160606	ICV/MS/MSD/LCS/LCSD Solution A		0.25
2MWST-160606	ICV/MS/MSD/LCS/LCSD Solution C		0.25
2MWST-160606	ICV/MS/MSD/LCS/LCSD Solution D		0.25

INSTRUMENT TUNING CHECK

QC Tune Report

Data File: C:\ICPMH\1\7500\QCTUNE.D
Date Acquired: 10 Jul 2016 10:28:26 am
Operator:
Misc Info:
Vial Number: 0
Current Method: C:\ICPMH\1\METHODS\TuneCHK.m

Minimum Response(CPS)

Element	Actual	Required	Flag
9 Be	139798.00	0.00	
24 Mg	676142.00	0.00	
25 Mg	90801.20	0.00	
26 Mg	107301.00	0.00	
59 Co	1315700.00	0.00	
115 In	2331360.00	0.00	
206 Pb	662279.00	0.00	
207 Pb	581465.00	0.00	
208 Pb	1434880.00	0.00	

RSD (%)

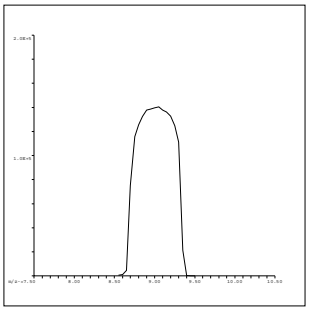
Element	Actual	Required	Flag
9 Be	1.11	5.00	
24 Mg	0.45	5.00	
25 Mg	0.61	5.00	
26 Mg	0.69	5.00	
59 Co	0.69	5.00	
115 In	0.75	5.00	
206 Pb	1.23	5.00	
207 Pb	0.74	5.00	
208 Pb	0.69	5.00	

Ion Ratio

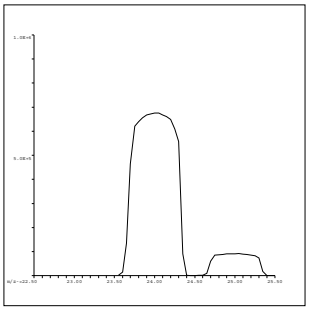
Element	Actual	Required	Flag
9 Be			
24 Mg			
25 Mg			
26 Mg			
59 Co			
115 In			
206 Pb			
207 Pb			
208 Pb			

Maximum Bkg. Count(CPS)

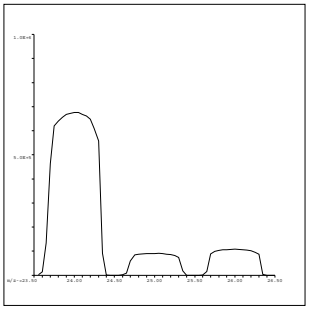
Element	Actual	Required	Flag



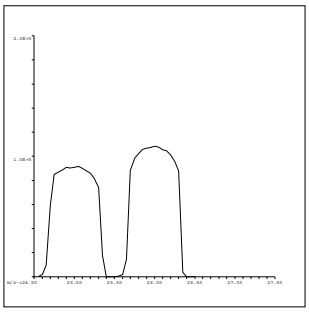
9 Be
Mass Calib.
Actual: 9.00
Required: 8.90-9.10
Flag:
Peak Width
Actual: 0.65
Required: 0.75
Flag:



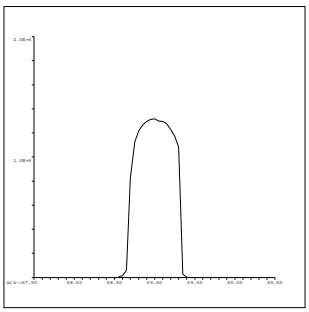
24 Mg
Mass Calib.
Actual: 24.00
Required: 23.90-24.10
Flag:
Peak Width
Actual: 0.70
Required: 0.75
Flag:



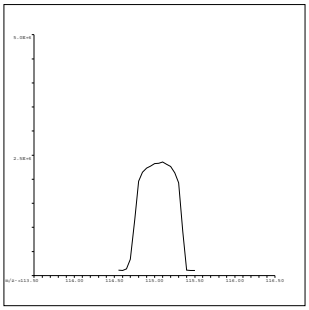
25 Mg
Mass Calib.
Actual: 25.00
Required: 24.90-25.10
Flag:
Peak Width
Actual: 0.70
Required: 0.75
Flag:



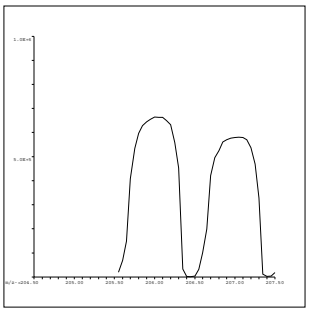
26 Mg
Mass Calib.
Actual: 25.95
Required: 25.90-26.10
Flag:
Peak Width
Actual: 0.65
Required: 0.75
Flag:



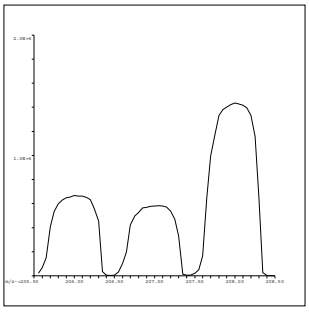
59 Co
Mass Calib.
Actual: 59.00
Required: 58.90-59.10
Flag:
Peak Width
Actual: 0.60
Required: 0.75
Flag:



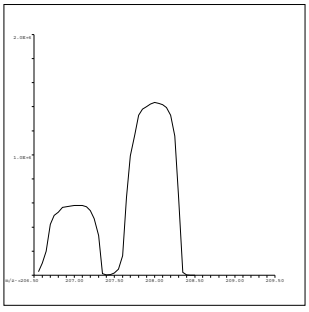
115 In
Mass Calib.
Actual: 115.05
Required: 114.90-115.10
Flag:
Peak Width
Actual: 0.65
Required: 0.75
Flag:



206 Pb
Mass Calib.
Actual: 206.05
Required: 205.90-206.10
Flag:
Peak Width
Actual: 0.70
Required: 0.75
Flag:



207 Pb
Mass Calib.
Actual: 207.05
Required: 206.90-207.10
Flag:
Peak Width
Actual: 0.70
Required: 0.75
Flag:



208 Pb
Mass Calib.
Actual: 208.00
Required: 207.90-208.10
Flag:
Peak Width
Actual: 0.70
Required: 0.75
Flag:

QC Tune Result:Pass

QC Tune Report

Data File: C:\ICPMH\1\7500\QCTUNE.D
Date Acquired: 11 Jul 2016 10:04:31 am
Operator:
Misc Info:
Vial Number: 0
Current Method: C:\ICPMH\1\METHODS\TuneCHK.m

Minimum Response(CPS)

Element		Actual	Required	Flag
9	Be	118669.00	0.00	
24	Mg	578069.00	0.00	
25	Mg	77415.20	0.00	
26	Mg	91809.70	0.00	
59	Co	1074450.00	0.00	
115	In	2043090.00	0.00	
206	Pb	578578.00	0.00	
207	Pb	502290.00	0.00	
208	Pb	1236370.00	0.00	

RSD (%)

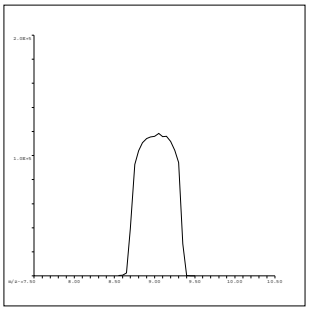
Element		Actual	Required	Flag
9	Be	1.30	5.00	
24	Mg	0.49	5.00	
25	Mg	0.55	5.00	
26	Mg	1.31	5.00	
59	Co	0.56	5.00	
115	In	1.23	5.00	
206	Pb	0.60	5.00	
207	Pb	1.12	5.00	
208	Pb	0.60	5.00	

Ion Ratio

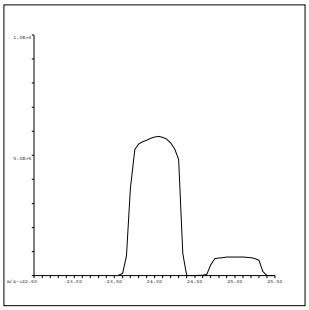
Element		Actual	Required	Flag
9	Be			
24	Mg			
25	Mg			
26	Mg			
59	Co			
115	In			
206	Pb			
207	Pb			
208	Pb			

Maximum Bkg. Count(CPS)

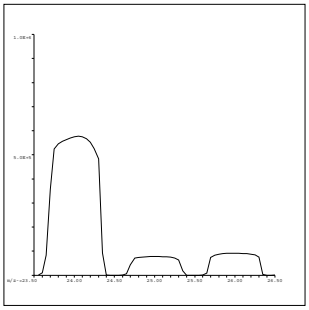
Element	Actual	Required	Flag



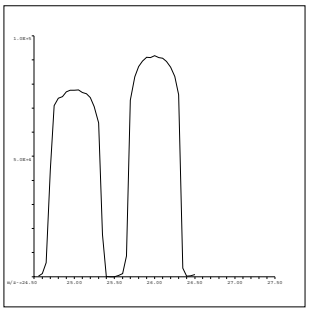
9 Be
Mass Calib.
Actual: 9.05
Required: 8.90-9.10
Flag:
Peak Width
Actual: 0.65
Required: 0.75
Flag:



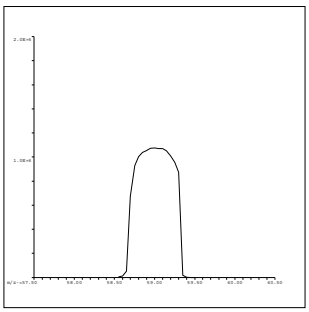
24 Mg
Mass Calib.
Actual: 24.05
Required: 23.90-24.10
Flag:
Peak Width
Actual: 0.70
Required: 0.75
Flag:



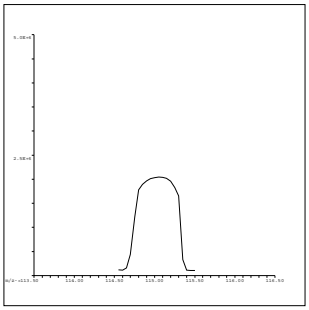
25 Mg
Mass Calib.
Actual: 25.00
Required: 24.90-25.10
Flag:
Peak Width
Actual: 0.70
Required: 0.75
Flag:



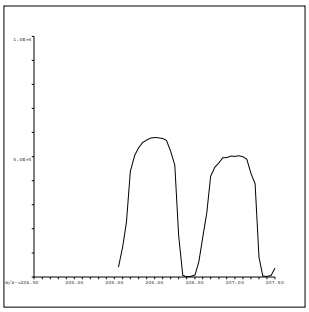
26 Mg
Mass Calib.
Actual: 26.00
Required: 25.90-26.10
Flag:
Peak Width
Actual: 0.65
Required: 0.75
Flag:



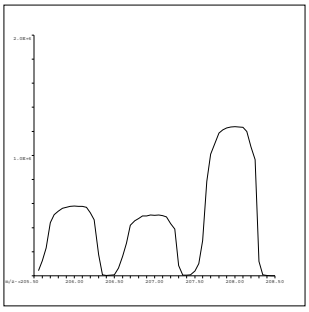
59 Co
Mass Calib.
Actual: 59.00
Required: 58.90-59.10
Flag:
Peak Width
Actual: 0.60
Required: 0.75
Flag:



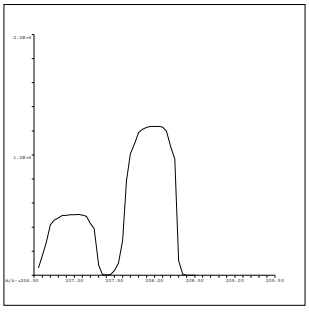
115 In
Mass Calib.
Actual: 115.05
Required: 114.90-115.10
Flag:
Peak Width
Actual: 0.65
Required: 0.75
Flag:



206 Pb
Mass Calib.
Actual: 206.00
Required: 205.90-206.10
Flag:
Peak Width
Actual: 0.70
Required: 0.75
Flag:



207 Pb
Mass Calib.
Actual: 207.00
Required: 206.90-207.10
Flag:
Peak Width
Actual: 0.75
Required: 0.75
Flag:



208 Pb
Mass Calib.
Actual: 208.00
Required: 207.90-208.10
Flag:
Peak Width
Actual: 0.70
Required: 0.75
Flag:

QC Tune Result:Pass

INITIAL CALIBRATION DATA SUMMARY

INITIAL CALIBRATION SUMMARY: 160710A

Instrument ID: ICPMS-02

Analyte	Data File	A0710002.D	A0710003.D	A0710004.D	A0710005.D	A0710006.D	A0710007.D	A0710008.D	A0710009.D	A0710010.D	
	Acq. Date-Time	07/10/2016 10:44 AM	07/10/2016 10:49 AM	07/10/2016 10:55 AM	07/10/2016 11:00 AM	07/10/2016 11:06 AM	07/10/2016 11:11 AM	07/10/2016 11:17 AM	07/10/2016 11:23 AM	07/10/2016 11:28 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	R
45 Sc (ISTD) [2]	CPS	192983.9		218453.5	220051.4	222758	220942.8	225066.8	217249.3	217786.6	
55 Mn [2]	CPS	434.7		5517.2	48942.5	98850.9	194502.2	389813.8	939670.2	1826566.2	0.9999
52 Cr [2]	CPS	562.1		9197.2	87391.5	176470.9	350490.7	709278.5	1689678.6	3315647.6	0.9999
72 Ge (ISTD) [1]	CPS	178288.4		198586.7	197943.8	200064.9	198568.8	202072	194137.8	193677.3	
78 Se [1]	CPS	1.1		426.7	4486.4	9409.8	18031.8	36830.5	88617	177259	1.0000
72 Ge (ISTD) [2]	CPS	160747	187302.3	181595.7	182360.3	183578.5	182961.4	186210.2	177329.4	176248.3	
75 As [2]	CPS	32	275.1	1051.6	10322	21054.6	41512.2	83627.4	200431.3	399092	1.0000
103 Rh (ISTD) [2]	CPS	4463386		4980315	4997576.3	5046967.8	5017745.3	5075794.8	4847574.1	4839207.3	
95 Mo [2]	CPS	44.5		6039.2	60029	122704.8	243975.3	491088.6	1190803.5	2270659.8	0.9998
159 Tb (ISTD) [3]	CPS	14875301		16712088.2	16622931.7	16775397.1	16649159.8	16918591.7	16405216.6	16398128.5	
137 Ba [3]	CPS	196.9		16298.1	146736.2	288297.2	569202.7	1151465.2	2692125.2	5316402.4	0.9999

Standard Code
ICAL: 2MSST-151207C
ICAL: 2MSST-151207D
ICAL: 2MWST-160606G
IS Mix: 2MWST-160606A

Calibration Acceptance Criteria: > 0.995 Correlation

INITIAL CALIBRATION SUMMARY: 160711A

Instrument ID: ICPMS-02

Analyte	Data File	A0711002.D	A0711004.D	A0711005.D	A0711006.D	A0711007.D	A0711008.D	A0711009.D	A0711010.D	
	Acq. Date-Time	07/11/2016 10:20 AM	07/11/2016 10:31 AM	07/11/2016 10:36 AM	07/11/2016 10:42 AM	07/11/2016 10:47 AM	07/11/2016 10:53 AM	07/11/2016 10:57 AM	07/11/2016 11:03 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
159 Tb (ISTD) [3]	CPS	12545513	12549717.6	12460738.6	12455768.3	12442295.2	12277877.3	12223803.4	12309386.6	
137 Ba [3]	CPS	118.3	11499.6	107940	215012.1	426954.8	838710.7	2039716.1	4041595.3	1.0000

Standard Code
ICAL: 2MSST-151207C
ICAL: 2MSST-151207D
ICAL: 2MWST-160606G
IS Mix: 2MWST-160606A

Calibration Acceptance Criteria: > 0.995 Correlation

INITIAL CALIBRATION AND CONTINUING CALIBRATION VERIFICATION SUMMARY

CLIENT: ARCADIS U.S., Inc. - California
Work Order: N020244
Project: PG&E Topock - RMP, RC000753.0801

ANALYTICAL QC SUMMARY REPORT

TestCode: 6020_DIS

Sample ID **ICV**	SampType: **ICV**	TestCode: **6020_DIS**	Units: **µg/L**	Prep Date:	RunNo: **109346**
Client ID: **ICV**	Batch ID: **R109346**	TestNo: **EPA 6020**		Analysis Date: **7/10/2016**	SeqNo: **2368164**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	10.073	0.10	10.00	0	101	90	110				
Barium	100.427	1.0	100.0	0	100	90	110				
Manganese	101.036	0.50	100.0	0	101	90	110				
Molybdenum	10.341	0.50	10.00	0	103	90	110				
Selenium	9.849	0.50	10.00	0	98.5	90	110				

Sample ID **LLICV**	SampType: **CCV1**	TestCode: **6020_DIS**	Units: **µg/L**	Prep Date:	RunNo: **109346**
Client ID: **ZZZZZZ**	Batch ID: **R109346**	TestNo: **EPA 6020**		Analysis Date: **7/10/2016**	SeqNo: **2368166**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	0.115	0.10	0.1000	0	115	80	120				
Barium	1.199	1.0	1.000	0	120	80	120				
Manganese	0.566	0.50	0.5000	0	113	80	120				
Molybdenum	0.503	0.50	0.5000	0	101	80	120				
Selenium	0.478	0.50	0.5000	0	95.6	80	120				

Sample ID **CCV1**	SampType: **CCV**	TestCode: **6020_DIS**	Units: **µg/L**	Prep Date:	RunNo: **109346**
Client ID: **CCV**	Batch ID: **R109346**	TestNo: **EPA 6020**		Analysis Date: **7/10/2016**	SeqNo: **2368179**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	19.907	0.10	20.00	0	99.5	90	110				
Barium	21.034	1.0	20.00	0	105	90	110				
Manganese	20.632	0.50	20.00	0	103	90	110				
Molybdenum	20.447	0.50	20.00	0	102	90	110				
Selenium	19.957	0.50	20.00	0	99.8	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: N020244
Project: PG&E Topock - RMP, RC000753.0801

ANALYTICAL QC SUMMARY REPORT

TestCode: 6020_DIS

Sample ID **CCV2**	SampType: **CCV**	TestCode: **6020_DIS**	Units: **µg/L**	Prep Date:	RunNo: **109346**
Client ID: **CCV**	Batch ID: **R109346**	TestNo: **EPA 6020**		Analysis Date: **7/10/2016**	SeqNo: **2368191**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	19.918	0.10	20.00	0	99.6	90	110				
Barium	21.158	1.0	20.00	0	106	90	110				
Manganese	20.618	0.50	20.00	0	103	90	110				
Molybdenum	20.362	0.50	20.00	0	102	90	110				
Selenium	20.105	0.50	20.00	0	101	90	110				

Sample ID **CCV3**	SampType: **CCV**	TestCode: **6020_DIS**	Units: **µg/L**	Prep Date:	RunNo: **109346**
Client ID: **CCV**	Batch ID: **R109346**	TestNo: **EPA 6020**		Analysis Date: **7/10/2016**	SeqNo: **2368203**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	19.836	0.10	20.00	0	99.2	90	110				
Barium	21.651	1.0	20.00	0	108	90	110				
Manganese	21.106	0.50	20.00	0	106	90	110				
Molybdenum	20.153	0.50	20.00	0	101	90	110				
Selenium	18.585	0.50	20.00	0	92.9	90	110				

Sample ID **CCV4**	SampType: **CCV**	TestCode: **6020_DIS**	Units: **µg/L**	Prep Date:	RunNo: **109346**
Client ID: **CCV**	Batch ID: **R109346**	TestNo: **EPA 6020**		Analysis Date: **7/10/2016**	SeqNo: **2368215**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	19.949	0.10	20.00	0	99.7	90	110				
Barium	21.501	1.0	20.00	0	108	90	110				
Manganese	20.846	0.50	20.00	0	104	90	110				
Molybdenum	20.183	0.50	20.00	0	101	90	110				
Selenium	18.737	0.50	20.00	0	93.7	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: N020244
Project: PG&E Topock - RMP, RC000753.0801

ANALYTICAL QC SUMMARY REPORT

TestCode: 6020_DIS

Sample ID **CCV5**	SampType: **CCV**	TestCode: **6020_DIS**	Units: **µg/L**	Prep Date:	RunNo: **109346**
Client ID: **CCV**	Batch ID: **R109346**	TestNo: **EPA 6020**		Analysis Date: **7/10/2016**	SeqNo: **2368227**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	19.574	0.10	20.00	0	97.9	90	110				
Barium	21.423	1.0	20.00	0	107	90	110				
Manganese	21.025	0.50	20.00	0	105	90	110				
Molybdenum	20.232	0.50	20.00	0	101	90	110				
Selenium	18.587	0.50	20.00	0	92.9	90	110				

Sample ID **CCV6**	SampType: **CCV**	TestCode: **6020_DIS**	Units: **µg/L**	Prep Date:	RunNo: **109346**
Client ID: **CCV**	Batch ID: **R109346**	TestNo: **EPA 6020**		Analysis Date: **7/10/2016**	SeqNo: **2368233**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	19.643	0.10	20.00	0	98.2	90	110				
Barium	21.454	1.0	20.00	0	107	90	110				
Manganese	20.724	0.50	20.00	0	104	90	110				
Molybdenum	19.864	0.50	20.00	0	99.3	90	110				
Selenium	18.685	0.50	20.00	0	93.4	90	110				

Sample ID **LLCCV1**	SampType: **CCV2**	TestCode: **6020_DIS**	Units: **µg/L**	Prep Date:	RunNo: **109346**
Client ID: **ZZZZZZ**	Batch ID: **R109346**	TestNo: **EPA 6020**		Analysis Date: **7/10/2016**	SeqNo: **2368235**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	0.128	0.10	0.1000	0	128	70	130				
Barium	1.236	1.0	1.000	0	124	70	130				
Manganese	0.590	0.50	0.5000	0	118	70	130				
Molybdenum	0.551	0.50	0.5000	0	110	70	130				
Selenium	0.548	0.50	0.5000	0	110	70	130				

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: N020244
Project: PG&E Topock - RMP, RC000753.0801

ANALYTICAL QC SUMMARY REPORT

TestCode: 6020_DIS

Sample ID **ICV**	SampType: **ICV**	TestCode: **6020_DIS**	Units: **µg/L**	Prep Date:	RunNo: **109348**
Client ID: **ICV**	Batch ID: **R109348**	TestNo: **EPA 6020**		Analysis Date: **7/11/2016**	SeqNo: **2368334**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Barium	100.972	1.0	100.0	0	101	90	110				

Sample ID **LLICV**	SampType: **CCV1**	TestCode: **6020_DIS**	Units: **µg/L**	Prep Date:	RunNo: **109348**
Client ID: **ZZZZZZ**	Batch ID: **R109348**	TestNo: **EPA 6020**		Analysis Date: **7/11/2016**	SeqNo: **2368336**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Barium	1.134	1.0	1.000	0	113	80	120				

Sample ID **CCV1**	SampType: **CCV**	TestCode: **6020_DIS**	Units: **µg/L**	Prep Date:	RunNo: **109348**
Client ID: **CCV**	Batch ID: **R109348**	TestNo: **EPA 6020**		Analysis Date: **7/11/2016**	SeqNo: **2368349**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Barium	20.924	1.0	20.00	0	105	90	110				

Sample ID **CCV2**	SampType: **CCV**	TestCode: **6020_DIS**	Units: **µg/L**	Prep Date:	RunNo: **109348**
Client ID: **CCV**	Batch ID: **R109348**	TestNo: **EPA 6020**		Analysis Date: **7/11/2016**	SeqNo: **2368361**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Barium	20.716	1.0	20.00	0	104	90	110				

Sample ID **CCV3**	SampType: **CCV**	TestCode: **6020_DIS**	Units: **µg/L**	Prep Date:	RunNo: **109348**
Client ID: **CCV**	Batch ID: **R109348**	TestNo: **EPA 6020**		Analysis Date: **7/11/2016**	SeqNo: **2368373**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Barium	20.936	1.0	20.00	0	105	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: N020244
Project: PG&E Topock - RMP, RC000753.0801

ANALYTICAL QC SUMMARY REPORT

TestCode: 6020_DIS

Sample ID	CCV4	SampType:	CCV	TestCode:	6020_DIS	Units:	µg/L	Prep Date:		RunNo:	109348
Client ID:	CCV	Batch ID:	R109348	TestNo:	EPA 6020			Analysis Date:	7/11/2016	SeqNo:	2368380

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Barium	20.833	1.0	20.00	0	104	90	110				

Sample ID	LLCCV1	SampType:	CCV2	TestCode:	6020_DIS	Units:	µg/L	Prep Date:		RunNo:	109348
Client ID:	ZZZZZZ	Batch ID:	R109348	TestNo:	EPA 6020			Analysis Date:	7/11/2016	SeqNo:	2368382

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Barium	1.213	1.0	1.000	0	121	70	130				

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis 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: N020244
Project: PG&E Topock - RMP, RC000753.0801

ANALYTICAL QC SUMMARY REPORT

TestCode: 6020DIS_CrPGE

Sample ID **ICV**	SampType: **ICV**	TestCode: **6020DIS_CrP**	Units: **µg/L**	Prep Date:	RunNo: **109346**
Client ID: **ICV**	Batch ID: **R109346**	TestNo: **EPA 6020**		Analysis Date: **7/10/2016**	SeqNo: **2368016**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium	10.166	1.0	10.00	0	102	90	110				

Sample ID **LLICV**	SampType: **CCV1**	TestCode: **6020DIS_CrP**	Units: **µg/L**	Prep Date:	RunNo: **109346**
Client ID: **ZZZZZZ**	Batch ID: **R109346**	TestNo: **EPA 6020**		Analysis Date: **7/10/2016**	SeqNo: **2368018**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium	0.966	1.0	1.000	0	96.6	80	120				

Sample ID **CCV1**	SampType: **CCV**	TestCode: **6020DIS_CrP**	Units: **µg/L**	Prep Date:	RunNo: **109346**
Client ID: **CCV**	Batch ID: **R109346**	TestNo: **EPA 6020**		Analysis Date: **7/10/2016**	SeqNo: **2368031**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium	20.374	1.0	20.00	0	102	90	110				

Sample ID **CCV2**	SampType: **CCV**	TestCode: **6020DIS_CrP**	Units: **µg/L**	Prep Date:	RunNo: **109346**
Client ID: **CCV**	Batch ID: **R109346**	TestNo: **EPA 6020**		Analysis Date: **7/10/2016**	SeqNo: **2368043**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium	20.481	1.0	20.00	0	102	90	110				

Sample ID **CCV3**	SampType: **CCV**	TestCode: **6020DIS_CrP**	Units: **µg/L**	Prep Date:	RunNo: **109346**
Client ID: **CCV**	Batch ID: **R109346**	TestNo: **EPA 6020**		Analysis Date: **7/10/2016**	SeqNo: **2368055**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium	20.454	1.0	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

CLIENT: ARCADIS U.S., Inc. - California
Work Order: N020244
Project: PG&E Topock - RMP, RC000753.0801

ANALYTICAL QC SUMMARY REPORT

TestCode: 6020DIS_CrPGE

Sample ID **CCV4**	SampType: **CCV**	TestCode: **6020DIS_CrP**	Units: **µg/L**	Prep Date:	RunNo: **109346**
Client ID: **CCV**	Batch ID: **R109346**	TestNo: **EPA 6020**		Analysis Date: **7/10/2016**	SeqNo: **2368067**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium	20.542	1.0	20.00	0	103	90	110				

Sample ID **CCV5**	SampType: **CCV**	TestCode: **6020DIS_CrP**	Units: **µg/L**	Prep Date:	RunNo: **109346**
Client ID: **CCV**	Batch ID: **R109346**	TestNo: **EPA 6020**		Analysis Date: **7/10/2016**	SeqNo: **2368079**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium	20.487	1.0	20.00	0	102	90	110				

Sample ID **CCV6**	SampType: **CCV**	TestCode: **6020DIS_CrP**	Units: **µg/L**	Prep Date:	RunNo: **109346**
Client ID: **CCV**	Batch ID: **R109346**	TestNo: **EPA 6020**		Analysis Date: **7/10/2016**	SeqNo: **2368085**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium	20.312	1.0	20.00	0	102	90	110				

Sample ID **LLCCV1**	SampType: **CCV2**	TestCode: **6020DIS_CrP**	Units: **µg/L**	Prep Date:	RunNo: **109346**
Client ID: **ZZZZZZ**	Batch ID: **R109346**	TestNo: **EPA 6020**		Analysis Date: **7/10/2016**	SeqNo: **2368087**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium	1.065	1.0	1.000	0	107	70	130				

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis 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

CLIENT: ARCADIS U.S., Inc. - California
Work Order: N020244
Project: PG&E Topock - RMP, RC000753.0801

ANALYTICAL QC SUMMARY REPORT

TestCode: 6020_DIS

Sample ID **ICB**	SampType: **ICB**	TestCode: **6020_DIS**	Units: **µg/L**	Prep Date:	RunNo: **109346**
Client ID: **ICB**	Batch ID: **R109346**	TestNo: **EPA 6020**		Analysis Date: **7/10/2016**	SeqNo: **2368165**

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	0.079	0.50									
Selenium	ND	0.50									

Sample ID **CCB1**	SampType: **CCB**	TestCode: **6020_DIS**	Units: **µg/L**	Prep Date:	RunNo: **109346**
Client ID: **CCB**	Batch ID: **R109346**	TestNo: **EPA 6020**		Analysis Date: **7/10/2016**	SeqNo: **2368180**

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	0.054	0.50									
Selenium	ND	0.50									

Sample ID **CCB2**	SampType: **CCB**	TestCode: **6020_DIS**	Units: **µg/L**	Prep Date:	RunNo: **109346**
Client ID: **CCB**	Batch ID: **R109346**	TestNo: **EPA 6020**		Analysis Date: **7/10/2016**	SeqNo: **2368192**

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									
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
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: ARCADIS U.S., Inc. - California
Work Order: N020244
Project: PG&E Topock - RMP, RC000753.0801

ANALYTICAL QC SUMMARY REPORT

TestCode: 6020_DIS

Sample ID **CCB3**	SampType: **CCB**	TestCode: **6020_DIS**	Units: **µg/L**	Prep Date:	RunNo: **109346**
Client ID: **CCB**	Batch ID: **R109346**	TestNo: **EPA 6020**		Analysis Date: **7/10/2016**	SeqNo: **2368204**

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									
Selenium	ND	0.50									

Sample ID **CCB4**	SampType: **CCB**	TestCode: **6020_DIS**	Units: **µg/L**	Prep Date:	RunNo: **109346**
Client ID: **CCB**	Batch ID: **R109346**	TestNo: **EPA 6020**		Analysis Date: **7/10/2016**	SeqNo: **2368216**

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									
Selenium	ND	0.50									

Sample ID **CCB5**	SampType: **CCB**	TestCode: **6020_DIS**	Units: **µg/L**	Prep Date:	RunNo: **109346**
Client ID: **CCB**	Batch ID: **R109346**	TestNo: **EPA 6020**		Analysis Date: **7/10/2016**	SeqNo: **2368228**

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									
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
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: ARCADIS U.S., Inc. - California
Work Order: N020244
Project: PG&E Topock - RMP, RC000753.0801

ANALYTICAL QC SUMMARY REPORT

TestCode: 6020_DIS

Sample ID **CCB6**	SampType: **CCB**	TestCode: **6020_DIS**	Units: **µg/L**	Prep Date:	RunNo: **109346**
Client ID: **CCB**	Batch ID: **R109346**	TestNo: **EPA 6020**		Analysis Date: **7/10/2016**	SeqNo: **2368234**

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									
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
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: ARCADIS U.S., Inc. - California
Work Order: N020244
Project: PG&E Topock - RMP, RC000753.0801

ANALYTICAL QC SUMMARY REPORT

TestCode: 6020_DIS

Sample ID **ICB**	SampType: **ICB**	TestCode: **6020_DIS**	Units: **µg/L**	Prep Date:	RunNo: **109348**
Client ID: **ICB**	Batch ID: **R109348**	TestNo: **EPA 6020**		Analysis Date: **7/11/2016**	SeqNo: **2368335**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Barium	ND	1.0									

Sample ID **CCB1**	SampType: **CCB**	TestCode: **6020_DIS**	Units: **µg/L**	Prep Date:	RunNo: **109348**
Client ID: **CCB**	Batch ID: **R109348**	TestNo: **EPA 6020**		Analysis Date: **7/11/2016**	SeqNo: **2368350**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Barium	ND	1.0									

Sample ID **CCB2**	SampType: **CCB**	TestCode: **6020_DIS**	Units: **µg/L**	Prep Date:	RunNo: **109348**
Client ID: **CCB**	Batch ID: **R109348**	TestNo: **EPA 6020**		Analysis Date: **7/11/2016**	SeqNo: **2368362**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Barium	ND	1.0									

Sample ID **CCB3**	SampType: **CCB**	TestCode: **6020_DIS**	Units: **µg/L**	Prep Date:	RunNo: **109348**
Client ID: **CCB**	Batch ID: **R109348**	TestNo: **EPA 6020**		Analysis Date: **7/11/2016**	SeqNo: **2368374**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Barium	ND	1.0									

Sample ID **CCB4**	SampType: **CCB**	TestCode: **6020_DIS**	Units: **µg/L**	Prep Date:	RunNo: **109348**
Client ID: **CCB**	Batch ID: **R109348**	TestNo: **EPA 6020**		Analysis Date: **7/11/2016**	SeqNo: **2368381**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Barium	ND	1.0									

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: N020244
Project: PG&E Topock - RMP, RC000753.0801

ANALYTICAL QC SUMMARY REPORT

TestCode: 6020DIS_CrPGE

Sample ID **ICB**	SampType: **ICB**	TestCode: **6020DIS_CrP**	Units: **µg/L**	Prep Date:	RunNo: **109346**
Client ID: **ICB**	Batch ID: **R109346**	TestNo: **EPA 6020**		Analysis Date: **7/10/2016**	SeqNo: **2368017**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium	ND	1.0									

Sample ID **CCB1**	SampType: **CCB**	TestCode: **6020DIS_CrP**	Units: **µg/L**	Prep Date:	RunNo: **109346**
Client ID: **CCB**	Batch ID: **R109346**	TestNo: **EPA 6020**		Analysis Date: **7/10/2016**	SeqNo: **2368032**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium	ND	1.0									

Sample ID **CCB2**	SampType: **CCB**	TestCode: **6020DIS_CrP**	Units: **µg/L**	Prep Date:	RunNo: **109346**
Client ID: **CCB**	Batch ID: **R109346**	TestNo: **EPA 6020**		Analysis Date: **7/10/2016**	SeqNo: **2368044**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium	ND	1.0									

Sample ID **CCB3**	SampType: **CCB**	TestCode: **6020DIS_CrP**	Units: **µg/L**	Prep Date:	RunNo: **109346**
Client ID: **CCB**	Batch ID: **R109346**	TestNo: **EPA 6020**		Analysis Date: **7/10/2016**	SeqNo: **2368056**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium	ND	1.0									

Sample ID **CCB4**	SampType: **CCB**	TestCode: **6020DIS_CrP**	Units: **µg/L**	Prep Date:	RunNo: **109346**
Client ID: **CCB**	Batch ID: **R109346**	TestNo: **EPA 6020**		Analysis Date: **7/10/2016**	SeqNo: **2368068**

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
- 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: N020244
Project: PG&E Topock - RMP, RC000753.0801

ANALYTICAL QC SUMMARY REPORT

TestCode: 6020DIS_CrPGE

Sample ID **CCB5**	SampType: **CCB**	TestCode: **6020DIS_CrP**	Units: **µg/L**	Prep Date:	RunNo: **109346**
Client ID: **CCB**	Batch ID: **R109346**	TestNo: **EPA 6020**		Analysis Date: **7/10/2016**	SeqNo: **2368080**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium	ND	1.0									

Sample ID **CCB6**	SampType: **CCB**	TestCode: **6020DIS_CrP**	Units: **µg/L**	Prep Date:	RunNo: **109346**
Client ID: **CCB**	Batch ID: **R109346**	TestNo: **EPA 6020**		Analysis Date: **7/10/2016**	SeqNo: **2368086**

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)

CLIENT: ARCADIS U.S., Inc. - California
Work Order: N020244
Project: PG&E Topock - RMP, RC000753.0801

ANALYTICAL QC SUMMARY REPORT

TestCode: 6020_DIS

Sample ID **ICSA1**	SampType: **ICSA**	TestCode: **6020_DIS**	Units: **µg/L**	Prep Date:	RunNo: **109346**
Client ID: **ICSA**	Batch ID: **R109346**	TestNo: **EPA 6020**		Analysis Date: **7/10/2016**	SeqNo: **2368167**

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	0.057	0.50									
Selenium	0.031	0.50									

Sample ID **ICSAB1**	SampType: **ICSAB**	TestCode: **6020_DIS**	Units: **µg/L**	Prep Date:	RunNo: **109346**
Client ID: **ICSAB**	Batch ID: **R109346**	TestNo: **EPA 6020**		Analysis Date: **7/10/2016**	SeqNo: **2368168**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	20.492	0.10	20.00	0	102	80	120				
Barium	21.346	1.0	20.00	0	107	80	120				
Manganese	18.868	0.50	20.00	0	94.3	80	120				
Molybdenum	23.751	0.50	20.00	0	119	80	120				
Selenium	17.806	0.50	20.00	0	89.0	80	120				

Sample ID **ICSA2**	SampType: **ICSA**	TestCode: **6020_DIS**	Units: **µg/L**	Prep Date:	RunNo: **109346**
Client ID: **ICSA**	Batch ID: **R109346**	TestNo: **EPA 6020**		Analysis Date: **7/10/2016**	SeqNo: **2368236**

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	0.048	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
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: ARCADIS U.S., Inc. - California
Work Order: N020244
Project: PG&E Topock - RMP, RC000753.0801

ANALYTICAL QC SUMMARY REPORT

TestCode: 6020_DIS

Sample ID **ICSAB2**	SampType: **ICSAB**	TestCode: **6020_DIS**	Units: **µg/L**	Prep Date:	RunNo: **109346**
Client ID: **ICSAB**	Batch ID: **R109346**	TestNo: **EPA 6020**		Analysis Date: **7/10/2016**	SeqNo: **2368237**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	18.955	0.10	20.00	0	94.8	80	120				
Barium	19.735	1.0	20.00	0	98.7	80	120				
Manganese	17.370	0.50	20.00	0	86.8	80	120				
Molybdenum	21.637	0.50	20.00	0	108	80	120				
Selenium	16.950	0.50	20.00	0	84.7	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: N020244
Project: PG&E Topock - RMP, RC000753.0801

ANALYTICAL QC SUMMARY REPORT

TestCode: 6020_DIS

Sample ID	ICSA1	SampType:	ICSA	TestCode:	6020_DIS	Units:	µg/L	Prep Date:		RunNo:	109348
Client ID:	ICSA	Batch ID:	R109348	TestNo:	EPA 6020			Analysis Date:	7/11/2016	SeqNo:	2368337

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Barium	ND	1.0									

Sample ID	ICSAB1	SampType:	ICSAB	TestCode:	6020_DIS	Units:	µg/L	Prep Date:		RunNo:	109348
Client ID:	ICSAB	Batch ID:	R109348	TestNo:	EPA 6020			Analysis Date:	7/11/2016	SeqNo:	2368338

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Barium	19.302	1.0	20.00	0	96.5	80	120				

Sample ID	ICSA2	SampType:	ICSA	TestCode:	6020_DIS	Units:	µg/L	Prep Date:		RunNo:	109348
Client ID:	ICSA	Batch ID:	R109348	TestNo:	EPA 6020			Analysis Date:	7/11/2016	SeqNo:	2368383

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Barium	ND	1.0									

Sample ID	ICSAB2	SampType:	ICSAB	TestCode:	6020_DIS	Units:	µg/L	Prep Date:		RunNo:	109348
Client ID:	ICSAB	Batch ID:	R109348	TestNo:	EPA 6020			Analysis Date:	7/11/2016	SeqNo:	2368384

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Barium	19.531	1.0	20.00	0	97.7	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: N020244
Project: PG&E Topock - RMP, RC000753.0801

ANALYTICAL QC SUMMARY REPORT

TestCode: 6020DIS_CrPGE

Sample ID **ICSA1**	SampType: **ICSA**	TestCode: **6020DIS_CrP**	Units: **µg/L**	Prep Date:	RunNo: **109346**
Client ID: **ICSA**	Batch ID: **R109346**	TestNo: **EPA 6020**		Analysis Date: **7/10/2016**	SeqNo: **2368019**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium	0.253	1.0									

Sample ID **ICSAB1**	SampType: **ICSAB**	TestCode: **6020DIS_CrP**	Units: **µg/L**	Prep Date:	RunNo: **109346**
Client ID: **ICSAB**	Batch ID: **R109346**	TestNo: **EPA 6020**		Analysis Date: **7/10/2016**	SeqNo: **2368020**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium	20.305	1.0	20.00	0	102	80	120				

Sample ID **ICSA2**	SampType: **ICSA**	TestCode: **6020DIS_CrP**	Units: **µg/L**	Prep Date:	RunNo: **109346**
Client ID: **ICSA**	Batch ID: **R109346**	TestNo: **EPA 6020**		Analysis Date: **7/10/2016**	SeqNo: **2368088**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium	0.231	1.0									

Sample ID **ICSAB2**	SampType: **ICSAB**	TestCode: **6020DIS_CrP**	Units: **µg/L**	Prep Date:	RunNo: **109346**
Client ID: **ICSAB**	Batch ID: **R109346**	TestNo: **EPA 6020**		Analysis Date: **7/10/2016**	SeqNo: **2368089**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium	19.218	1.0	20.00	0	96.1	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

INTERNAL STANDARD SUMMARY

INTERNAL STANDARD: 160710A

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	14875301	14875301	100	PASS	70-125	192983.9	192983.9	100	PASS	70-125
Std1-0.1/1 ppb	ICAL	1	17143290.3	14875301	115.25	PASS	70-125	226051.8	192983.9	117.14	PASS	70-125
Std2-0.5/5 ppb	ICAL	1	16712088.2	14875301	112.35	PASS	70-125	218453.5	192983.9	113.2	PASS	70-125
Std3-5/50 ppb	ICAL	1	16622931.7	14875301	111.75	PASS	70-125	220051.4	192983.9	114.03	PASS	70-125
Std4-10/100 ppb	ICAL	1	16775397.1	14875301	112.77	PASS	70-125	222758	192983.9	115.43	PASS	70-125
Std5-20/200 ppb	ICAL	1	16649159.8	14875301	111.92	PASS	70-125	220942.8	192983.9	114.49	PASS	70-125
Std6-40/400 ppb	ICAL	1	16918591.7	14875301	113.74	PASS	70-125	225066.8	192983.9	116.62	PASS	70-125
Std7-100/1000 ppb	ICAL	1	16405216.6	14875301	110.28	PASS	70-125	217249.3	192983.9	112.57	PASS	70-125
Std8-200/2000 ppb	ICAL	1	16398128.5	14875301	110.24	PASS	70-125	217786.6	192983.9	112.85	PASS	70-125
ICV	ICV	1	15793561	14875301	106.17	PASS	70-125	207623.1	192983.9	107.59	PASS	70-125
ICB	ICB	1	15302828	14875301	102.87	PASS	70-125	204484.7	192983.9	105.96	PASS	70-125
LLICV	CCV1	1	14028746.3	14875301	94.31	PASS	70-125	189735.1	192983.9	98.32	PASS	70-125
ICSA1	ICSA	1	12053237.5	14875301	81.029	PASS	70-125	172807.9	192983.9	89.55	PASS	70-125
ICSAB1	ICSAB	1	11743570.8	14875301	78.95	PASS	70-125	184012.6	192983.9	95.35	PASS	70-125
MB-58947	MBLK	1	13078162.7	14875301	87.92	PASS	70-125	191619.5	192983.9	99.29	PASS	70-125
LCS-58947	LCS	1	15063527.8	14875301	101.27	PASS	70-125	230001	192983.9	119.18	PASS	70-125
N020246-001B	SAMP	1	14836709.2	14875301	99.74	PASS	70-125	225845.4	192983.9	117.03	PASS	70-125
N020246-001B	SAMP	5	14798482.8	14875301	99.48	PASS	70-125	201967.6	192983.9	104.66	PASS	70-125
N020246-001B-PS	PS	1	15016419.6	14875301	100.95	PASS	70-125	218980.3	192983.9	113.47	PASS	70-125
N020246-001B-MS	MS	1	15049897	14875301	101.17	PASS	70-125	216569.1	192983.9	112.22	PASS	70-125
N020246-001B-MSD	MSD	1	14944293.9	14875301	100.46	PASS	70-125	214022.8	192983.9	110.9	PASS	70-125
N020246-002B	SAMP	1	14207525.8	14875301	95.51	PASS	70-125	203509.8	192983.9	105.45	PASS	70-125
N020246-003B	SAMP	1	14001697.7	14875301	94.13	PASS	70-125	195284	192983.9	101.19	PASS	70-125
N020246-004B	SAMP	1	14357122.3	14875301	96.52	PASS	70-125	207191.3	192983.9	107.36	PASS	70-125
CCV1	CCV	1	16985003.9	14875301	114.18	PASS	70-125	229819.7	192983.9	119.09	PASS	70-125
CCB1	CCB	1	14380806.2	14875301	96.68	PASS	70-125	191840.7	192983.9	99.41	PASS	70-125
N020246-005B	SAMP	1	14297305.6	14875301	96.11	PASS	70-125	197946	192983.9	102.57	PASS	70-125
N020246-006B	SAMP	1	14154726.2	14875301	95.16	PASS	70-125	206192.3	192983.9	106.84	PASS	70-125
N020246-007B	SAMP	1	14248028.7	14875301	95.78	PASS	70-125	223928	192983.9	116.04	PASS	70-125
N020246-008B	SAMP	1	14890265.2	14875301	100.1	PASS	70-125	204773.4	192983.9	106.11	PASS	70-125
N020246-009B	SAMP	1	14868074.9	14875301	99.95	PASS	70-125	203238	192983.9	105.31	PASS	70-125
N020244-001B	SAMP	1	14796136.9	14875301	99.47	PASS	70-125	199422.1	192983.9	103.34	PASS	70-125
N020244-002B	SAMP	1	14968862.4	14875301	100.63	PASS	70-125	207173.7	192983.9	107.35	PASS	70-125
N020244-002B-MS	MS	1	15391483.8	14875301	103.47	PASS	70-125	215338.3	192983.9	111.58	PASS	70-125
N020244-003B	SAMP	1	14831243.5	14875301	99.7	PASS	70-125	209108.6	192983.9	108.36	PASS	70-125
N020244-004B	SAMP	1	14975319.2	14875301	100.67	PASS	70-125	212033.7	192983.9	109.87	PASS	70-125
CCV2	CCV	1	17127369.7	14875301	115.14	PASS	70-125	232097	192983.9	120.27	PASS	70-125
CCB2	CCB	1	14813626.6	14875301	99.59	PASS	70-125	201580.9	192983.9	104.45	PASS	70-125
N020244-005B	SAMP	1	15234682.6	14875301	102.42	PASS	70-125	214436.4	192983.9	111.12	PASS	70-125
N020244-006B	SAMP	1	15041310.8	14875301	101.12	PASS	70-125	214634.7	192983.9	111.22	PASS	70-125
N020244-007B	SAMP	1	15143100.3	14875301	101.8	PASS	70-125	218294.6	192983.9	113.12	PASS	70-125

INTERNAL STANDARD: 160710A

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
N020244-008B	SAMP	1	15142026.3	14875301	101.79	PASS	70-125	216786	192983.9	112.33	PASS	70-125
N020244-009B	SAMP	1	15758407.8	14875301	105.94	PASS	70-125	227162.5	192983.9	117.71	PASS	70-125
N020244-010B	SAMP	1	15077808.4	14875301	101.36	PASS	70-125	217993.1	192983.9	112.96	PASS	70-125
N020244-011B	SAMP	1	15364812.7	14875301	103.29	PASS	70-125	222509.2	192983.9	115.3	PASS	70-125
CCV3	CCV	1	14789111.2	14875301	99.42	PASS	70-125	194035.1	192983.9	100.54	PASS	70-125
CCB3	CCB	1	14478303.7	14875301	97.33	PASS	70-125	193862.6	192983.9	100.46	PASS	70-125
CCV4	CCV	1	14260601.2	14875301	95.87	PASS	70-125	179077.1	192983.9	92.79	PASS	70-125
CCB4	CCB	1	14346739.4	14875301	96.45	PASS	70-125	184478.2	192983.9	95.59	PASS	70-125
CCV5	CCV	1	14135209.9	14875301	95.025	PASS	70-125	179280.5	192983.9	92.9	PASS	70-125
CCB5	CCB	1	14073196.5	14875301	94.61	PASS	70-125	181967.7	192983.9	94.29	PASS	70-125
CCV6	CCV	1	14145080.1	14875301	95.091	PASS	70-125	188685.2	192983.9	97.77	PASS	70-125
CCB6	CCB	1	13917465.1	14875301	93.56	PASS	70-125	173047	192983.9	89.67	PASS	70-125
LLCCV1	CCV2	1	15196928.9	14875301	102.16	PASS	70-125	189623.7	192983.9	98.26	PASS	70-125
ICSA2	ICSA	1	15801684.1	14875301	106.23	PASS	70-125	230892.8	192983.9	119.64	PASS	70-125
ICSAB2	ICSAB	1	12485575.6	14875301	83.93	PASS	70-125	181072.9	192983.9	93.83	PASS	70-125

INTERNAL STANDARD: 160710A

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	160747	160747	100	PASS	70-125	178288.4	178288.4	100	PASS	70-125
Std1-0.1/1 ppb	ICAL	1	187302.3	160747	116.52	PASS	70-125	207888.8	178288.4	116.6	PASS	70-125
Std2-0.5/5 ppb	ICAL	1	181595.7	160747	112.97	PASS	70-125	198586.7	178288.4	111.39	PASS	70-125
Std3-5/50 ppb	ICAL	1	182360.3	160747	113.45	PASS	70-125	197943.8	178288.4	111.02	PASS	70-125
Std4-10/100 ppb	ICAL	1	183578.5	160747	114.2	PASS	70-125	200064.9	178288.4	112.21	PASS	70-125
Std5-20/200 ppb	ICAL	1	182961.4	160747	113.82	PASS	70-125	198568.8	178288.4	111.38	PASS	70-125
Std6-40/400 ppb	ICAL	1	186210.2	160747	115.84	PASS	70-125	202072	178288.4	113.34	PASS	70-125
Std7-100/1000 ppb	ICAL	1	177329.4	160747	110.32	PASS	70-125	194137.8	178288.4	108.89	PASS	70-125
Std8-200/2000 ppb	ICAL	1	176248.3	160747	109.64	PASS	70-125	193677.3	178288.4	108.63	PASS	70-125
ICV	ICV	1	170273.7	160747	105.93	PASS	70-125	186172.5	178288.4	104.42	PASS	70-125
ICB	ICB	1	170275.5	160747	105.93	PASS	70-125	185046.5	178288.4	103.79	PASS	70-125
LLICV	CCV1	1	155828.8	160747	96.94	PASS	70-125	172912.8	178288.4	96.98	PASS	70-125
ICSA1	ICSA	1	134091.7	160747	83.42	PASS	70-125	156199.6	178288.4	87.61	PASS	70-125
ICSAB1	ICSAB	1	140702	160747	87.53	PASS	70-125	163031.8	178288.4	91.44	PASS	70-125
MB-58947	MBLK	1	159141.1	160747	99.001	PASS	70-125	196747.7	178288.4	110.35	PASS	70-125
LCS-58947	LCS	1	182745.1	160747	113.68	PASS	70-125	207978.3	178288.4	116.65	PASS	70-125
N020246-001B	SAMP	1	175147.5	160747	108.96	PASS	70-125	194904.6	178288.4	109.32	PASS	70-125
N020246-001B	SAMP	5	166727.9	160747	103.72	PASS	70-125	184801.2	178288.4	103.65	PASS	70-125
N020246-001B-PS	PS	1	169406.4	160747	105.39	PASS	70-125	183589.7	178288.4	102.97	PASS	70-125
N020246-001B-MS	MS	1	169405.9	160747	105.39	PASS	70-125	184945.2	178288.4	103.73	PASS	70-125
N020246-001B-MSD	MSD	1	166718.1	160747	103.71	PASS	70-125	183093.9	178288.4	102.7	PASS	70-125
N020246-002B	SAMP	1	158754.1	160747	98.76	PASS	70-125	173771.6	178288.4	97.47	PASS	70-125
N020246-003B	SAMP	1	154311.7	160747	96	PASS	70-125	167362.1	178288.4	93.87	PASS	70-125
N020246-004B	SAMP	1	160849.8	160747	100.06	PASS	70-125	170319.4	178288.4	95.53	PASS	70-125
CCV1	CCV	1	189022.7	160747	117.59	PASS	70-125	207885.5	178288.4	116.6	PASS	70-125
CCB1	CCB	1	161269.5	160747	100.33	PASS	70-125	177254.1	178288.4	99.42	PASS	70-125
N020246-005B	SAMP	1	157845.7	160747	98.2	PASS	70-125	171120.7	178288.4	95.98	PASS	70-125
N020246-006B	SAMP	1	156267.1	160747	97.21	PASS	70-125	162941.7	178288.4	91.39	PASS	70-125
N020246-007B	SAMP	1	156184.7	160747	97.16	PASS	70-125	155476.4	178288.4	87.21	PASS	70-125
N020246-008B	SAMP	1	162489	160747	101.08	PASS	70-125	168396.8	178288.4	94.45	PASS	70-125
N020246-009B	SAMP	1	161402	160747	100.41	PASS	70-125	166420.5	178288.4	93.34	PASS	70-125
N020244-001B	SAMP	1	157915.6	160747	98.24	PASS	70-125	164920.2	178288.4	92.5	PASS	70-125
N020244-002B	SAMP	1	162668	160747	101.2	PASS	70-125	169950.6	178288.4	95.32	PASS	70-125
N020244-002B-MS	MS	1	166882.3	160747	103.82	PASS	70-125	175749.9	178288.4	98.58	PASS	70-125
N020244-003B	SAMP	1	162836.9	160747	101.3	PASS	70-125	171938.8	178288.4	96.44	PASS	70-125
N020244-004B	SAMP	1	165949.6	160747	103.24	PASS	70-125	176083	178288.4	98.76	PASS	70-125
CCV2	CCV	1	189713.7	160747	118.02	PASS	70-125	207255.4	178288.4	116.25	PASS	70-125
CCB2	CCB	1	167200.7	160747	104.02	PASS	70-125	180493.8	178288.4	101.24	PASS	70-125
N020244-005B	SAMP	1	168529.8	160747	104.84	PASS	70-125	177973.5	178288.4	99.82	PASS	70-125
N020244-006B	SAMP	1	167624.9	160747	104.28	PASS	70-125	177157.1	178288.4	99.37	PASS	70-125
N020244-007B	SAMP	1	169338.1	160747	105.34	PASS	70-125	179126.5	178288.4	100.47	PASS	70-125

INTERNAL STANDARD: 160710A

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
N020244-008B	SAMP	1	170976.1	160747	106.36	PASS	70-125	180888.7	178288.4	101.46	PASS	70-125
N020244-009B	SAMP	1	176641	160747	109.89	PASS	70-125	187569.8	178288.4	105.21	PASS	70-125
N020244-010B	SAMP	1	168997.4	160747	105.13	PASS	70-125	181086.7	178288.4	101.57	PASS	70-125
N020244-011B	SAMP	1	172741.9	160747	107.46	PASS	70-125	182474.9	178288.4	102.35	PASS	70-125
CCV3	CCV	1	162747.1	160747	101.24	PASS	70-125	191028.2	178288.4	107.15	PASS	70-125
CCB3	CCB	1	163220.4	160747	101.54	PASS	70-125	180132.6	178288.4	101.03	PASS	70-125
CCV4	CCV	1	150624.5	160747	93.7	PASS	70-125	175394.2	178288.4	98.38	PASS	70-125
CCB4	CCB	1	155770.5	160747	96.9	PASS	70-125	174584.4	178288.4	97.92	PASS	70-125
CCV5	CCV	1	151734.8	160747	94.39	PASS	70-125	177278	178288.4	99.43	PASS	70-125
CCB5	CCB	1	153836.1	160747	95.7	PASS	70-125	174075.8	178288.4	97.64	PASS	70-125
CCV6	CCV	1	156941	160747	97.63	PASS	70-125	180331	178288.4	101.15	PASS	70-125
CCB6	CCB	1	150073.5	160747	93.36	PASS	70-125	167903.8	178288.4	94.18	PASS	70-125
LLCCV1	CCV2	1	163460.2	160747	101.69	PASS	70-125	181551.7	178288.4	101.83	PASS	70-125
ICSA2	ICSA	1	174888.2	160747	108.8	PASS	70-125	177246.7	178288.4	99.42	PASS	70-125
ICSAB2	ICSAB	1	138239.2	160747	86	PASS	70-125	148652.8	178288.4	83.38	PASS	70-125

INTERNAL STANDARD: 160710A

Instrument ID: ICPMS-02

Sample Name	Type	DF	103 Rh (ISTD) [2]				
			CPS	REF	%REC	Comment	Criteria
Cal Blank	IBLK	1	4463386	4463386	100	PASS	70-125
Std1-0.1/1 ppb	ICAL	1	5113519.6	4463386	114.57	PASS	70-125
Std2-0.5/5 ppb	ICAL	1	4980315	4463386	111.58	PASS	70-125
Std3-5/50 ppb	ICAL	1	4997576.3	4463386	111.97	PASS	70-125
Std4-10/100 ppb	ICAL	1	5046967.8	4463386	113.08	PASS	70-125
Std5-20/200 ppb	ICAL	1	5017745.3	4463386	112.42	PASS	70-125
Std6-40/400 ppb	ICAL	1	5075794.8	4463386	113.72	PASS	70-125
Std7-100/1000 ppb	ICAL	1	4847574.1	4463386	108.61	PASS	70-125
Std8-200/2000 ppb	ICAL	1	4839207.3	4463386	108.42	PASS	70-125
ICV	ICV	1	4726816.4	4463386	105.9	PASS	70-125
ICB	ICB	1	4653967.7	4463386	104.27	PASS	70-125
LLICV	CCV1	1	4121993.3	4463386	92.35	PASS	70-125
ICSA1	ICSA	1	3247906.9	4463386	72.77	PASS	70-125
ICSAB1	ICSAB	1	3334823	4463386	74.72	PASS	70-125
MB-58947	MBLK	1	4162807.1	4463386	93.27	PASS	70-125
LCS-58947	LCS	1	4841978.4	4463386	108.48	PASS	70-125
N020246-001B	SAMP	1	4329875	4463386	97.009	PASS	70-125
N020246-001B	SAMP	5	4339587.1	4463386	97.23	PASS	70-125
N020246-001B-PS	PS	1	4246455.5	4463386	95.14	PASS	70-125
N020246-001B-MS	MS	1	4231250.6	4463386	94.8	PASS	70-125
N020246-001B-MSD	MSD	1	4174799.8	4463386	93.53	PASS	70-125
N020246-002B	SAMP	1	3924500	4463386	87.93	PASS	70-125
N020246-003B	SAMP	1	3832049.6	4463386	85.86	PASS	70-125
N020246-004B	SAMP	1	3913731.5	4463386	87.69	PASS	70-125
CCV1	CCV	1	5120633	4463386	114.73	PASS	70-125
CCB1	CCB	1	4379388.7	4463386	98.12	PASS	70-125
N020246-005B	SAMP	1	3954276.9	4463386	88.59	PASS	70-125
N020246-006B	SAMP	1	3783135.7	4463386	84.76	PASS	70-125
N020246-007B	SAMP	1	3722258.6	4463386	83.4	PASS	70-125
N020246-008B	SAMP	1	4064448.9	4463386	91.062	PASS	70-125
N020246-009B	SAMP	1	4057538.8	4463386	90.91	PASS	70-125
N020244-001B	SAMP	1	3988092.2	4463386	89.35	PASS	70-125
N020244-002B	SAMP	1	4078345.4	4463386	91.37	PASS	70-125
N020244-002B-MS	MS	1	4191997.6	4463386	93.92	PASS	70-125
N020244-003B	SAMP	1	4065187.4	4463386	91.079	PASS	70-125
N020244-004B	SAMP	1	4150390.3	4463386	92.99	PASS	70-125
CCV2	CCV	1	5173080.1	4463386	115.9	PASS	70-125
CCB2	CCB	1	4536352.1	4463386	101.63	PASS	70-125
N020244-005B	SAMP	1	4171309.6	4463386	93.46	PASS	70-125
N020244-006B	SAMP	1	4144308.1	4463386	92.85	PASS	70-125
N020244-007B	SAMP	1	4180554.4	4463386	93.66	PASS	70-125

INTERNAL STANDARD: 160710A

Instrument ID: ICPMS-02

Sample Name	Type	DF	103 Rh (ISTD) [2]				
			CPS	REF	%REC	Comment	Criteria
N020244-008B	SAMP	1	4209378.3	4463386	94.31	PASS	70-125
N020244-009B	SAMP	1	4354645.9	4463386	97.56	PASS	70-125
N020244-010B	SAMP	1	4159716.5	4463386	93.2	PASS	70-125
N020244-011B	SAMP	1	4243644	4463386	95.077	PASS	70-125
CCV3	CCV	1	4389574.3	4463386	98.35	PASS	70-125
CCB3	CCB	1	4359828	4463386	97.68	PASS	70-125
CCV4	CCV	1	4124158.8	4463386	92.4	PASS	70-125
CCB4	CCB	1	4212692.3	4463386	94.38	PASS	70-125
CCV5	CCV	1	4120275.3	4463386	92.31	PASS	70-125
CCB5	CCB	1	4150886.5	4463386	93	PASS	70-125
CCV6	CCV	1	4262249.5	4463386	95.49	PASS	70-125
CCB6	CCB	1	4036801.6	4463386	90.44	PASS	70-125
LLCCV1	CCV2	1	4407788.9	4463386	98.75	PASS	70-125
ICSA2	ICSA	1	4229950.8	4463386	94.77	PASS	70-125
ICSAB2	ICSAB	1	3427927.3	4463386	76.8	PASS	70-125

INTERNAL STANDARD: 160711A

Instrument ID: ICPMS-02

Sample Name	Type	DF	159 Tb (ISTD) [3]				
			CPS	REF	%REC	Comment	Criteria
Cal Blank	IBLK	1	12545513	12545513	100	PASS	70-125
Std1-0.1/1 ppb	ICAL	1	12545313	12545513	100	PASS	70-125
Std2-0.5/5 ppb	ICAL	1	12549717.6	12545513	100.03	PASS	70-125
Std3-5/50 ppb	ICAL	1	12460738.6	12545513	99.32	PASS	70-125
Std4-10/100 ppb	ICAL	1	12455768.3	12545513	99.28	PASS	70-125
Std5-20/200 ppb	ICAL	1	12442295.2	12545513	99.18	PASS	70-125
Std6-40/400 ppb	ICAL	1	12277877.3	12545513	97.87	PASS	70-125
Std7-100/1000 ppb	ICAL	1	12223803.4	12545513	97.44	PASS	70-125
Std8-200/2000 ppb	ICAL	1	12309386.6	12545513	98.12	PASS	70-125
ICV	ICV	1	14121464.9	12545513	112.56	PASS	70-125
ICB	ICB	1	12735267.7	12545513	101.51	PASS	70-125
LLICV	CCV1	1	12569994.1	12545513	100.2	PASS	70-125
ICSA1	ICSA	1	12152602.6	12545513	96.87	PASS	70-125
ICSAB1	ICSAB	1	12520923.3	12545513	99.8	PASS	70-125
CCV1	CCV	1	13319301.7	12545513	106.17	PASS	70-125
CCB1	CCB	1	13084331.3	12545513	104.29	PASS	70-125
CCV2	CCV	1	13366091.9	12545513	106.54	PASS	70-125
CCB2	CCB	1	13166051.8	12545513	104.95	PASS	70-125
CCV3	CCV	1	14105372.8	12545513	112.43	PASS	70-125
CCB3	CCB	1	13503405.8	12545513	107.64	PASS	70-125
N020244-002B	SAMP	5	13044931.3	12545513	103.98	PASS	70-125
N020244-002B-MS	MS	5	13146164.8	12545513	104.79	PASS	70-125
CCV4	CCV	1	13138300.5	12545513	104.73	PASS	70-125
CCB4	CCB	1	13022380.2	12545513	103.8	PASS	70-125
LLCCV1	CCV2	1	12898675.4	12545513	102.82	PASS	70-125
ICSA2	ICSA	1	12905070.2	12545513	102.87	PASS	70-125
ICSAB2	ICSAB	1	13206340.5	12545513	105.27	PASS	70-125

SERIAL DILUTION/
POST DIGESTION SPIKE

ASSET Laboratories

ICP-MS-Metals in Water

Dilution Test Summary

Work Order No.: N020244
Test Method: EPA 6020
Analysis Date: 7/10/2016

Matrix: Groundwater
Batch No.: 58947

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

Comments:

Analyzed By: Mary Claire Ignacio

Dilution test is not applicable to Cr, Mn & Se. The calculated concentration is <25RL.

Sample ID	Analyte	Units	Calc Val	OQual	SAMPRefVal	%DIFF	%DIFFlimit
N020246-001B DT 5X	Arsenic	ug/L	27.27522	PASS	26.60366	2.52%	10
N020246-001B DT 5X	Barium	ug/L	26.39995	PASS	28.56885	7.59%	10
N020246-001B DT 5X	Chromium	ug/L	2.737234	NA	2.605128	5.07%	10
N020246-001B DT 5X	Manganese	ug/L	0.977901	NA	1.015499	3.70%	10
N020246-001B DT 5X	Molybdenum	ug/L	18.36446	PASS	19.0825	3.76%	10
N020246-001B DT 5X	Selenium	ug/L	0.354118	NA	0.33267	6.45%	10

Note: NA - Not applicable

CLIENT: ARCADIS U.S., Inc. - California
Work Order: N020244
Project: PG&E Topock - RMP, RC000753.0801

ANALYTICAL QC SUMMARY REPORT

TestCode: 6020_DIS

Sample ID	**N020246-001B-PS**	SampType: **PS**	TestCode: **6020_DIS**	Units: **µg/L**	Prep Date:	RunNo: **109346**
Client ID:	**ZZZZZZ**	Batch ID: **58947**	TestNo: **EPA 6020**	**EPA 3010A**	Analysis Date: **7/10/2016**	SeqNo: **2368173**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	34.923	0.10	10.00	26.60	83.2	80	120				
Barium	124.761	1.0	100.0	28.57	96.2	80	120				
Manganese	94.074	0.50	100.0	1.015	93.1	80	120				
Molybdenum	29.360	0.50	10.00	19.08	103	80	120				
Selenium	8.917	0.50	10.00	0.3327	85.8	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		

CLIENT: ARCADIS U.S., Inc. - California
Work Order: N020244
Project: PG&E Topock - RMP, RC000753.0801

ANALYTICAL QC SUMMARY REPORT

TestCode: 6020DIS_CrPGE

Sample ID	**N020246-001B-PS**	SampType: **PS**	TestCode: **6020DIS_CrP**	Units: **µg/L**	Prep Date:	RunNo: **109346**
Client ID:	**ZZZZZZ**	Batch ID: **58947**	TestNo: **EPA 6020**	**EPA 3010A**	Analysis Date: **7/10/2016**	SeqNo: **2368025**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium	11.739	1.0	10.00	2.605	91.3	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
DO	Surrogate Diluted Out		Calculations are based on raw values		

MDL STUDY

METHOD DETECTION LIMIT 2016

Method Detection Limit
Analytical Method: EPA 6020 / 200.8
Digestion Method: EPA 3010A
Date of Analysis: 4/5/2016,4/6/2016
Digestion Date: 4/1/2016
Instrument Name: ICPMS2
Analysts: MEI

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

ACCEPTANCE CRITERIA: MDL<SPIKE<10XMDL

Analyte	AMT SPIKED, ppb	1	2	3	4	5	6	7	SD	MDL	MDL*10	LOD	ACTUAL LOD	PQL	ACTUAL PQL	% REC
ANTIMONY	0.100	0.091	0.078	0.067	0.089	0.069	0.088	0.087	0.0100	0.0313	0.3133	0.3000	0.187	0.50	0.515	103
ARSENIC	0.050	0.054	0.045	0.064	0.053	0.047	0.051	0.039	0.0079	0.0248	0.2485	0.3000	0.049	0.10	0.103	103
BARIUM	0.100	0.199	0.158	0.159	0.206	0.167	0.196	0.207	0.0222	0.0699	0.6986	0.3000	0.403	1.00	1.245	125
BERYLLIUM	0.100	0.090	0.089	0.072	0.104	0.077	0.103	0.107	0.0137	0.0430	0.4304	0.3000	0.185	0.50	0.524	105
CADMIUM	0.100	0.105	0.093	0.089	0.122	0.093	0.121	0.122	0.0151	0.0473	0.4734	0.3000	0.174	0.50	0.501	100
CHROMIUM	0.100	0.088	0.096	0.092	0.093	0.085	0.100	0.102	0.0061	0.0192	0.1925	0.3000	0.321	1.00	0.973	97
COBALT	0.100	0.102	0.088	0.084	0.096	0.085	0.104	0.100	0.0084	0.0263	0.2630	0.3000	0.163	0.50	0.475	95
COPPER	0.500	0.789	0.565	0.564	0.559	0.574	0.563	0.596	0.0836	0.2626	2.6262	0.3000	0.328	1.00	1.062	106
IRON	1.000	0.685	0.581	0.566	1.123	0.578	0.843	1.075	0.2394	0.7517	7.5170	0.3000	0.605	10.00	11.338	113
LEAD	0.100	0.108	0.098	0.088	0.116	0.089	0.113	0.112	0.0117	0.0367	0.3670	0.3000	0.343	1.00	1.018	102
MANGANESE	0.100	0.162	0.122	0.123	0.160	0.133	0.156	0.154	0.0177	0.0554	0.5543	0.3000	0.193	0.50	0.605	121
MOLYBDENUM	0.100	0.100	0.095	0.079	0.109	0.080	0.098	0.109	0.0123	0.0385	0.3853	0.3000	0.247	0.50	0.660	132
NICKEL	0.100	0.126	0.095	0.090	0.119	0.105	0.110	0.106	0.0126	0.0395	0.3954	0.3000	0.341	1.00	1.002	100
SELENIUM	0.100	0.113	0.104	0.091	0.104	0.092	0.110	0.110	0.0088	0.0276	0.2760	0.3000	0.170	0.50	0.502	100
SILVER	0.100	0.028	0.065	0.071	0.079	0.076	0.079	0.082	0.0188	0.0590	0.5899	0.3000	0.247	1.00	1.029	103
THALLIUM	0.100	0.084	0.076	0.067	0.091	0.070	0.088	0.087	0.0094	0.0296	0.2961	0.3000	0.186	0.50	0.549	110
URANIUM	0.100	0.099	0.090	0.082	0.104	0.083	0.105	0.106	0.0104	0.0327	0.3272	0.3000	0.181	0.50	0.533	107
VANADIUM	0.100	0.126	0.111	0.110	0.126	0.116	0.123	0.122	0.0068	0.0213	0.2133	0.3000	0.221	1.00	0.873	87
ZINC	0.500	0.930	0.695	0.905	0.781	0.765	0.744	0.810	0.0853	0.2678	2.6780	0.3000	3.286	10.00	10.085	101

ARCADIS

Project: PG&E Topock - RMP

Project No.: RC000753.0801

ASSET Laboratories Work Order: N020245

ANALYTICAL and QC RESULTS
SAMPLE RECEIVING ITEMS

PRIVILEGED AND CONFIDENTIAL

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July 23, 2016

Dan Bush
ARCADIS U.S., Inc. - California
1410 Rocky Ridge Dr #330
Roseville, CA 95661

TEL: (916) 786-3302
FAX:

CA-ELAP No.: 2676
NV Cert. No.: NV-00922

Workorder No.: N020245

RE: PG&E Topock - RMP, RC000753.0801

Attention: Dan Bush

Enclosed are the results for sample(s) received on July 07, 2016 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 Ribucan for

Puri Romualdo
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.

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 6010B_Total:

Matrix Spike (MS) is outside recovery criteria for Iron on QC sample N020245-002C-MS possibly due to matrix interference. The associated Laboratory Control Sample (LCS) recovery was acceptable.

ASSET LABORATORIES
ANALYTICAL SUPPORT SERVICES FOR ENVIRONMENTAL TECHNOLOGIES

CALIFORNIA
11060 Artesia Blvd., Ste C, Cerritos, CA 90703
P: 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

Date: *23-Jul-16*

CLIENT: ARCADIS U.S., Inc. - California
Project: PG&E Topock - RMP, RC000753.0801
Lab Order: N020245
Contract No:

Work Order Sample Summary

Lab Sample ID	Client Sample ID	Matrix	Collection Date	Date Received	Date Reported
N020245-001A	R-19-Q316	Groundwater	7/7/2016 8:20:00 AM	7/7/2016	7/23/2016
N020245-001B	R-19-Q316	Groundwater	7/7/2016 8:20:00 AM	7/7/2016	7/23/2016
N020245-001C	R-19-Q316	Groundwater	7/7/2016 8:20:00 AM	7/7/2016	7/23/2016
N020245-001D	R-19-Q316	Groundwater	7/7/2016 8:20:00 AM	7/7/2016	7/23/2016
N020245-001E	R-19-Q316	Groundwater	7/7/2016 8:20:00 AM	7/7/2016	7/23/2016
N020245-002A	R-28-Q316	Groundwater	7/7/2016 9:00:00 AM	7/7/2016	7/23/2016
N020245-002B	R-28-Q316	Groundwater	7/7/2016 9:00:00 AM	7/7/2016	7/23/2016
N020245-002C	R-28-Q316	Groundwater	7/7/2016 9:00:00 AM	7/7/2016	7/23/2016
N020245-002D	R-28-Q316	Groundwater	7/7/2016 9:00:00 AM	7/7/2016	7/23/2016
N020245-002E	R-28-Q316	Groundwater	7/7/2016 9:00:00 AM	7/7/2016	7/23/2016
N020245-003A	RMP-AB2-Q316	Groundwater	7/7/2016 8:05:00 AM	7/7/2016	7/23/2016
N020245-004A	RMP-AB3-Q316	Groundwater	7/7/2016 8:30:00 AM	7/7/2016	7/23/2016

CLIENT: ARCADIS U.S., Inc. - California
Lab Order: N020245
Project: PG&E Topock - RMP, RC000753.0801
Lab ID: N020245-001

Client Sample ID: R-19-Q316
Collection Date: 7/7/2016 8:20:00 AM
Matrix: GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
SPECIFIC CONDUCTANCE							
			EPA 120.1				
RunID: **WETCHEM_160708B**	QC Batch: **R109322**			PrepDate			Analyst: **LR**
Specific Conductance	990	0.10	0.10		umhos/cm	1	7/8/2016 10:10 AM

CLIENT:	ARCADIS U.S., Inc. - California	**Client Sample ID:**	R-28-Q316
Lab Order:	N020245	**Collection Date:**	7/7/2016 9:00:00 AM
Project:	PG&E Topock - RMP, RC000753.0801	**Matrix:**	GROUNDWATER
Lab ID:	N020245-002		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
SPECIFIC CONDUCTANCE							
			EPA 120.1				
RunID: **WETCHEM_160708B**	QC Batch: **R109322**			PrepDate			Analyst: **LR**
Specific Conductance	990	0.10	0.10		umhos/cm	1	7/8/2016 10:10 AM

Qualifiers:

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

CLIENT: ARCADIS U.S., Inc. - California
Work Order: N020245
Project: PG&E Topock - RMP, RC000753.0801

ANALYTICAL QC SUMMARY REPORT

TestCode: 120.1_WPGE

Sample ID **N020244-001DDUP**	SampType: **DUP**	TestCode: **120.1_WPGE**	Units: **umhos/cm**	Prep Date:	RunNo: **109322**
Client ID: **ZZZZZZ**	Batch ID: **R109322**	TestNo: **EPA 120.1**		Analysis Date: **7/8/2016**	SeqNo: **2366668**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Specific Conductance	974.000	0.10						967.0	0.721	10	

Sample ID **N020245-002DDUP**	SampType: **DUP**	TestCode: **120.1_WPGE**	Units: **umhos/cm**	Prep Date:	RunNo: **109322**
Client ID: **ZZZZZZ**	Batch ID: **R109322**	TestNo: **EPA 120.1**		Analysis Date: **7/8/2016**	SeqNo: **2366734**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Specific Conductance	991.000	0.10						994.0	0.302	10	

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis 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
Lab Order: N020245
Project: PG&E Topock - RMP, RC000753.0801
Lab ID: N020245-001

Client Sample ID: R-19-Q316
Collection Date: 7/7/2016 8:20:00 AM
Matrix: GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
PH							
			SM4500-H+B				
RunID: **WETCHEM_160708D**	QC Batch: **R109326**			PrepDate			Analyst: **LR**
pH	8.3	0.10	0.10	H	pH Units	1	7/8/2016 10:55 AM
Temp. at time of pH Analysis	22	0.10	0.10	H	°C	1	7/8/2016 10:55 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

CLIENT: ARCADIS U.S., Inc. - California
Lab Order: N020245
Project: PG&E Topock - RMP, RC000753.0801
Lab ID: N020245-002

Client Sample ID: R-28-Q316
Collection Date: 7/7/2016 9:00:00 AM
Matrix: GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
PH							
			SM4500-H+B				
RunID: **WETCHEM_160708D**	QC Batch: **R109326**			PrepDate			Analyst: **LR**
pH	8.2	0.10	0.10	H	pH Units	1	7/8/2016 10:55 AM
Temp. at time of pH Analysis	23	0.10	0.10	H	°C	1	7/8/2016 10:55 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

CLIENT: ARCADIS U.S., Inc. - California
Work Order: N020245
Project: PG&E Topock - RMP, RC000753.0801

ANALYTICAL QC SUMMARY REPORT

TestCode: 150.1_4500H+B_W

Sample ID **N020244-001DDUP**	SampType: **DUP**	TestCode: **150.1_4500H**	Units: **pH Units**	Prep Date:	RunNo: **109326**
Client ID: **ZZZZZZ**	Batch ID: **R109326**	TestNo: **SM4500-H+B**		Analysis Date: **7/8/2016**	SeqNo: **2366797**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
pH	8.160	0.10						8.210	0.611	10	H
Temp. at time of pH Analysis	21.900	0.10						21.50	1.84	10	H

Sample ID **N020245-002DDUP**	SampType: **DUP**	TestCode: **150.1_4500H**	Units: **pH Units**	Prep Date:	RunNo: **109326**
Client ID: **ZZZZZZ**	Batch ID: **R109326**	TestNo: **SM4500-H+B**		Analysis Date: **7/8/2016**	SeqNo: **2366810**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
pH	8.210	0.10						8.190	0.244	10	H
Temp. at time of pH Analysis	22.500	0.10						22.70	0.885	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
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: ARCADIS U.S., Inc. - California
Lab Order: N020245
Project: PG&E Topock - RMP, RC000753.0801
Lab ID: N020245-001

Client Sample ID: R-19-Q316
Collection Date: 7/7/2016 8:20:00 AM
Matrix: GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
TOTAL NON-FILTERABLE RESIDUE							
			SM2540D				
RunID: **WETCHEM_160708H**	QC Batch: **58952**				PrepDate	**7/8/2016**	Analyst: **LR**
Suspended Solids (Residue, Non-Filterable)	ND	10	10		mg/L	1	7/8/2016 12:07 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

CLIENT:	ARCADIS U.S., Inc. - California	**Client Sample ID:**	R-28-Q316
Lab Order:	N020245	**Collection Date:**	7/7/2016 9:00:00 AM
Project:	PG&E Topock - RMP, RC000753.0801	**Matrix:**	GROUNDWATER
Lab ID:	N020245-002		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
TOTAL NON-FILTERABLE RESIDUE							
			SM2540D				
RunID: **WETCHEM_160708H**	QC Batch: **58952**				PrepDate	**7/8/2016**	Analyst: **LR**
Suspended Solids (Residue, Non-Filterable)	ND	10	10		mg/L	1	7/8/2016 12:07 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

CLIENT: ARCADIS U.S., Inc. - California
Work Order: N020245
Project: PG&E Topock - RMP, RC000753.0801

ANALYTICAL QC SUMMARY REPORT

TestCode: 160.2_2540D_W

Sample ID **LCS-58952**	SampType: **LCS**	TestCode: **160.2_2540D**	Units: **mg/L**	Prep Date: **7/8/2016**	RunNo: **109337**
Client ID: **LCSW**	Batch ID: **58952**	TestNo: **SM2540D**		Analysis Date: **7/8/2016**	SeqNo: **2367515**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Suspended Solids (Residue, Non-Filter	947.000	10	1000	0	94.7	80	120				

Sample ID **MBLK-58952**	SampType: **MBLK**	TestCode: **160.2_2540D**	Units: **mg/L**	Prep Date: **7/8/2016**	RunNo: **109337**
Client ID: **PBW**	Batch ID: **58952**	TestNo: **SM2540D**		Analysis Date: **7/8/2016**	SeqNo: **2367516**

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 **N020245-001DDUP**	SampType: **DUP**	TestCode: **160.2_2540D**	Units: **mg/L**	Prep Date: **7/8/2016**	RunNo: **109337**
Client ID: **ZZZZZZ**	Batch ID: **58952**	TestNo: **SM2540D**		Analysis Date: **7/8/2016**	SeqNo: **2367520**

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
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: ARCADIS U.S., Inc. - California
Lab Order: N020245
Project: PG&E Topock - RMP, RC000753.0801
Lab ID: N020245-001

Client Sample ID: R-19-Q316
Collection Date: 7/7/2016 8:20:00 AM
Matrix: GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
HEXAVALENT CHROMIUM BY IC							
			EPA 218.6				
RunID: **IC7_160708A**	QC Batch: **R109328**			PrepDate			Analyst: **QBM**
Hexavalent Chromium	ND	0.066	0.20		µg/L	1	7/8/2016 05:13 PM
DISSOLVED METALS BY ICP-MS							
	EPA 3010A			**EPA 6020**			
RunID: **ICP7_160711A**	QC Batch: **58959**			PrepDate	**7/11/2016**		Analyst: **CEI**
Chromium	ND	0.019	1.0		µg/L	1	7/11/2016 11:50 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

CLIENT: ARCADIS U.S., Inc. - California
Lab Order: N020245
Project: PG&E Topock - RMP, RC000753.0801
Lab ID: N020245-002

Client Sample ID: R-28-Q316
Collection Date: 7/7/2016 9:00:00 AM
Matrix: GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
HEXAVALENT CHROMIUM BY IC							
			EPA 218.6				
RunID: **IC7_160708A**	QC Batch: **R109328**			PrepDate			Analyst: **QBM**
Hexavalent Chromium	ND	0.066	0.20		µg/L	1	7/8/2016 05:32 PM
DISSOLVED METALS BY ICP-MS							
	EPA 3010A			**EPA 6020**			
RunID: **ICP7_160711A**	QC Batch: **58959**			PrepDate	**7/11/2016**		Analyst: **CEI**
Chromium	ND	0.019	1.0		µg/L	1	7/11/2016 12:17 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

CLIENT: ARCADIS U.S., Inc. - California
Lab Order: N020245
Project: PG&E Topock - RMP, RC000753.0801
Lab ID: N020245-003

Client Sample ID: RMP-AB2-Q316
Collection Date: 7/7/2016 8:05:00 AM
Matrix: GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
HEXAVALENT CHROMIUM BY IC							
			EPA 218.6				
RunID: **IC7_160711A**	QC Batch: **R109341**			PrepDate			Analyst: **QBM**
Hexavalent Chromium	ND	0.066	0.20		µg/L	1	7/11/2016 12:54 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

CLIENT: ARCADIS U.S., Inc. - California
Lab Order: N020245
Project: PG&E Topock - RMP, RC000753.0801
Lab ID: N020245-004

Client Sample ID: RMP-AB3-Q316
Collection Date: 7/7/2016 8:30:00 AM
Matrix: GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
HEXAVALENT CHROMIUM BY IC							
			EPA 218.6				
RunID: **IC7_160711A**	QC Batch: **R109341**			PrepDate			Analyst: **QBM**
Hexavalent Chromium	ND	0.066	0.20		µg/L	1	7/11/2016 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

CLIENT: ARCADIS U.S., Inc. - California
Work Order: N020245
Project: PG&E Topock - RMP, RC000753.0801

ANALYTICAL QC SUMMARY REPORT

TestCode: 218.6_WPGE

Sample ID	MB-R109328	SampType:	MBLK	TestCode:	218.6_WPGE	Units:	µg/L	Prep Date:		RunNo:	109328
Client ID:	PBW	Batch ID:	R109328	TestNo:	EPA 218.6			Analysis Date:	7/8/2016	SeqNo:	2366827

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	ND	0.20									

Sample ID	LCS-R109328	SampType:	LCS	TestCode:	218.6_WPGE	Units:	µg/L	Prep Date:		RunNo:	109328
Client ID:	LCSW	Batch ID:	R109328	TestNo:	EPA 218.6			Analysis Date:	7/8/2016	SeqNo:	2366828

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	5.070	0.20	5.000	0	101	90	110				

Sample ID	N020230-013ADUP	SampType:	DUP	TestCode:	218.6_WPGE	Units:	µg/L	Prep Date:		RunNo:	109328
Client ID:	ZZZZZZ	Batch ID:	R109328	TestNo:	EPA 218.6			Analysis Date:	7/8/2016	SeqNo:	2366836

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	0.123	0.20						0.1318	0	20	

Sample ID	N020244-001AMS	SampType:	MS	TestCode:	218.6_WPGE	Units:	µg/L	Prep Date:		RunNo:	109328
Client ID:	ZZZZZZ	Batch ID:	R109328	TestNo:	EPA 218.6			Analysis Date:	7/8/2016	SeqNo:	2366840

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	1.109	0.20	1.000	0.09600	101	90	110				

Sample ID	N020244-001AMSD	SampType:	MSD	TestCode:	218.6_WPGE	Units:	µg/L	Prep Date:		RunNo:	109328
Client ID:	ZZZZZZ	Batch ID:	R109328	TestNo:	EPA 218.6			Analysis Date:	7/8/2016	SeqNo:	2366841

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	0.09600	102	90	110	1.109	0.808	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
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: ARCADIS U.S., Inc. - California
Work Order: N020245
Project: PG&E Topock - RMP, RC000753.0801

ANALYTICAL QC SUMMARY REPORT

TestCode: 218.6_WPGE

Sample ID **N020244-002AMS**	SampType: **MS**	TestCode: **218.6_WPGE**	Units: **µg/L**	Prep Date:	RunNo: **109328**
Client ID: **ZZZZZZ**	Batch ID: **R109328**	TestNo: **EPA 218.6**		Analysis Date: **7/8/2016**	SeqNo: **2366843**

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	0.07980	102	90	110				

Sample ID **N020244-003AMS**	SampType: **MS**	TestCode: **218.6_WPGE**	Units: **µg/L**	Prep Date:	RunNo: **109328**
Client ID: **ZZZZZZ**	Batch ID: **R109328**	TestNo: **EPA 218.6**		Analysis Date: **7/8/2016**	SeqNo: **2366845**

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	0.08530	99.1	90	110				

Sample ID **N020244-004AMS**	SampType: **MS**	TestCode: **218.6_WPGE**	Units: **µg/L**	Prep Date:	RunNo: **109328**
Client ID: **ZZZZZZ**	Batch ID: **R109328**	TestNo: **EPA 218.6**		Analysis Date: **7/8/2016**	SeqNo: **2366847**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	1.081	0.20	1.000	0.08200	99.9	90	110				

Sample ID **N020244-005AMS**	SampType: **MS**	TestCode: **218.6_WPGE**	Units: **µg/L**	Prep Date:	RunNo: **109328**
Client ID: **ZZZZZZ**	Batch ID: **R109328**	TestNo: **EPA 218.6**		Analysis Date: **7/8/2016**	SeqNo: **2366851**

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	0.1041	98.2	90	110				

Sample ID **N020244-006AMS**	SampType: **MS**	TestCode: **218.6_WPGE**	Units: **µg/L**	Prep Date:	RunNo: **109328**
Client ID: **ZZZZZZ**	Batch ID: **R109328**	TestNo: **EPA 218.6**		Analysis Date: **7/8/2016**	SeqNo: **2366853**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	1.117	0.20	1.000	0.08910	103	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: N020245
Project: PG&E Topock - RMP, RC000753.0801

ANALYTICAL QC SUMMARY REPORT

TestCode: 218.6_WPGE

Sample ID **N020244-007AMS**	SampType: **MS**	TestCode: **218.6_WPGE**	Units: **µg/L**	Prep Date:	RunNo: **109328**
Client ID: **ZZZZZZ**	Batch ID: **R109328**	TestNo: **EPA 218.6**		Analysis Date: **7/8/2016**	SeqNo: **2366855**

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	0.1070	99.3	90	110				

Sample ID **N020244-008AMS**	SampType: **MS**	TestCode: **218.6_WPGE**	Units: **µg/L**	Prep Date:	RunNo: **109328**
Client ID: **ZZZZZZ**	Batch ID: **R109328**	TestNo: **EPA 218.6**		Analysis Date: **7/8/2016**	SeqNo: **2366857**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	1.059	0.20	1.000	0	106	90	110				

Sample ID **N020244-009AMS**	SampType: **MS**	TestCode: **218.6_WPGE**	Units: **µg/L**	Prep Date:	RunNo: **109328**
Client ID: **ZZZZZZ**	Batch ID: **R109328**	TestNo: **EPA 218.6**		Analysis Date: **7/8/2016**	SeqNo: **2366859**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	1.116	0.20	1.000	0.1202	99.6	90	110				

Sample ID **N020244-010AMS**	SampType: **MS**	TestCode: **218.6_WPGE**	Units: **µg/L**	Prep Date:	RunNo: **109328**
Client ID: **ZZZZZZ**	Batch ID: **R109328**	TestNo: **EPA 218.6**		Analysis Date: **7/8/2016**	SeqNo: **2366863**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	1.145	0.20	1.000	0.1176	103	90	110				

Sample ID **N020244-011AMS**	SampType: **MS**	TestCode: **218.6_WPGE**	Units: **µg/L**	Prep Date:	RunNo: **109328**
Client ID: **ZZZZZZ**	Batch ID: **R109328**	TestNo: **EPA 218.6**		Analysis Date: **7/8/2016**	SeqNo: **2366865**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	1.093	0.20	1.000	0.1004	99.2	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
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: ARCADIS U.S., Inc. - California
Work Order: N020245
Project: PG&E Topock - RMP, RC000753.0801

ANALYTICAL QC SUMMARY REPORT

TestCode: 218.6_WPGE

Sample ID **N020245-001AMS**	SampType: **MS**	TestCode: **218.6_WPGE**	Units: **µg/L**	Prep Date:	RunNo: **109328**
Client ID: **ZZZZZZ**	Batch ID: **R109328**	TestNo: **EPA 218.6**		Analysis Date: **7/8/2016**	SeqNo: **2366867**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	1.108	0.20	1.000	0.09390	101	90	110				

Sample ID **N020245-002AMS**	SampType: **MS**	TestCode: **218.6_WPGE**	Units: **µg/L**	Prep Date:	RunNo: **109328**
Client ID: **ZZZZZZ**	Batch ID: **R109328**	TestNo: **EPA 218.6**		Analysis Date: **7/8/2016**	SeqNo: **2366869**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	1.101	0.20	1.000	0.09030	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		

CLIENT: ARCADIS U.S., Inc. - California
Work Order: N020245
Project: PG&E Topock - RMP, RC000753.0801

ANALYTICAL QC SUMMARY REPORT

TestCode: 218.6_WPGE

Sample ID **MB-R109341**	SampType: **MBLK**	TestCode: **218.6_WPGE**	Units: **µg/L**	Prep Date:	RunNo: **109341**
Client ID: **PBW**	Batch ID: **R109341**	TestNo: **EPA 218.6**		Analysis Date: **7/11/2016**	SeqNo: **2367545**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	ND	0.20									

Sample ID **LCS-R109341**	SampType: **LCS**	TestCode: **218.6_WPGE**	Units: **µg/L**	Prep Date:	RunNo: **109341**
Client ID: **LCSW**	Batch ID: **R109341**	TestNo: **EPA 218.6**		Analysis Date: **7/11/2016**	SeqNo: **2367546**

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 **N020253-014ADUP**	SampType: **DUP**	TestCode: **218.6_WPGE**	Units: **µg/L**	Prep Date:	RunNo: **109341**
Client ID: **ZZZZZZ**	Batch ID: **R109341**	TestNo: **EPA 218.6**		Analysis Date: **7/11/2016**	SeqNo: **2367563**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	0.083	0.20						0.08510	0	20	

Sample ID **N020245-003AMS**	SampType: **MS**	TestCode: **218.6_WPGE**	Units: **µg/L**	Prep Date:	RunNo: **109341**
Client ID: **ZZZZZZ**	Batch ID: **R109341**	TestNo: **EPA 218.6**		Analysis Date: **7/11/2016**	SeqNo: **2367565**

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	105	90	110				

Sample ID **N020245-003AMSD**	SampType: **MSD**	TestCode: **218.6_WPGE**	Units: **µg/L**	Prep Date:	RunNo: **109341**
Client ID: **ZZZZZZ**	Batch ID: **R109341**	TestNo: **EPA 218.6**		Analysis Date: **7/11/2016**	SeqNo: **2367566**

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	1.051	3.14	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

CLIENT: ARCADIS U.S., Inc. - California
Work Order: N020245
Project: PG&E Topock - RMP, RC000753.0801

ANALYTICAL QC SUMMARY REPORT

TestCode: 218.6_WPGE

Sample ID	N020245-004AMS	SampType:	MS	TestCode:	218.6_WPGE	Units:	µg/L	Prep Date:		RunNo:	109341
Client ID:	ZZZZZZ	Batch ID:	R109341	TestNo:	EPA 218.6			Analysis Date:	7/11/2016	SeqNo:	2367570

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	1.058	0.20	1.000	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
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: ARCADIS U.S., Inc. - California
Work Order: N020245
Project: PG&E Topock - RMP, RC000753.0801

ANALYTICAL QC SUMMARY REPORT

TestCode: 6020DIS_CrPGE

Sample ID	LCS-58959	SampType:	LCS	TestCode:	6020DIS_CrP	Units:	µg/L	Prep Date:	7/11/2016	RunNo:	109348
Client ID:	LCSW	Batch ID:	58959	TestNo:	EPA 6020	EPA 3010A		Analysis Date:	7/11/2016	SeqNo:	2368273

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium	9.538	1.0	10.00	0	95.4	85	115				

Sample ID	N020253-005B-MS	SampType:	MS	TestCode:	6020DIS_CrP	Units:	µg/L	Prep Date:	7/11/2016	RunNo:	109348
Client ID:	ZZZZZZ	Batch ID:	58959	TestNo:	EPA 6020	EPA 3010A		Analysis Date:	7/11/2016	SeqNo:	2368291

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium	12.308	1.0	10.00	2.902	94.1	75	125				

Sample ID	MB-58959	SampType:	MBLK	TestCode:	6020DIS_CrP	Units:	µg/L	Prep Date:	7/11/2016	RunNo:	109348
Client ID:	PBW	Batch ID:	58959	TestNo:	EPA 6020	EPA 3010A		Analysis Date:	7/11/2016	SeqNo:	2368308

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium	ND	1.0									

Sample ID	N020245-001B-MS	SampType:	MS	TestCode:	6020DIS_CrP	Units:	µg/L	Prep Date:	7/11/2016	RunNo:	109348
Client ID:	ZZZZZZ	Batch ID:	58959	TestNo:	EPA 6020	EPA 3010A		Analysis Date:	7/11/2016	SeqNo:	2368309

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium	9.477	1.0	10.00	0.04968	94.3	75	125				

Sample ID	N020245-001B-MSD	SampType:	MSD	TestCode:	6020DIS_CrP	Units:	µg/L	Prep Date:	7/11/2016	RunNo:	109348
Client ID:	ZZZZZZ	Batch ID:	58959	TestNo:	EPA 6020	EPA 3010A		Analysis Date:	7/11/2016	SeqNo:	2368310

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium	9.340	1.0	10.00	0.04968	92.9	75	125	9.477	1.45	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
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: ARCADIS U.S., Inc. - California
Lab Order: N020245
Project: PG&E Topock - RMP, RC000753.0801
Lab ID: N020245-001

Client Sample ID: R-19-Q316
Collection Date: 7/7/2016 8:20:00 AM
Matrix: GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
NITRATE/NITRITE-N BY CADMIUM REDUCTION							
			SM4500-NO3F				
RunID: **WETCHEM_160712B**	QC Batch: **R109386**		PrepDate				Analyst: **RB**
Nitrate/Nitrite as N	0.38	0.022	0.050		mg/L	1	7/12/2016

Qualifiers:

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

CLIENT:	ARCADIS U.S., Inc. - California	**Client Sample ID:**	R-28-Q316
Lab Order:	N020245	**Collection Date:**	7/7/2016 9:00:00 AM
Project:	PG&E Topock - RMP, RC000753.0801	**Matrix:**	GROUNDWATER
Lab ID:	N020245-002		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
NITRATE/NITRITE-N BY CADMIUM REDUCTION							
			SM4500-NO3F				
RunID: **WETCHEM_160712B**	QC Batch: **R109386**		PrepDate				Analyst: **RB**
Nitrate/Nitrite as N	0.44	0.022	0.050		mg/L	1	7/12/2016

Qualifiers:

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

CLIENT: ARCADIS U.S., Inc. - California
Work Order: N020245
Project: PG&E Topock - RMP, RC000753.0801

ANALYTICAL QC SUMMARY REPORT

TestCode: 4500N03F_W

Sample ID	SampType	TestCode	Units	Prep Date	RunNo
MB-R109386	**MBLK**	**4500N03F_W**	**mg/L**		**109386**
Client ID: **PBW**	Batch ID: **R109386**	TestNo: **SM4500-NO3**		Analysis Date: **7/12/2016**	SeqNo: **2370902**

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	SampType	TestCode	Units	Prep Date	RunNo
LCS-R109386	**LCS**	**4500N03F_W**	**mg/L**		**109386**
Client ID: **LCSW**	Batch ID: **R109386**	TestNo: **SM4500-NO3**		Analysis Date: **7/12/2016**	SeqNo: **2370903**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrate/Nitrite as N	0.470	0.050	0.5000	0	94.0	85	115				

Sample ID	SampType	TestCode	Units	Prep Date	RunNo
N020244-001EDUP	**DUP**	**4500N03F_W**	**mg/L**		**109386**
Client ID: **ZZZZZZ**	Batch ID: **R109386**	TestNo: **SM4500-NO3**		Analysis Date: **7/12/2016**	SeqNo: **2370905**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrate/Nitrite as N	0.398	0.050						0.4262	6.79	20	

Sample ID	SampType	TestCode	Units	Prep Date	RunNo
N020244-001EMS	**MS**	**4500N03F_W**	**mg/L**		**109386**
Client ID: **ZZZZZZ**	Batch ID: **R109386**	TestNo: **SM4500-NO3**		Analysis Date: **7/12/2016**	SeqNo: **2370906**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrate/Nitrite as N	0.992	0.050	0.5000	0.4262	113	75	125				

Sample ID	SampType	TestCode	Units	Prep Date	RunNo
N020244-001EMSD	**MSD**	**4500N03F_W**	**mg/L**		**109386**
Client ID: **ZZZZZZ**	Batch ID: **R109386**	TestNo: **SM4500-NO3**		Analysis Date: **7/12/2016**	SeqNo: **2370907**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrate/Nitrite as N	1.009	0.050	0.5000	0.4262	116	75	125	0.9919	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
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: ARCADIS U.S., Inc. - California
Lab Order: N020245
Project: PG&E Topock - RMP, RC000753.0801
Lab ID: N020245-001

Client Sample ID: R-19-Q316
Collection Date: 7/7/2016 8:20:00 AM
Matrix: GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
DISSOLVED METALS BY ICP							
	EPA 3010A			**EPA 6010B**			
RunID: **ICP2_160712D**	QC Batch: **58946**			PrepDate	**7/8/2016**		Analyst: **CEI**
Iron	33	1.8	20		ug/L	1	7/12/2016 06:59 AM
TOTAL METALS BY ICP							
	EPA 3010A			**EPA 6010B**			
RunID: **ICP2_160712D**	QC Batch: **58945**			PrepDate	**7/8/2016**		Analyst: **CEI**
Iron	71	1.8	20		ug/L	1	7/12/2016 09:02 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

CLIENT: ARCADIS U.S., Inc. - California
Lab Order: N020245
Project: PG&E Topock - RMP, RC000753.0801
Lab ID: N020245-002

Client Sample ID: R-28-Q316
Collection Date: 7/7/2016 9:00:00 AM
Matrix: GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
DISSOLVED METALS BY ICP							
	EPA 3010A			**EPA 6010B**			
RunID: **ICP2_160712D**	QC Batch: **58946**				PrepDate	**7/8/2016**	Analyst: **CEI**
Iron	22	1.8	20		ug/L	1	7/12/2016 07:05 AM
TOTAL METALS BY ICP							
	EPA 3010A			**EPA 6010B**			
RunID: **ICP2_160712D**	QC Batch: **58945**				PrepDate	**7/8/2016**	Analyst: **CEI**
Iron	83	1.8	20		ug/L	1	7/12/2016 09:08 AM

Qualifiers:

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

CLIENT: ARCADIS U.S., Inc. - California
Work Order: N020245
Project: PG&E Topock - RMP, RC000753.0801

ANALYTICAL QC SUMMARY REPORT

TestCode: 6010_WDPGEPPB

Sample ID	MB-58946	SampType:	MBLK	TestCode:	6010_WDPG	Units:	ug/L	Prep Date:	7/8/2016	RunNo:	109377
Client ID:	PBW	Batch ID:	58946	TestNo:	EPA 6010B	EPA 3010A		Analysis Date:	7/12/2016	SeqNo:	2370445

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Iron	ND	20									

Sample ID	LCS-58946	SampType:	LCS	TestCode:	6010_WDPG	Units:	ug/L	Prep Date:	7/8/2016	RunNo:	109377
Client ID:	LCSW	Batch ID:	58946	TestNo:	EPA 6010B	EPA 3010A		Analysis Date:	7/12/2016	SeqNo:	2370446

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Iron	111.142	20	100.0	0	111	85	115				

Sample ID	N020244-001B-MS	SampType:	MS	TestCode:	6010_WDPG	Units:	ug/L	Prep Date:	7/8/2016	RunNo:	109377
Client ID:	ZZZZZZ	Batch ID:	58946	TestNo:	EPA 6010B	EPA 3010A		Analysis Date:	7/12/2016	SeqNo:	2370450

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Iron	104.724	20	100.0	2.150	103	75	125				

Sample ID	N020244-001B-MSD	SampType:	MSD	TestCode:	6010_WDPG	Units:	ug/L	Prep Date:	7/8/2016	RunNo:	109377
Client ID:	ZZZZZZ	Batch ID:	58946	TestNo:	EPA 6010B	EPA 3010A		Analysis Date:	7/12/2016	SeqNo:	2370451

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Iron	103.106	20	100.0	2.150	101	75	125	104.7	1.56	20	

Sample ID	N020245-002B-MS	SampType:	MS	TestCode:	6010_WDPG	Units:	ug/L	Prep Date:	7/8/2016	RunNo:	109377
Client ID:	ZZZZZZ	Batch ID:	58946	TestNo:	EPA 6010B	EPA 3010A		Analysis Date:	7/12/2016	SeqNo:	2370464

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Iron	116.243	20	100.0	22.26	94.0	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
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: ARCADIS U.S., Inc. - California
Work Order: N020245
Project: PG&E Topock - RMP, RC000753.0801

ANALYTICAL QC SUMMARY REPORT

TestCode: 6010_WPGEPPB

Sample ID	MB-58945	SampType:	MBLK	TestCode:	6010_WPGE	Units:	ug/L	Prep Date:	7/8/2016	RunNo:	109377
Client ID:	PBW	Batch ID:	58945	TestNo:	EPA 6010B	EPA 3010A		Analysis Date:	7/12/2016	SeqNo:	2370519

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Iron	ND	20									

Sample ID	LCS-58945	SampType:	LCS	TestCode:	6010_WPGE	Units:	ug/L	Prep Date:	7/8/2016	RunNo:	109377
Client ID:	LCSW	Batch ID:	58945	TestNo:	EPA 6010B	EPA 3010A		Analysis Date:	7/12/2016	SeqNo:	2370520

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Iron	96.935	20	100.0	0	96.9	85	115				

Sample ID	N020244-001C-MS	SampType:	MS	TestCode:	6010_WPGE	Units:	ug/L	Prep Date:	7/8/2016	RunNo:	109377
Client ID:	ZZZZZZ	Batch ID:	58945	TestNo:	EPA 6010B	EPA 3010A		Analysis Date:	7/12/2016	SeqNo:	2370526

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Iron	222.501	20	100.0	142.2	80.3	75	125				

Sample ID	N020244-001C-MSD	SampType:	MSD	TestCode:	6010_WPGE	Units:	ug/L	Prep Date:	7/8/2016	RunNo:	109377
Client ID:	ZZZZZZ	Batch ID:	58945	TestNo:	EPA 6010B	EPA 3010A		Analysis Date:	7/12/2016	SeqNo:	2370527

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Iron	223.509	20	100.0	142.2	81.3	75	125	222.5	0.452	20	

Sample ID	N020245-002C-MS	SampType:	MS	TestCode:	6010_WPGE	Units:	ug/L	Prep Date:	7/8/2016	RunNo:	109377
Client ID:	ZZZZZZ	Batch ID:	58945	TestNo:	EPA 6010B	EPA 3010A		Analysis Date:	7/12/2016	SeqNo:	2370540

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Iron	153.381	20	100.0	82.90	70.5	75	125				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

CLIENT: ARCADIS U.S., Inc. - California
Lab Order: N020245
Project: PG&E Topock - RMP, RC000753.0801
Lab ID: N020245-001

Client Sample ID: R-19-Q316
Collection Date: 7/7/2016 8:20:00 AM
Matrix: GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
DISSOLVED METALS BY ICP-MS							
	EPA 3010A			**EPA 6020**			
RunID: **ICP7_160711A**	QC Batch: **58959**			PrepDate	**7/11/2016**		Analyst: **CEI**
Arsenic	2.3	0.025	0.10		µg/L	1	7/11/2016 11:50 AM
Barium	140	0.35	5.0		µg/L	5	7/11/2016 11:55 AM
Manganese	1.8	0.056	0.50		µg/L	1	7/11/2016 11:50 AM
Molybdenum	5.4	0.039	0.50		µg/L	1	7/11/2016 11:50 AM
Selenium	1.6	0.028	0.50		µg/L	1	7/11/2016 11:50 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

CLIENT: ARCADIS U.S., Inc. - California
Lab Order: N020245
Project: PG&E Topock - RMP, RC000753.0801
Lab ID: N020245-002

Client Sample ID: R-28-Q316
Collection Date: 7/7/2016 9:00:00 AM
Matrix: GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
DISSOLVED METALS BY ICP-MS							
	EPA 3010A			**EPA 6020**			
RunID: **ICP7_160711A**	QC Batch: **58959**			PrepDate	**7/11/2016**		Analyst: **CEI**
Arsenic	2.3	0.025	0.10		µg/L	1	7/11/2016 12:17 PM
Barium	130	0.070	1.0		µg/L	1	7/11/2016 12:17 PM
Manganese	1.6	0.056	0.50		µg/L	1	7/11/2016 12:17 PM
Molybdenum	5.4	0.039	0.50		µg/L	1	7/11/2016 12:17 PM
Selenium	1.5	0.028	0.50		µg/L	1	7/11/2016 12:17 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

CLIENT: ARCADIS U.S., Inc. - California
Work Order: N020245
Project: PG&E Topock - RMP, RC000753.0801

ANALYTICAL QC SUMMARY REPORT

TestCode: 6020_DIS

Sample ID **LCS-58959**	SampType: **LCS**	TestCode: **6020_DIS**	Units: **µg/L**	Prep Date: **7/11/2016**	RunNo: **109348**
Client ID: **LCSW**	Batch ID: **58959**	TestNo: **EPA 6020**	**EPA 3010A**	Analysis Date: **7/11/2016**	SeqNo: **2368340**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	9.579	0.10	10.00	0	95.8	85	115				
Barium	103.141	1.0	100.0	0	103	85	115				
Manganese	95.811	0.50	100.0	0	95.8	85	115				
Molybdenum	10.049	0.50	10.00	0	100	85	115				
Selenium	8.940	0.50	10.00	0	89.4	85	115				

Sample ID **N020253-005B-MS**	SampType: **MS**	TestCode: **6020_DIS**	Units: **µg/L**	Prep Date: **7/11/2016**	RunNo: **109348**
Client ID: **ZZZZZZ**	Batch ID: **58959**	TestNo: **EPA 6020**	**EPA 3010A**	Analysis Date: **7/11/2016**	SeqNo: **2368358**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	49.794	0.10	10.00	39.55	102	75	125				
Barium	105.081	1.0	100.0	4.188	101	75	125				
Manganese	94.637	0.50	100.0	1.409	93.2	75	125				
Molybdenum	20.411	0.50	10.00	9.413	110	75	125				
Selenium	9.399	0.50	10.00	0.2538	91.4	75	125				

Sample ID **N020245-001B-MS**	SampType: **MS**	TestCode: **6020_DIS**	Units: **µg/L**	Prep Date: **7/11/2016**	RunNo: **109348**
Client ID: **ZZZZZZ**	Batch ID: **58959**	TestNo: **EPA 6020**	**EPA 3010A**	Analysis Date: **7/11/2016**	SeqNo: **2368370**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Barium	234.817	5.0	100.0	138.5	96.3	75	125				

Sample ID **N020245-001B-MSD**	SampType: **MSD**	TestCode: **6020_DIS**	Units: **µg/L**	Prep Date: **7/11/2016**	RunNo: **109348**
Client ID: **ZZZZZZ**	Batch ID: **58959**	TestNo: **EPA 6020**	**EPA 3010A**	Analysis Date: **7/11/2016**	SeqNo: **2368371**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Barium	235.075	5.0	100.0	138.5	96.6	75	125	234.8	0.110	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
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: ARCADIS U.S., Inc. - California
Work Order: N020245
Project: PG&E Topock - RMP, RC000753.0801

ANALYTICAL QC SUMMARY REPORT

TestCode: 6020_DIS

Sample ID **MB-58959**	SampType: **MBLK**	TestCode: **6020_DIS**	Units: **µg/L**	Prep Date: **7/11/2016**	RunNo: **109348**
Client ID: **PBW**	Batch ID: **58959**	TestNo: **EPA 6020**	**EPA 3010A**	Analysis Date: **7/11/2016**	SeqNo: **2368375**

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									
Selenium	ND	0.50									

Sample ID **N020245-001B-MS**	SampType: **MS**	TestCode: **6020_DIS**	Units: **µg/L**	Prep Date: **7/11/2016**	RunNo: **109348**
Client ID: **ZZZZZZ**	Batch ID: **58959**	TestNo: **EPA 6020**	**EPA 3010A**	Analysis Date: **7/11/2016**	SeqNo: **2368376**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	11.814	0.10	10.00	2.326	94.9	75	125				
Manganese	93.368	0.50	100.0	1.812	91.6	75	125				
Molybdenum	16.030	0.50	10.00	5.433	106	75	125				
Selenium	10.977	0.50	10.00	1.597	93.8	75	125				

Sample ID **N020245-001B-MSD**	SampType: **MSD**	TestCode: **6020_DIS**	Units: **µg/L**	Prep Date: **7/11/2016**	RunNo: **109348**
Client ID: **ZZZZZZ**	Batch ID: **58959**	TestNo: **EPA 6020**	**EPA 3010A**	Analysis Date: **7/11/2016**	SeqNo: **2368377**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	11.973	0.10	10.00	2.326	96.5	75	125	11.81	1.33	20	
Manganese	93.056	0.50	100.0	1.812	91.2	75	125	93.37	0.334	20	
Molybdenum	16.108	0.50	10.00	5.433	107	75	125	16.03	0.486	20	
Selenium	11.197	0.50	10.00	1.597	96.0	75	125	10.98	1.98	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
DO	Surrogate Diluted Out		Calculations are based on raw values		

SAMPLE RECEIVING ITEMS

ASSET LABORATORIES
ANALYTICAL SUPPORT SERVICES FOR ENVIRONMENTAL TECHNOLOGIES

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

CHAIN OF CUSTODY RECORD

Page 1 of 1

Client: Arcadis	Report to: Dan Bush	Bill to: Marty Bloes	EDD Requirement	QA/QC	Sample Receipt Condition	Y	N
Address: 1410 Rocky Ridge Dr # 330	Company: Arcadis	Address:	Excel EDD	RTNE	1 Chilled	X	
Address: Roseville, CA 95661	Email: [redacted]	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	CalTrans	3 Container Intact	X	
Submitted By:		Phone: 949-727-1400, ext 200 / Fax:	Others ✓	LEVEL III	4. Seal Present	X	
Title: Environmental Tech	Phone: 916-786-3302 / Fax:	P O #	Specify: RWQCB	LEVEL IV	5 IR number	2	
Signature: [signature] Date: 7-7-16	Sampled By: Susan Mahon	Global ID:		Regulatory	6 Method of Cooling: 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	Specify State:			Sample Temp: 4.3, 3.2, 5.6 °C		
Project Name: PG&E Topock - RMP	Signature: [signature] Date: 7/7/16				Courier: ASSET		
Project Number: RC000753.0801					Tracking No.		

Item No.	Laboratory Work Order No.	Sample ID/Location	Sample Date	Sample Time	Others	Matrix: Ground	Sediment	Potable	Soil	NPDES	Other Solid	Surface	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 (SM4500N03) Nitrate, H2SO4	Turn Around Time	No. of Container	Container Type	PRESERVATION	Remarks
													3x250 mL poly		500mL poly	500mL poly	500mL 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					
6	N020245 - 01	R-19-Q316	7/7/2016	820			X						X		X		X	X		X	X		X	X	E	7	P	BNS	
7	- 02	R-28-Q316	7/7/2016	800			X						X		X		X	X		X	X		X	X	E	7	P	BNS	

Relinquished by (Signature and Printed Name) / Date/Time: [signature] 7/7/16 1600
Received by (Signature and Printed Name) / Date/Time: [signature] 7/7/16 @1601
Relinquished by (Signature and Printed Name) / Date/Time: [signature] 7/7/16 @1742
Received by (Signature and Printed Name) / Date/Time: Yoandra Rodriguez 7/7/16 18:42

Turn Around Time (TAT)

	A	= 24 Hrs or Same Day TAT
	B	= Next Workday
	C	= 2 Workdays
	D	= 3 Workdays
x	E	= Routine 5-7 Workdays

TAT Starts at 8 AM the following day if samples received after 3:00PM

Special Instruction:

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 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=HNO_3	S=H_2SO_4	C=4°C	
Z=Zn(AC)$_2$	O=NaOH	T=$Na_2S_2O_3$		
Others/Specify	B	(NH4)2SO4/NH4OH		

Container Type:

T=Tube	V=VOA	P=Pint
J=Jar	B=Tedlar	G=Glass
M=Metal	M=Metal	C=Can

White=Laboratory Copy
Yellow=Customer's Copy

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CHAIN OF CUSTODY RECORD

Page 1 of 1

Client: Arcadis	Report to: Dan Bush	Bill to: Marty Bloes	EDD Requirement: Excel EDD; Geotracker; Labspec; Others ✓; Specify: RWQCB; Global ID
Address: 1410 Rocky Ridge Dr # 330	Company: Arcadis	Address:	QA/QC: RTNE; RWQCB ✓; CalTrans; LEVEL III; LEVEL IV; Regulatory; Specify State:
Address: Roseville, CA 95661	Email: dan.bush@arcadis.com; daniel.mayo@arcadis.com	Address:	Sample Receipt Condition: 1 Chilled; 2 Headspace; 3 Container Intact ✓; 4 Seal Present; 5 IR number 2; 6 Method of Cooling: ICE
Phone: 916-786-3302 Fax:	Address: 1410 Rocky Ridge Dr # 330, Roseville, CA 95661	Email to: mbloes@pivox.com	P.O.#
Submitted By:	Phone: 916-786-3302 Fax:	Phone: 949-727-1400, ext 200	Fax:
Title: Environmental tech			Sample Temp: 4, 3.2, 5.6°C
Signature: Date: 7-7-16	Sampled By: Susan Mahon		Courier: ASSET
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		Tracking No
Project Name: PG&E Topock - RMP	Signature: Date: 7/7/16		
Project Number: RC000753.0801			

Matrix: Ground; Potable; NPDES; Surface; Sediment; Soil; Other Solid

Item No.	Laboratory Work Order No.	Sample ID/Location	Sample Date	Sample Time	Others	Cr(VI) FF (E218.6) (NH4)2, SO4, NH4, OH 3x250 mL poly	Field QC Cr(VI) FF (E218.6) (NH4)2, SO4, NH4, OH 250 ml Poly	Dissolved metals (SW6010B/SW6020Adis) FF, HNO3 Cr 3x500mL poly	Dissolved metals (SW6010B/SW6020Adis) FF, HNO3 Ca, Mg, K, Na, B 3x500mL poly	Dissolved metals (SW6010B/SW6020Adis) FF, HNO3 As, Mn, Fe, Se, Mo, Ba 3x500mL poly	Total metals (SW6010B), HNO3 Fe 500 mL 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 (SM4500N03) Nitrate, H2SO4 125 mL poly	Turn Around Time	No. of Container	Container Type	PRESERVATION	Remarks
2	N020245 - 03	RMP-AB2-Q316	7/7/2016	805			X												E	1	P	BN	
3	- 04	RMP-AB3-Q316	7/7/2016	830			X												E	1	P	BN	

Relinquished by (Signature and Printed Name): Date/Time: 7/7/16 1600
Received by (Signature and Printed Name): Date/Time: 7/7/16 @ 1601
Relinquished by (Signature and Printed Name): Date/Time: 7/7/16 @ 1647
Received by (Signature and Printed Name): Veenda Rodriguez Date/Time: 7/7/16 18:47
Relinquished by (Signature and Printed Name): Date/Time:
Received by (Signature and Printed Name): Date/Time:

Turn Around Time (TAT)

	A	< 24 Hrs or Same Day TAT
	B	= Next Workday
	C	= 2 Workdays
	D	= 3 Workdays
X	E	= Routine 5-7 Workdays

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Less than 24 Hrs =200% Next Day=100% 2 Workdays=50% 3 Workdays=35 % 4 Workdays=20%
Custom EDD formats will be an additional 3% of the total project price
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.
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H=HCL	N=HNO_3	S=H_2SO_4	C=4°C
Z=Zn(AC)$_2$	O=NaOH	T=$Na_2S_2O_3$	
Others/Specify:	B	(NH4)2SO4/NH4OH	

Container Type:

T=Tube	V=VOA	P=Pint
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:	7/7/2016	Workorder:	N020245
Rep sample Temp (Deg C):	4.3/3.2/5.6	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 ☑	No ☐	Not Present ☐
2. Custody seals intact, signed, dated on shippping container/cooler?	Yes ☐	No ☐	Not Present ☑
3. Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
4. Chain of custody present?	Yes ☑	No ☐	
5. Sampler's name present in COC?	Yes ☑	No ☐	
6. Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
7. Chain of custody agrees with sample labels?	Yes ☑	No ☐	
8. Samples in proper container/bottle?	Yes ☑	No ☐	
9. Sample containers intact?	Yes ☑	No ☐	
10. Sufficient sample volume for indicated test?	Yes ☑	No ☐	
11. All samples received within holding time?	Yes ☐	No ☑	
12. Temperature of rep sample or Temp Blank within acceptable limit?	Yes ☑	No ☐	NA ☐
13. Water - VOA vials have zero headspace?	Yes ☐	No ☐	NA ☑
14. Water - pH acceptable upon receipt? Example: pH > 12 for (CN,S); pH<2 for Metals	Yes ☑	No ☐	NA ☐
15. Did the bottle labels indicate correct preservatives used?	Yes ☑	No ☐	NA ☐
16. Were there Non-Conformance issues at login?	Yes ☑	No ☐	NA ☐
Was Client notified?	Yes ☐	No ☐	NA ☑

Comments: Sample for pH was past holding time upon receipt.

Checklist Completed By: YR 7/11/2016

Reviewed By: 7/14/2016

ASSET Laboratories

WORK ORDER Summary

11-Jul-16

WorkOrder: N020245

Client ID: ARCUS02

Project: PG&E Topock - RMP, RC000753.0801 **QC Level:** Level IV **Date Received:** 7/7/2016

Comments:

Sample ID	Client Sample ID	Date Collected	Date Due	Matrix	Test No	Test Name	Hld	MS	Sub	Storage
N020245-001A	R-19-Q316	7/7/2016 8:20:00 AM	7/21/2016	Groundwater	EPA 218.6	Hexavalent Chromium by IC	☐	☐	☐	WW
N020245-001B			7/21/2016		EPA 3010A	AQPREP TOTAL METALS: ICP, FLAA	☐	☐	☐	WW
			7/21/2016		EPA 3010A	AQPREP TOTAL METALS: ICP, FLAA	☐	☐	☐	WW
			7/21/2016		EPA 6010B	DISSOLVED METALS BY ICP	☐	☐	☐	WW
			7/21/2016		EPA 6020	DISSOLVED METALS BY ICP-MS	☐	☐	☐	WW
			7/21/2016		EPA 6020	DISSOLVED METALS BY ICP-MS	☐	☐	☐	WW
N020245-001C			7/21/2016		EPA 3010A	AQPREP TOTAL METALS: ICP, FLAA	☐	☐	☐	WW
			7/21/2016		EPA 6010B	TOTAL METALS BY ICP	☐	☐	☐	WW
N020245-001D			7/21/2016		EPA 120.1	SPECIFIC CONDUCTANCE	☐	☐	☐	WW
			7/21/2016		SM4500-H+B	pH	☐	☐	☐	WW
			7/21/2016		SM2540D	TOTAL NON-FILTERABLE RESIDUE	☐	☐	☐	WW
			7/21/2016			Total Suspended Solids Prep	☐	☐	☐	WW
N020245-001E			7/21/2016		SM4500-NO3F	NITRATE/NITRITE-N BY CADMIUM REDUCTION	☐	☐	☐	WW
N020245-002A	R-28-Q316	7/7/2016 9:00:00 AM	7/21/2016		EPA 218.6	Hexavalent Chromium by IC	☐	☐	☐	WW
N020245-002B			7/21/2016		EPA 3010A	AQPREP TOTAL METALS: ICP, FLAA	☐	☐	☐	WW
			7/21/2016		EPA 3010A	AQPREP TOTAL METALS: ICP, FLAA	☐	☐	☐	WW
			7/21/2016		EPA 6010B	DISSOLVED METALS BY ICP	☐	☐	☐	WW
			7/21/2016		EPA 6020	DISSOLVED METALS BY ICP-MS	☐	☐	☐	WW
			7/21/2016		EPA 6020	DISSOLVED METALS BY ICP-MS	☐	☐	☐	WW
N020245-002C			7/21/2016		EPA 3010A	AQPREP TOTAL METALS: ICP, FLAA	☐	☐	☐	WW
			7/21/2016		EPA 6010B	TOTAL METALS BY ICP	☐	☐	☐	WW
N020245-002D			7/21/2016		EPA 120.1	SPECIFIC CONDUCTANCE	☐	☐	☐	WW

WORK ORDER Summary

11-Jul-16

WorkOrder: N020245

Client ID: ARCUS02

Project: PG&E Topock - RMP, RC000753.0801 **QC Level:** Level IV **Date Received:** 7/7/2016

Comments:

Sample ID	Client Sample ID	Date Collected	Date Due	Matrix	Test No	Test Name	Hld	MS	Sub	Storage
N020245-002D	R-28-Q316	7/7/2016 9:00:00 AM	7/21/2016	Groundwater	SM4500-H+B	pH	☐	☐	☐	WW
			7/21/2016		SM2540D	TOTAL NON-FILTERABLE RESIDUE	☐	☐	☐	WW
			7/21/2016			Total Suspended Solids Prep	☐	☐	☐	WW
N020245-002E			7/21/2016		SM4500-NO3F	NITRATE/NITRITE-N BY CADMIUM REDUCTION	☐	☐	☐	WW
N020245-003A	RMP-AB2-Q316	7/7/2016 8:05:00 AM	7/21/2016		EPA 218.6	Hexavalent Chromium by IC	☐	☐	☐	WW
N020245-004A	RMP-AB3-Q316	7/7/2016 8:30:00 AM	7/21/2016		EPA 218.6	Hexavalent Chromium by IC	☐	☐	☐	WW
N020245-005A	FOLDER		7/21/2016		EDD	RWQCB	☐	☐	☐	LAB
			7/21/2016		Folder	Folder	☐	☐	☐	LAB

List of Analysts

ASSET Laboratories Work Order: **N020245**

NAME	TEST METHOD
Quennie Manimtim	EPA 218.6
Claire Ignacio	EPA 6010B, EPA 6020
Ryan Balilu	SM 4500-NO3F
Lilia Ramit	EPA 120.1, SM 4500-H+B, SM 2540D

EPA 120.1

Wet Chemistry Technical Batch Review Checklist (ARCUS02)

ASSET LABORATORIES - LAS VEGAS

FIRST LEVEL REVIEW:

QC Batch Number: R109322 **Analyst:** LSR

ASSET #: N020245 **Date Analyzed:** 7/8/2016

Method: EPA 120.1

Initial Calibration	1st Level Review Y	N	N/A	2nd Level Review 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:

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: 7/11/2016

2nd Level Reviewer: 7/23/2016 Date: —

LOGBOOK DATA, QUANTITATION REPORT and/or SPECTRA

Conductivity Logbook

Date: 7/8/16 1010

Analyst: LSR

Standard	Std ID	Reading	Comments
9.31 uS/cm	CINV-160111A	941 uS/cm @ 23.1°C	% Rec: (90-110%)
1411	160425A	1414 @ 23.1°C	
9988	160425B	9990 @ 23.1°C	
100005	160322B	101100 @ 23.1°C	

	Sample ID	Matrix	Reading	Comments
1	N020244-001D	H_2O	967 @ 22.1°C	
2	2D		960 @ 21.5°C	
3	3D		952 @ 21.5°C	
4	4D		960 @ 21.2°C	
5	5D		957 @ 21.4°C	
6	6D		948 @ 21.4°C	
7	7D		958 @ 21.3°C	
8	8D		965 @ 21.4°C	
9	9D		971 @ 21.5°C	
10	10C		1016 @ 21.5°C	
Dup	1DUP		974 @ 21.9°C	Accept: 10% water, 20% soil
	Std Chk:			% Rec: (90-110%)

Date:

Analyst: CONTD

Standard	Std ID	Reading	Comments
1413 uS/cm	CINV-160111E	1462 @ 23.3°C	% Rec: (90-110%)
10,000	160425C	10580 @ 23.3°C	
99893	151130A	104700 @ 23.3°C	

	Sample ID	Matrix	Reading	Comments
1	N020244-011C	H_2O	1020 @ 22.0°C	
2	N020245-001D		986 @ 22.1°C	
3	2D		994 @ 21.9°C	
4	2D DUP		991 @ 22.0°C	
5				
6				
7				
8				
9	1413 uS/cm	CINV-160111E	1461 uS/cm @ 23.4°C	
10	10000	160425C	10530 @ 23.4°C	
Dup	99893	151130A	10520 @ 23.4°C	Accept: 10% water, 20% soil
	Std Chk:			% Rec: (90-110%)

Logbook # 5

ASSET LABORATORIES

Julia Ramit 7/11/2016

SM 4500-H+B

pH Technical Batch Review Checklist (ARCUS02)

ASSET LABORATORIES - LAS VEGAS

FIRST LEVEL REVIEW:

QC Batch Number: R109326 **Instrument ID:** pH meter

ASSET #: N020245 **Analyst:** LSR

Date Analyzed: 7/8/2016

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			
Sample Information						
4. Are all samples analyzed within hold time.		X				
QC Items						
5. Was a duplicate sample analyzed?	X					
Raw Data and Miscellaneous Information						
6. Are Non-Conformances documented			X			
7. Runlog complete and included in package.	X					
Preliminary Report						
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:

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: 7/12/2016

2nd Level Reviewer 7/23/2016 Date:

LOGBOOK DATA, QUANTITATION REPORT and/or SPECTRA

pH Logbook

Date: 7/8/16 1055

Analyst: ISR

CONTD

Standard	Std ID	pH	Comments
Buffer 4	CINV-160322A	4.02 @ 23.2°C	SLOPE: 95.4%
Buffer 7	" 160309A	7.01 @ 23.6°C	
Buffer 10	" 160609C	10.05 @ 22.9°C	

	Sample ID	Matrix	pH	Comments
1	N020244-011C	H2O	7.93 @ 21.9°C	
2	N020245-001D	"	8.31 @ 21.9°C	
3	" 2D	"	8.19 @ 22.7°C	
4	" 2D DUP	"	8.21 @ 22.5°C	
5				
6				
7				
8				
9				
10				
Dup				Accept: 10% water, 20% soil
	Buffer 4, (7), 10 (Circle one)	CINV-160111C	7.02 @ 24.6°C	Accept: +/-0.1 pH units from expected value

Date: 7/11/16

Analyst: Mark

Standard	Std ID	pH	Comments
Buffer 4	CINV-160322A	4.01 @ 23.3°C	Slope: 96.7%
Buffer 7	" 160309A	7.00 @ 23.5°C	
Buffer 10	" 160609C	10.03 @ 23.5°C	

	Sample ID	Matrix	pH	Comments
1	N020239-001A	Soil	9.14 / 2.14	
2				
3				
4				
5				
6				
7				
8				
9				
10				
Dup				Accept: 10% water, 20% soil
	Buffer 4, (7), 10 (Circle one)	CINV-160111C	7.02 @ 23.5°C	Accept: +/-0.1 pH units from expected value

SM 2540D

Wet Chemistry Technical Batch Review Checklist (ARCUS02)

ASSET LABORATORIES - LAS VEGAS

FIRST LEVEL REVIEW:

QC Batch Number: 58952 **Analyst:** LSR

ASSET #: N020245 **Date Analyzed:** 7/8/2016

Method: EPA 160.2

Initial Calibration	1st Level Review Y	N	N/A	2nd Level Review 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:

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: 7/12/2016

2nd Level Reviewer: 7/23/2016 Date: —

SAMPLE CALCULATION

SAMPLE CALCULATION

METHOD: SM 2540D
TEST NAME: Total Non-Filterable Residue
MATRIX: ~~Water~~ Groundwater

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 **N020245-001D,** TSS concentration in mg/L is calculated as follows:

$$\text{TSS, mg/L} = \frac{(1.4239- 1.4233) *1000000}{100}$$

= 6 mg/L

Since reporting limit is 10 mg/L, therefore:

TSS = ND

Julia Ramit 7/12/2016

SAMPLE PREPARATION LOG

ASSET Laboratories

PREP BATCH REPORT

Prep Start Date: **7/8/2016 12:07:13 P**
Prep End Date: **7/8/2016 6:00:00 P**
Reviewed/ Date: _____
Initials/ Date: Lilia Ramit 7/12/2016
Prep Batch **58952** Prep Code: **160.2_W_PRE** Technician: **Lilia Ramit**
Prep Factor Units: **mL / mL** Temp. (°C): **105**

Sample ID	Matrix	pH	SampAmt	3 Replicates	Sol Added	Sol Recov	Fin Vol	factor	Clean Up Code	TURB Check
LCS-58952	Water		100	☐	0	0	100	1.000		
MB-58952	Water		100	☐	0	0	100	1.000		
N020244-008D	Groundwater		100	☐	0	0	100	1.000		
N020244-009D	Groundwater		100	☐	0	0	100	1.000		
N020245-001D	Groundwater		100	☐	0	0	100	1.000		
N020245-001D-DU	Groundwater		100	☐	0	0	100	1.000		
N020245-002D	Groundwater		100	☐	0	0	100	1.000		

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

Number	Reagent Name
8395	Glass Fiber Filter, 47mm

Spk ID	Spike Name	SampType	AmtAdd
IWST160520A	1000 ppm Talc	LCS	100

ASSET Laboratories

PREP BATCH REPORT

Prep Start Date: 7/8/2016 12:07:13 P
Prep End Date:

Reviewed/ Date: _____
Initials/ Date: Lilia Ramit 7/12/2016

Prep Batch 58952 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-58952	Water	IWR1600 5207	100	☐	0	0	100	1.000		
MB-58952	Water		100	☐	0	0	100	1.000		
N020244-008D	Groundwater		100	☐	0	0	100	1.000		
N020244-009D	Groundwater		100	☐	0	0	100	1.000		
N020245-001D	Groundwater		100	☐	0	0	100	1.000		
N020245-001D-DU	Groundwater		100	☐	0	0	100	1.000		
N020245-002D	Groundwater		100	☐	0	0	100	1.000		

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

#83915

LOGBOOK DATA, QUANTITATION REPORT and/or SPECTRA

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
7/8/16 T207 18	N020244-005D	100	1.4434 1.4433	1.4442 1.44~~3~~40 4	
19	6D	100	1.4227 1.4227	1.4236 1.4234	
20	7D	100	1.4454 1.4455	1.4462 1.4460	
	MB3 58952	100	1.3622 1.3619	1.3618 1.3619	
30	LCS3 58952	100	1.4210 1.4210	1.5156 1.5157	
21	N020244-008D	100	1.4298 1.4298	1.4301 1.4302	
22	9D	100	1.4194 1.4194	1.4201 1.4198	
23	N020245-001D	100	1.4235 1.4233	1.4237 1.4239	
DP4	1D DUP	100	1.3682 1.3680	1.3686 1.3685	
24	2D	100	1.4406 1.4406	1.4412 1.4413	

Julia Ramit 7/12/2016

TOTAL SUSPENDED SOLIDS, TSS

TSS, mg/L = (A-B) * 10000*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

Date:	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
7/8/2016							
MBLK-58952	100	1.3619	1.3619	0.0000	1.00	0	MBLK
LCS-58952	100	1.4210	1.5157	947.0000	1.00	947	LCS
N020244-008D	100	1.4298	1.4302	4.0000	1.00	4	SAMP
N020244-009D	100	1.4194	1.4198	4.0000	1.00	4	SAMP
N020245-001D	100	1.4233	1.4239	6.0000	1.00	6	SAMP
N020245-001DDUP	100	1.368	1.3685	5.0000	1.00	5	DUP
N020245-002D	100	1.4406	1.4413	7.0000	1.00	7	SAMP

Julia Ramit 7/12/2016

EPA 218.6

IC Technical Batch Review Checklist (ARCUS02)

ASSET LABORATORIES - LAS VEGAS

IC ARCUS
REV 2.0
011416

QC Batch Number: R109328
ASSET #: N020245

Instrument ID: IC-07
Analyst: QBM
Date Analyzed: 7/8/2016

Method:

- [ ] EPA 300.0
- [ ] EPA 7199
- [x] 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					
Continuing Calibration						
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					
Sample Information						
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			
QC Items						
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			
Raw Data and Miscellaneous Information						
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					
Preliminary Report						
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 _____ Date: 7/21/2016

2nd Level Reviewer 7/23/2016 Date: _____

IC Technical Batch Review Checklist (ARCUS02)

ASSET LABORATORIES - LAS VEGAS

IC ARCUS
REV 2.0
011416

QC Batch Number: R109341
ASSET #: N020245

Instrument ID: IC-07
Analyst: QBM
Date Analyzed: 7/11/2016

Method:

- [ ] EPA 300.0
- [ ] EPA 7199
- [x] 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					
Continuing Calibration						
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					
Sample Information						
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			
QC Items						
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			
Raw Data and Miscellaneous Information						
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					
Preliminary Report						
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:

N020245-003/004 only.

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 _____ Date: 7/21/2016

2nd Level Reviewer 7/23/2016 Date: _____

SAMPLE CALCULATION

Sample Calculation

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

FORMULA:

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

Cr^{+6}, μg/L = A * DF

where:

A = μg/L, IC Cr^{+6} calculated concentration
DF = dilution factor

For **N020245-001A** concentration in μg/L is calculated as follows:

Cr^{+6}, μg/L = 0.0939 * 1

= 0.0939

Reporting result in two significant figures,

Cr^{+6}, μg/L = ~~0.09~~ 0.094

Since reporting limit is 0.2 ug/L,

Cr6+, ug/L = ND

7/21/2016

ANALYSIS RUN LOG

INJECTION LOG: 160707A

Instrument ID: IC-07

Sample No	Sample Name	Type	DF	Peak Name	Injection Date/Time	Comments
1	BLANK	BLANK	1	Hexavalent Chromium	07/07/16 10:12 AM	Not Reported
2	iBLANK	iBLANK	1	Hexavalent Chromium	07/07/16 10:23 AM	~~Not~~ Reported
3	STD-0.2 ppb	ICAL	1	Hexavalent Chromium	07/07/16 10:32 AM	Reported
4	STD-1.0 ppb	ICAL	1	Hexavalent Chromium	07/07/16 10:42 AM	Reported
5	STD-5.0 ppb	ICAL	1	Hexavalent Chromium	07/07/16 10:51 AM	Reported
6	STD-10.0 ppb	ICAL	1	Hexavalent Chromium	07/07/16 11:00 AM	Reported
7	STD-15.0 ppb	ICAL	1	Hexavalent Chromium	07/07/16 11:10 AM	Reported
8	STD-20.0 ppb	ICAL	1	Hexavalent Chromium	07/07/16 11:19 AM	Reported
9	ICV	ICV	1	Hexavalent Chromium	07/07/16 11:29 AM	Reported
10	PQL@0.2ppb	CCV2	1	Hexavalent Chromium	07/07/16 11:38 AM	Reported
11	ICB	ICB	1	Hexavalent Chromium	07/07/16 11:48 AM	Reported
12	MB-109313	MBLK	1	Hexavalent Chromium	07/07/16 11:59 AM	Reported
13	LCS-109313	LCS	1	Hexavalent Chromium	07/07/16 12:09 PM	Reported
14	N020228-001A	SAMP	1	Hexavalent Chromium	07/07/16 12:18 PM	Reported
15	N020228-001ADUP	DUP	1	Hexavalent Chromium	07/07/16 12:28 PM	Reported
16	N020228-001AMS	MS	1	Hexavalent Chromium	07/07/16 12:37 PM	Reported
17	N020228-002A	SAMP	1	Hexavalent Chromium	07/07/16 12:47 PM	Reported
18	N020228-002AMS	MS	1	Hexavalent Chromium	07/07/16 12:56 PM	Reported
19	N020228-002AMSD	MSD	1	Hexavalent Chromium	07/07/16 1:06 PM	Reported
20	N020228-003A	SAMP	1	Hexavalent Chromium	07/07/16 1:15 PM	Reported
21	N020228-003AMS	MS	1	Hexavalent Chromium	07/07/16 1:25 PM	Reported
22	CCV-1	CCV1	1	Hexavalent Chromium	07/07/16 1:34 PM	Reported
23	CCB-1	CCB	1	Hexavalent Chromium	07/07/16 1:44 PM	Reported
24	N020228-004A	SAMP	1	Hexavalent Chromium	07/07/16 1:53 PM	Reported
25	N020228-004AMS	MS	1	Hexavalent Chromium	07/07/16 2:02 PM	Reported
26	N020228-005A	SAMP	1	Hexavalent Chromium	07/07/16 2:12 PM	Reported
27	N020228-005AMS	MS	1	Hexavalent Chromium	07/07/16 2:21 PM	Not Reported
28	N020228-006A	SAMP	1	Hexavalent Chromium	07/07/16 2:31 PM	Reported
29	N020228-006AMS	MS	1	Hexavalent Chromium	07/07/16 2:40 PM	Reported
30	N020228-007A	SAMP	1	Hexavalent Chromium	07/07/16 2:50 PM	Reported
31	N020228-007AMS	MS	1	Hexavalent Chromium	07/07/16 2:59 PM	Reported
32	N020228-008A	SAMP	1	Hexavalent Chromium	07/07/16 3:09 PM	Reported
33	N020228-008AMS	MS	1	Hexavalent Chromium	07/07/16 3:18 PM	Reported
34	CCV-2	CCV	1	Hexavalent Chromium	07/07/16 3:28 PM	Reported
35	CCB-2	CCB	1	Hexavalent Chromium	07/07/16 3:37 PM	Reported
36	N020228-005AMS	MS	1	Hexavalent Chromium	07/07/16 3:47 PM	Reported
37	N020228-009A	SAMP	1	Hexavalent Chromium	07/07/16 3:56 PM	Reported
38	N020228-009AMS	MS	1	Hexavalent Chromium	07/07/16 4:05 PM	Reported
39	N020228-010A	SAMP	1	Hexavalent Chromium	07/07/16 4:15 PM	Reported
40	N020228-010AMS	MS	1	Hexavalent Chromium	07/07/16 4:24 PM	Reported
41	N020228-011A	SAMP	1	Hexavalent Chromium	07/07/16 4:34 PM	Reported
42	N020228-011AMS	MS	1	Hexavalent Chromium	07/07/16 4:44 PM	Reported

INJECTION LOG: 160707A

Instrument ID: IC-07

Sample No	Sample Name	Type	DF	Peak Name	Injection Date/Time	Comments
43	N020228-012A	SAMP	1	Hexavalent Chromium	07/07/16 4:53 PM	Reported
44	N020228-012AMS	MS	1	Hexavalent Chromium	07/07/16 5:02 PM	Reported
45	N020228-013A	SAMP	1	Hexavalent Chromium	07/07/16 5:12 PM	Reported
46	CCV-3	CCV1	1	Hexavalent Chromium	07/07/16 5:24 PM	Reported
47	CCB-3	CCB	1	Hexavalent Chromium	07/07/16 5:33 PM	Reported
48	N020229-001A	SAMP	1	Hexavalent Chromium	07/07/16 5:43 PM	Not Reported
49	N020228-013AMS	MS	1	Hexavalent Chromium	07/07/16 5:52 PM	Not Reported
50	N020228-013AMS	MS	1	Hexavalent Chromium	07/07/16 6:04 PM	Reported
51	N020229-001AMS	MS	1	Hexavalent Chromium	07/07/16 6:15 PM	Not Reported
52	N020230-001A	SAMP	1	Hexavalent Chromium	07/07/16 6:25 PM	Reported
53	N020230-002A	SAMP	1	Hexavalent Chromium	07/07/16 6:34 PM	Reported
54	N020230-003A	SAMP	1	Hexavalent Chromium	07/07/16 6:44 PM	Reported
55	N020230-004A	SAMP	1	Hexavalent Chromium	07/07/16 6:53 PM	Reported
56	N020230-005A	SAMP	1	Hexavalent Chromium	07/07/16 7:03 PM	Reported
57	N020230-006A	SAMP	1	Hexavalent Chromium	07/07/16 7:12 PM	Reported
58	CCV-4	CCV	1	Hexavalent Chromium	07/07/16 7:22 PM	Reported
59	CCB-4	CCB	1	Hexavalent Chromium	07/07/16 7:31 PM	Reported
60	N020229-001A	SAMP	1	Hexavalent Chromium	07/07/16 7:40 PM	Reported
61	N020229-001AMS	MS	1	Hexavalent Chromium	07/07/16 7:50 PM	Reported
62	CCV-5	CCV1	1	Hexavalent Chromium	07/07/16 7:59 PM	Reported
63	CCB-5	CCB	1	Hexavalent Chromium	07/07/16 8:09 PM	Reported

7/21/2016

Injection Log Summary

Sequence Details

Name:	**IC-07_160707B**	*Created On:*	**24/Jul/12 17:17:21**
Directory:	**Instrument Data\IC-7\2016**	*Created By:*	**ics 5000**
Data Vault:	**ChromeleonLocal**	*Updated On:*	**08/Jul/16 09:38:15**
No. of Injections:	**66**	*Updated By:*	**ics 5000**

Injection Details

No.	Injection Name	Position	Volume µL	Type	Level	Inject Time	Status	Comment
1	BLANK	3	1000	Unknown		07/07/2016 10:12	Finished	
2	iBLANK	4	1000	Unknown		07/07/2016 10:23	Finished	INSTRUMENT BLANK
3	STD1-0.2 ppb	5	1000	Calibration Standard	01	07/07/2016 10:32	Finished	0.2 ppb, IWST160401A
4	STD2-1.0 ppb	6	1000	Calibration Standard	02	07/07/2016 10:42	Finished	1.0 ppb, IWST160401A
5	STD3-5.0 ppb	7	1000	Calibration Standard	03	07/07/2016 10:51	Finished	5.0 ppb, IWST160401A
6	STD4-10.0 ppb	8	1000	Calibration Standard	04	07/07/2016 11:00	Finished	10 ppb, IWST160401A
7	STD5-15.0 ppb	9	1000	Calibration Standard	05	07/07/2016 11:10	Finished	15 ppb, IWST160401A
8	STD6-20.0 ppb	10	1000	Calibration Standard	06	07/07/2016 11:19	Finished	20 ppb, IWST160401A
9	ICV,ICV,1,	11	1000	Unknown		07/07/2016 11:29	Finished	ICV @5ppb, IWST-160401B
10	PQL@0.2ppb,CCV2,1	12	1000	Unknown		07/07/2016 11:38	Finished	PQL @ 0.2ppb
11	ICB,ICB,1,	13	1000	Unknown		07/07/2016 11:48	Finished	ICB R160629C
12	MB-H2O,MBLK,1	14	1000	Unknown		07/07/2016 11:59	Finished	MB R160629C
13	LCS-H2O,LCS,1	15	1000	Unknown		07/07/2016 12:09	Finished	LCS, IWST-160401B
14	N020228-001A,SAMP	16	1000	Unknown		07/07/2016 12:18	Finished	SAMP, 10 mL
15	N020228-001ADUP,D	17	1000	Unknown		07/07/2016 12:28	Finished	DUP, 10 mL
16	N020228-001AMS,MS	18	1000	Unknown		07/07/2016 12:37	Finished	MS (1ppb), IWST-160401B, 10
17	N020228-002A,SAMP	19	1000	Unknown		07/07/2016 12:47	Finished	SAMP, 10 mL
18	N020228-002AMS,MS	20	1000	Unknown		07/07/2016 12:56	Finished	MS (1ppb), IWST-160401B, 10
19	N020228-002AMSD,M	21	1000	Unknown		07/07/2016 13:06	Finished	MSD (1ppb), IWST-160401B, 1
20	N020228-003A,SAMP	22	1000	Unknown		07/07/2016 13:15	Finished	SAMP, 10 mL
21	N020228-003AMS,MS	23	1000	Unknown		07/07/2016 13:25	Finished	MS (1ppb), IWST-160401B, 10
22	CCV-1,CCV1,1,	24	1000	Unknown		07/07/2016 13:34	Finished	CCV @10ppb, IWST-160401A
23	CCB-1,CCB,1,	25	1000	Unknown		07/07/2016 13:44	Finished	CCB, R160629C
24	N020228-004A,SAMP	26	1000	Unknown		07/07/2016 13:53	Finished	SAMP, 10 mL
25	N020228-004AMS,MS	27	1000	Unknown		07/07/2016 14:02	Finished	MS (1ppb), IWST-160401B, 10
26	N020228-005A,SAMP	28	1000	Unknown		07/07/2016 14:12	Finished	SAMP, 10 mL
27	N020228-005AMS,MS	29	1000	Unknown		07/07/2016 14:21	Finished	MS (1ppb), IWST-160401B, 10
28	N020228-006A,SAMP	30	1000	Unknown		07/07/2016 14:31	Finished	SAMP, 10 mL
29	N020228-006AMS,MS	31	1000	Unknown		07/07/2016 14:40	Finished	MS (1ppb), IWST-160401B, 10
30	N020228-007A,SAMP	32	1000	Unknown		07/07/2016 14:50	Finished	SAMP, 10 mL
31	N020228-007AMS,MS	33	1000	Unknown		07/07/2016 14:59	Finished	MS (1ppb), IWST-160401B, 10
32	N020228-008A,SAMP	34	1000	Unknown		07/07/2016 15:09	Finished	SAMP, 10 mL
33	N020228-008AMS,MS	35	1000	Unknown		07/07/2016 15:18	Finished	MS (1ppb), IWST-160401B, 10
34	CCV-2,CCV,1,	36	1000	Unknown		07/07/2016 15:28	Finished	CCV @5ppb, IWST-160401A
35	CCB-2,CCB,1,	37	1000	Unknown		07/07/2016 15:37	Finished	CCB R160629C
36	N020228-005AMS,MS	38	1000	Unknown		07/07/2016 15:47	Finished	MS (1ppb), IWST-160401B, 10
37	N020228-009A,SAMP	39	1000	Unknown		07/07/2016 15:56	Finished	SAMP, 10 mL
38	N020228-009AMS,MS	40	1000	Unknown		07/07/2016 16:05	Finished	MS (1ppb), IWST-160401B, 10
39	N020228-010A,SAMP	41	1000	Unknown		07/07/2016 16:15	Finished	SAMP, 10 mL
40	N020228-010AMS,MS	42	1000	Unknown		07/07/2016 16:24	Finished	MS (1ppb), IWST-160401B, 10
41	N020228-011A,SAMP	43	1000	Unknown		07/07/2016 16:34	Finished	SAMP, 10 mL
42	N020228-011AMS,MS	44	1000	Unknown		07/07/2016 16:44	Finished	MS (1ppb), IWST-160401B, 10
43	N020228-012A,SAMP	45	1000	Unknown		07/07/2016 16:53	Finished	SAMP, 10 mL
44	N020228-012AMS,MS	46	1000	Unknown		07/07/2016 17:02	Finished	MS (1ppb), IWST-160401B, 10
45	N020228-013A,SAMP	1	1000	Unknown		07/07/2016 17:12	Finished	SAMP, 10 mL
46	CCV-3,CCV1,1,	2	1000	Unknown		07/07/2016 17:24	Finished	CCV @10ppb, IWST-160401A
47	CCB-3,CCB,1,	3	1000	Unknown		07/07/2016 17:33	Finished	CCB, R160629C
48	N020229-001A,SAMP	4	1000	Unknown		07/07/2016 17:43	Finished	SAMP, 10 mL
49	N020228-013AMS,MS	5	1000	Unknown		07/07/2016 17:52	Finished	MS (1ppb), IWST-160401B, 10
50	N020228-013AMS,MS	5	1000	Unknown		07/07/2016 18:04	Finished	MS (1ppb), IWST-160401B, 10
51	N020229-001AMS,MS	6	1000	Unknown		07/07/2016 18:15	Finished	MS (1ppb), IWST-160401B, 10
52	N020230-001A,SAMP	7	1000	Unknown		07/07/2016 18:25	Finished	SAMP, 10 mL
53	N020230-002A,SAMP	8	1000	Unknown		07/07/2016 18:34	Finished	SAMP, 10 mL
54	N020230-003A,SAMP	9	1000	Unknown		07/07/2016 18:44	Finished	SAMP, 10 mL
55	N020230-004A,SAMP	10	1000	Unknown		07/07/2016 18:53	Finished	SAMP, 10 mL
56	N020230-005A,SAMP	11	1000	Unknown		07/07/2016 19:03	Finished	SAMP, 10 mL
57	N020230-006A,SAMP	12	1000	Unknown		07/07/2016 19:12	Finished	SAMP, 10 mL
58	CCV-4,CCV,1,	13	1000	Unknown		07/07/2016 19:22	Finished	CCV @5ppb, IWST-160401A
59	CCB-4,CCB,1,	14	1000	Unknown		07/07/2016 19:31	Finished	CCB R160622B
60	N020229-001A,SAMP	15	1000	Unknown		07/07/2016 19:40	Finished	SAMP, 10 mL

61	N020229-001AMS,MS	16	1000	Unknown		07/07/2016 19:50	Finished	MS (1ppb), IWST-160401B, 10
62	CCV-5,CCV1,1,	17	1000	Unknown		07/07/2016 19:59	Finished	CCV @10ppb, IWST-160401A
63	CCB-5,CCB,1,	18	1000	Unknown		07/07/2016 20:09	Finished	CCB, R160629C
64	SHUTDOWN	19	1000	Unknown		07/07/2016 20:18	Finished	
65	Eluent: R160630C	20	1000	Unknown		n.a.	Finished	Eluent
66	PCR: R160706C	21	1000	Unknown		n.a.	Finished	Post-Column Reagent

INJECTION LOG: 160708A

Instrument ID: IC-07

Sample No	Sample Name	Type	DF	Peak Name	Injection Date/Time	Comments
1	BLANK	BLANK	1	Hexavalent Chromium	07/07/16 10:12 AM	Not Reported
2	iBLANK	iBLANK	1	Hexavalent Chromium	07/07/16 10:23 AM	~~Not~~ Reported
3	STD-0.2 ppb	ICAL	1	Hexavalent Chromium	07/07/16 10:32 AM	Reported
4	STD-1.0 ppb	ICAL	1	Hexavalent Chromium	07/07/16 10:42 AM	Reported
5	STD-5.0 ppb	ICAL	1	Hexavalent Chromium	07/07/16 10:51 AM	Reported
6	STD-10.0 ppb	ICAL	1	Hexavalent Chromium	07/07/16 11:00 AM	Reported
7	STD-15.0 ppb	ICAL	1	Hexavalent Chromium	07/07/16 11:10 AM	Reported
8	STD-20.0 ppb	ICAL	1	Hexavalent Chromium	07/07/16 11:19 AM	Reported
9	BLANK	BLANK	1	Hexavalent Chromium	07/08/16 10:16 AM	Not Reported
10	BLANK	BLANK	1	Hexavalent Chromium	07/08/16 10:27 AM	Not Reported
11	CCV-1	CCV	1	Hexavalent Chromium	07/08/16 10:36 AM	Reported
12	PQL@0.2ppb	CCV2	1	Hexavalent Chromium	07/08/16 10:45 AM	Reported
13	CCB-1	CCB	1	Hexavalent Chromium	07/08/16 10:55 AM	Reported
14	MB-109328	MBLK	1	Hexavalent Chromium	07/08/16 11:04 AM	Reported
15	LCS-109328	LCS	1	Hexavalent Chromium	07/08/16 11:14 AM	Reported
16	N020230-007A	SAMP	1	Hexavalent Chromium	07/08/16 11:23 AM	Reported
17	N020230-008A	SAMP	1	Hexavalent Chromium	07/08/16 11:33 AM	Reported
18	N020230-009A	SAMP	1	Hexavalent Chromium	07/08/16 11:42 AM	Reported
19	N020230-010A	SAMP	1	Hexavalent Chromium	07/08/16 11:52 AM	Reported
20	N020230-011A	SAMP	1	Hexavalent Chromium	07/08/16 12:01 PM	Reported
21	N020230-012A	SAMP	1	Hexavalent Chromium	07/08/16 12:11 PM	Reported
22	N020230-013A	SAMP	1	Hexavalent Chromium	07/08/16 12:20 PM	Reported
23	N020230-013ADUP	DUP	1	Hexavalent Chromium	07/08/16 12:30 PM	Reported
24	CCV-2	CCV1	1	Hexavalent Chromium	07/08/16 12:39 PM	Reported
25	CCB-2	CCB	1	Hexavalent Chromium	07/08/16 12:48 PM	Reported
26	N020244-001A	SAMP	1	Hexavalent Chromium	07/08/16 12:58 PM	Reported
27	N020244-001AMS	MS	1	Hexavalent Chromium	07/08/16 1:07 PM	Reported
28	N020244-001AMSD	MSD	1	Hexavalent Chromium	07/08/16 1:17 PM	Reported
29	N020244-002A	SAMP	1	Hexavalent Chromium	07/08/16 1:26 PM	Reported
30	N020244-002AMS	MS	1	Hexavalent Chromium	07/08/16 1:36 PM	Reported
31	N020244-003A	SAMP	1	Hexavalent Chromium	07/08/16 1:45 PM	Reported
32	N020244-003AMS	MS	1	Hexavalent Chromium	07/08/16 1:55 PM	Reported
33	N020244-004A	SAMP	1	Hexavalent Chromium	07/08/16 2:04 PM	Reported
34	N020244-004AMS	MS	1	Hexavalent Chromium	07/08/16 2:14 PM	Reported
35	N020244-005A	SAMP	1	Hexavalent Chromium	07/08/16 2:23 PM	Reported
36	CCV-3	CCV	1	Hexavalent Chromium	07/08/16 2:33 PM	Reported
37	CCB-3	CCB	1	Hexavalent Chromium	07/08/16 2:42 PM	Reported
38	N020244-005AMS	MS	1	Hexavalent Chromium	07/08/16 2:51 PM	Reported
39	N020244-006A	SAMP	1	Hexavalent Chromium	07/08/16 3:01 PM	Reported
40	N020244-006AMS	MS	1	Hexavalent Chromium	07/08/16 3:10 PM	Reported
41	N020244-007A	SAMP	1	Hexavalent Chromium	07/08/16 3:20 PM	Reported
42	N020244-007AMS	MS	1	Hexavalent Chromium	07/08/16 3:29 PM	Reported

7/21/2016

INJECTION LOG: 160708A

Instrument ID: IC-07

Sample No	Sample Name	Type	DF	Peak Name	Injection Date/Time	Comments
43	N020244-008A	SAMP	1	Hexavalent Chromium	07/08/16 3:39 PM	Reported
44	N020244-008AMS	MS	1	Hexavalent Chromium	07/08/16 3:48 PM	Reported
45	N020244-009A	SAMP	1	Hexavalent Chromium	07/08/16 3:58 PM	Reported
46	N020244-009AMS	MS	1	Hexavalent Chromium	07/08/16 4:07 PM	Reported
47	N020244-010A	SAMP	1	Hexavalent Chromium	07/08/16 4:17 PM	Reported
48	CCV-4	CCV1	1	Hexavalent Chromium	07/08/16 4:26 PM	Reported
49	CCB-4	CCB	1	Hexavalent Chromium	07/08/16 4:36 PM	Reported
50	N020244-010AMS	MS	1	Hexavalent Chromium	07/08/16 4:45 PM	Reported
51	N020244-011A	SAMP	1	Hexavalent Chromium	07/08/16 4:54 PM	Reported
52	N020244-011AMS	MS	1	Hexavalent Chromium	07/08/16 5:04 PM	Reported
53	N020245-001A	SAMP	1	Hexavalent Chromium	07/08/16 5:13 PM	Reported
54	N020245-001AMS	MS	1	Hexavalent Chromium	07/08/16 5:23 PM	Reported
55	N020245-002A	SAMP	1	Hexavalent Chromium	07/08/16 5:32 PM	Reported
56	N020245-002AMS	MS	1	Hexavalent Chromium	07/08/16 5:42 PM	Reported
57	BLANK	BLANK	1	Hexavalent Chromium	07/08/16 6:00 PM	Not Reported
58	CCV-5	CCV	1	Hexavalent Chromium	07/08/16 6:11 PM	Reported
59	CCB-5	CCB	1	Hexavalent Chromium	07/08/16 6:20 PM	Reported

7/21/2016

Injection Log Summary

Sequence Details

Name:	**IC-07_160708A**	*Created On:*	**24/Jul/12 17:17:21**
Directory:	**Instrument Data\IC-7\2016**	*Created By:*	**ics 5000**
Data Vault:	**ChromeleonLocal**	*Updated On:*	**09/Jul/16 10:48:13**
No. of Injections:	**62**	*Updated By:*	**ics 5000**

Injection Details

No.	Injection Name	Position	Volume µL	Type	Level	Inject Time	Status	Comment
1	BLANK	3	1000	Unknown		07/07/2016 10:12	Finished	
2	iBLANK	4	1000	Unknown		07/07/2016 10:23	Finished	INSTRUMENT BLANK
3	STD1-0.2 ppb	5	1000	Calibration Standard	01	07/07/2016 10:32	Finished	0.2 ppb, IWST160401A
4	STD2-1.0 ppb	6	1000	Calibration Standard	02	07/07/2016 10:42	Finished	1.0 ppb, IWST160401A
5	STD3-5.0 ppb	7	1000	Calibration Standard	03	07/07/2016 10:51	Finished	5.0 ppb, IWST160401A
6	STD4-10.0 ppb	8	1000	Calibration Standard	04	07/07/2016 11:00	Finished	10 ppb, IWST160401A
7	STD5-15.0 ppb	9	1000	Calibration Standard	05	07/07/2016 11:10	Finished	15 ppb, IWST160401A
8	STD6-20.0 ppb	10	1000	Calibration Standard	06	07/07/2016 11:19	Finished	20 ppb, IWST160401A
9	BLANK	1	1000	Unknown		07/08/2016 10:16	Finished	
10	BLANK	2	1000	Unknown		07/08/2016 10:27	Finished	
11	CCV-1,CCV,1,	3	1000	Unknown		07/08/2016 10:36	Finished	CCV @5ppb, IWST-160401A
12	PQL@0.2ppb,CCV2,1	4	1000	Unknown		07/08/2016 10:45	Finished	PQL @ 0.2ppb
13	CCB-1,CCB,1,	5	1000	Unknown		07/08/2016 10:55	Finished	CCB R160622B
14	MB-H2O,MBLK,1	6	1000	Unknown		07/08/2016 11:04	Finished	MB R160622B
15	LCS-H2O,LCS,1	7	1000	Unknown		07/08/2016 11:14	Finished	LCS, IWST-160401B
16	N020230-007A,SAMP	8	1000	Unknown		07/08/2016 11:23	Finished	SAMP, 10 mL
17	N020230-008A,SAMP	9	1000	Unknown		07/08/2016 11:33	Finished	SAMP, 10 mL
18	N020230-009A,SAMP	10	1000	Unknown		07/08/2016 11:42	Finished	SAMP, 10 mL
19	N020230-010A,SAMP	11	1000	Unknown		07/08/2016 11:52	Finished	SAMP, 10 mL
20	N020230-011A,SAMP	12	1000	Unknown		07/08/2016 12:01	Finished	SAMP, 10 mL
21	N020230-012A,SAMP	13	1000	Unknown		07/08/2016 12:11	Finished	SAMP, 10 mL
22	N020230-013A,SAMP	14	1000	Unknown		07/08/2016 12:20	Finished	SAMP, 10 mL
23	N020230-013ADUP,D	15	1000	Unknown		07/08/2016 12:30	Finished	DUP, 10 mL
24	CCV-2,CCV1,1,	16	1000	Unknown		07/08/2016 12:39	Finished	CCV @10ppb, IWST-160401A
25	CCB-2,CCB,1,	17	1000	Unknown		07/08/2016 12:48	Finished	CCB, R160622B
26	N020244-001A,SAMP	18	1000	Unknown		07/08/2016 12:58	Finished	SAMP, 10 mL
27	N020244-001AMS,MS	19	1000	Unknown		07/08/2016 13:07	Finished	MS (1ppb), IWST-160401B, 10
28	N020244-001AMSD,M	20	1000	Unknown		07/08/2016 13:17	Finished	MSD (1ppb), IWST-160401B, 1
29	N020244-002A,SAMP	21	1000	Unknown		07/08/2016 13:26	Finished	SAMP, 10 mL
30	N020244-002AMS,MS	22	1000	Unknown		07/08/2016 13:36	Finished	MS (1ppb), IWST-160401B, 10
31	N020244-003A,SAMP	23	1000	Unknown		07/08/2016 13:45	Finished	SAMP, 10 mL
32	N020244-003AMS,MS	24	1000	Unknown		07/08/2016 13:55	Finished	MS (1ppb), IWST-160401B, 10
33	N020244-004A,SAMP	25	1000	Unknown		07/08/2016 14:04	Finished	SAMP, 10 mL
34	N020244-004AMS,MS	26	1000	Unknown		07/08/2016 14:14	Finished	MS (1ppb), IWST-160401B, 10
35	N020244-005A,SAMP	27	1000	Unknown		07/08/2016 14:23	Finished	SAMP, 10 mL
36	CCV-3,CCV,1,	28	1000	Unknown		07/08/2016 14:33	Finished	CCV @5ppb, IWST-160401A
37	CCB-3,CCB,1,	29	1000	Unknown		07/08/2016 14:42	Finished	CCB R160629C
38	N020244-005AMS,MS	30	1000	Unknown		07/08/2016 14:51	Finished	MS (1ppb), IWST-160401B, 10
39	N020244-006A,SAMP	31	1000	Unknown		07/08/2016 15:01	Finished	SAMP, 10 mL
40	N020244-006AMS,MS	32	1000	Unknown		07/08/2016 15:10	Finished	MS (1ppb), IWST-160401B, 10
41	N020244-007A,SAMP	33	1000	Unknown		07/08/2016 15:20	Finished	SAMP, 10 mL
42	N020244-007AMS,MS	34	1000	Unknown		07/08/2016 15:29	Finished	MS (1ppb), IWST-160401B, 10
43	N020244-008A,SAMP	35	1000	Unknown		07/08/2016 15:39	Finished	SAMP, 10 mL
44	N020244-008AMS,MS	36	1000	Unknown		07/08/2016 15:48	Finished	MS (1ppb), IWST-160401B, 10
45	N020244-009A,SAMP	37	1000	Unknown		07/08/2016 15:58	Finished	SAMP, 10 mL
46	N020244-009AMS,MS	38	1000	Unknown		07/08/2016 16:07	Finished	MS (1ppb), IWST-160401B, 10
47	N020244-010A,SAMP	39	1000	Unknown		07/08/2016 16:17	Finished	SAMP, 10 mL
48	CCV-4,CCV1,1,	40	1000	Unknown		07/08/2016 16:26	Finished	CCV @10ppb, IWST-160401A
49	CCB-4,CCB,1,	41	1000	Unknown		07/08/2016 16:36	Finished	CCB, R160629C
50	N020244-010AMS,MS	42	1000	Unknown		07/08/2016 16:45	Finished	MS (1ppb), IWST-160401B, 10
51	N020244-011A,SAMP	43	1000	Unknown		07/08/2016 16:54	Finished	SAMP, 10 mL
52	N020244-011AMS,MS	44	1000	Unknown		07/08/2016 17:04	Finished	MS (1ppb), IWST-160401B, 10
53	N020245-001A,SAMP	45	1000	Unknown		07/08/2016 17:13	Finished	SAMP, 10 mL
54	N020245-001AMS,MS	46	1000	Unknown		07/08/2016 17:23	Finished	MS (1ppb), IWST-160401B, 10
55	N020245-002A,SAMP	47	1000	Unknown		07/08/2016 17:32	Finished	SAMP, 10 mL
56	N020245-002AMS,MS	48	1000	Unknown		07/08/2016 17:42	Finished	MS (1ppb), IWST-160401B, 10
57	BLANK	1	1000	Unknown		07/08/2016 18:00	Finished	
58	CCV-5,CCV,1,	2	1000	Unknown		07/08/2016 18:11	Finished	CCV @5ppb, IWST-160401A
59	CCB-5,CCB,1,	3	1000	Unknown		07/08/2016 18:20	Finished	CCB R160629C
60	SHUTDOWN	4	1000	Unknown		07/08/2016 18:30	Finished	

61	Eluent: R160708A	5	1000	Unknown		n.a.	Finished	Eluent
62	PCR: R160708B	6	1000	Unknown		n.a.	Finished	Post-Column Reagent

INJECTION LOG: 160711A

Instrument ID: IC-07

Sample No	Sample Name	Type	DF	Peak Name	Injection Date/Time	Comments
1	BLANK	BLANK	1	Hexavalent Chromium	07/07/16 10:12 AM	Not Reported
2	iBLANK	iBLANK	1	Hexavalent Chromium	07/07/16 10:23 AM	Not Reported
3	STD-0.2 ppb	ICAL	1	Hexavalent Chromium	07/07/16 10:32 AM	Reported
4	STD-1.0 ppb	ICAL	1	Hexavalent Chromium	07/07/16 10:42 AM	Reported
5	STD-5.0 ppb	ICAL	1	Hexavalent Chromium	07/07/16 10:51 AM	Reported
6	STD-10.0 ppb	ICAL	1	Hexavalent Chromium	07/07/16 11:00 AM	Reported
7	STD-15.0 ppb	ICAL	1	Hexavalent Chromium	07/07/16 11:10 AM	Reported
8	STD-20.0 ppb	ICAL	1	Hexavalent Chromium	07/07/16 11:19 AM	Reported
9	BLANK	BLANK	1	Hexavalent Chromium	07/11/16 8:43 AM	Not Reported
10	BLANK	BLANK	1	Hexavalent Chromium	07/11/16 8:54 AM	Not Reported
11	CCV-1	CCV	1	Hexavalent Chromium	07/11/16 9:03 AM	Reported
12	PQL@0.2ppb	CCV2	1	Hexavalent Chromium	07/11/16 9:13 AM	Reported
13	CCB-1	CCB	1	Hexavalent Chromium	07/11/16 9:22 AM	Reported
14	MB-109341	MBLK	1	Hexavalent Chromium	07/11/16 9:32 AM	Reported
15	LCS-109341	LCS	1	Hexavalent Chromium	07/11/16 9:41 AM	Reported
16	N020253-001A	SAMP	1	Hexavalent Chromium	07/11/16 10:12 AM	Reported
17	N020253-002A	SAMP	1	Hexavalent Chromium	07/11/16 10:22 AM	Reported
18	N020253-003A	SAMP	1	Hexavalent Chromium	07/11/16 10:32 AM	Reported
19	N020253-004A	SAMP	1	Hexavalent Chromium	07/11/16 10:41 AM	Reported
20	N020253-005A	SAMP	1	Hexavalent Chromium	07/11/16 10:51 AM	Reported
21	N020253-006A	SAMP	1	Hexavalent Chromium	07/11/16 11:00 AM	Reported
22	N020253-007A	SAMP	1	Hexavalent Chromium	07/11/16 11:10 AM	Reported
23	N020253-008A	SAMP	1	Hexavalent Chromium	07/11/16 11:19 AM	Reported
24	CCV-2	CCV1	1	Hexavalent Chromium	07/11/16 11:29 AM	Reported
25	CCB-2	CCB	1	Hexavalent Chromium	07/11/16 11:38 AM	Reported
26	N020253-009A	SAMP	1	Hexavalent Chromium	07/11/16 11:48 AM	Reported
27	N020253-010A	SAMP	1	Hexavalent Chromium	07/11/16 11:57 AM	Reported
28	N020253-011A	SAMP	1	Hexavalent Chromium	07/11/16 12:07 PM	Reported
29	N020253-012A	SAMP	1	Hexavalent Chromium	07/11/16 12:16 PM	Reported
30	N020253-013A	SAMP	1	Hexavalent Chromium	07/11/16 12:25 PM	Reported
31	N020253-014A	SAMP	1	Hexavalent Chromium	07/11/16 12:35 PM	Reported
32	N020253-014ADUP	DUP	1	Hexavalent Chromium	07/11/16 12:44 PM	Reported
33	N020245-003A	SAMP	1	Hexavalent Chromium	07/11/16 12:54 PM	Reported
34	N020245-003AMS	MS	1	Hexavalent Chromium	07/11/16 1:03 PM	Reported
35	N020245-003AMSD	MSD	1	Hexavalent Chromium	07/11/16 1:13 PM	Reported
36	CCV-3	CCV	1	Hexavalent Chromium	07/11/16 1:22 PM	Reported
37	CCB-3	CCB	1	Hexavalent Chromium	07/11/16 1:32 PM	Reported
38	N020245-004A	SAMP	1	Hexavalent Chromium	07/11/16 1:41 PM	Reported
39	N020245-004AMS	MS	1	Hexavalent Chromium	07/11/16 1:51 PM	Reported
40	N020232-004A	SAMP	1	Hexavalent Chromium	07/11/16 2:00 PM	Reported *
41	N020232-004AMS	MS	1	Hexavalent Chromium	07/11/16 2:10 PM	Reported *
42	N020232-005A	SAMP	1	Hexavalent Chromium	07/11/16 2:19 PM	Reported *

INJECTION LOG: 160711A

Instrument ID: IC-07

Sample No	Sample Name	Type	DF	Peak Name	Injection Date/Time	Comments
43	N020232-005AMS	MS	1	Hexavalent Chromium	07/11/16 2:29 PM	Reported *
44	N020232-006A	SAMP	1	Hexavalent Chromium	07/11/16 2:38 PM	Reported *
45	N020232-006AMS	MS	1	Hexavalent Chromium	07/11/16 2:47 PM	Reported *
46	N020223-003B	SAMP	25	Hexavalent Chromium	07/11/16 2:57 PM	Reported *
47	N020223-003BMS	MS	25	Hexavalent Chromium	07/11/16 3:06 PM	Reported *
48	CCV-4	CCV1	1	Hexavalent Chromium	07/11/16 3:16 PM	Reported
49	CCB-4	CCB	1	Hexavalent Chromium	07/11/16 3:25 PM	Reported

* Confirmation only

7/21/2016

Injection Log Summary

Sequence Details

Name:	**IC-07_160711A**	*Created On:*	**24/Jul/12 17:17:21**
Directory:	**Instrument Data\IC-7\2016**	*Created By:*	**ics 5000**
Data Vault:	**ChromeleonLocal**	*Updated On:*	**11/Jul/16 15:59:48**
No. of Injections:	**52**	*Updated By:*	**ics 5000**

Injection Details

No.	Injection Name	Position	Volume µL	Type	Level	Inject Time	Status	Comment
1	BLANK	3	1000	Unknown		07/07/2016 10:12	Finished	
2	iBLANK	4	1000	Unknown		07/07/2016 10:23	Finished	INSTRUMENT BLANK
3	STD1-0.2 ppb	5	1000	Calibration Standard	01	07/07/2016 10:32	Finished	0.2 ppb, IWST160401A
4	STD2-1.0 ppb	6	1000	Calibration Standard	02	07/07/2016 10:42	Finished	1.0 ppb, IWST160401A
5	STD3-5.0 ppb	7	1000	Calibration Standard	03	07/07/2016 10:51	Finished	5.0 ppb, IWST160401A
6	STD4-10.0 ppb	8	1000	Calibration Standard	04	07/07/2016 11:00	Finished	10 ppb, IWST160401A
7	STD5-15.0 ppb	9	1000	Calibration Standard	05	07/07/2016 11:10	Finished	15 ppb, IWST160401A
8	STD6-20.0 ppb	10	1000	Calibration Standard	06	07/07/2016 11:19	Finished	20 ppb, IWST160401A
9	BLANK	1	1000	Unknown		07/11/2016 08:43	Finished	
10	BLANK	2	1000	Unknown		07/11/2016 08:54	Finished	
11	CCV-1,CCV,1,	3	1000	Unknown		07/11/2016 09:03	Finished	CCV @5ppb, IWST-160401A
12	PQL@0.2ppb,CCV2,1	4	1000	Unknown		07/11/2016 09:13	Finished	PQL @ 0.2ppb
13	CCB-1,CCB,1,	5	1000	Unknown		07/11/2016 09:22	Finished	CCB R160622B
14	MB-H2O,MBLK,1	6	1000	Unknown		07/11/2016 09:32	Finished	MB R160622B
15	LCS-H2O,LCS,1	7	1000	Unknown		07/11/2016 09:41	Finished	LCS, IWST-160401B
16	N020253-001A,SAMP	8	1000	Unknown		07/11/2016 10:12	Finished	SAMP, 10 mL
17	N020253-002A,SAMP	9	1000	Unknown		07/11/2016 10:22	Finished	SAMP, 10 mL
18	N020253-003A,SAMP	10	1000	Unknown		07/11/2016 10:32	Finished	SAMP, 10 mL
19	N020253-004A,SAMP	11	1000	Unknown		07/11/2016 10:41	Finished	SAMP, 10 mL
20	N020253-005A,SAMP	12	1000	Unknown		07/11/2016 10:51	Finished	SAMP, 10 mL
21	N020253-006A,SAMP	13	1000	Unknown		07/11/2016 11:00	Finished	SAMP, 10 mL
22	N020253-007A,SAMP	14	1000	Unknown		07/11/2016 11:10	Finished	SAMP, 10 mL
23	N020253-008A,SAMP	15	1000	Unknown		07/11/2016 11:19	Finished	SAMP, 10 mL
24	CCV-2,CCV1,1,	16	1000	Unknown		07/11/2016 11:29	Finished	CCV @10ppb, IWST-160401A
25	CCB-2,CCB,1,	17	1000	Unknown		07/11/2016 11:38	Finished	CCB, R160622B
26	N020253-009A,SAMP	18	1000	Unknown		07/11/2016 11:48	Finished	SAMP, 10 mL
27	N020253-010A,SAMP	19	1000	Unknown		07/11/2016 11:57	Finished	SAMP, 10 mL
28	N020253-011A,SAMP	20	1000	Unknown		07/11/2016 12:07	Finished	SAMP, 10 mL
29	N020253-012A,SAMP	21	1000	Unknown		07/11/2016 12:16	Finished	SAMP, 10 mL
30	N020253-013A,SAMP	22	1000	Unknown		07/11/2016 12:25	Finished	SAMP, 10 mL
31	N020253-014A,SAMP	23	1000	Unknown		07/11/2016 12:35	Finished	SAMP, 10 mL
32	N020253-014ADUP,D	24	1000	Unknown		07/11/2016 12:44	Finished	DUP, 10 mL
33	N020245-003A,SAMP	25	1000	Unknown		07/11/2016 12:54	Finished	SAMP, 10 mL
34	N020245-003AMS,MS	26	1000	Unknown		07/11/2016 13:03	Finished	MS (1ppb), IWST-160401B, 10
35	N020245-003AMSD,M	27	1000	Unknown		07/11/2016 13:13	Finished	MSD (1ppb), IWST-160401B, 1
36	CCV-3,CCV,1,	28	1000	Unknown		07/11/2016 13:22	Finished	CCV @5ppb, IWST-160401A
37	CCB-3,CCB,1,	29	1000	Unknown		07/11/2016 13:32	Finished	CCB R160629C
38	N020245-004A,SAMP	30	1000	Unknown		07/11/2016 13:41	Finished	SAMP, 10 mL
39	N020245-004AMS,MS	31	1000	Unknown		07/11/2016 13:51	Finished	MS (1ppb), IWST-160401B, 10
40	N020232-004A,SAMP	32	1000	Unknown		07/11/2016 14:00	Finished	SAMP, 10 mL
41	N020232-004AMS,MS	33	1000	Unknown		07/11/2016 14:10	Finished	MS (1ppb), IWST-160401B, 10
42	N020232-005A,SAMP	34	1000	Unknown		07/11/2016 14:19	Finished	SAMP, 10 mL
43	N020232-005AMS,MS	35	1000	Unknown		07/11/2016 14:29	Finished	MS (1ppb), IWST-160401B, 10
44	N020232-006A,SAMP	36	1000	Unknown		07/11/2016 14:38	Finished	SAMP, 10 mL
45	N020232-006AMS,MS	37	1000	Unknown		07/11/2016 14:47	Finished	MS (1ppb), IWST-160401B, 10
46	N020223-003B,SAMP	38	1000	Unknown		07/11/2016 14:57	Finished	SAMP, 0.4>10 mL
47	N020223-003BMS,MS	39	1000	Unknown		07/11/2016 15:06	Finished	MS (1ppb), IWST-160401B, 0.4
48	CCV-4,CCV1,1,	40	1000	Unknown		07/11/2016 15:16	Finished	CCV @10ppb, IWST-160401A
49	CCB-4,CCB,1,	41	1000	Unknown		07/11/2016 15:25	Finished	CCB, R160629C
50	SHUTDOWN	42	1000	Unknown		07/11/2016 15:35	Finished	
51	Eluent: R160708A	43	1000	Unknown		n.a.	Finished	Eluent
52	PCR: R160708B	44	1000	Unknown		n.a.	Finished	Post-Column Reagent

SAMPLE PREPARATION LOG

Hexavalent Chromium Preparation and Runlog

Sample Preparation

Date Prepared: 7/8/16
Time Prepared: 1045
Prepared By: Mark

Reagent ID:
Sulfuric Acid: #8457
Diphenylcarbazide: CINV-160125H
NH4OH + NH4SO4 eluent: R160708A/F
NH4OH + NH4SO4 buffer: R160629C/R160622B

6N NaOH: R160613B

	Sample ID.	pH of sample	pH after treatment	Initial Volume of sample	Final Volume after buffer add'n	Volume of buffer added	Comments
1)	N020244-011A3	9.47	–	~250 ml	~250ml	–	R160629 C
2)	N020245-001A	9.45	–			–	R160629C
3)	001A2	9.46	–			–	
4)	001A3	9.45	–			–	
5)	002A	9.39	–			–	
6)	002A2	9.47	–			–	
7)	002A3	9.45	–			–	
8)	003A	9.40	–			–	
9)	004A	9.50	–			–	
10)	N020246-001A	9.41	–			–	R160622B
11)	002A	9.36	–			–	
12)	003A	9.44	–			–	
13)	004A	9.39	–			–	
14)	005A	9.36	–			–	
15)	006A	9.25	9.30			1drop 6N NaOH	
	007A	8.51	9.40			10drops 6N NaOH	

Sample Preparation

Date Prepared: 7/8/16
Time Prepared: 1045
Prepared By: Mark

Reagent ID:
Sulfuric Acid: #8457
Diphenylcarbazide: CINV-160125H
NH4OH + NH4SO4 eluent: R160708A/F
NH4OH + NH4SO4 buffer: R160622B

6N NaOH: R160613B

	Sample ID.	pH of sample	pH after treatment	Initial Volume of sample	Final Volume after buffer add'n	Volume of buffer added	Comments
1)	N020246-008A	9.44	–	~250 ml	~250ml	–	R160622B
2)	009A	9.37	–			–	
3)	010A	9.46	–			–	
4)	N020247-001A	9.26	9.30			1drop 6N NaOH	
5)	002A	9.23	9.32			1drop 6N NaOH	
6)	003A	9.20	9.32			2drops 6N NaOH	
7)	004A	9.28	9.32			1drop 6N NaOH	
8)	005A	9.24	9.30			1drop "	
9)	006A	9.20	9.30			2drops "	
0)	007A	9.30	–			–	
1)	008A	9.33	–			–	
2)	009A	9.43	–			–	
3)	010A	9.33	–			–	
4)	011A	9.21	9.31			2drops 6N NaOH	
5)	012A	9.33	–			–	
	013A	9.36	–			–	

Logbook No. 10

INITIAL CALIBRATION DATA SUMMARY

(EPA 218.6) - INITIAL CALIBRATION

Instrument ID: IC-07
Date Calibrated: 7/7/2016

Initial Calibration:

Hexavalent Chromium	STD1	STD2	STD3	STD4	STD5	STD6	
COMPOUND, in ug/L	0.2	1	5	10	15	20	R^2
Area,mAU*min	0.0628	0.2582	1.2706	2.5192	3.8249	5.0640	1.0000

	Stock	Working
Standard Concentration:	1,000,000 PPB	1,000 PPB
Standard ID:	ISST150306A	IWST160401A

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.

7/21/2016

INITIAL CALIBRATION AND CONTINUING CALIBRATION VERIFICATION SUMMARY

CLIENT: ARCADIS U.S., Inc. - California
Work Order: N020245
Project: PG&E Topock - RMP, RC000753.0801

ANALYTICAL QC SUMMARY REPORT

TestCode: 218.6_WPGE

Sample ID: **ICV**	SampType: **ICV**	TestCode: **218.6_WPGE**	Units: **µg/L**	Prep Date:	RunNo: **109328**
Client ID: **ICV**	Batch ID: **R109328**	TestNo: **EPA 218.6**		Analysis Date: **7/7/2016**	SeqNo: **2366821**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	5.035	0.20	5.000	0	101	90	110				

Sample ID: **PQL@0.2ppb**	SampType: **CCV2**	TestCode: **218.6_WPGE**	Units: **µg/L**	Prep Date:	RunNo: **109328**
Client ID: **ZZZZZZ**	Batch ID: **R109328**	TestNo: **EPA 218.6**		Analysis Date: **7/7/2016**	SeqNo: **2366822**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	0.228	0.20	0.2000	0	114	80	120				

Sample ID: **CCV-1**	SampType: **CCV**	TestCode: **218.6_WPGE**	Units: **µg/L**	Prep Date:	RunNo: **109328**
Client ID: **CCV**	Batch ID: **R109328**	TestNo: **EPA 218.6**		Analysis Date: **7/8/2016**	SeqNo: **2366824**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	5.058	0.20	5.000	0	101	95	105				

Sample ID: **PQL@0.2ppb**	SampType: **CCV2**	TestCode: **218.6_WPGE**	Units: **µg/L**	Prep Date:	RunNo: **109328**
Client ID: **ZZZZZZ**	Batch ID: **R109328**	TestNo: **EPA 218.6**		Analysis Date: **7/8/2016**	SeqNo: **2366825**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	0.226	0.20	0.2000	0	113	80	120				

Sample ID: **CCV-2**	SampType: **CCV1**	TestCode: **218.6_WPGE**	Units: **µg/L**	Prep Date:	RunNo: **109328**
Client ID: **ZZZZZZ**	Batch ID: **R109328**	TestNo: **EPA 218.6**		Analysis Date: **7/8/2016**	SeqNo: **2366837**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	9.905	0.20	10.00	0	99.1	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

ANALYTICAL QC SUMMARY REPORT

TestCode: 218.6_WPGE

Sample ID: **CCV-3**	SampType: **CCV**	TestCode: **218.6_WPGE**	Units: **µg/L**	Prep Date:	RunNo: **109328**
Client ID: **CCV**	Batch ID: **R109328**	TestNo: **EPA 218.6**		Analysis Date: **7/8/2016**	SeqNo: **2366849**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	5.050	0.20	5.000	0	101	95	105				

Sample ID: **CCV-4**	SampType: **CCV1**	TestCode: **218.6_WPGE**	Units: **µg/L**	Prep Date:	RunNo: **109328**
Client ID: **ZZZZZZ**	Batch ID: **R109328**	TestNo: **EPA 218.6**		Analysis Date: **7/8/2016**	SeqNo: **2366861**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	9.933	0.20	10.00	0	99.3	95	105				

Sample ID: **CCV-5**	SampType: **CCV**	TestCode: **218.6_WPGE**	Units: **µg/L**	Prep Date:	RunNo: **109328**
Client ID: **CCV**	Batch ID: **R109328**	TestNo: **EPA 218.6**		Analysis Date: **7/8/2016**	SeqNo: **2366870**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	5.029	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
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: ARCADIS U.S., Inc. - California
Work Order: N020245
Project: PG&E Topock - RMP, RC000753.0801

ANALYTICAL QC SUMMARY REPORT

TestCode: 218.6_WPGE

Sample ID: **ICV**	SampType: **ICV**	TestCode: **218.6_WPGE**	Units: **µg/L**	Prep Date:	RunNo: **109341**
Client ID: **ICV**	Batch ID: **R109341**	TestNo: **EPA 218.6**		Analysis Date: **7/7/2016**	SeqNo: **2367539**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	5.035	0.20	5.000	0	101	90	110				

Sample ID: **PQL@0.2ppb**	SampType: **CCV2**	TestCode: **218.6_WPGE**	Units: **µg/L**	Prep Date:	RunNo: **109341**
Client ID: **ZZZZZZ**	Batch ID: **R109341**	TestNo: **EPA 218.6**		Analysis Date: **7/7/2016**	SeqNo: **2367540**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	0.228	0.20	0.2000	0	114	80	120				

Sample ID: **CCV-1**	SampType: **CCV**	TestCode: **218.6_WPGE**	Units: **µg/L**	Prep Date:	RunNo: **109341**
Client ID: **CCV**	Batch ID: **R109341**	TestNo: **EPA 218.6**		Analysis Date: **7/11/2016**	SeqNo: **2367542**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	5.108	0.20	5.000	0	102	95	105				

Sample ID: **PQL@0.2ppb**	SampType: **CCV2**	TestCode: **218.6_WPGE**	Units: **µg/L**	Prep Date:	RunNo: **109341**
Client ID: **ZZZZZZ**	Batch ID: **R109341**	TestNo: **EPA 218.6**		Analysis Date: **7/11/2016**	SeqNo: **2367543**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	0.229	0.20	0.2000	0	114	80	120				

Sample ID: **CCV-2**	SampType: **CCV1**	TestCode: **218.6_WPGE**	Units: **µg/L**	Prep Date:	RunNo: **109341**
Client ID: **ZZZZZZ**	Batch ID: **R109341**	TestNo: **EPA 218.6**		Analysis Date: **7/11/2016**	SeqNo: **2367555**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	9.955	0.20	10.00	0	99.5	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: N020245
Project: PG&E Topock - RMP, RC000753.0801

ANALYTICAL QC SUMMARY REPORT

TestCode: 218.6_WPGE

Sample ID: **CCV-3**	SampType: **CCV**	TestCode: **218.6_WPGE**	Units: **µg/L**	Prep Date:	RunNo: **109341**
Client ID: **CCV**	Batch ID: **R109341**	TestNo: **EPA 218.6**		Analysis Date: **7/11/2016**	SeqNo: **2367567**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	5.136	0.20	5.000	0	103	95	105				

Sample ID: **CCV-4**	SampType: **CCV1**	TestCode: **218.6_WPGE**	Units: **µg/L**	Prep Date:	RunNo: **109341**
Client ID: **ZZZZZZ**	Batch ID: **R109341**	TestNo: **EPA 218.6**		Analysis Date: **7/11/2016**	SeqNo: **2367579**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	10.042	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
DO	Surrogate Diluted Out		Calculations are based on raw values		

SUMMARY OF INSTRUMENT BLANKS

CLIENT: ARCADIS U.S., Inc. - California
Work Order: N020245
Project: PG&E Topock - RMP, RC000753.0801

ANALYTICAL QC SUMMARY REPORT

TestCode: 218.6_WPGE

Sample ID: **ICB**	SampType: **ICB**	TestCode: **218.6_WPGE**	Units: **µg/L**	Prep Date:	RunNo: **109328**
Client ID: **ICB**	Batch ID: **R109328**	TestNo: **EPA 218.6**		Analysis Date: **7/7/2016**	SeqNo: **2366823**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	ND	0.20									

Sample ID: **CCB-1**	SampType: **CCB**	TestCode: **218.6_WPGE**	Units: **µg/L**	Prep Date:	RunNo: **109328**
Client ID: **CCB**	Batch ID: **R109328**	TestNo: **EPA 218.6**		Analysis Date: **7/8/2016**	SeqNo: **2366826**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	ND	0.20									

Sample ID: **CCB-2**	SampType: **CCB**	TestCode: **218.6_WPGE**	Units: **µg/L**	Prep Date:	RunNo: **109328**
Client ID: **CCB**	Batch ID: **R109328**	TestNo: **EPA 218.6**		Analysis Date: **7/8/2016**	SeqNo: **2366838**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	ND	0.20									

Sample ID: **CCB-3**	SampType: **CCB**	TestCode: **218.6_WPGE**	Units: **µg/L**	Prep Date:	RunNo: **109328**
Client ID: **CCB**	Batch ID: **R109328**	TestNo: **EPA 218.6**		Analysis Date: **7/8/2016**	SeqNo: **2366850**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	ND	0.20									

Sample ID: **CCB-4**	SampType: **CCB**	TestCode: **218.6_WPGE**	Units: **µg/L**	Prep Date:	RunNo: **109328**
Client ID: **CCB**	Batch ID: **R109328**	TestNo: **EPA 218.6**		Analysis Date: **7/8/2016**	SeqNo: **2366862**

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
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: ARCADIS U.S., Inc. - California
Work Order: N020245
Project: PG&E Topock - RMP, RC000753.0801

ANALYTICAL QC SUMMARY REPORT

TestCode: 218.6_WPGE

Sample ID: **CCB-5**	SampType: **CCB**	TestCode: **218.6_WPGE**	Units: **µg/L**	Prep Date:	RunNo: **109328**
Client ID: **CCB**	Batch ID: **R109328**	TestNo: **EPA 218.6**		Analysis Date: **7/8/2016**	SeqNo: **2366871**

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
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: ARCADIS U.S., Inc. - California
Work Order: N020245
Project: PG&E Topock - RMP, RC000753.0801

ANALYTICAL QC SUMMARY REPORT

TestCode: 218.6_WPGE

Sample ID: **ICB**	SampType: **ICB**	TestCode: **218.6_WPGE**	Units: **µg/L**	Prep Date:	RunNo: **109341**
Client ID: **ICB**	Batch ID: **R109341**	TestNo: **EPA 218.6**		Analysis Date: **7/7/2016**	SeqNo: **2367541**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	ND	0.20									

Sample ID: **CCB-1**	SampType: **CCB**	TestCode: **218.6_WPGE**	Units: **µg/L**	Prep Date:	RunNo: **109341**
Client ID: **CCB**	Batch ID: **R109341**	TestNo: **EPA 218.6**		Analysis Date: **7/11/2016**	SeqNo: **2367544**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	ND	0.20									

Sample ID: **CCB-2**	SampType: **CCB**	TestCode: **218.6_WPGE**	Units: **µg/L**	Prep Date:	RunNo: **109341**
Client ID: **CCB**	Batch ID: **R109341**	TestNo: **EPA 218.6**		Analysis Date: **7/11/2016**	SeqNo: **2367556**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	ND	0.20									

Sample ID: **CCB-3**	SampType: **CCB**	TestCode: **218.6_WPGE**	Units: **µg/L**	Prep Date:	RunNo: **109341**
Client ID: **CCB**	Batch ID: **R109341**	TestNo: **EPA 218.6**		Analysis Date: **7/11/2016**	SeqNo: **2367568**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	ND	0.20									

Sample ID: **CCB-4**	SampType: **CCB**	TestCode: **218.6_WPGE**	Units: **µg/L**	Prep Date:	RunNo: **109341**
Client ID: **CCB**	Batch ID: **R109341**	TestNo: **EPA 218.6**		Analysis Date: **7/11/2016**	SeqNo: **2367580**

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

RETENTION TIME (RT) SUMMARY

Instrument ID: IC-07

Analytical Sequence

Date Analyzed: 7/8/2016

Sample Name	Retention Time	Evaluation
CCV-1	5.057	
CCV-2	5.057	
CCV-3	5.065	
CCV-4	5.065	
CCV-5	5.057	
Average	5.060	
Actual RT Window	4.980 - 5.140	
Applied RT Window	4.860 - 5.260	
MB-109328	N.A.	N.A.
LCS-109328	5.057	PASS
N020230-007A	5.057	PASS
N020230-008A	5.057	PASS
N020230-009A	5.057	PASS
N020230-010A	5.057	PASS
N020230-011A	5.057	PASS
N020230-012A	5.057	PASS
N020230-013A	5.057	PASS
N020230-013ADUP	5.065	PASS
N020244-001A	5.057	PASS
N020244-001AMS	5.057	PASS
N020244-001AMSD	5.057	PASS
N020244-002A	5.057	PASS
N020244-002AMS	5.057	PASS
N020244-003A	5.048	PASS
N020244-003AMS	5.057	PASS
N020244-004A	5.048	PASS
N020244-004AMS	5.057	PASS
N020244-005A	5.048	PASS
N020244-005AMS	5.057	PASS
N020244-006A	5.057	PASS
N020244-006AMS	5.057	PASS
N020244-007A	5.048	PASS

7/21/2016

RETENTION TIME (RT) SUMMARY

Instrument ID: IC-07

Analytical Sequence

Date Analyzed: 7/8/2016

Sample Name	Retention Time	Evaluation
CCV-1	5.057	
CCV-2	5.057	
CCV-3	5.065	
CCV-4	5.065	
CCV-5	5.057	
Average	5.060	
Actual RT Window	4.980 - 5.140	
Applied RT Window	4.860 - 5.260	
N020244-007AMS	5.048	PASS
N020244-008A	5.048	PASS
N020244-008AMS	5.048	PASS
N020244-009A	5.057	PASS
N020244-009AMS	5.057	PASS
N020244-010A	5.048	PASS
N020244-010AMS	5.057	PASS
N020244-011A	5.073	PASS
N020244-011AMS	5.057	PASS
N020245-001A	5.048	PASS
N020245-001AMS	5.057	PASS
N020245-002A	5.040	PASS
N020245-002AMS	5.057	PASS

7/21/2016

RETENTION TIME (RT) SUMMARY

Instrument ID: IC-07

Analytical Sequence

Date Analyzed: 7/11/2016

Sample Name	Retention Time	Evaluation
CCV-1	5.048	
CCV-2	5.048	
CCV-3	5.048	
CCV-4	5.048	
Average	5.048	
Actual RT Window	4.968 - 5.128	
Applied RT Window	4.848 - 5.248	
MB-109341	N.A.	N.A.
LCS-109341	5.056	PASS
N020253-001A	5.056	PASS
N020253-002A	5.031	PASS
N020253-003A	5.040	PASS
N020253-004A	5.048	PASS
N020253-005A	5.048	PASS
N020253-006A	5.048	PASS
N020253-007A	5.040	PASS
N020253-008A	5.048	PASS
N020253-009A	5.056	PASS
N020253-010A	5.040	PASS
N020253-011A	5.081	PASS
N020253-012A	5.065	PASS
N020253-013A	5.040	PASS
N020253-014A	5.056	PASS
N020253-014ADUP	5.056	PASS
N020245-003A	N.A.	N.A.
N020245-003AMS	5.048	PASS
N020245-003AMSD	5.048	PASS
N020245-004A	N.A.	N.A.
N020245-004AMS	5.048	PASS
N020232-004A	5.040	PASS
N020232-004AMS	5.040	PASS
N020232-005A	5.040	PASS

7/21/2016

RETENTION TIME (RT) SUMMARY

Instrument ID: IC-07

Analytical Sequence

Date Analyzed: 7/11/2016

Sample Name	Retention Time	Evaluation
CCV-1	5.048	
CCV-2	5.048	
CCV-3	5.048	
CCV-4	5.048	
Average	5.048	
Actual RT Window	4.968 - 5.128	
Applied RT Window	4.848 - 5.248	
N020232-005AMS	5.048	PASS
N020232-006A	5.031	PASS
N020232-006AMS	5.031	PASS
N020223-003B	4.998	PASS
N020223-003BMS	5.006	PASS

7/21/2016

MDL STUDY

METHOD DETECTION LIMIT 2016

Method Name: **HEXAVALENT CHROMIUM by Ion Chromatography** Matrix: **WATER**
Method Number: EPA 218.6/EPA 7199 Unit: ug/L
Analysis Date(s): 2/12/2016, 2/23/2016, 2/24/2016, 2/25/2016, 3/7/2016, 3/9/2016 & 3/11/2016
Analyst: Ryan Balilu, Jannette Soria

Instrument Name: **IC-06** **Acceptance Criteria:** MDL < spike < 10X MDL

Datafile:	160212	160223	160224	160225	160307	160309	160311						
Analyte	**#1**	**#2**	**#3**	**#4**	**#5**	**#6**	**#7**	**Spike Conc., mg/L**	**SD**	**$t_{(n-1)}$ value**	**MDL**	**PQL**	**Remarks**
ICAL:													
Hexavalent Chromiu	0.2195	0.2048	0.2167	0.1675	0.2194	0.1811	0.1826	0.20	0.0215	3.143	**0.0675**	**0.20**	OK,meets criteria

Students' **t** Values at 99% CL

#	$t_{(n-1)}$
10	2.821
9	2.896
8	2.998
7	3.143

METHOD DETECTION LIMIT 2016

Method Name: **HEXAVALENT CHROMIUM by Ion Chromatography**
Method Number: EPA 218.6/EPA 7199
Analysis Date(s): 3/16/2016; 3/18/2016; 3/21/2016, 3/22/2016, 3/25/2016 & 3/30/2016
Analyst: Jannette Soria

Matrix: **WATER**
Unit: ug/L

Instrument Name: **IC-07**

Acceptance Criteria: MDL < spike < 10X MDL

Datafile:	160316	160318	160321	160322	160323	160325	160330						
Analyte	**#1**	**#2**	**#3**	**#4**	**#5**	**#6**	**#7**	**Spike Conc., mg/L**	**SD**	**$t_{(n-1)}$ value**	**MDL**	**PQL**	**Remarks**
ICAL:													
Hexavalent Chromiu	0.1906	0.2326	0.2339	0.2002	0.2394	0.2147	0.1920	0.20	0.0208	3.143	**0.0655**	**0.20**	OK,meets criteria

Students' **t** Values at 99% CL

#	$t_{(n-1)}$
10	2.821
9	2.896
8	2.998
7	3.143

RAW DATA

INITIAL CALIBRATION

INJECTION LOG: 160707A

Instrument ID: IC-07

Sample No	Sample Name	Type	DF	Peak Name	Injection Date/Time	Comments
1	BLANK	BLANK	1	Hexavalent Chromium	07/07/16 10:12 AM	Not Reported
2	iBLANK	iBLANK	1	Hexavalent Chromium	07/07/16 10:23 AM	Not Reported
3	STD-0.2 ppb	ICAL	1	Hexavalent Chromium	07/07/16 10:32 AM	Reported
4	STD-1.0 ppb	ICAL	1	Hexavalent Chromium	07/07/16 10:42 AM	Reported
5	STD-5.0 ppb	ICAL	1	Hexavalent Chromium	07/07/16 10:51 AM	Reported
6	STD-10.0 ppb	ICAL	1	Hexavalent Chromium	07/07/16 11:00 AM	Reported
7	STD-15.0 ppb	ICAL	1	Hexavalent Chromium	07/07/16 11:10 AM	Reported
8	STD-20.0 ppb	ICAL	1	Hexavalent Chromium	07/07/16 11:19 AM	Reported
9	ICV	ICV	1	Hexavalent Chromium	07/07/16 11:29 AM	Reported
10	PQL@0.2ppb	CCV2	1	Hexavalent Chromium	07/07/16 11:38 AM	Reported
11	ICB	ICB	1	Hexavalent Chromium	07/07/16 11:48 AM	Reported
12	MB-109313	MBLK	1	Hexavalent Chromium	07/07/16 11:59 AM	Reported
13	LCS-109313	LCS	1	Hexavalent Chromium	07/07/16 12:09 PM	Reported
14	N020228-001A	SAMP	1	Hexavalent Chromium	07/07/16 12:18 PM	Reported
15	N020228-001ADUP	DUP	1	Hexavalent Chromium	07/07/16 12:28 PM	Reported
16	N020228-001AMS	MS	1	Hexavalent Chromium	07/07/16 12:37 PM	Reported
17	N020228-002A	SAMP	1	Hexavalent Chromium	07/07/16 12:47 PM	Reported
18	N020228-002AMS	MS	1	Hexavalent Chromium	07/07/16 12:56 PM	Reported
19	N020228-002AMSD	MSD	1	Hexavalent Chromium	07/07/16 1:06 PM	Reported
20	N020228-003A	SAMP	1	Hexavalent Chromium	07/07/16 1:15 PM	Reported
21	N020228-003AMS	MS	1	Hexavalent Chromium	07/07/16 1:25 PM	Reported
22	CCV-1	CCV1	1	Hexavalent Chromium	07/07/16 1:34 PM	Reported
23	CCB-1	CCB	1	Hexavalent Chromium	07/07/16 1:44 PM	Reported
24	N020228-004A	SAMP	1	Hexavalent Chromium	07/07/16 1:53 PM	Reported
25	N020228-004AMS	MS	1	Hexavalent Chromium	07/07/16 2:02 PM	Reported
26	N020228-005A	SAMP	1	Hexavalent Chromium	07/07/16 2:12 PM	Reported
27	N020228-005AMS	MS	1	Hexavalent Chromium	07/07/16 2:21 PM	Not Reported
28	N020228-006A	SAMP	1	Hexavalent Chromium	07/07/16 2:31 PM	Reported
29	N020228-006AMS	MS	1	Hexavalent Chromium	07/07/16 2:40 PM	Reported
30	N020228-007A	SAMP	1	Hexavalent Chromium	07/07/16 2:50 PM	Reported
31	N020228-007AMS	MS	1	Hexavalent Chromium	07/07/16 2:59 PM	Reported
32	N020228-008A	SAMP	1	Hexavalent Chromium	07/07/16 3:09 PM	Reported
33	N020228-008AMS	MS	1	Hexavalent Chromium	07/07/16 3:18 PM	Reported
34	CCV-2	CCV	1	Hexavalent Chromium	07/07/16 3:28 PM	Reported
35	CCB-2	CCB	1	Hexavalent Chromium	07/07/16 3:37 PM	Reported
36	N020228-005AMS	MS	1	Hexavalent Chromium	07/07/16 3:47 PM	Reported
37	N020228-009A	SAMP	1	Hexavalent Chromium	07/07/16 3:56 PM	Reported
38	N020228-009AMS	MS	1	Hexavalent Chromium	07/07/16 4:05 PM	Reported
39	N020228-010A	SAMP	1	Hexavalent Chromium	07/07/16 4:15 PM	Reported
40	N020228-010AMS	MS	1	Hexavalent Chromium	07/07/16 4:24 PM	Reported
41	N020228-011A	SAMP	1	Hexavalent Chromium	07/07/16 4:34 PM	Reported
42	N020228-011AMS	MS	1	Hexavalent Chromium	07/07/16 4:44 PM	Reported

7/15/2016

7/22/2016

IC-07 QBM 7/10/2016 7:38 PM

INJECTION LOG: 160707A

Instrument ID: IC-07

Sample No	Sample Name	Type	DF	Peak Name	Injection Date/Time	Comments
43	N020228-012A	SAMP	1	Hexavalent Chromium	07/07/16 4:53 PM	Reported
44	N020228-012AMS	MS	1	Hexavalent Chromium	07/07/16 5:02 PM	Reported
45	N020228-013A	SAMP	1	Hexavalent Chromium	07/07/16 5:12 PM	Reported
46	CCV-3	CCV1	1	Hexavalent Chromium	07/07/16 5:24 PM	Reported
47	CCB-3	CCB	1	Hexavalent Chromium	07/07/16 5:33 PM	Reported
48	N020229-001A	SAMP	1	Hexavalent Chromium	07/07/16 5:43 PM	Not Reported
49	N020228-013AMS	MS	1	Hexavalent Chromium	07/07/16 5:52 PM	Not Reported
50	N020228-013AMS	MS	1	Hexavalent Chromium	07/07/16 6:04 PM	Reported
51	N020229-001AMS	MS	1	Hexavalent Chromium	07/07/16 6:15 PM	Not Reported
52	N020230-001A	SAMP	1	Hexavalent Chromium	07/07/16 6:25 PM	Reported
53	N020230-002A	SAMP	1	Hexavalent Chromium	07/07/16 6:34 PM	Reported
54	N020230-003A	SAMP	1	Hexavalent Chromium	07/07/16 6:44 PM	Reported
55	N020230-004A	SAMP	1	Hexavalent Chromium	07/07/16 6:53 PM	Reported
56	N020230-005A	SAMP	1	Hexavalent Chromium	07/07/16 7:03 PM	Reported
57	N020230-006A	SAMP	1	Hexavalent Chromium	07/07/16 7:12 PM	Reported
58	CCV-4	CCV	1	Hexavalent Chromium	07/07/16 7:22 PM	Reported
59	CCB-4	CCB	1	Hexavalent Chromium	07/07/16 7:31 PM	Reported
60	N020229-001A	SAMP	1	Hexavalent Chromium	07/07/16 7:40 PM	Reported
61	N020229-001AMS	MS	1	Hexavalent Chromium	07/07/16 7:50 PM	Reported
62	CCV-5	CCV1	1	Hexavalent Chromium	07/07/16 7:59 PM	Reported
63	CCB-5	CCB	1	Hexavalent Chromium	07/07/16 8:09 PM	Reported

7/15/2016

Injection Log Summary

Sequence Details

Name:	**IC-07_160707B**	*Created On:*	**24/Jul/12 17:17:21**
Directory:	**Instrument Data\IC-7\2016**	*Created By:*	**ics 5000**
Data Vault:	**ChromeleonLocal**	*Updated On:*	**08/Jul/16 09:38:15**
No. of Injections:	**66**	*Updated By:*	**ics 5000**

Injection Details

No.	Injection Name	Position	Volume µL	Type	Level	Inject Time	Status	Comment
1	BLANK	3	1000	Unknown		07/07/2016 10:12	Finished	
2	iBLANK	4	1000	Unknown		07/07/2016 10:23	Finished	INSTRUMENT BLANK
3	STD1-0.2 ppb	5	1000	Calibration Standard	01	07/07/2016 10:32	Finished	0.2 ppb, IWST160401A
4	STD2-1.0 ppb	6	1000	Calibration Standard	02	07/07/2016 10:42	Finished	1.0 ppb, IWST160401A
5	STD3-5.0 ppb	7	1000	Calibration Standard	03	07/07/2016 10:51	Finished	5.0 ppb, IWST160401A
6	STD4-10.0 ppb	8	1000	Calibration Standard	04	07/07/2016 11:00	Finished	10 ppb, IWST160401A
7	STD5-15.0 ppb	9	1000	Calibration Standard	05	07/07/2016 11:10	Finished	15 ppb, IWST160401A
8	STD6-20.0 ppb	10	1000	Calibration Standard	06	07/07/2016 11:19	Finished	20 ppb, IWST160401A
9	ICV,ICV,1,	11	1000	Unknown		07/07/2016 11:29	Finished	ICV @5ppb, IWST-160401B
10	PQL@0.2ppb,CCV2,1	12	1000	Unknown		07/07/2016 11:38	Finished	PQL @ 0.2ppb
11	ICB,ICB,1,	13	1000	Unknown		07/07/2016 11:48	Finished	ICB R160629C
12	MB-H2O,MBLK,1	14	1000	Unknown		07/07/2016 11:59	Finished	MB R160629C
13	LCS-H2O,LCS,1	15	1000	Unknown		07/07/2016 12:09	Finished	LCS, IWST-160401B
14	N020228-001A,SAMP	16	1000	Unknown		07/07/2016 12:18	Finished	SAMP, 10 mL
15	N020228-001ADUP,D	17	1000	Unknown		07/07/2016 12:28	Finished	DUP, 10 mL
16	N020228-001AMS,MS	18	1000	Unknown		07/07/2016 12:37	Finished	MS (1ppb), IWST-160401B, 10
17	N020228-002A,SAMP	19	1000	Unknown		07/07/2016 12:47	Finished	SAMP, 10 mL
18	N020228-002AMS,MS	20	1000	Unknown		07/07/2016 12:56	Finished	MS (1ppb), IWST-160401B, 10
19	N020228-002AMSD,M	21	1000	Unknown		07/07/2016 13:06	Finished	MSD (1ppb), IWST-160401B, 1
20	N020228-003A,SAMP	22	1000	Unknown		07/07/2016 13:15	Finished	SAMP, 10 mL
21	N020228-003AMS,MS	23	1000	Unknown		07/07/2016 13:25	Finished	MS (1ppb), IWST-160401B, 10
22	CCV-1,CCV1,1,	24	1000	Unknown		07/07/2016 13:34	Finished	CCV @10ppb, IWST-160401A
23	CCB-1,CCB,1,	25	1000	Unknown		07/07/2016 13:44	Finished	CCB, R160629C
24	N020228-004A,SAMP	26	1000	Unknown		07/07/2016 13:53	Finished	SAMP, 10 mL
25	N020228-004AMS,MS	27	1000	Unknown		07/07/2016 14:02	Finished	MS (1ppb), IWST-160401B, 10
26	N020228-005A,SAMP	28	1000	Unknown		07/07/2016 14:12	Finished	SAMP, 10 mL
27	N020228-005AMS,MS	29	1000	Unknown		07/07/2016 14:21	Finished	MS (1ppb), IWST-160401B, 10
28	N020228-006A,SAMP	30	1000	Unknown		07/07/2016 14:31	Finished	SAMP, 10 mL
29	N020228-006AMS,MS	31	1000	Unknown		07/07/2016 14:40	Finished	MS (1ppb), IWST-160401B, 10
30	N020228-007A,SAMP	32	1000	Unknown		07/07/2016 14:50	Finished	SAMP, 10 mL
31	N020228-007AMS,MS	33	1000	Unknown		07/07/2016 14:59	Finished	MS (1ppb), IWST-160401B, 10
32	N020228-008A,SAMP	34	1000	Unknown		07/07/2016 15:09	Finished	SAMP, 10 mL
33	N020228-008AMS,MS	35	1000	Unknown		07/07/2016 15:18	Finished	MS (1ppb), IWST-160401B, 10
34	CCV-2,CCV,1,	36	1000	Unknown		07/07/2016 15:28	Finished	CCV @5ppb, IWST-160401A
35	CCB-2,CCB,1,	37	1000	Unknown		07/07/2016 15:37	Finished	CCB R160629C
36	N020228-005AMS,MS	38	1000	Unknown		07/07/2016 15:47	Finished	MS (1ppb), IWST-160401B, 10
37	N020228-009A,SAMP	39	1000	Unknown		07/07/2016 15:56	Finished	SAMP, 10 mL
38	N020228-009AMS,MS	40	1000	Unknown		07/07/2016 16:05	Finished	MS (1ppb), IWST-160401B, 10
39	N020228-010A,SAMP	41	1000	Unknown		07/07/2016 16:15	Finished	SAMP, 10 mL
40	N020228-010AMS,MS	42	1000	Unknown		07/07/2016 16:24	Finished	MS (1ppb), IWST-160401B, 10
41	N020228-011A,SAMP	43	1000	Unknown		07/07/2016 16:34	Finished	SAMP, 10 mL
42	N020228-011AMS,MS	44	1000	Unknown		07/07/2016 16:44	Finished	MS (1ppb), IWST-160401B, 10
43	N020228-012A,SAMP	45	1000	Unknown		07/07/2016 16:53	Finished	SAMP, 10 mL
44	N020228-012AMS,MS	46	1000	Unknown		07/07/2016 17:02	Finished	MS (1ppb), IWST-160401B, 10
45	N020228-013A,SAMP	1	1000	Unknown		07/07/2016 17:12	Finished	SAMP, 10 mL
46	CCV-3,CCV1,1,	2	1000	Unknown		07/07/2016 17:24	Finished	CCV @10ppb, IWST-160401A
47	CCB-3,CCB,1,	3	1000	Unknown		07/07/2016 17:33	Finished	CCB, R160629C
48	N020229-001A,SAMP	4	1000	Unknown		07/07/2016 17:43	Finished	SAMP, 10 mL
49	N020228-013AMS,MS	5	1000	Unknown		07/07/2016 17:52	Finished	MS (1ppb), IWST-160401B, 10
50	N020228-013AMS,MS	5	1000	Unknown		07/07/2016 18:04	Finished	MS (1ppb), IWST-160401B, 10
51	N020229-001AMS,MS	6	1000	Unknown		07/07/2016 18:15	Finished	MS (1ppb), IWST-160401B, 10
52	N020230-001A,SAMP	7	1000	Unknown		07/07/2016 18:25	Finished	SAMP, 10 mL
53	N020230-002A,SAMP	8	1000	Unknown		07/07/2016 18:34	Finished	SAMP, 10 mL
54	N020230-003A,SAMP	9	1000	Unknown		07/07/2016 18:44	Finished	SAMP, 10 mL
55	N020230-004A,SAMP	10	1000	Unknown		07/07/2016 18:53	Finished	SAMP, 10 mL
56	N020230-005A,SAMP	11	1000	Unknown		07/07/2016 19:03	Finished	SAMP, 10 mL
57	N020230-006A,SAMP	12	1000	Unknown		07/07/2016 19:12	Finished	SAMP, 10 mL
58	CCV-4,CCV,1,	13	1000	Unknown		07/07/2016 19:22	Finished	CCV @5ppb, IWST-160401A
59	CCB-4,CCB,1,	14	1000	Unknown		07/07/2016 19:31	Finished	CCB R160622B
60	N020229-001A,SAMP	15	1000	Unknown		07/07/2016 19:40	Finished	SAMP, 10 mL

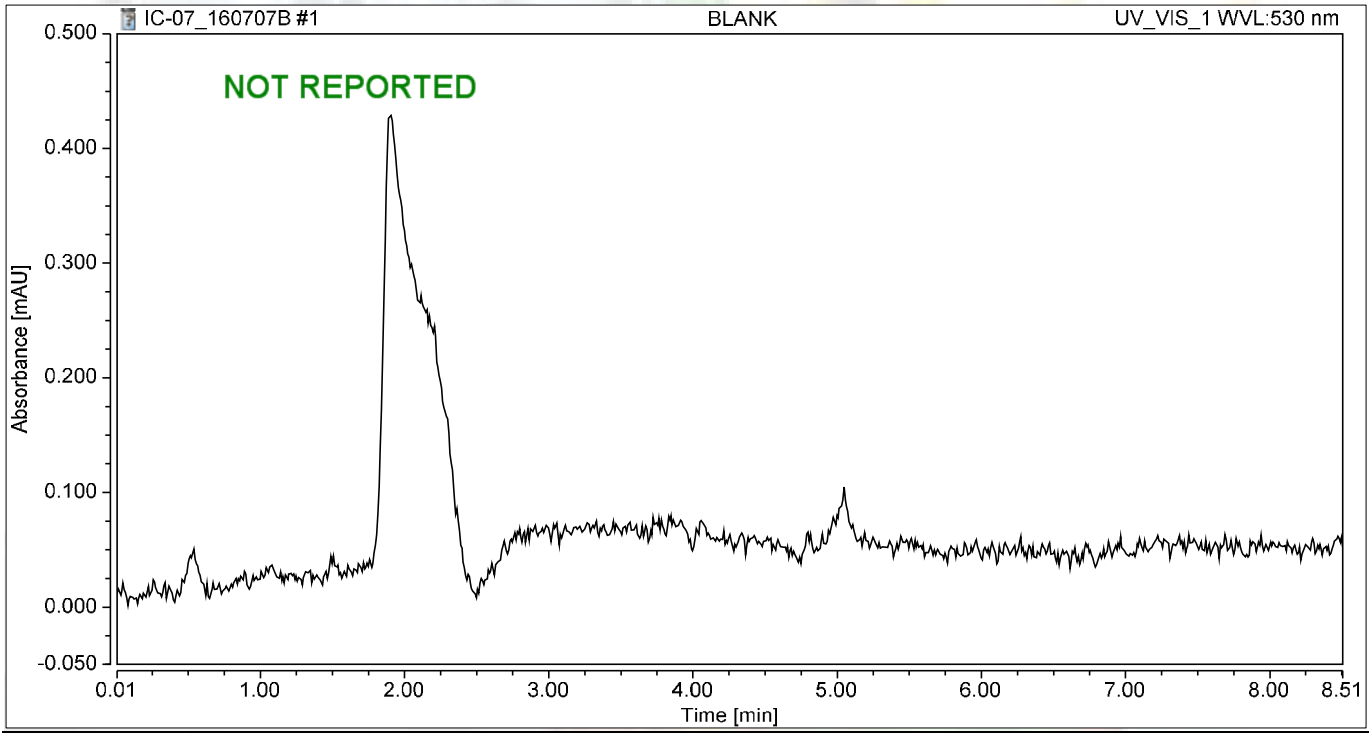
61	N020229-001AMS,MS	16	1000	Unknown		07/07/2016 19:50	Finished	MS (1ppb), IWST-160401B, 10
62	CCV-5,CCV1,1,	17	1000	Unknown		07/07/2016 19:59	Finished	CCV @10ppb, IWST-160401A
63	CCB-5,CCB,1,	18	1000	Unknown		07/07/2016 20:09	Finished	CCB, R160629C
64	SHUTDOWN	19	1000	Unknown		07/07/2016 20:18	Finished	
65	Eluent: R160630C	20	1000	Unknown		n.a.	Finished	Eluent
66	PCR: R160706C	21	1000	Unknown		n.a.	Finished	Post-Column Reagent

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:	**160707_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**07/Jul/16 10:12**	*Sample Weight:*	**1.0000**

Chromatogram



Integration Results

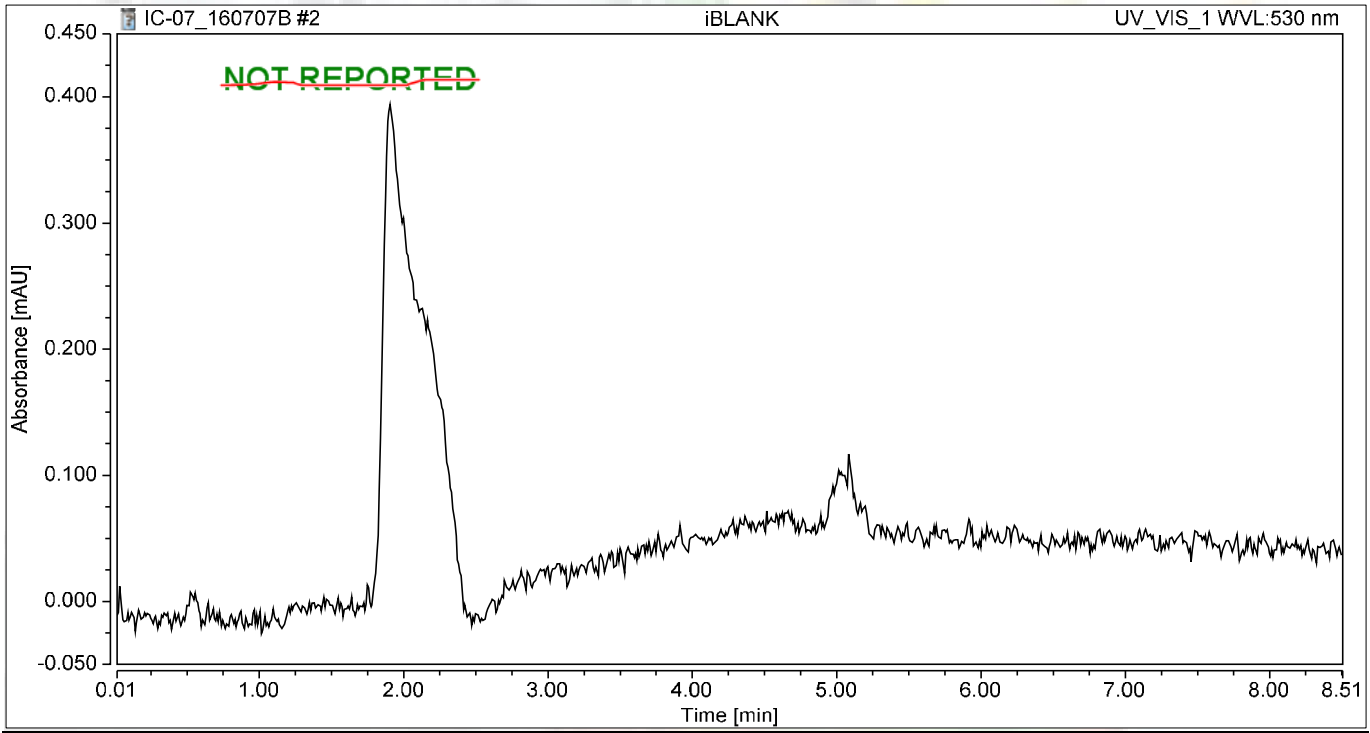
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
n.a.	Hexavalent Chromium	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Total:			**0.000**	**0.000**	**0.00**	**0.00**	

Chromatogram and Results

Injection Details

Injection Name:	**iBLANK**	*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:	**160707_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**07/Jul/16 10:23**	*Sample Weight:*	**1.0000**

Chromatogram



Integration Results

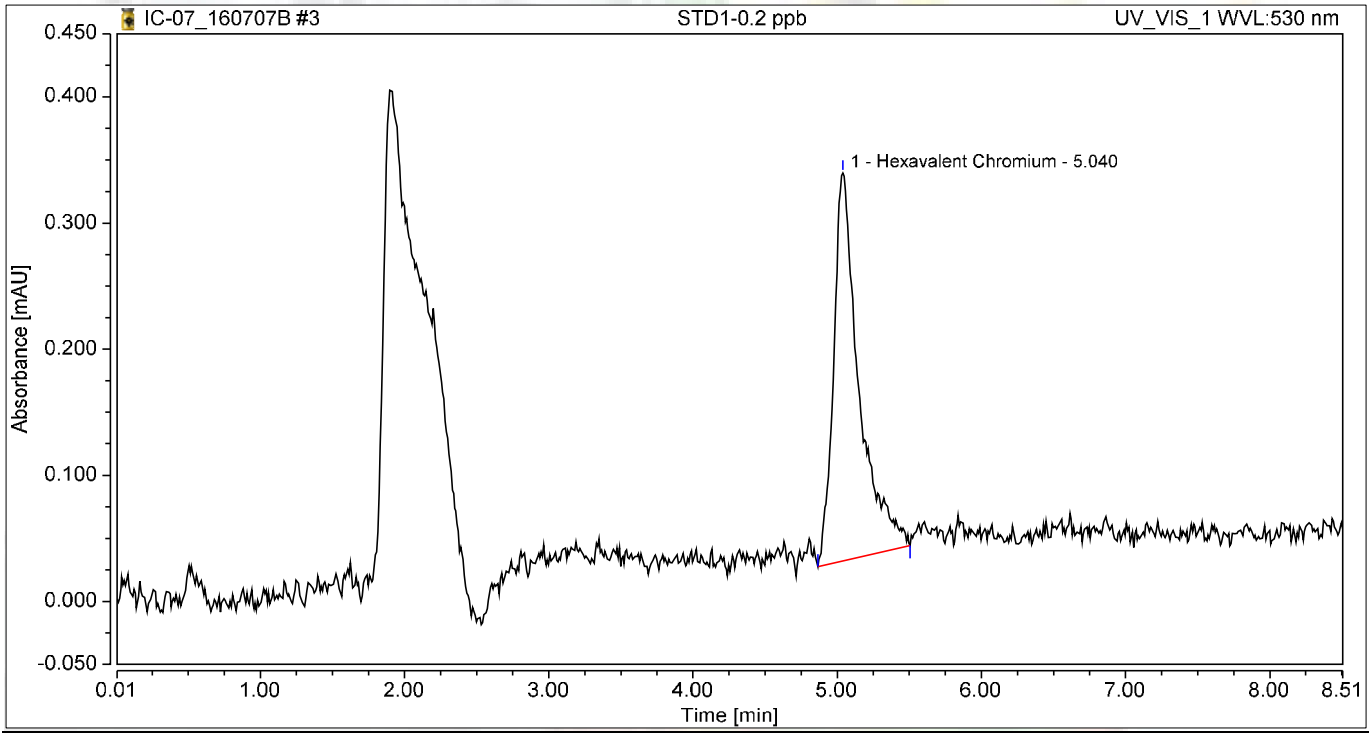
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
n.a.	Hexavalent Chromium	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Total:			**0.000**	**0.000**	**0.00**	**0.00**	

Chromatogram and Results

Injection Details

Injection Name:	**STD1-0.2 ppb**	*Run Time (min):*	**8.50**
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:	**160707_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**07/Jul/16 10:32**	*Sample Weight:*	**1.0000**

Chromatogram



Integration Results

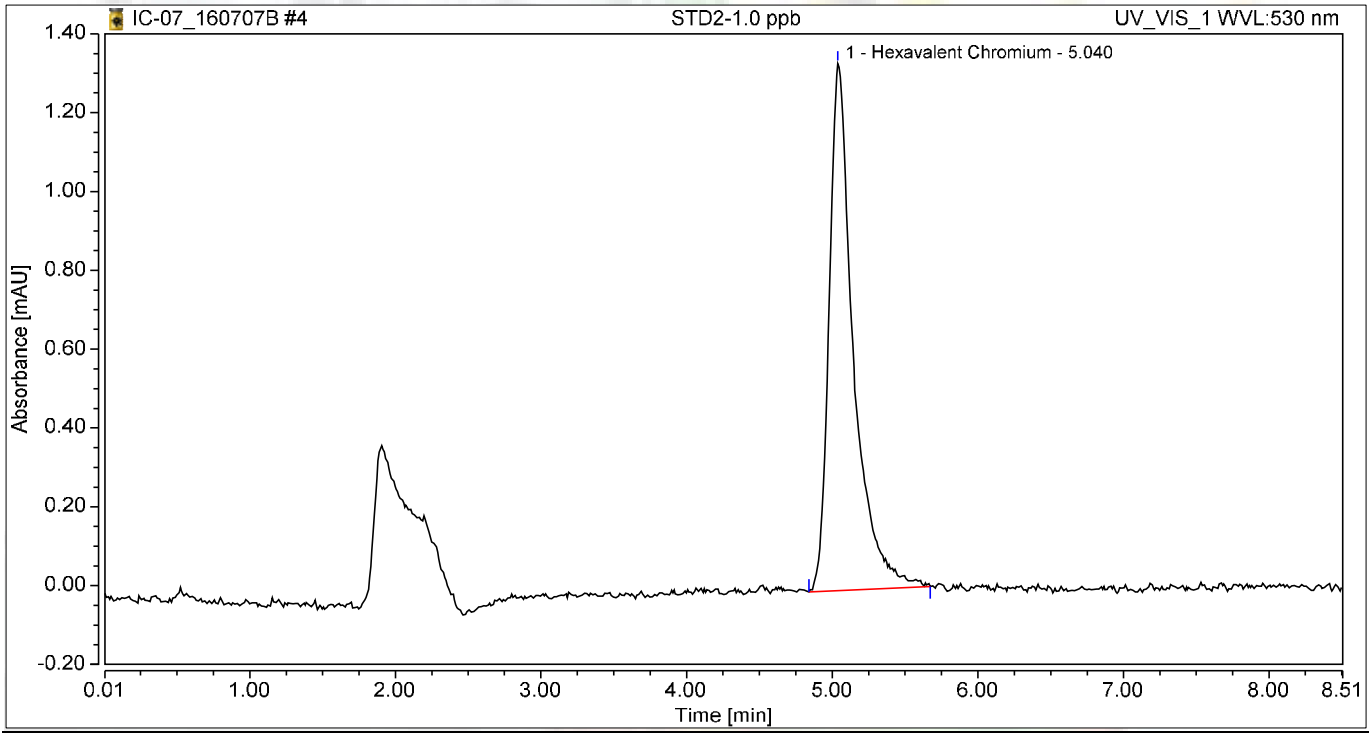
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	5.040	0.063	0.308	100.00	100.00	0.2475
Total:			**0.063**	**0.308**	**100.00**	**100.00**	

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:	**160707_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**07/Jul/16 10:42**	*Sample Weight:*	**1.0000**

Chromatogram



Integration Results

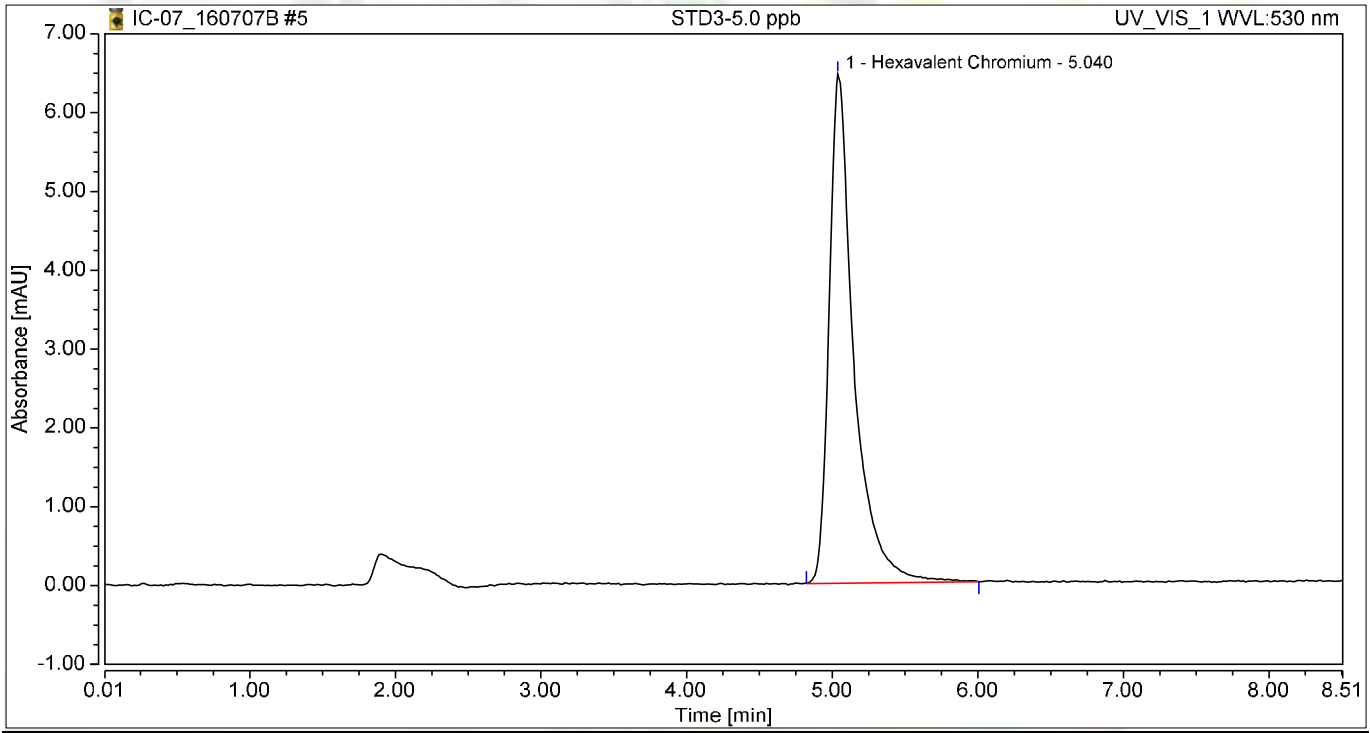
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	5.040	0.258	1.336	100.00	100.00	1.0183
Total:			**0.258**	**1.336**	**100.00**	**100.00**	

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:	**160707_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**07/Jul/16 10:51**	*Sample Weight:*	**1.0000**

Chromatogram



Integration Results

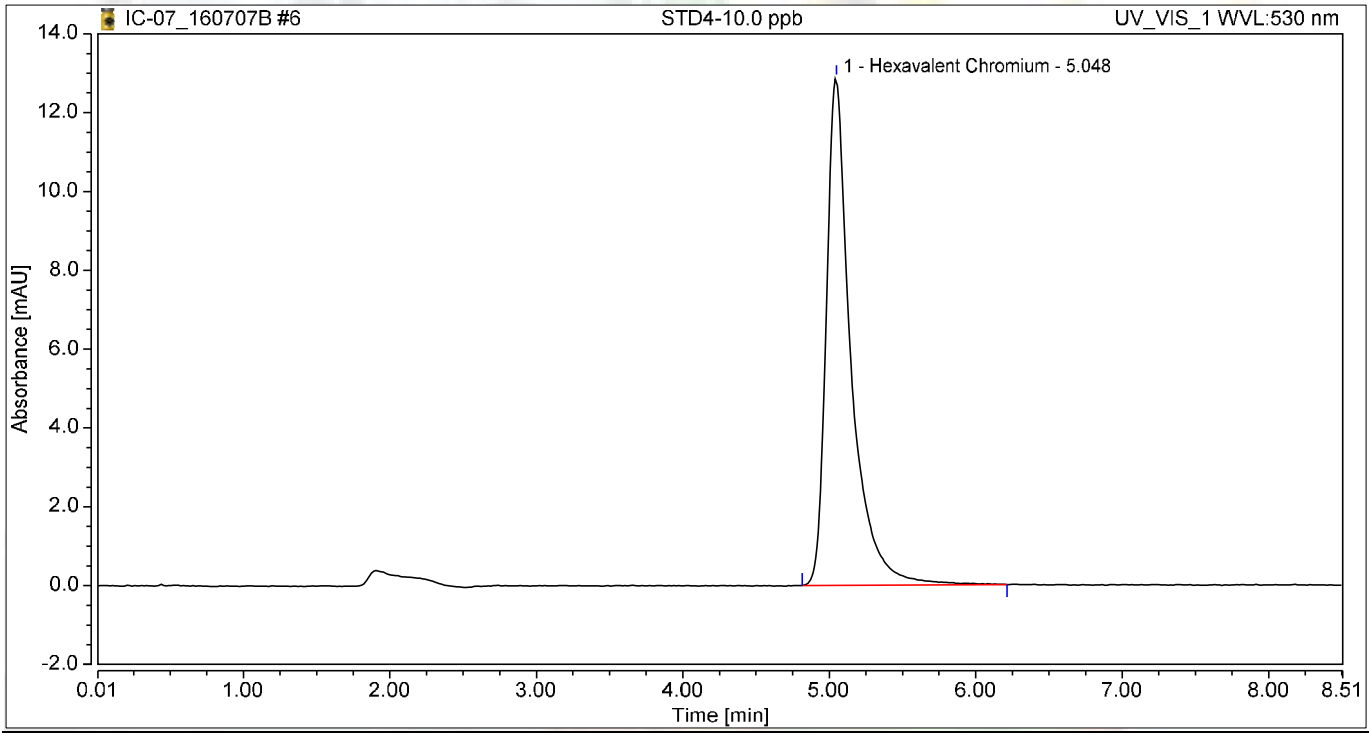
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	5.040	1.271	6.462	100.00	100.00	5.0100
Total:			**1.271**	**6.462**	**100.00**	**100.00**	

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:	**160707_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**07/Jul/16 11:00**	*Sample Weight:*	**1.0000**

Chromatogram



Integration Results

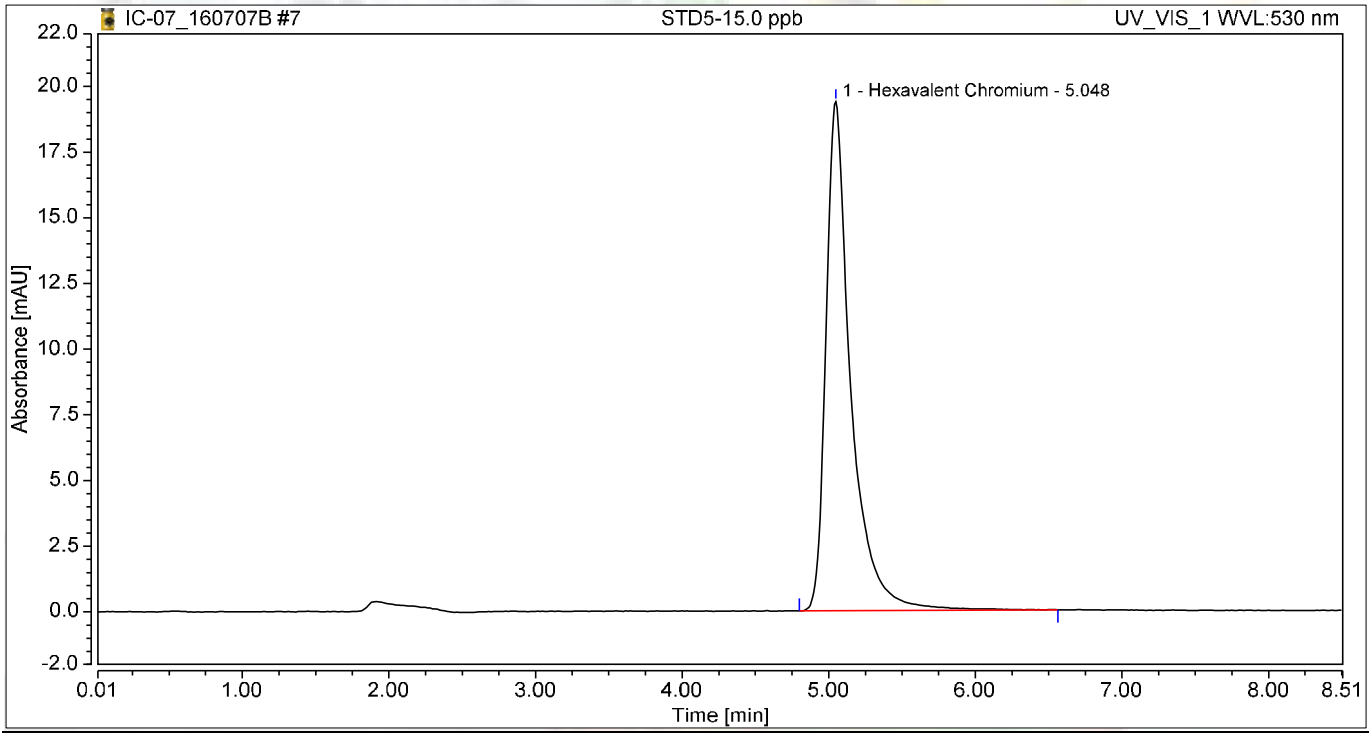
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	5.048	2.519	12.882	100.00	100.00	9.9335
Total:			**2.519**	**12.882**	**100.00**	**100.00**	

Chromatogram and Results

Injection Details

Injection Name:	**STD5-15.0 ppb**	*Run Time (min):*	**8.49**
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:	**160707_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**07/Jul/16 11:10**	*Sample Weight:*	**1.0000**

Chromatogram



Integration Results

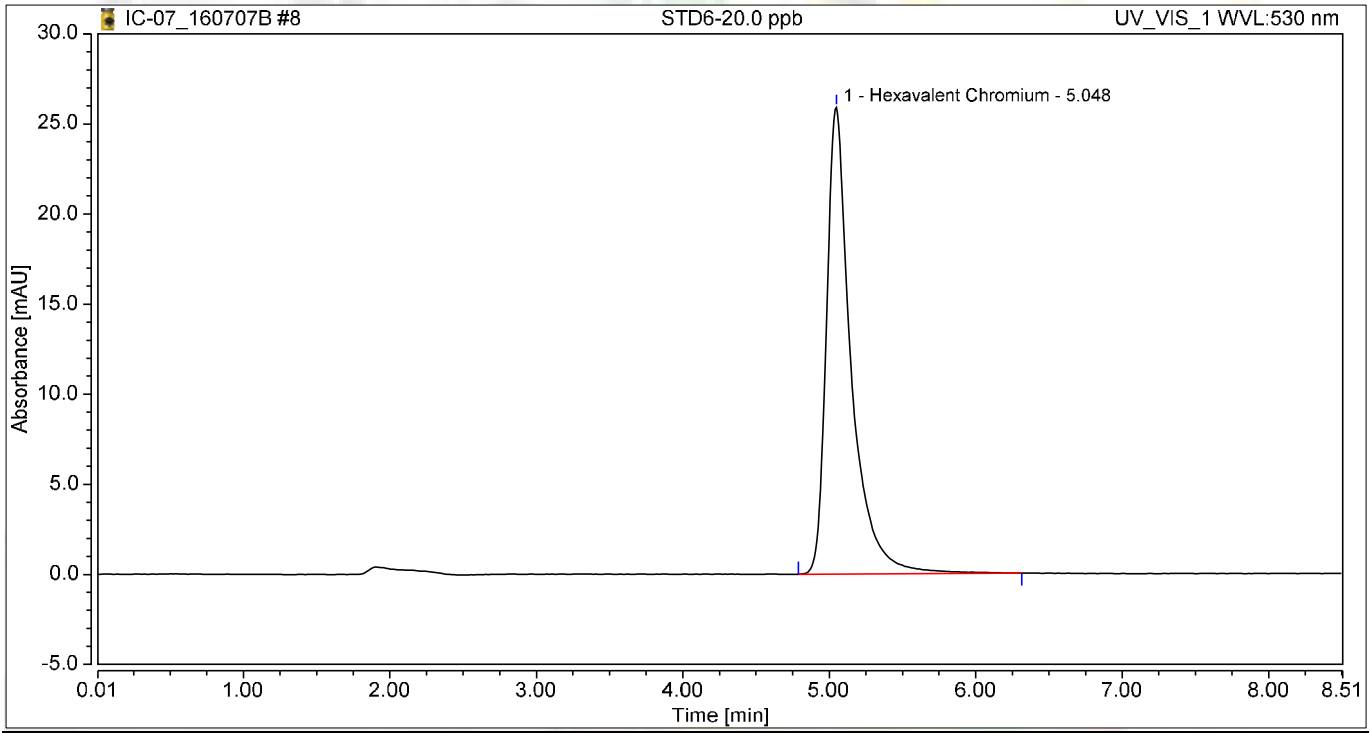
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	5.048	3.825	19.377	100.00	100.00	15.0822
Total:			**3.825**	**19.377**	**100.00**	**100.00**	

Chromatogram and Results

Injection Details

Injection Name:	**STD6-20.0 ppb**	*Run Time (min):*	**8.50**
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:	**160707_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**07/Jul/16 11:19**	*Sample Weight:*	**1.0000**

Chromatogram



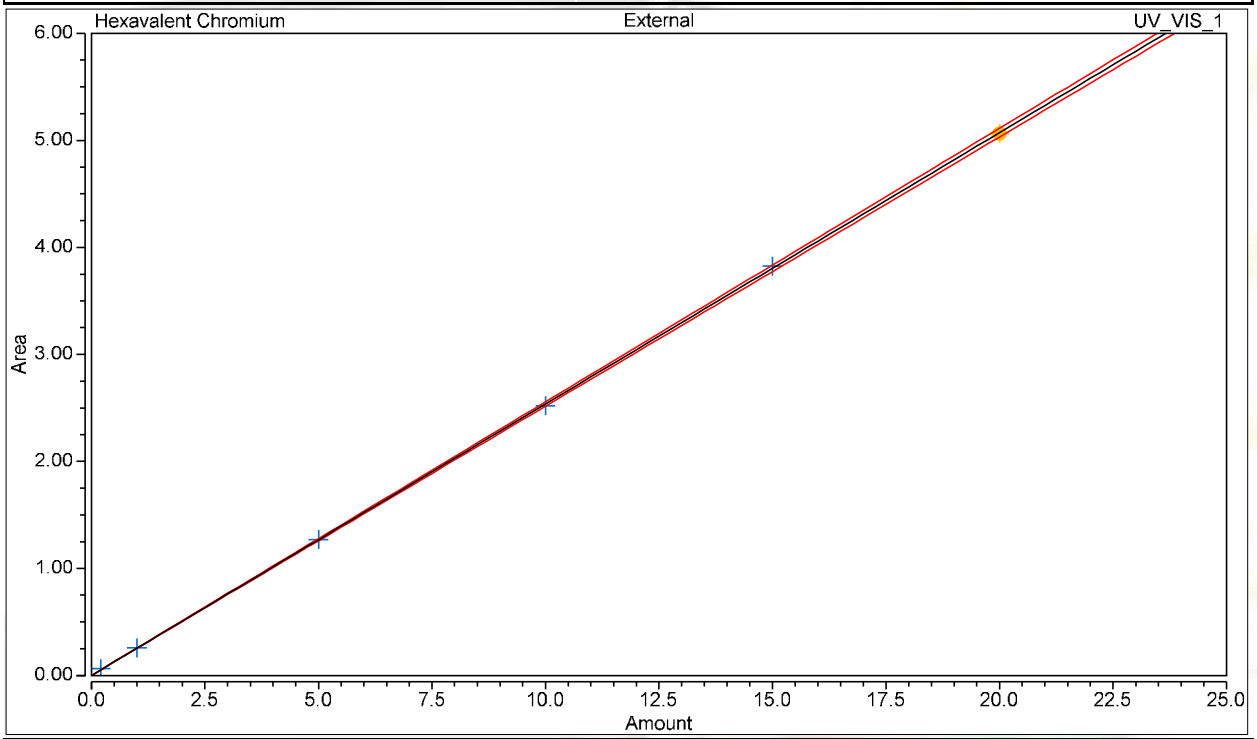
Integration Results

No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	5.048	5.064	25.901	100.00	100.00	19.9677
Total:			**5.064**	**25.901**	**100.00**	**100.00**	

Initial Calibration Summary

Calibration Details	Hexavalent Chromium		
Calibration Type	Lin	*Offset (C0)*	0.0000
Evaluation Type	Area	*Slope (C1)*	0.2536
Number of Calibration Points	6	*Curve (C2)*	0.0000
Number of disabled Calibration Points	0	*R-Square*	0.99995

Calibration Plot Hexavalent Chromium



Calibration Results Hexavalent Chromium

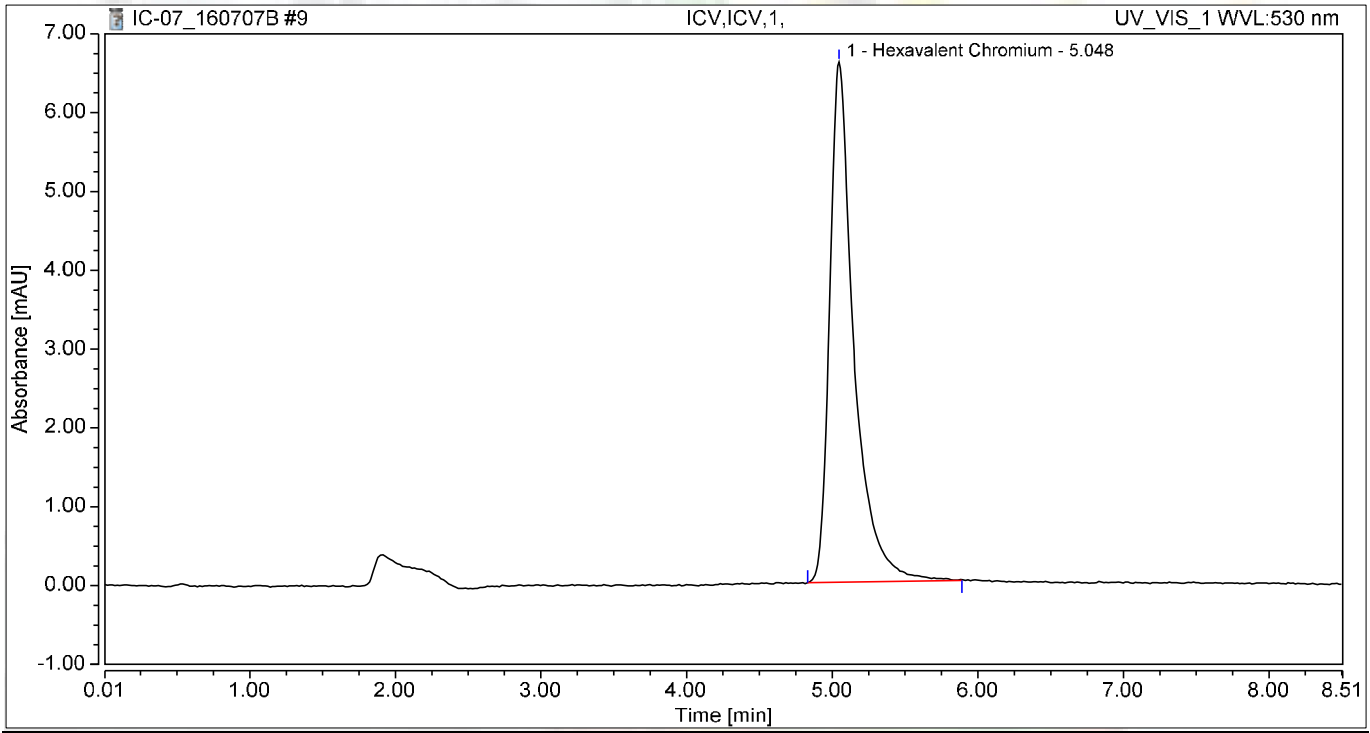
No.	Injection Name	Calibration Level	X Value	Y Value	Area mAU*min	Height mAU
	Hexavalent Chromium		UV_VIS_1	VIS_1	UV_VIS_1	
3	STD1-0.2 ppb	01	0.2000	0.0628	0.063	0.308
4	STD2-1.0 ppb	02	1.0000	0.2582	0.258	1.336
5	STD3-5.0 ppb	03	5.0000	1.2706	1.271	6.462
6	STD4-10.0 ppb	04	10.0000	2.5192	2.519	12.882
7	STD5-15.0 ppb	05	15.0000	3.8249	3.825	19.377
8	STD6-20.0 ppb	06	20.0000	5.0640	5.064	25.901

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:	**160707_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**07/Jul/16 11:29**	*Sample Weight:*	**1.0000**

Chromatogram



Integration Results

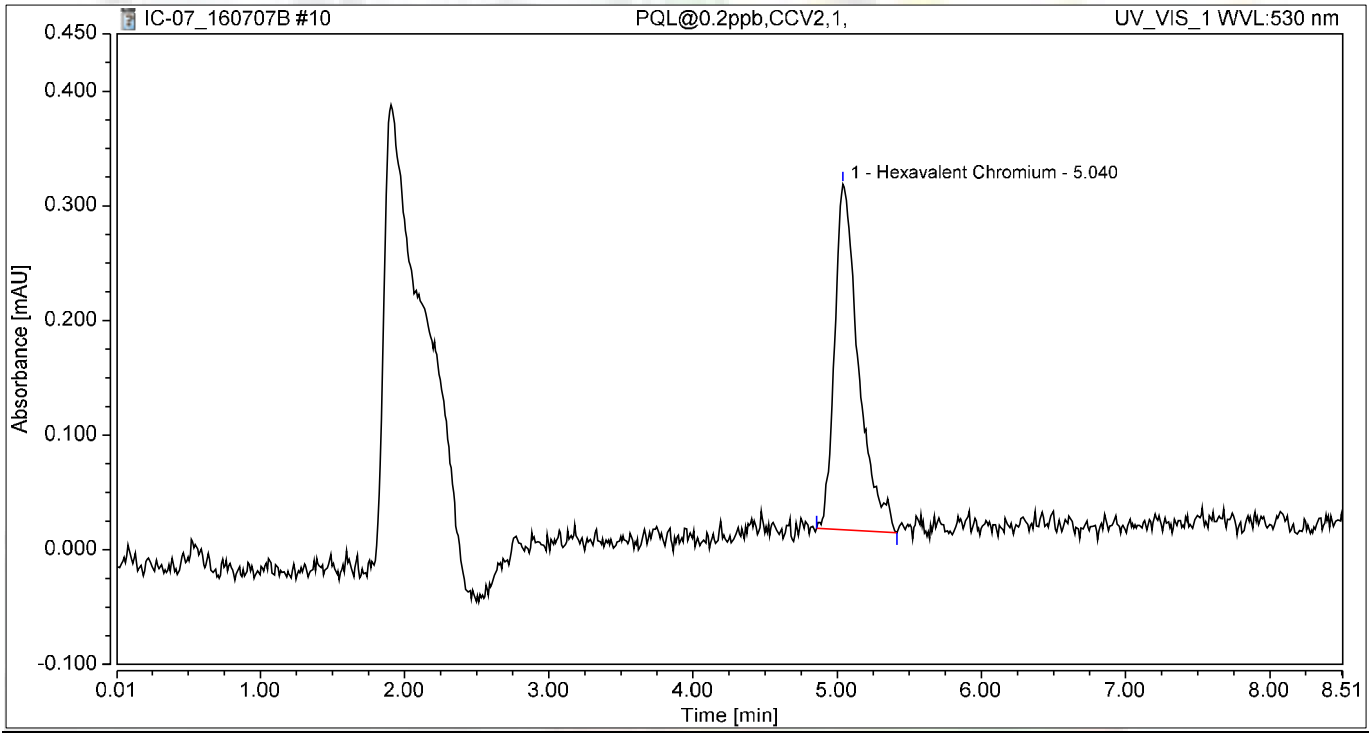
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	5.048	1.277	6.598	100.00	100.00	5.0352
Total:			**1.277**	**6.598**	**100.00**	**100.00**	

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:	**160707_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**07/Jul/16 11:38**	*Sample Weight:*	**1.0000**

Chromatogram



Integration Results

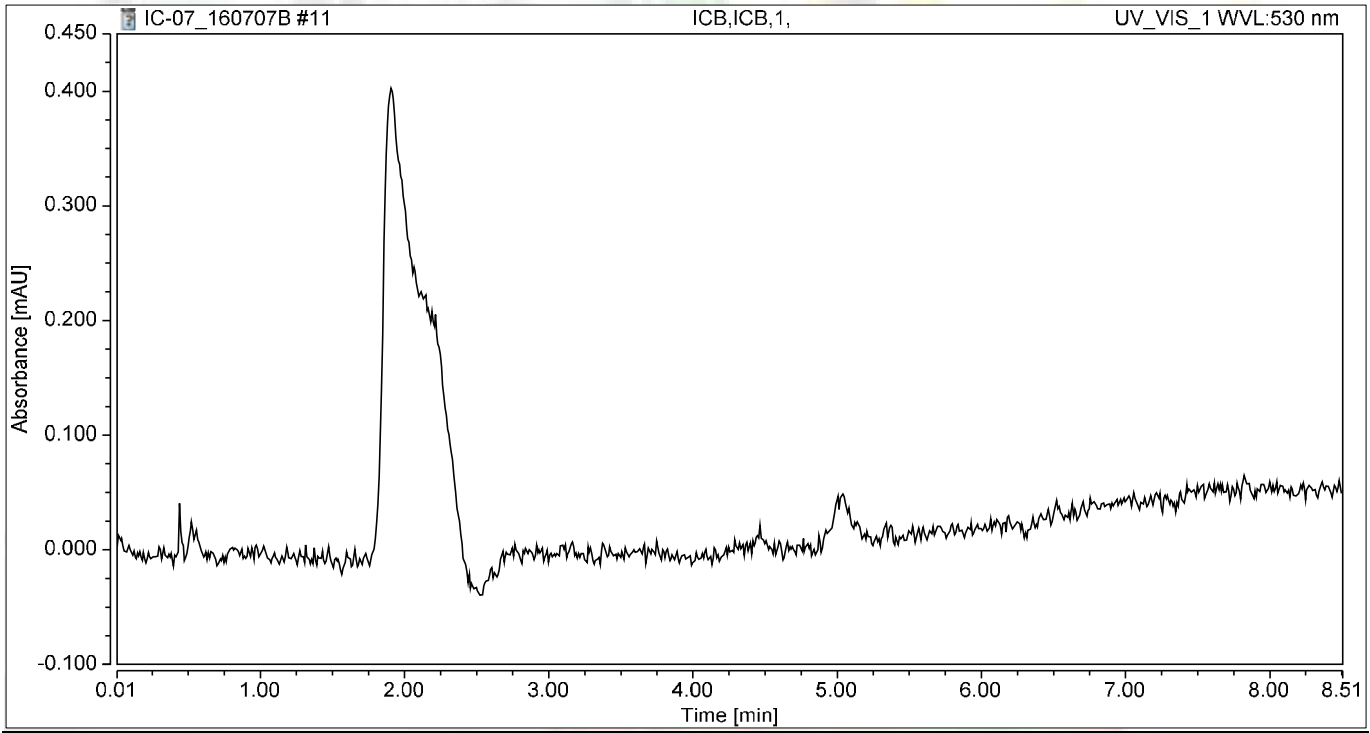
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	5.040	0.058	0.301	100.00	100.00	0.2276
Total:			**0.058**	**0.301**	**100.00**	**100.00**	

Chromatogram and Results

Injection Details

Injection Name:	**ICB,ICB,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:	**160707_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**07/Jul/16 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
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**	

RAW DATA

INJECTION LOG: 160708A

Instrument ID: IC-07

Sample No	Sample Name	Type	DF	Peak Name	Injection Date/Time	Comments
1	BLANK	BLANK	1	Hexavalent Chromium	07/07/16 10:12 AM	Not Reported
2	iBLANK	iBLANK	1	Hexavalent Chromium	07/07/16 10:23 AM	Not Reported
3	STD-0.2 ppb	ICAL	1	Hexavalent Chromium	07/07/16 10:32 AM	Reported
4	STD-1.0 ppb	ICAL	1	Hexavalent Chromium	07/07/16 10:42 AM	Reported
5	STD-5.0 ppb	ICAL	1	Hexavalent Chromium	07/07/16 10:51 AM	Reported
6	STD-10.0 ppb	ICAL	1	Hexavalent Chromium	07/07/16 11:00 AM	Reported
7	STD-15.0 ppb	ICAL	1	Hexavalent Chromium	07/07/16 11:10 AM	Reported
8	STD-20.0 ppb	ICAL	1	Hexavalent Chromium	07/07/16 11:19 AM	Reported
9	BLANK	BLANK	1	Hexavalent Chromium	07/08/16 10:16 AM	Not Reported
10	BLANK	BLANK	1	Hexavalent Chromium	07/08/16 10:27 AM	Not Reported
11	CCV-1	CCV	1	Hexavalent Chromium	07/08/16 10:36 AM	Reported
12	PQL@0.2ppb	CCV2	1	Hexavalent Chromium	07/08/16 10:45 AM	Reported
13	CCB-1	CCB	1	Hexavalent Chromium	07/08/16 10:55 AM	Reported
14	MB-109328	MBLK	1	Hexavalent Chromium	07/08/16 11:04 AM	Reported
15	LCS-109328	LCS	1	Hexavalent Chromium	07/08/16 11:14 AM	Reported
16	N020230-007A	SAMP	1	Hexavalent Chromium	07/08/16 11:23 AM	Reported
17	N020230-008A	SAMP	1	Hexavalent Chromium	07/08/16 11:33 AM	Reported
18	N020230-009A	SAMP	1	Hexavalent Chromium	07/08/16 11:42 AM	Reported
19	N020230-010A	SAMP	1	Hexavalent Chromium	07/08/16 11:52 AM	Reported
20	N020230-011A	SAMP	1	Hexavalent Chromium	07/08/16 12:01 PM	Reported
21	N020230-012A	SAMP	1	Hexavalent Chromium	07/08/16 12:11 PM	Reported
22	N020230-013A	SAMP	1	Hexavalent Chromium	07/08/16 12:20 PM	Reported
23	N020230-013ADUP	DUP	1	Hexavalent Chromium	07/08/16 12:30 PM	Reported
24	CCV-2	CCV1	1	Hexavalent Chromium	07/08/16 12:39 PM	Reported
25	CCB-2	CCB	1	Hexavalent Chromium	07/08/16 12:48 PM	Reported
26	N020244-001A	SAMP	1	Hexavalent Chromium	07/08/16 12:58 PM	Reported
27	N020244-001AMS	MS	1	Hexavalent Chromium	07/08/16 1:07 PM	Reported
28	N020244-001AMSD	MSD	1	Hexavalent Chromium	07/08/16 1:17 PM	Reported
29	N020244-002A	SAMP	1	Hexavalent Chromium	07/08/16 1:26 PM	Reported
30	N020244-002AMS	MS	1	Hexavalent Chromium	07/08/16 1:36 PM	Reported
31	N020244-003A	SAMP	1	Hexavalent Chromium	07/08/16 1:45 PM	Reported
32	N020244-003AMS	MS	1	Hexavalent Chromium	07/08/16 1:55 PM	Reported
33	N020244-004A	SAMP	1	Hexavalent Chromium	07/08/16 2:04 PM	Reported
34	N020244-004AMS	MS	1	Hexavalent Chromium	07/08/16 2:14 PM	Reported
35	N020244-005A	SAMP	1	Hexavalent Chromium	07/08/16 2:23 PM	Reported
36	CCV-3	CCV	1	Hexavalent Chromium	07/08/16 2:33 PM	Reported
37	CCB-3	CCB	1	Hexavalent Chromium	07/08/16 2:42 PM	Reported
38	N020244-005AMS	MS	1	Hexavalent Chromium	07/08/16 2:51 PM	Reported
39	N020244-006A	SAMP	1	Hexavalent Chromium	07/08/16 3:01 PM	Reported
40	N020244-006AMS	MS	1	Hexavalent Chromium	07/08/16 3:10 PM	Reported
41	N020244-007A	SAMP	1	Hexavalent Chromium	07/08/16 3:20 PM	Reported
42	N020244-007AMS	MS	1	Hexavalent Chromium	07/08/16 3:29 PM	Reported

7/22/2016

7/21/2016

IC-07 QBM 7/10/2016 10:00 PM

INJECTION LOG: 160708A

Instrument ID: IC-07

Sample No	Sample Name	Type	DF	Peak Name	Injection Date/Time	Comments
43	N020244-008A	SAMP	1	Hexavalent Chromium	07/08/16 3:39 PM	Reported
44	N020244-008AMS	MS	1	Hexavalent Chromium	07/08/16 3:48 PM	Reported
45	N020244-009A	SAMP	1	Hexavalent Chromium	07/08/16 3:58 PM	Reported
46	N020244-009AMS	MS	1	Hexavalent Chromium	07/08/16 4:07 PM	Reported
47	N020244-010A	SAMP	1	Hexavalent Chromium	07/08/16 4:17 PM	Reported
48	CCV-4	CCV1	1	Hexavalent Chromium	07/08/16 4:26 PM	Reported
49	CCB-4	CCB	1	Hexavalent Chromium	07/08/16 4:36 PM	Reported
50	N020244-010AMS	MS	1	Hexavalent Chromium	07/08/16 4:45 PM	Reported
51	N020244-011A	SAMP	1	Hexavalent Chromium	07/08/16 4:54 PM	Reported
52	N020244-011AMS	MS	1	Hexavalent Chromium	07/08/16 5:04 PM	Reported
53	N020245-001A	SAMP	1	Hexavalent Chromium	07/08/16 5:13 PM	Reported
54	N020245-001AMS	MS	1	Hexavalent Chromium	07/08/16 5:23 PM	Reported
55	N020245-002A	SAMP	1	Hexavalent Chromium	07/08/16 5:32 PM	Reported
56	N020245-002AMS	MS	1	Hexavalent Chromium	07/08/16 5:42 PM	Reported
57	BLANK	BLANK	1	Hexavalent Chromium	07/08/16 6:00 PM	Not Reported
58	CCV-5	CCV	1	Hexavalent Chromium	07/08/16 6:11 PM	Reported
59	CCB-5	CCB	1	Hexavalent Chromium	07/08/16 6:20 PM	Reported

7/21/2016

Injection Log Summary

Sequence Details

Name:	**IC-07_160708A**	*Created On:*	**24/Jul/12 17:17:21**
Directory:	**Instrument Data\IC-7\2016**	*Created By:*	**ics 5000**
Data Vault:	**ChromeleonLocal**	*Updated On:*	**09/Jul/16 10:48:13**
No. of Injections:	**62**	*Updated By:*	**ics 5000**

Injection Details

No.	Injection Name	Position	Volume µL	Type	Level	Inject Time	Status	Comment
1	BLANK	3	1000	Unknown		07/07/2016 10:12	Finished	
2	iBLANK	4	1000	Unknown		07/07/2016 10:23	Finished	INSTRUMENT BLANK
3	STD1-0.2 ppb	5	1000	Calibration Standard	01	07/07/2016 10:32	Finished	0.2 ppb, IWST160401A
4	STD2-1.0 ppb	6	1000	Calibration Standard	02	07/07/2016 10:42	Finished	1.0 ppb, IWST160401A
5	STD3-5.0 ppb	7	1000	Calibration Standard	03	07/07/2016 10:51	Finished	5.0 ppb, IWST160401A
6	STD4-10.0 ppb	8	1000	Calibration Standard	04	07/07/2016 11:00	Finished	10 ppb, IWST160401A
7	STD5-15.0 ppb	9	1000	Calibration Standard	05	07/07/2016 11:10	Finished	15 ppb, IWST160401A
8	STD6-20.0 ppb	10	1000	Calibration Standard	06	07/07/2016 11:19	Finished	20 ppb, IWST160401A
9	BLANK	1	1000	Unknown		07/08/2016 10:16	Finished	
10	BLANK	2	1000	Unknown		07/08/2016 10:27	Finished	
11	CCV-1,CCV,1,	3	1000	Unknown		07/08/2016 10:36	Finished	CCV @5ppb, IWST-160401A
12	PQL@0.2ppb,CCV2,1	4	1000	Unknown		07/08/2016 10:45	Finished	PQL @ 0.2ppb
13	CCB-1,CCB,1,	5	1000	Unknown		07/08/2016 10:55	Finished	CCB R160622B
14	MB-H2O,MBLK,1	6	1000	Unknown		07/08/2016 11:04	Finished	MB R160622B
15	LCS-H2O,LCS,1	7	1000	Unknown		07/08/2016 11:14	Finished	LCS, IWST-160401B
16	N020230-007A,SAMP	8	1000	Unknown		07/08/2016 11:23	Finished	SAMP, 10 mL
17	N020230-008A,SAMP	9	1000	Unknown		07/08/2016 11:33	Finished	SAMP, 10 mL
18	N020230-009A,SAMP	10	1000	Unknown		07/08/2016 11:42	Finished	SAMP, 10 mL
19	N020230-010A,SAMP	11	1000	Unknown		07/08/2016 11:52	Finished	SAMP, 10 mL
20	N020230-011A,SAMP	12	1000	Unknown		07/08/2016 12:01	Finished	SAMP, 10 mL
21	N020230-012A,SAMP	13	1000	Unknown		07/08/2016 12:11	Finished	SAMP, 10 mL
22	N020230-013A,SAMP	14	1000	Unknown		07/08/2016 12:20	Finished	SAMP, 10 mL
23	N020230-013ADUP,D	15	1000	Unknown		07/08/2016 12:30	Finished	DUP, 10 mL
24	CCV-2,CCV1,1,	16	1000	Unknown		07/08/2016 12:39	Finished	CCV @10ppb, IWST-160401A
25	CCB-2,CCB,1,	17	1000	Unknown		07/08/2016 12:48	Finished	CCB, R160622B
26	N020244-001A,SAMP	18	1000	Unknown		07/08/2016 12:58	Finished	SAMP, 10 mL
27	N020244-001AMS,MS	19	1000	Unknown		07/08/2016 13:07	Finished	MS (1ppb), IWST-160401B, 10
28	N020244-001AMSD,M	20	1000	Unknown		07/08/2016 13:17	Finished	MSD (1ppb), IWST-160401B, 1
29	N020244-002A,SAMP	21	1000	Unknown		07/08/2016 13:26	Finished	SAMP, 10 mL
30	N020244-002AMS,MS	22	1000	Unknown		07/08/2016 13:36	Finished	MS (1ppb), IWST-160401B, 10
31	N020244-003A,SAMP	23	1000	Unknown		07/08/2016 13:45	Finished	SAMP, 10 mL
32	N020244-003AMS,MS	24	1000	Unknown		07/08/2016 13:55	Finished	MS (1ppb), IWST-160401B, 10
33	N020244-004A,SAMP	25	1000	Unknown		07/08/2016 14:04	Finished	SAMP, 10 mL
34	N020244-004AMS,MS	26	1000	Unknown		07/08/2016 14:14	Finished	MS (1ppb), IWST-160401B, 10
35	N020244-005A,SAMP	27	1000	Unknown		07/08/2016 14:23	Finished	SAMP, 10 mL
36	CCV-3,CCV,1,	28	1000	Unknown		07/08/2016 14:33	Finished	CCV @5ppb, IWST-160401A
37	CCB-3,CCB,1,	29	1000	Unknown		07/08/2016 14:42	Finished	CCB R160629C
38	N020244-005AMS,MS	30	1000	Unknown		07/08/2016 14:51	Finished	MS (1ppb), IWST-160401B, 10
39	N020244-006A,SAMP	31	1000	Unknown		07/08/2016 15:01	Finished	SAMP, 10 mL
40	N020244-006AMS,MS	32	1000	Unknown		07/08/2016 15:10	Finished	MS (1ppb), IWST-160401B, 10
41	N020244-007A,SAMP	33	1000	Unknown		07/08/2016 15:20	Finished	SAMP, 10 mL
42	N020244-007AMS,MS	34	1000	Unknown		07/08/2016 15:29	Finished	MS (1ppb), IWST-160401B, 10
43	N020244-008A,SAMP	35	1000	Unknown		07/08/2016 15:39	Finished	SAMP, 10 mL
44	N020244-008AMS,MS	36	1000	Unknown		07/08/2016 15:48	Finished	MS (1ppb), IWST-160401B, 10
45	N020244-009A,SAMP	37	1000	Unknown		07/08/2016 15:58	Finished	SAMP, 10 mL
46	N020244-009AMS,MS	38	1000	Unknown		07/08/2016 16:07	Finished	MS (1ppb), IWST-160401B, 10
47	N020244-010A,SAMP	39	1000	Unknown		07/08/2016 16:17	Finished	SAMP, 10 mL
48	CCV-4,CCV1,1,	40	1000	Unknown		07/08/2016 16:26	Finished	CCV @10ppb, IWST-160401A
49	CCB-4,CCB,1,	41	1000	Unknown		07/08/2016 16:36	Finished	CCB, R160629C
50	N020244-010AMS,MS	42	1000	Unknown		07/08/2016 16:45	Finished	MS (1ppb), IWST-160401B, 10
51	N020244-011A,SAMP	43	1000	Unknown		07/08/2016 16:54	Finished	SAMP, 10 mL
52	N020244-011AMS,MS	44	1000	Unknown		07/08/2016 17:04	Finished	MS (1ppb), IWST-160401B, 10
53	N020245-001A,SAMP	45	1000	Unknown		07/08/2016 17:13	Finished	SAMP, 10 mL
54	N020245-001AMS,MS	46	1000	Unknown		07/08/2016 17:23	Finished	MS (1ppb), IWST-160401B, 10
55	N020245-002A,SAMP	47	1000	Unknown		07/08/2016 17:32	Finished	SAMP, 10 mL
56	N020245-002AMS,MS	48	1000	Unknown		07/08/2016 17:42	Finished	MS (1ppb), IWST-160401B, 10
57	BLANK	1	1000	Unknown		07/08/2016 18:00	Finished	
58	CCV-5,CCV,1,	2	1000	Unknown		07/08/2016 18:11	Finished	CCV @5ppb, IWST-160401A
59	CCB-5,CCB,1,	3	1000	Unknown		07/08/2016 18:20	Finished	CCB R160629C
60	SHUTDOWN	4	1000	Unknown		07/08/2016 18:30	Finished	

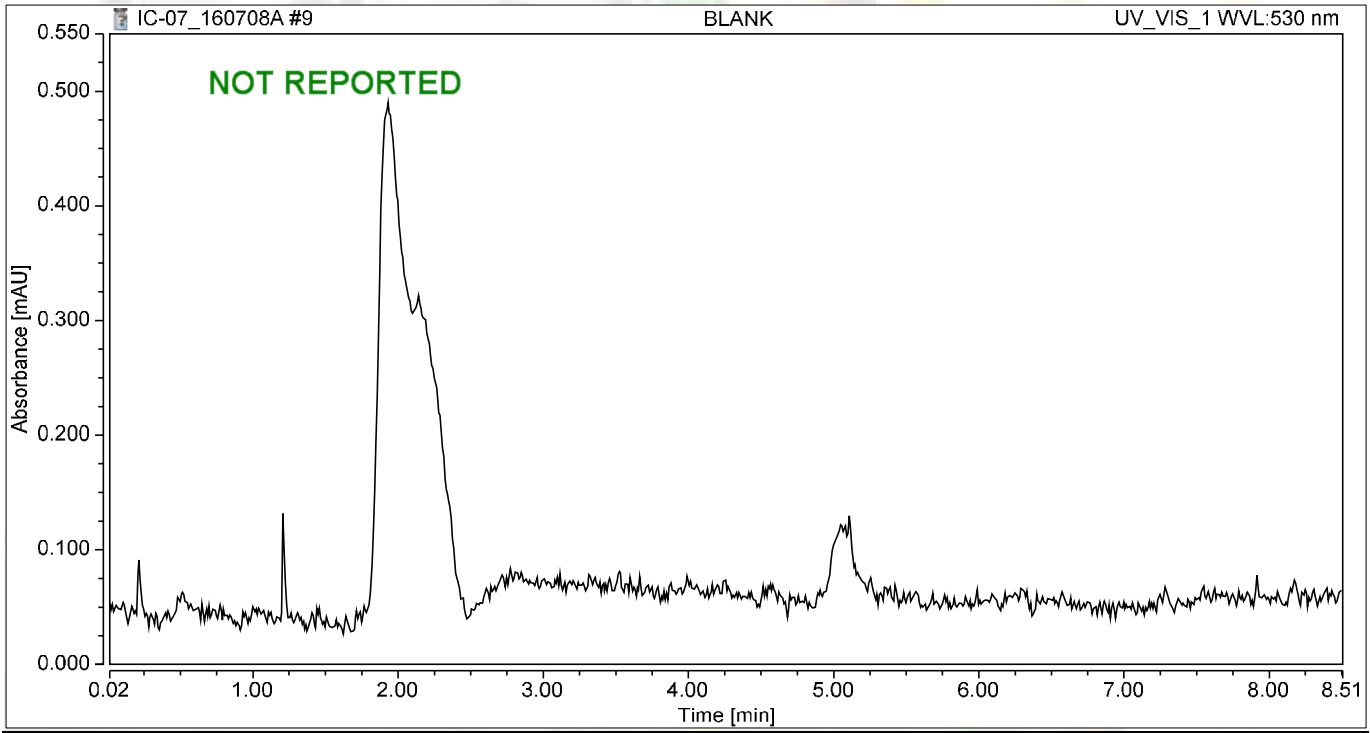
61	Eluent: R160708A	5	1000	Unknown		n.a.	Finished	Eluent
62	PCR: R160708B	6	1000	Unknown		n.a.	Finished	Post-Column Reagent

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:	**160707_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**08/Jul/16 10:16**	*Sample Weight:*	**1.0000**

Chromatogram



Integration Results

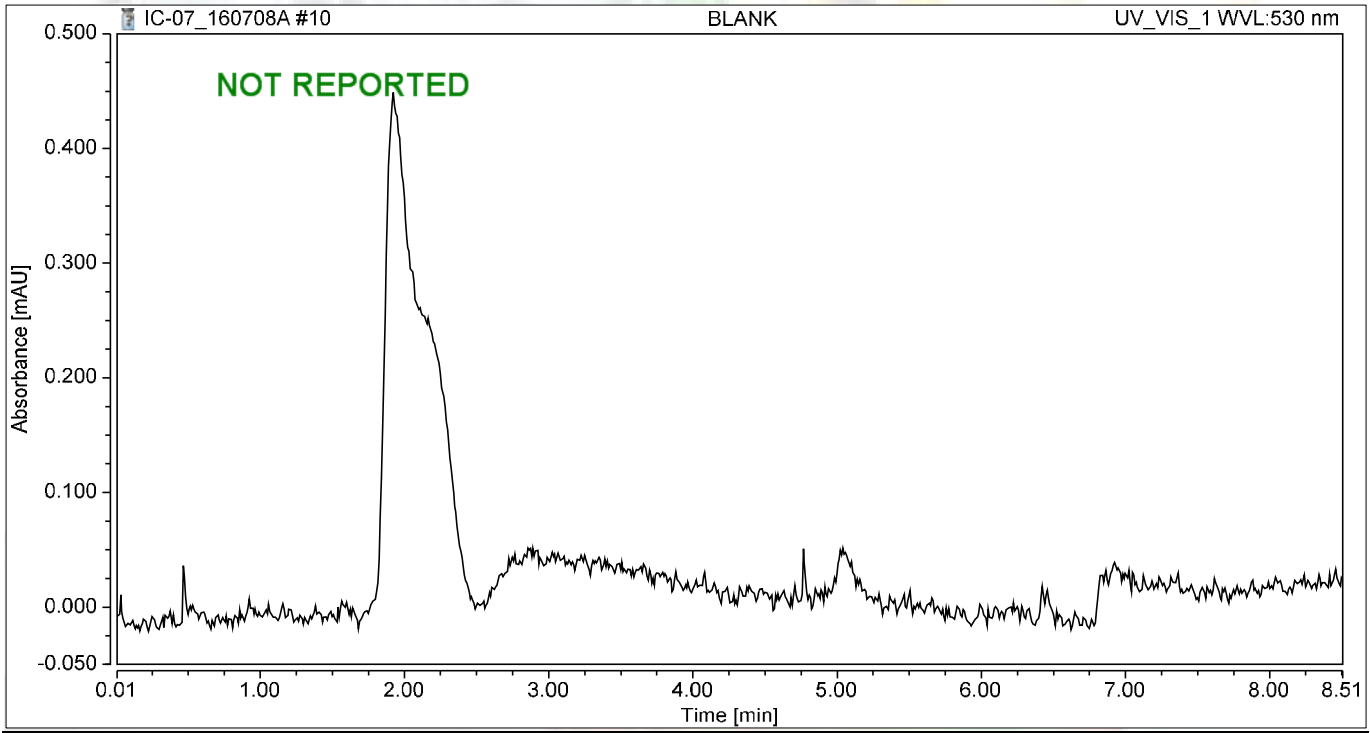
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
n.a.	Hexavalent Chromium	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Total:			**0.000**	**0.000**	**0.00**	**0.00**	

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:	**160707_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**08/Jul/16 10:27**	*Sample Weight:*	**1.0000**

Chromatogram



Integration Results

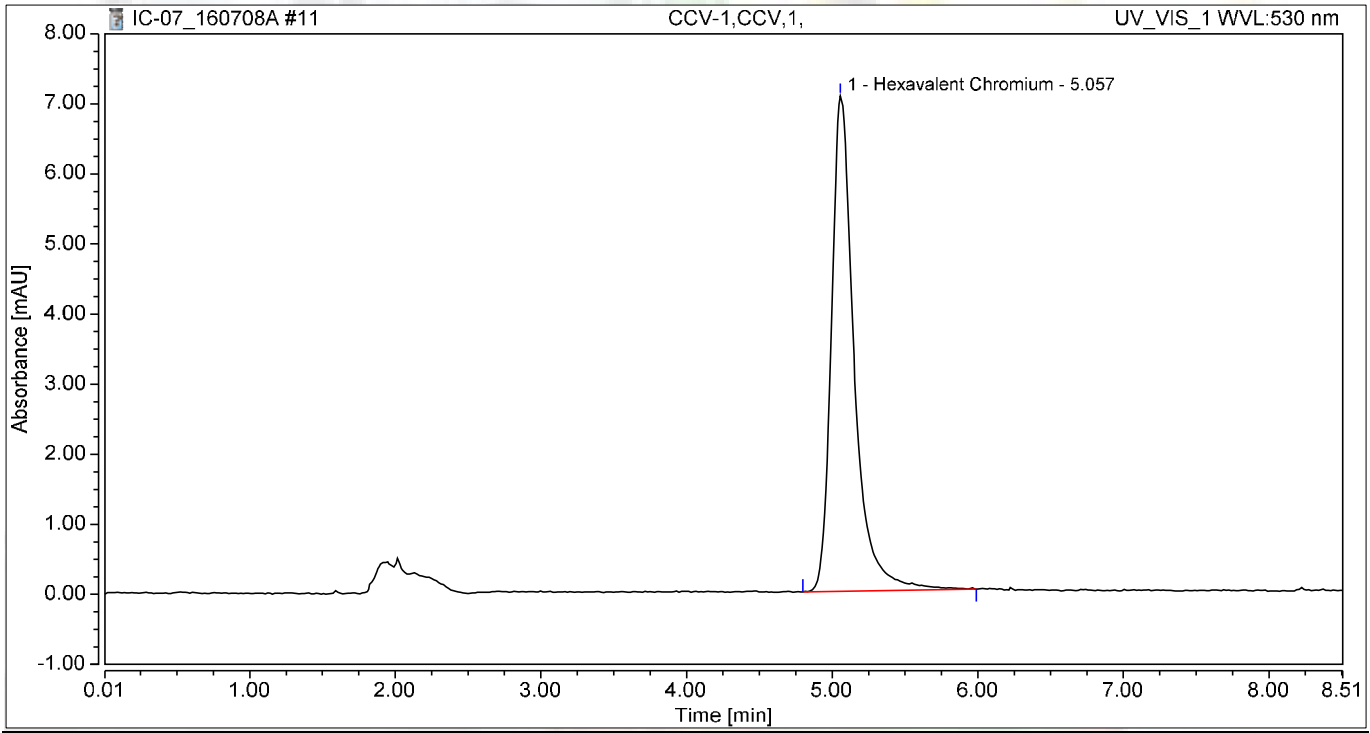
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
n.a.	Hexavalent Chromium	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Total:			**0.000**	**0.000**	**0.00**	**0.00**	

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:	**160707_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**08/Jul/16 10:36**	*Sample Weight:*	**1.0000**

Chromatogram



Integration Results

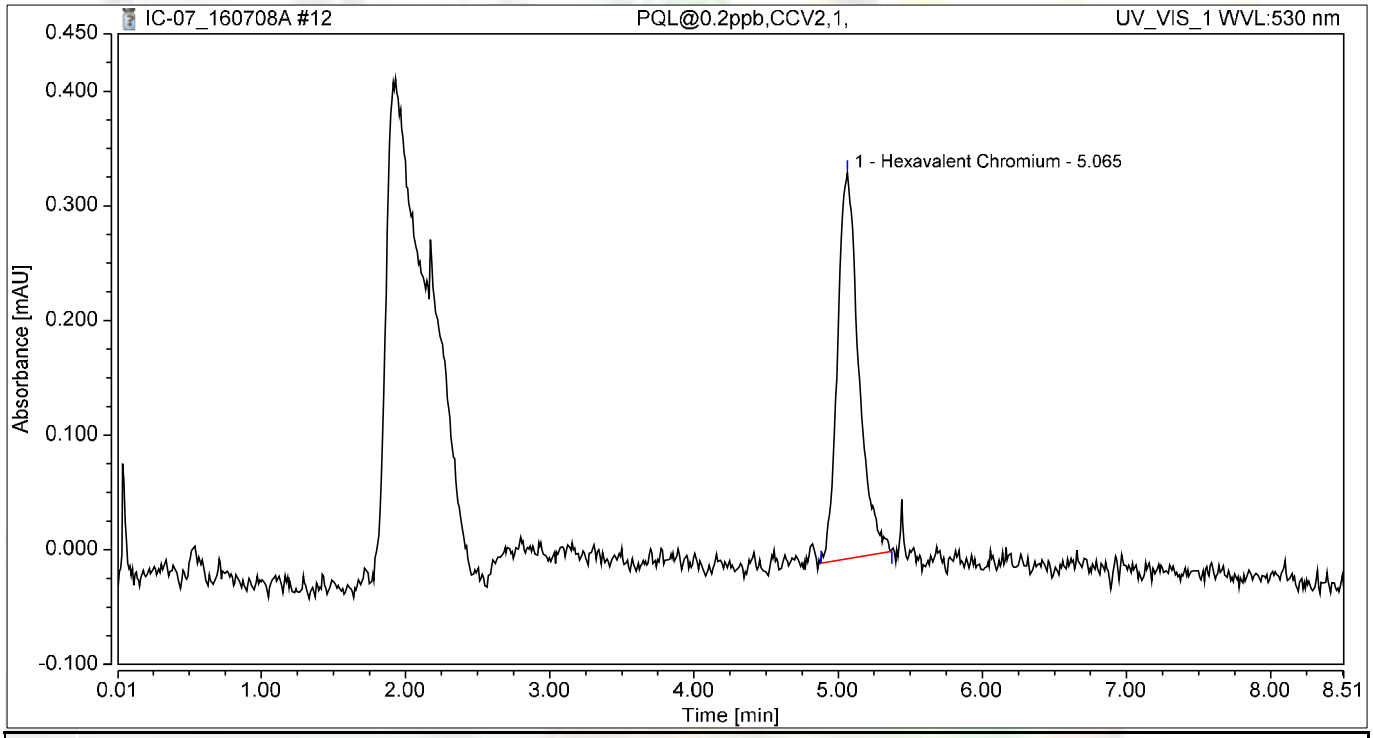
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	5.057	1.283	7.067	100.00	100.00	5.0581
Total:			**1.283**	**7.067**	**100.00**	**100.00**	

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:	**160707_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**08/Jul/16 10:45**	*Sample Weight:*	**1.0000**

Chromatogram



Integration Results

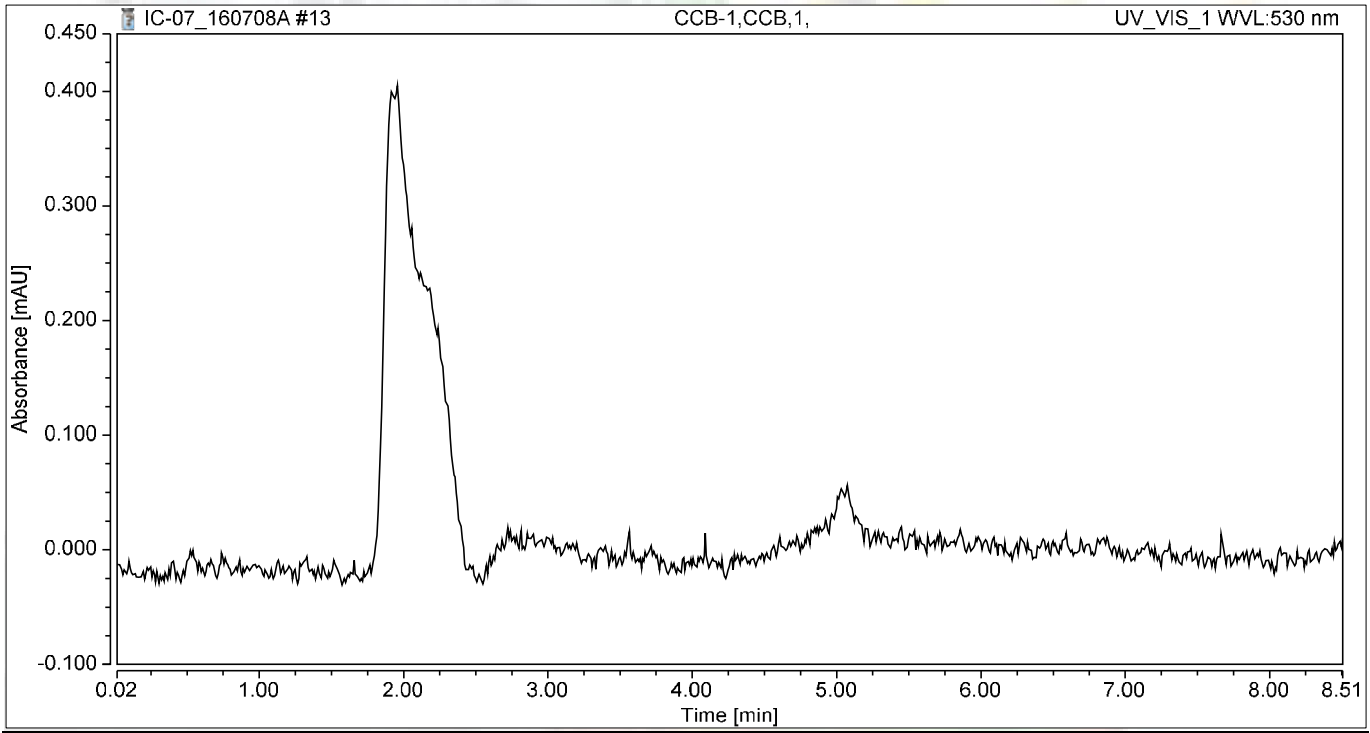
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	5.065	0.057	0.337	100.00	100.00	0.2258
Total:			**0.057**	**0.337**	**100.00**	**100.00**	

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:	**160707_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**08/Jul/16 10:55**	*Sample Weight:*	**1.0000**

Chromatogram



Integration Results

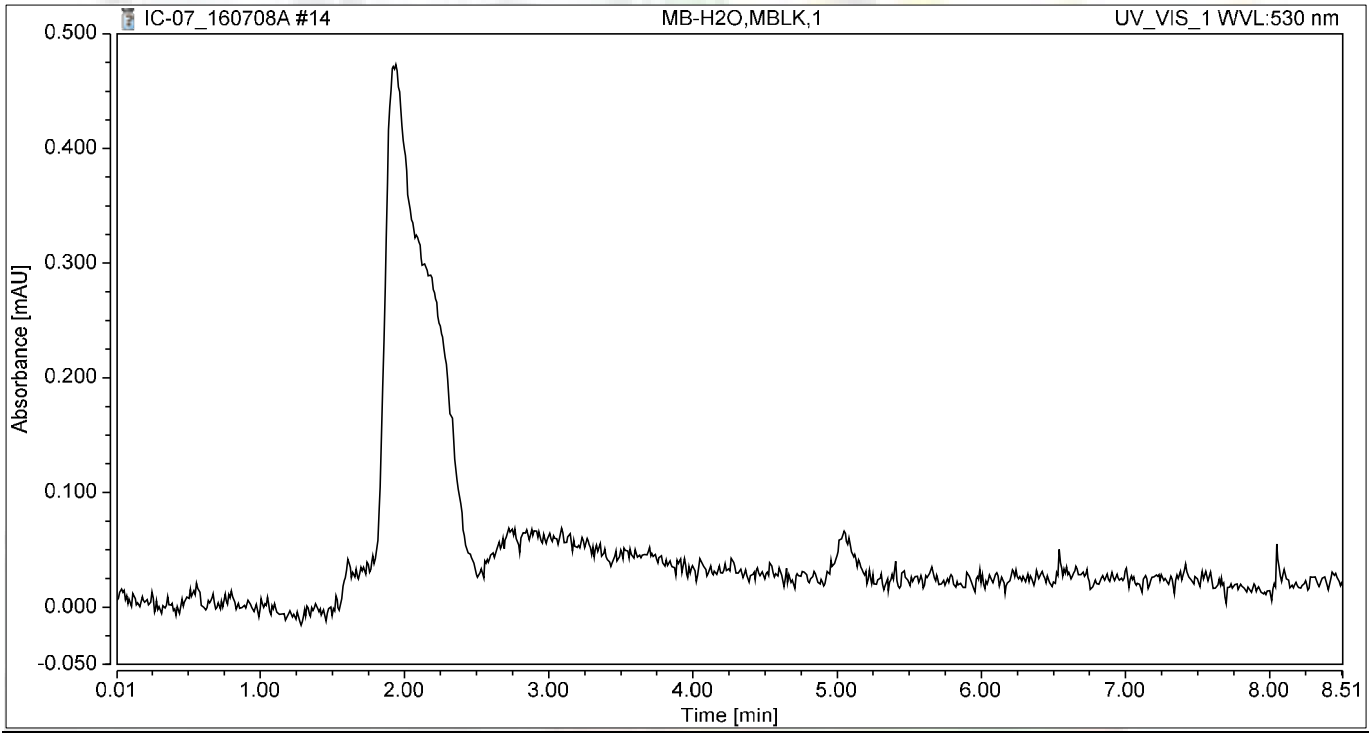
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
n.a.	Hexavalent Chromium	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Total:			**0.000**	**0.000**	**0.00**	**0.00**	

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:	**160707_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**08/Jul/16 11:04**	*Sample Weight:*	**1.0000**

Chromatogram



Integration Results

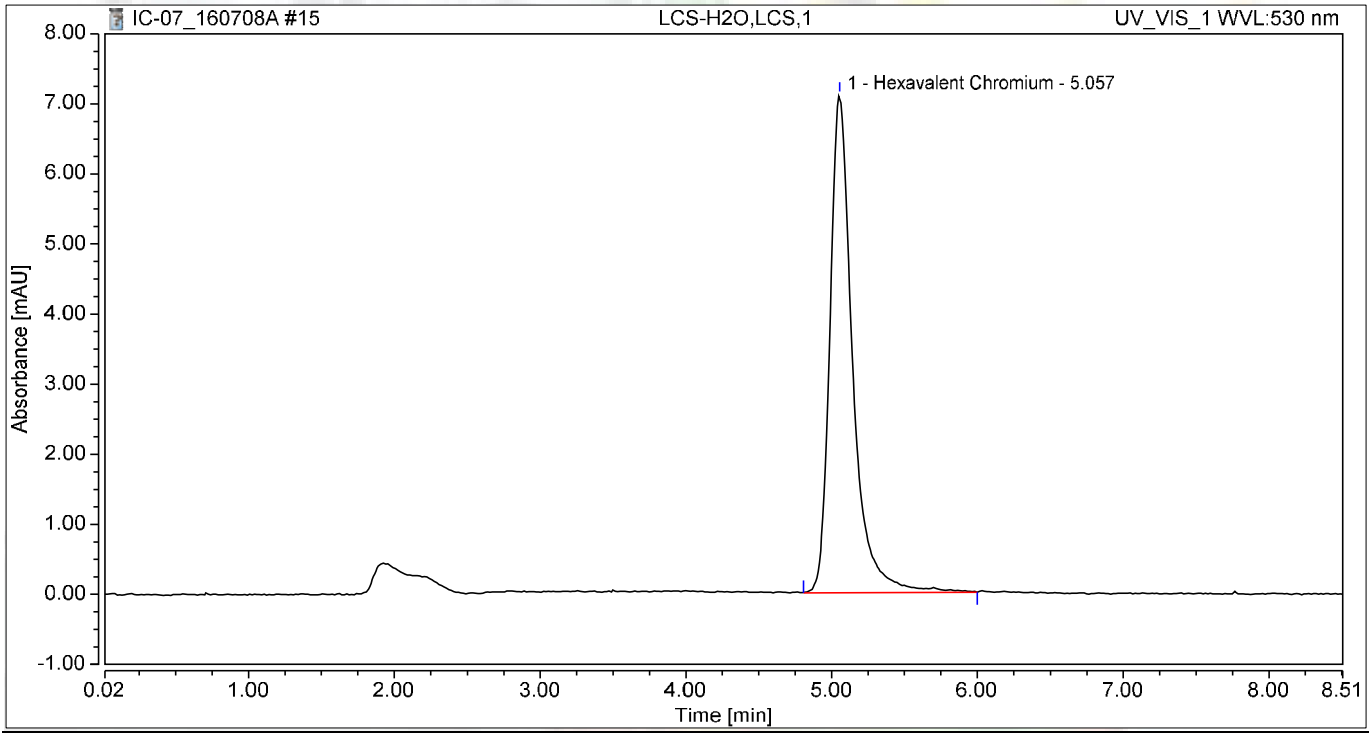
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
n.a.	Hexavalent Chromium	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Total:			**0.000**	**0.000**	**0.00**	**0.00**	

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:	**160707_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**08/Jul/16 11:14**	*Sample Weight:*	**1.0000**

Chromatogram



Integration Results

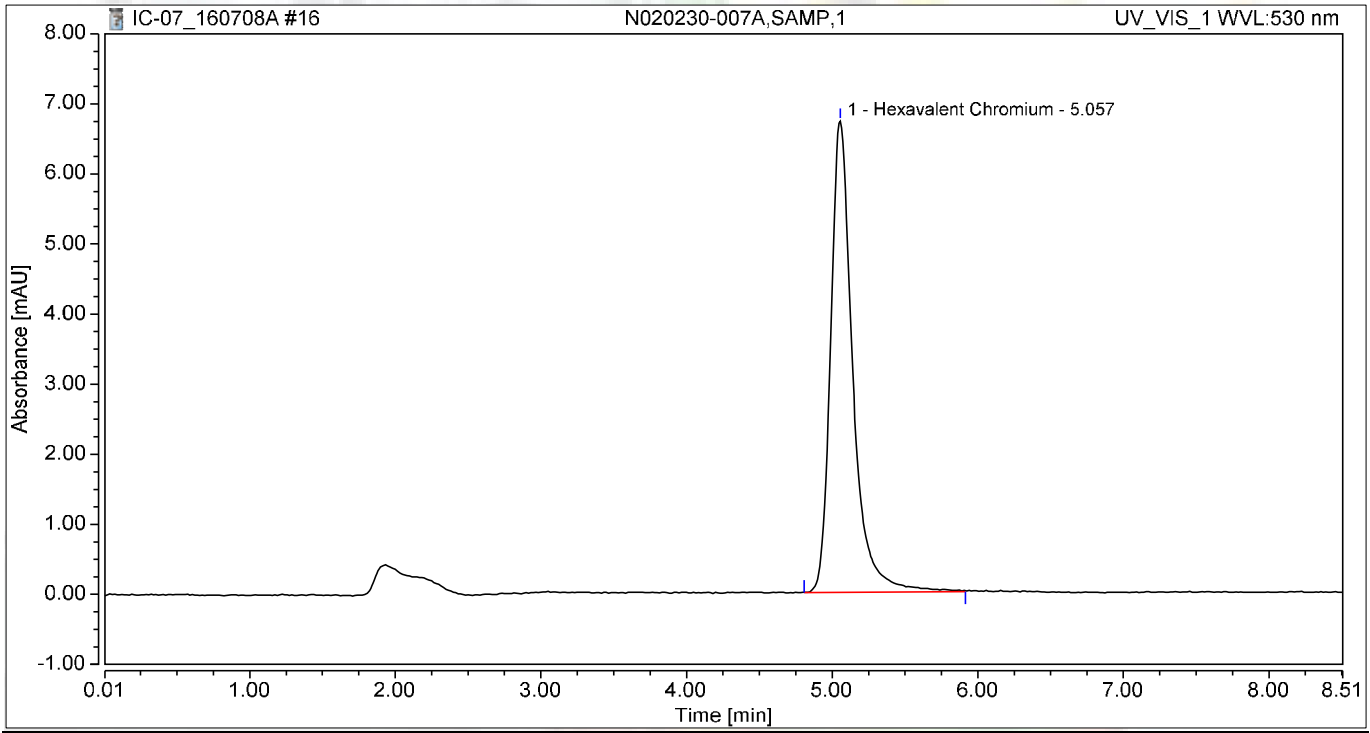
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	5.057	1.286	7.107	100.00	100.00	5.0699
Total:			**1.286**	**7.107**	**100.00**	**100.00**	

Chromatogram and Results

Injection Details

Injection Name:	**N020230-007A,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:	**160707_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**08/Jul/16 11:23**	*Sample Weight:*	**1.0000**

Chromatogram



Integration Results

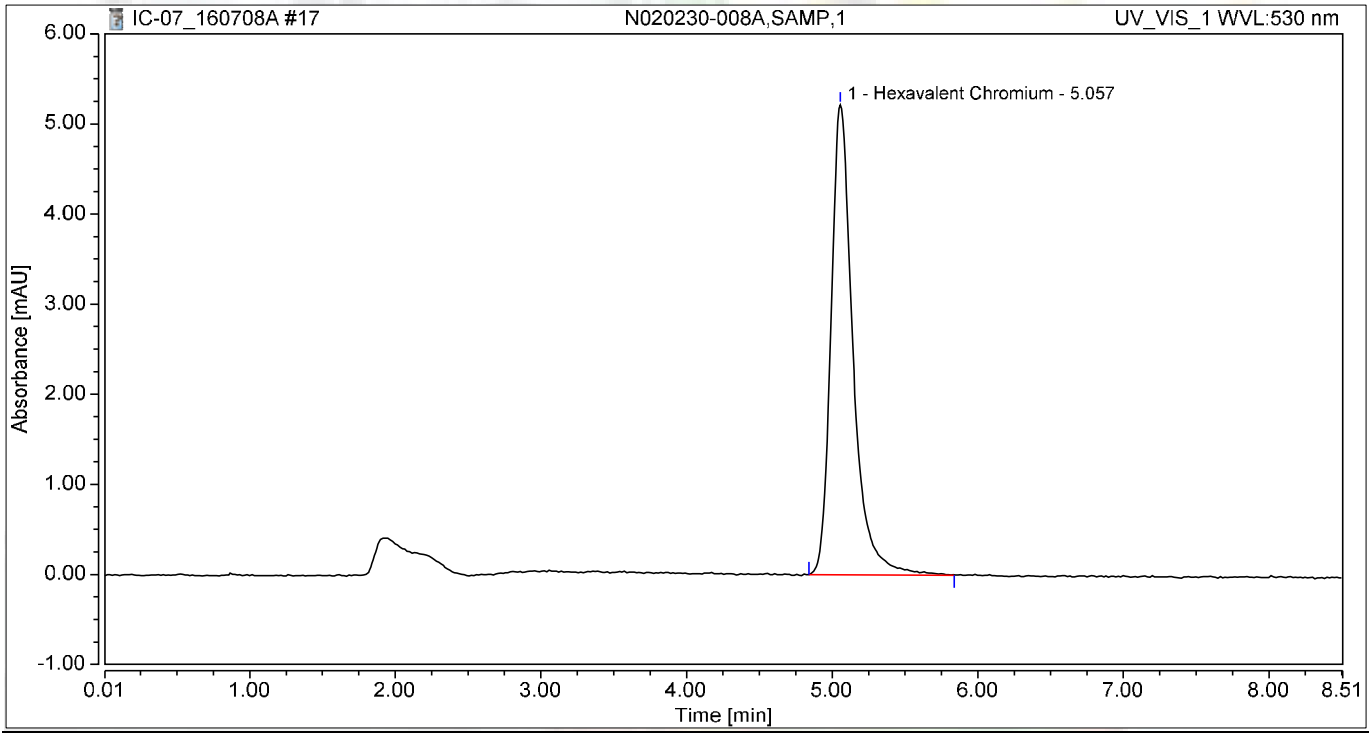
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	5.057	1.185	6.728	100.00	100.00	4.6734
Total:			**1.185**	**6.728**	**100.00**	**100.00**	

Chromatogram and Results

Injection Details

Injection Name:	**N020230-008A,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:	**160707_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**08/Jul/16 11:33**	*Sample Weight:*	**1.0000**

Chromatogram



Integration Results

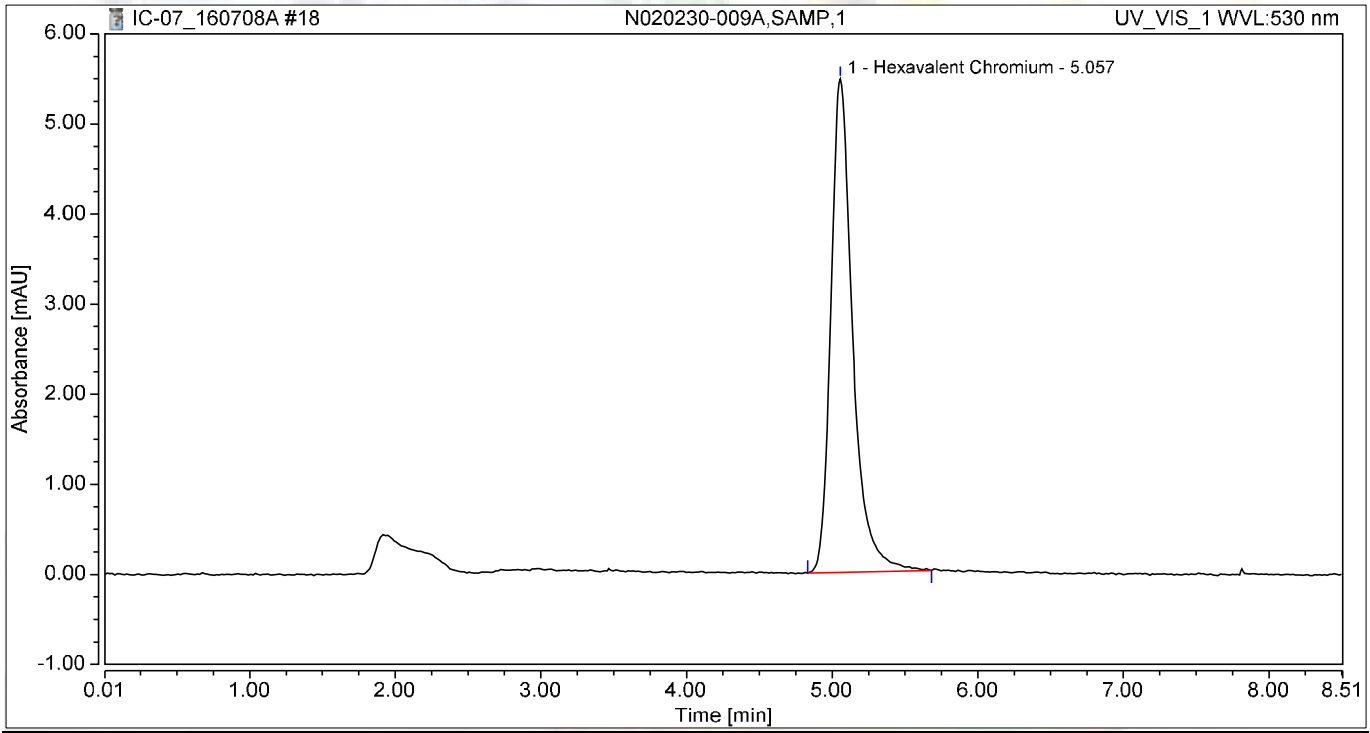
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	5.057	0.913	5.215	100.00	100.00	3.5982
Total:			**0.913**	**5.215**	**100.00**	**100.00**	

Chromatogram and Results

Injection Details

Injection Name:	**N020230-009A,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:	**160707_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**08/Jul/16 11:42**	*Sample Weight:*	**1.0000**

Chromatogram



Integration Results

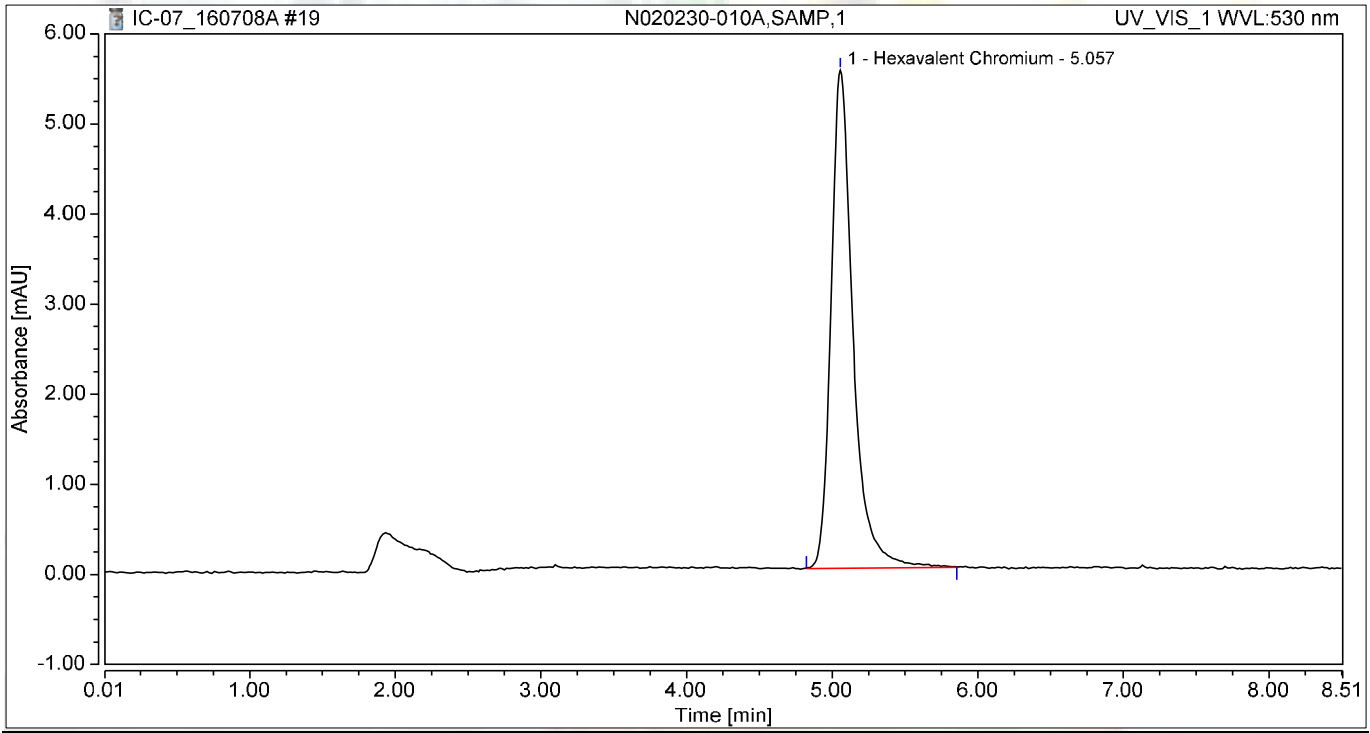
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	5.057	0.950	5.474	100.00	100.00	3.7467
Total:			**0.950**	**5.474**	**100.00**	**100.00**	

Chromatogram and Results

Injection Details

Injection Name:	**N020230-010A,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:	**160707_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**08/Jul/16 11:52**	*Sample Weight:*	**1.0000**

Chromatogram



Integration Results

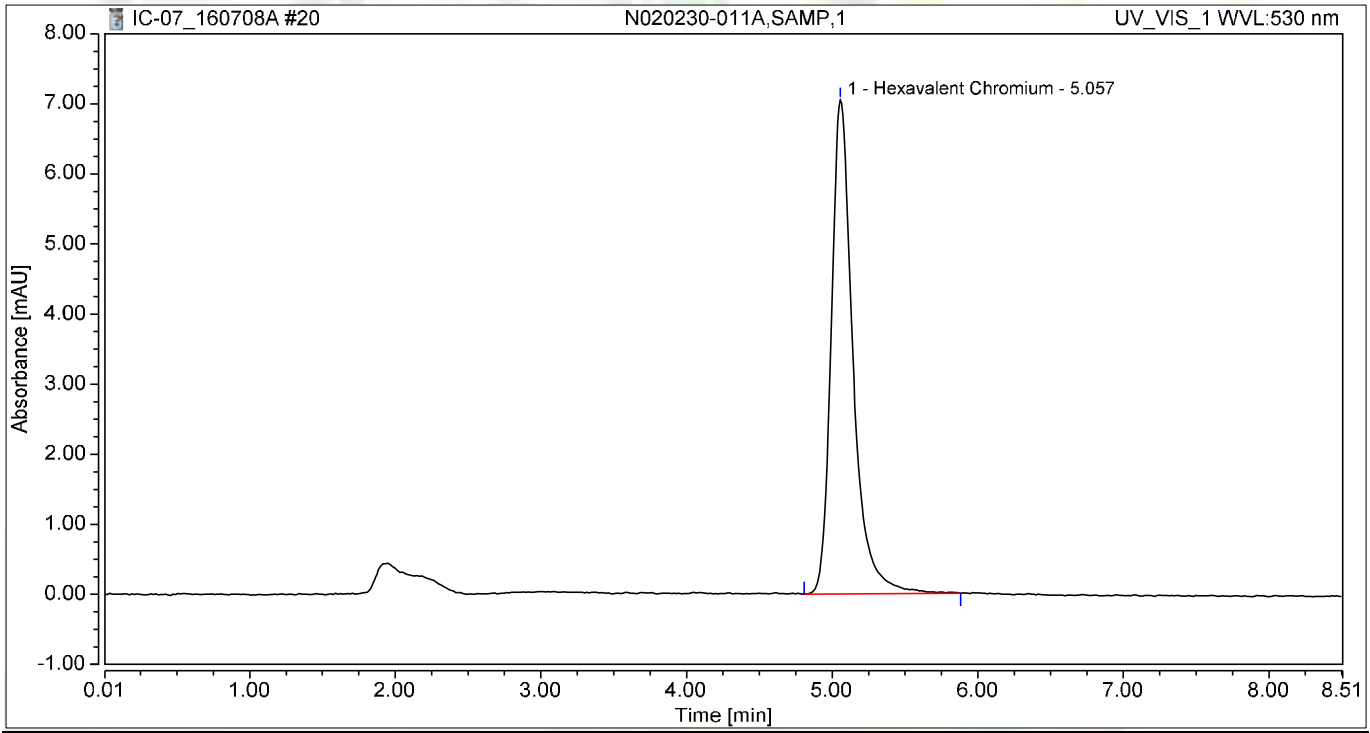
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	5.057	0.967	5.526	100.00	100.00	3.8120
Total:			**0.967**	**5.526**	**100.00**	**100.00**	

Chromatogram and Results

Injection Details

Injection Name:	**N020230-011A,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:	**160707_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**08/Jul/16 12:01**	*Sample Weight:*	**1.0000**

Chromatogram



Integration Results

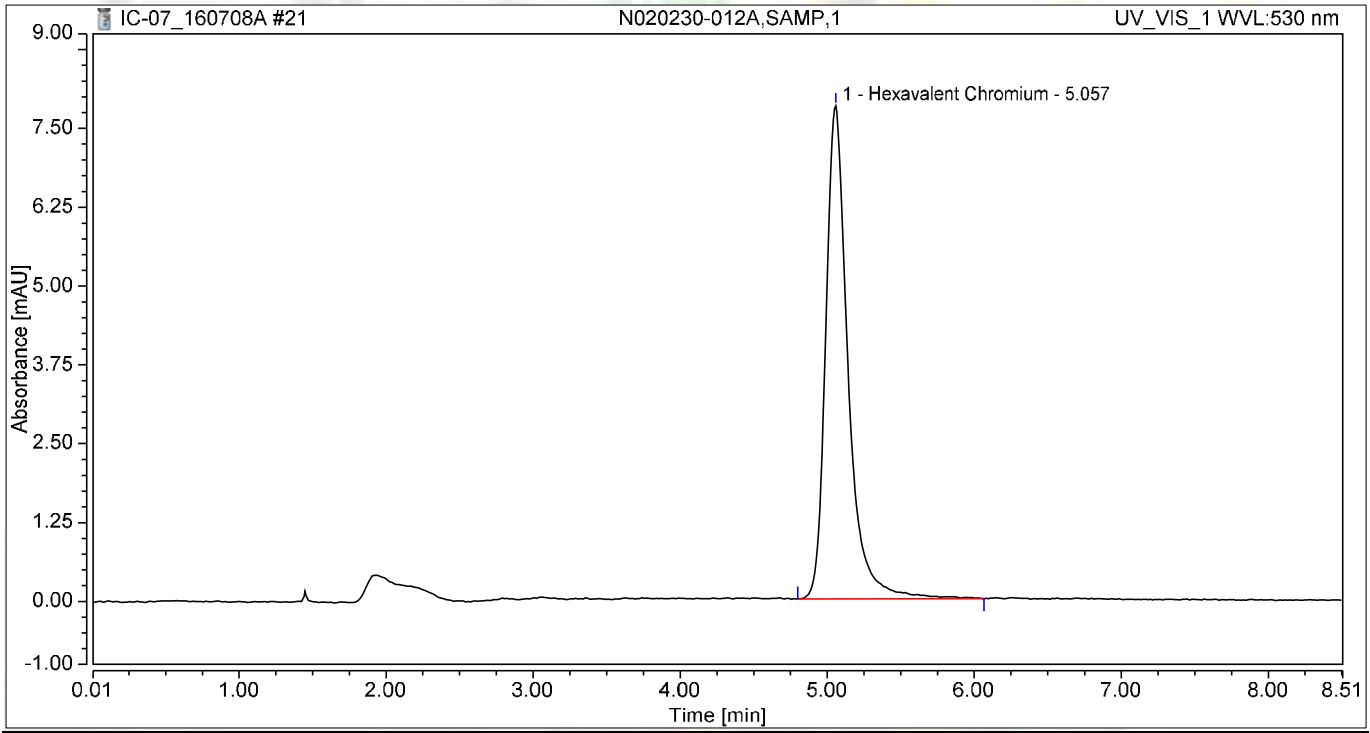
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	5.057	1.223	7.051	100.00	100.00	4.8210
Total:			**1.223**	**7.051**	**100.00**	**100.00**	

Chromatogram and Results

Injection Details

Injection Name:	**N020230-012A,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:	**160707_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**08/Jul/16 12:11**	*Sample Weight:*	**1.0000**

Chromatogram



Integration Results

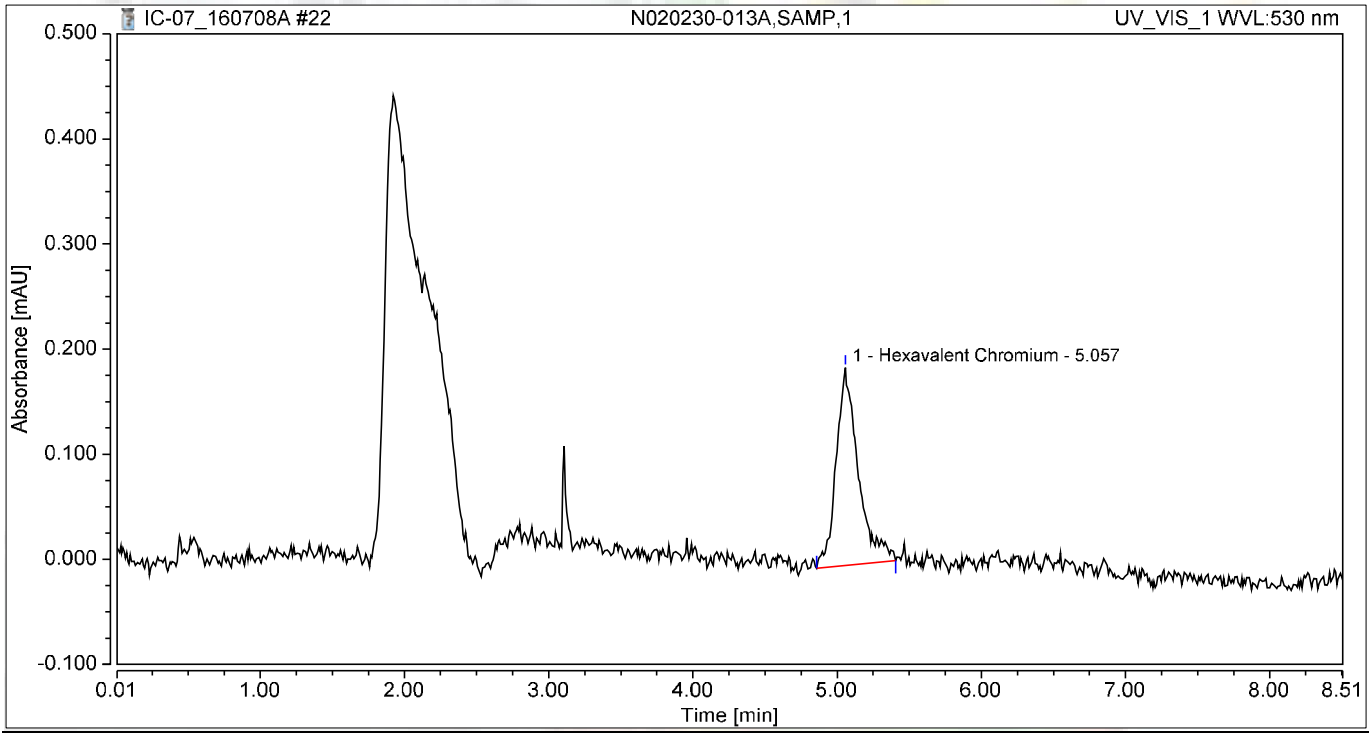
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	5.057	1.375	7.819	100.00	100.00	5.4198
Total:			**1.375**	**7.819**	**100.00**	**100.00**	

Chromatogram and Results

Injection Details

Injection Name:	**N020230-013A,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:	**160707_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**08/Jul/16 12:20**	*Sample Weight:*	**1.0000**

Chromatogram



Integration Results

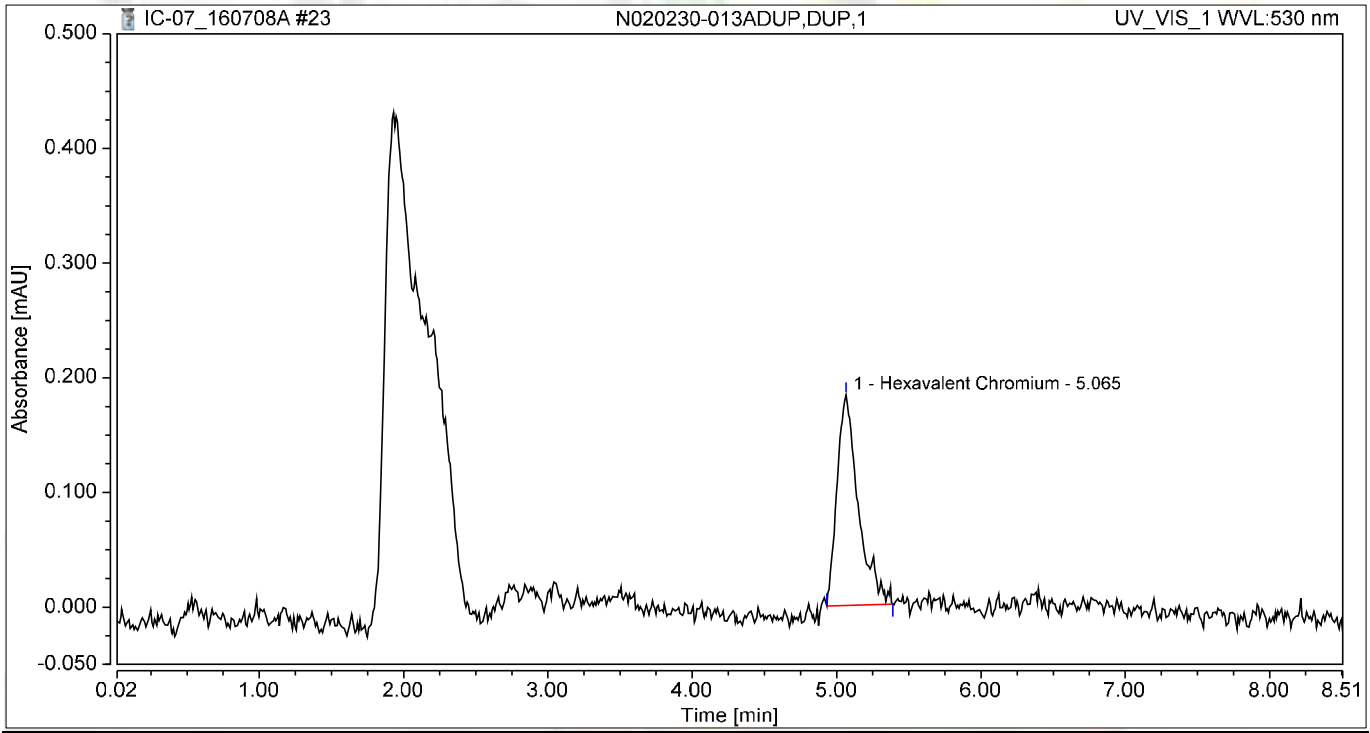
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	5.057	0.033	0.188	100.00	100.00	0.1318
Total:			**0.033**	**0.188**	**100.00**	**100.00**	

Chromatogram and Results

Injection Details

Injection Name:	**N020230-013ADUP,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:	**160707_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**08/Jul/16 12:30**	*Sample Weight:*	**1.0000**

Chromatogram



Integration Results

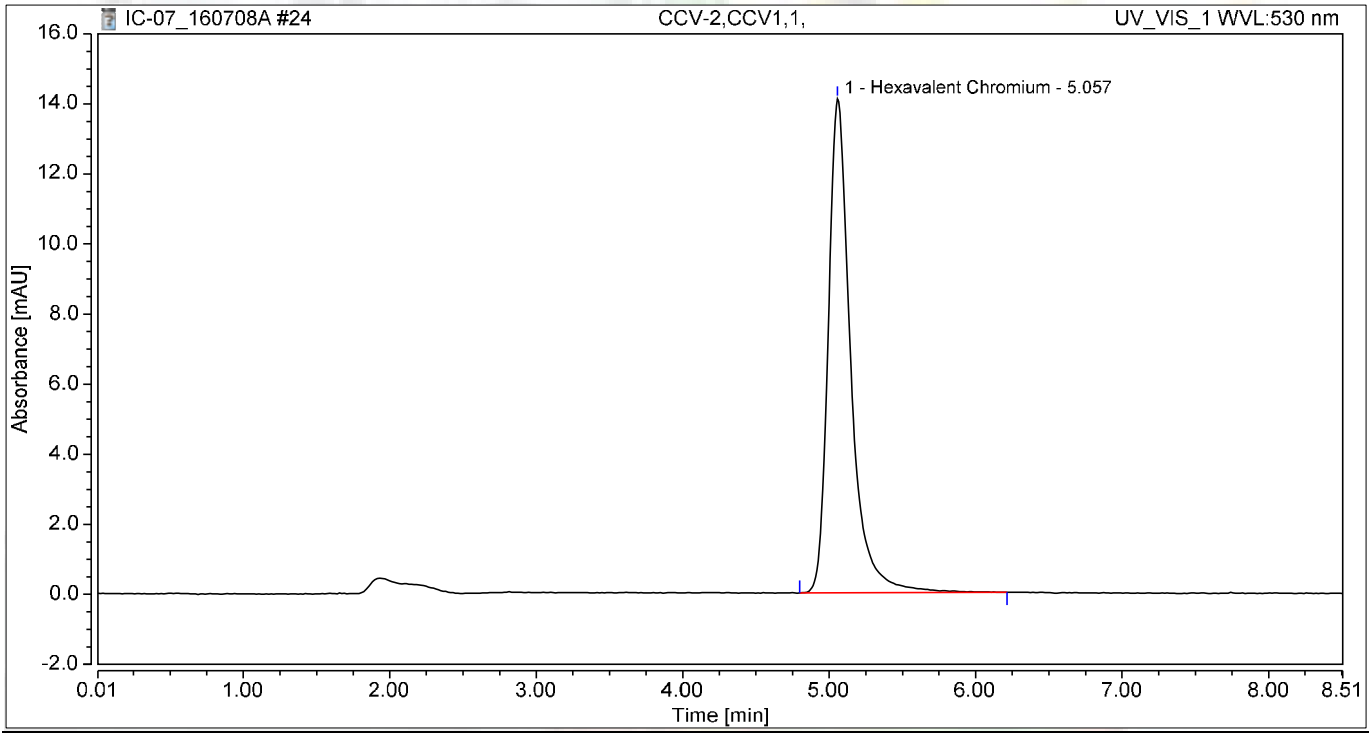
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	5.065	0.031	0.183	100.00	100.00	0.1231
Total:			**0.031**	**0.183**	**100.00**	**100.00**	

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:	**160707_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**08/Jul/16 12:39**	*Sample Weight:*	**1.0000**

Chromatogram



Integration Results

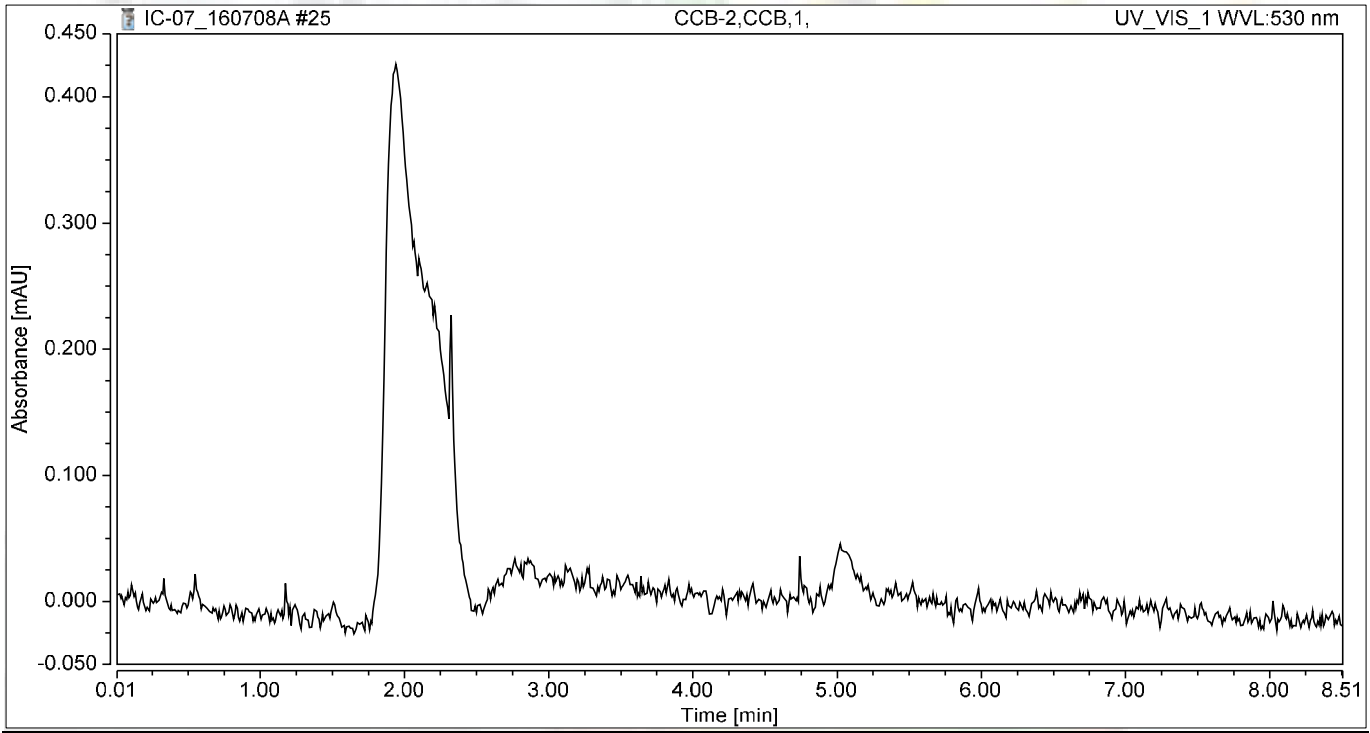
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	5.057	2.512	14.099	100.00	100.00	9.9053
Total:			**2.512**	**14.099**	**100.00**	**100.00**	

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:	**160707_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**08/Jul/16 12:48**	*Sample Weight:*	**1.0000**

Chromatogram



Integration Results

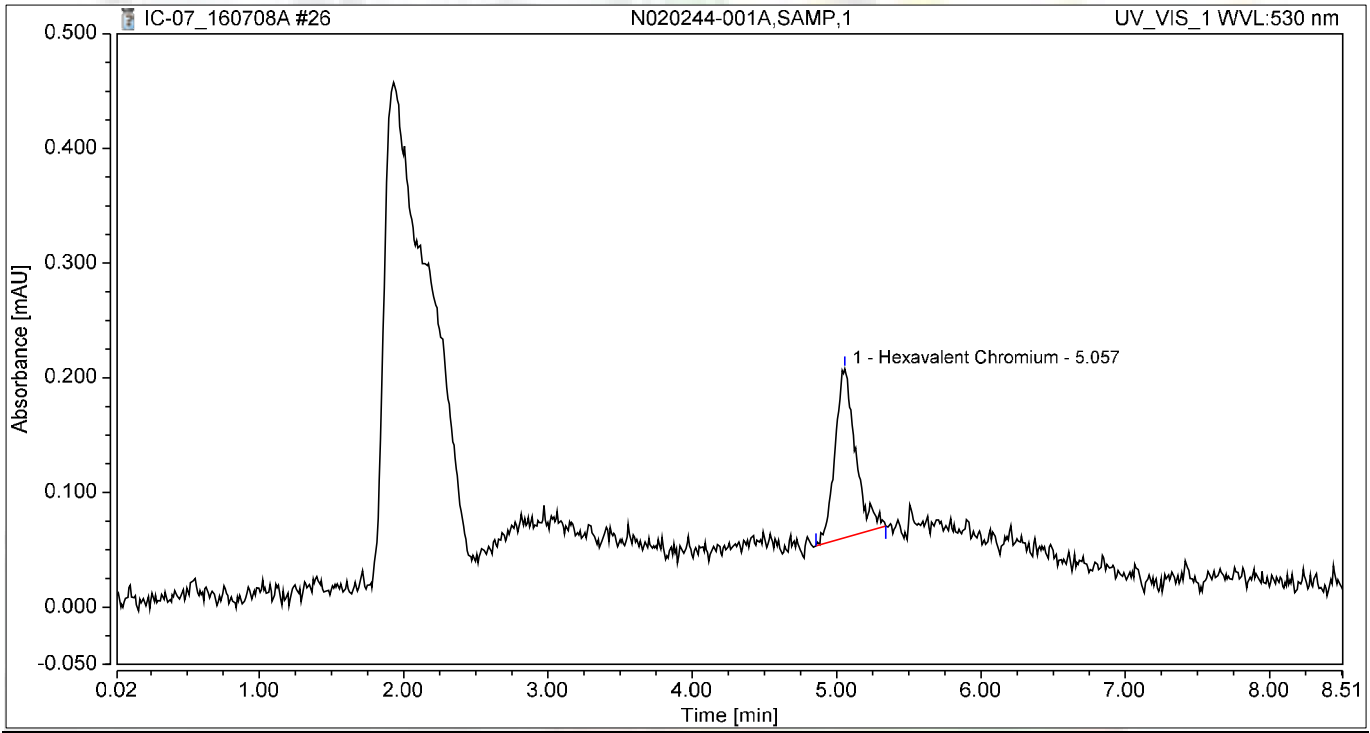
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
n.a.	Hexavalent Chromium	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Total:			**0.000**	**0.000**	**0.00**	**0.00**	

Chromatogram and Results

Injection Details

Injection Name:	**N020244-001A,SAMP,1**	*Run Time (min):*	**8.49**
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:	**160707_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**08/Jul/16 12:58**	*Sample Weight:*	**1.0000**

Chromatogram



Integration Results

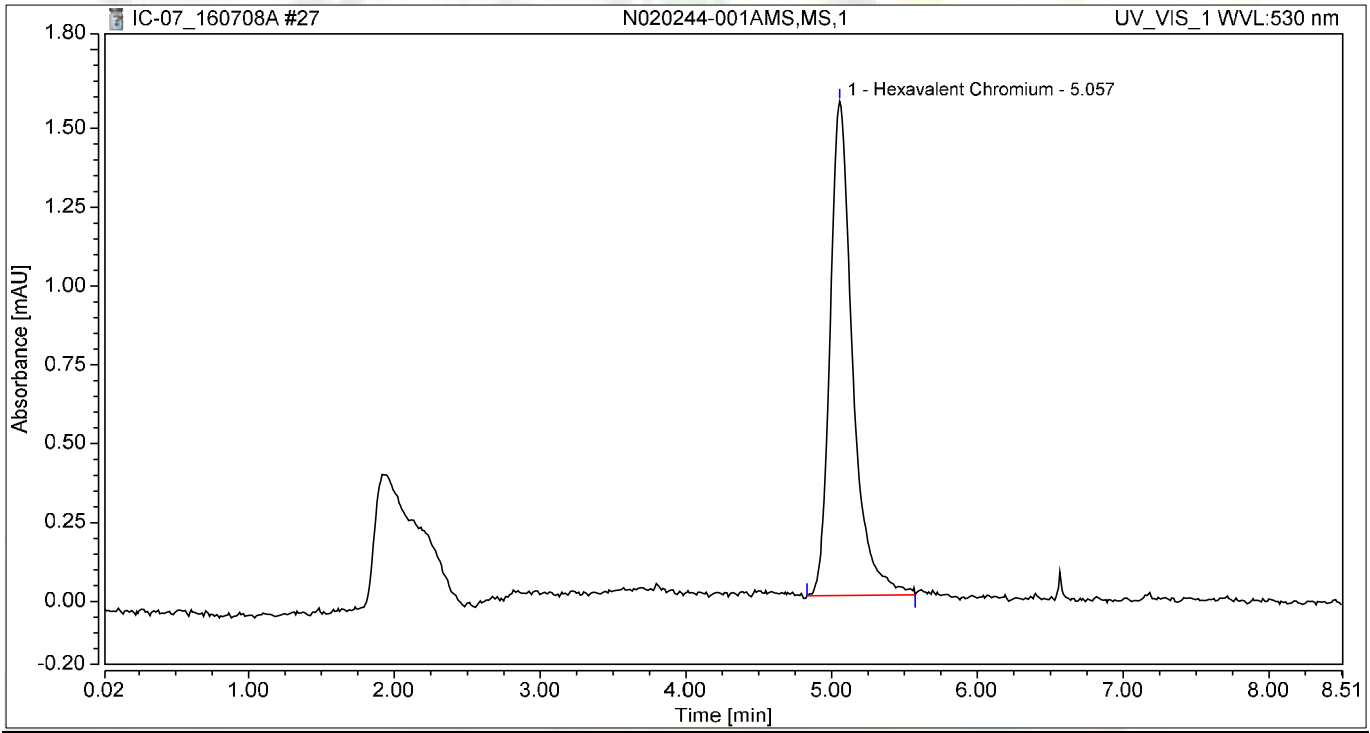
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	5.057	0.024	0.147	100.00	100.00	0.0960
Total:			**0.024**	**0.147**	**100.00**	**100.00**	

Chromatogram and Results

Injection Details

Injection Name:	**N020244-001AMS,MS,1**	*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:	**160707_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**08/Jul/16 13:07**	*Sample Weight:*	**1.0000**

Chromatogram



Integration Results

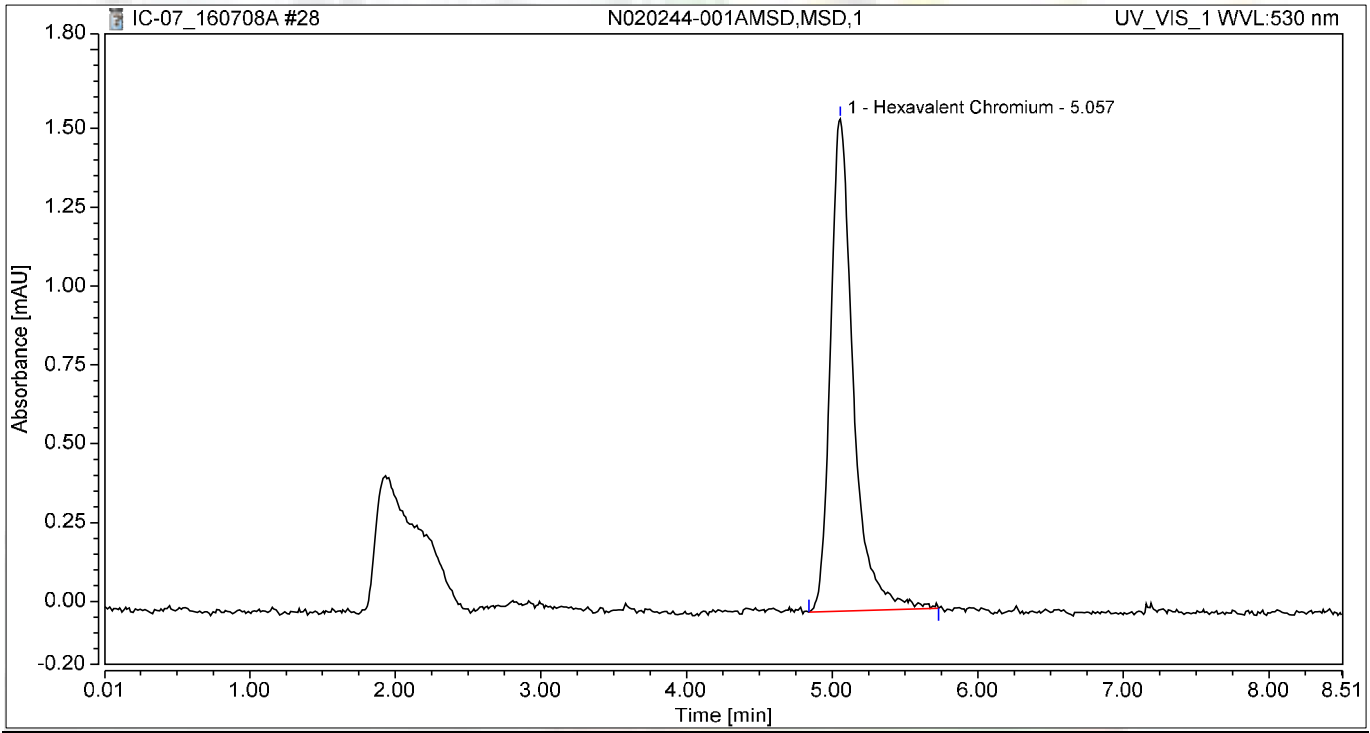
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	5.057	0.281	1.567	100.00	100.00	1.1092
Total:			**0.281**	**1.567**	**100.00**	**100.00**	

Chromatogram and Results

Injection Details

Injection Name:	**N020244-001AMSD,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:	**160707_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**08/Jul/16 13:17**	*Sample Weight:*	**1.0000**

Chromatogram



Integration Results

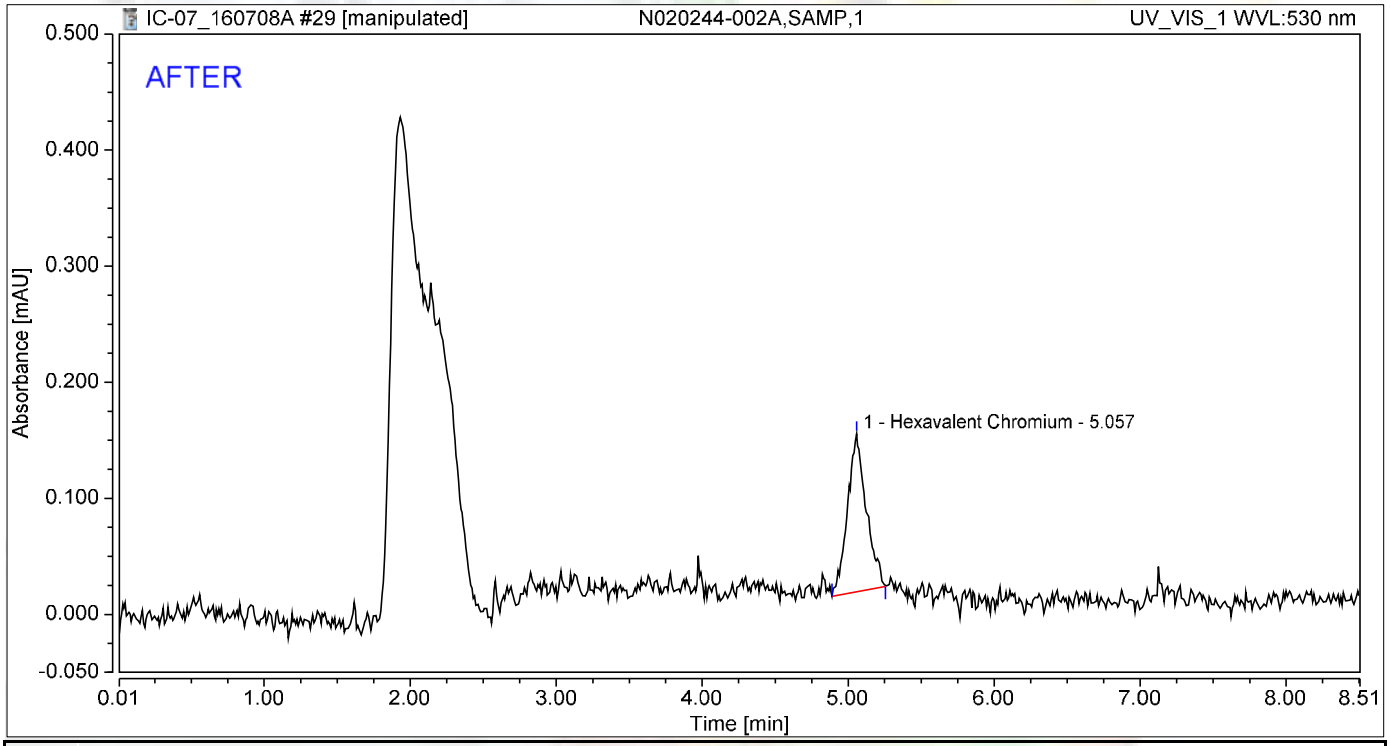
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	5.057	0.284	1.561	100.00	100.00	1.1182
Total:			**0.284**	**1.561**	**100.00**	**100.00**	

Chromatogram and Results

Injection Details

Injection Name:	**N020244-002A,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:	**160707_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**08/Jul/16 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	5.057	0.020	0.136	100.00	100.00	0.0798
Total:			**0.020**	**0.136**	**100.00**	**100.00**	

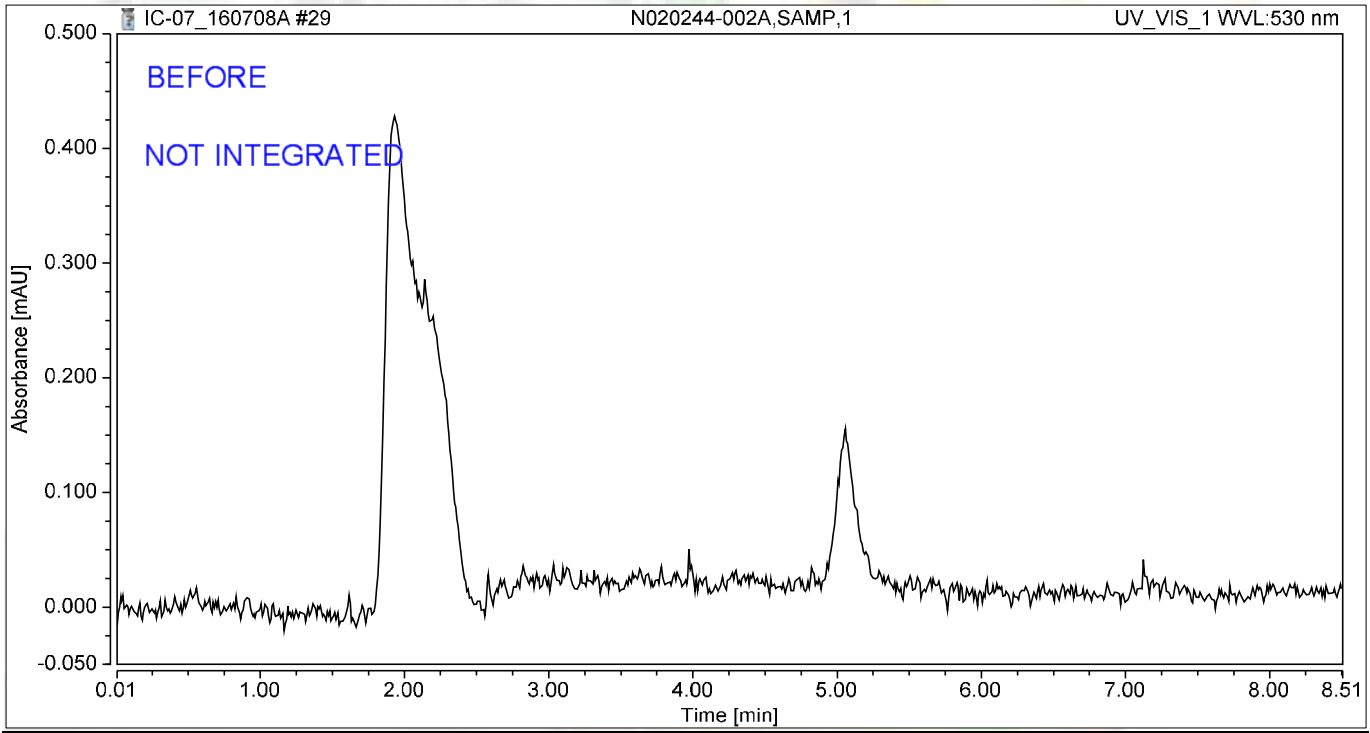
7/21/2016

Chromatogram and Results

Injection Details

Injection Name:	**N020244-002A,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:	**160707_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**08/Jul/16 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.
Total:			**0.000**	**0.000**	**0.00**	**0.00**	

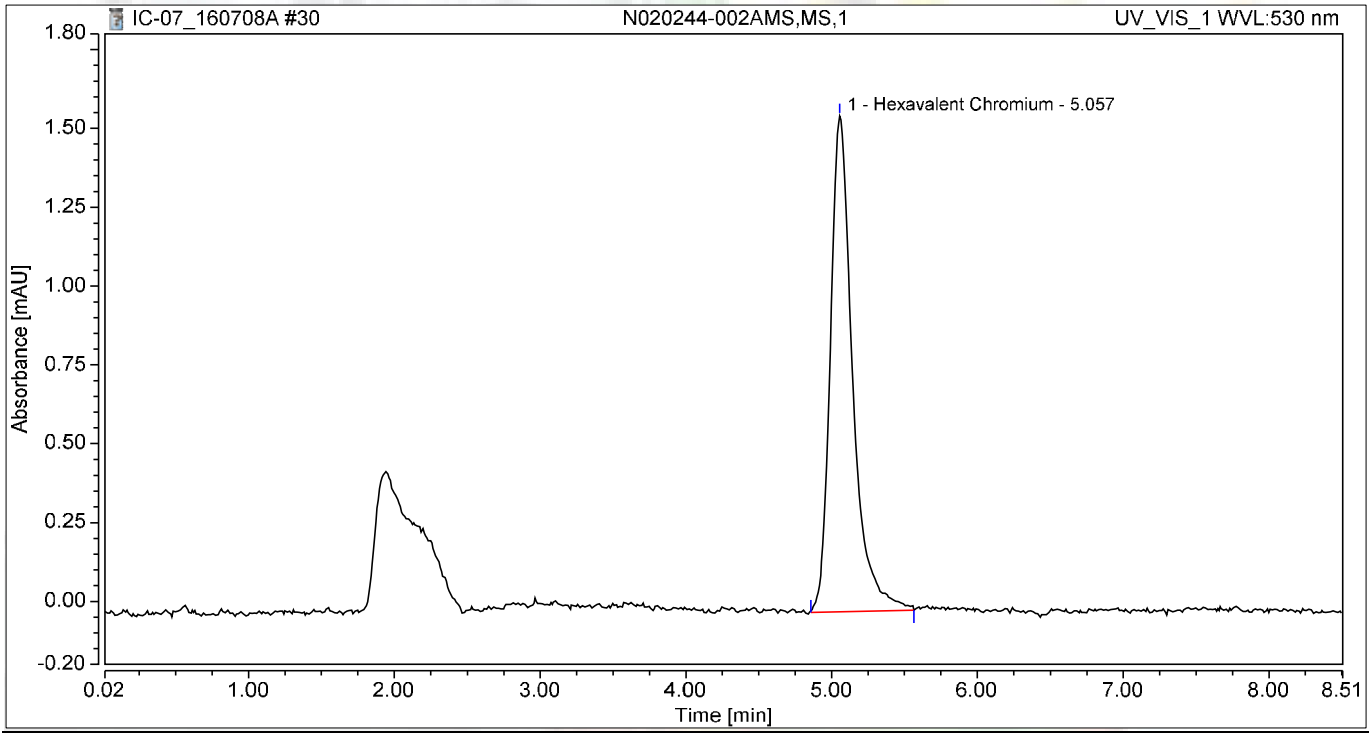
7/21/2016

Chromatogram and Results

Injection Details

Injection Name:	**N020244-002AMS,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:	**160707_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**08/Jul/16 13:36**	*Sample Weight:*	**1.0000**

Chromatogram



Integration Results

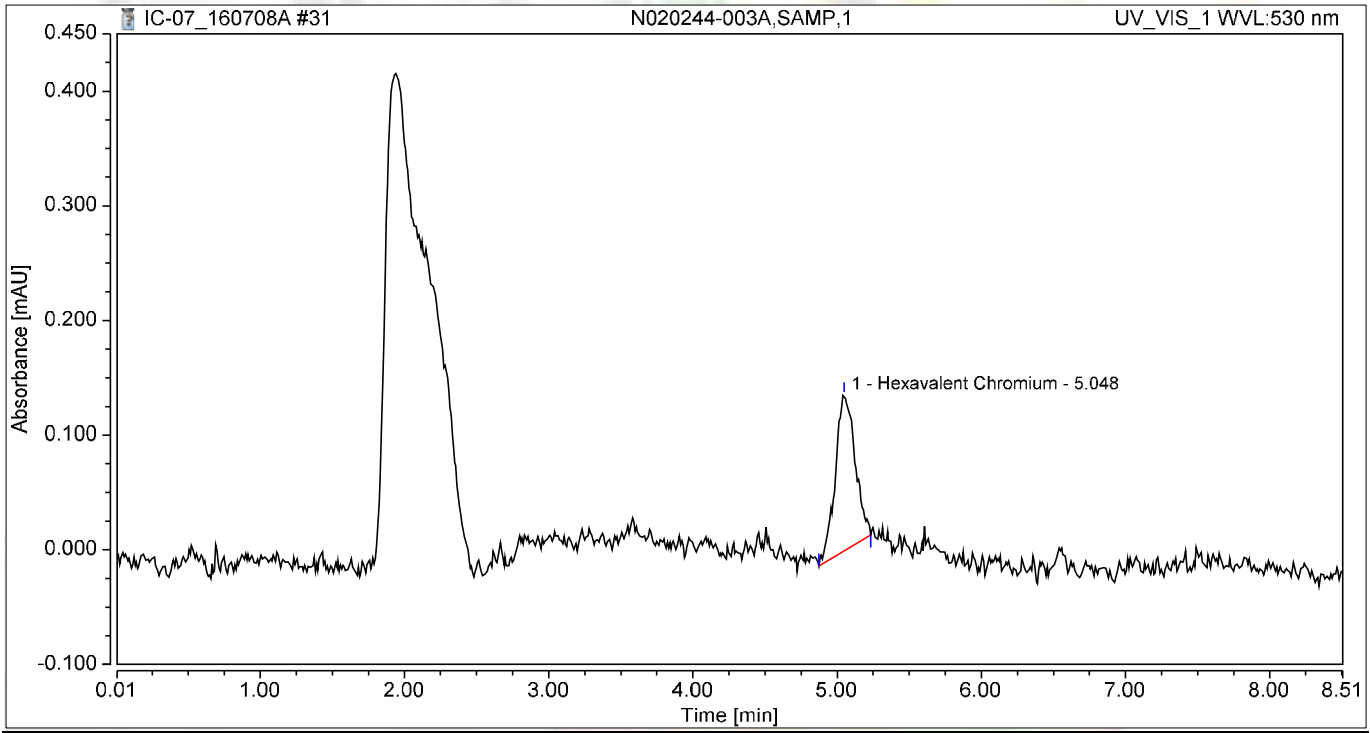
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	5.057	0.279	1.572	100.00	100.00	1.1002
Total:			**0.279**	**1.572**	**100.00**	**100.00**	

Chromatogram and Results

Injection Details

Injection Name:	**N020244-003A,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:	**160707_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**08/Jul/16 13:45**	*Sample Weight:*	**1.0000**

Chromatogram



Integration Results

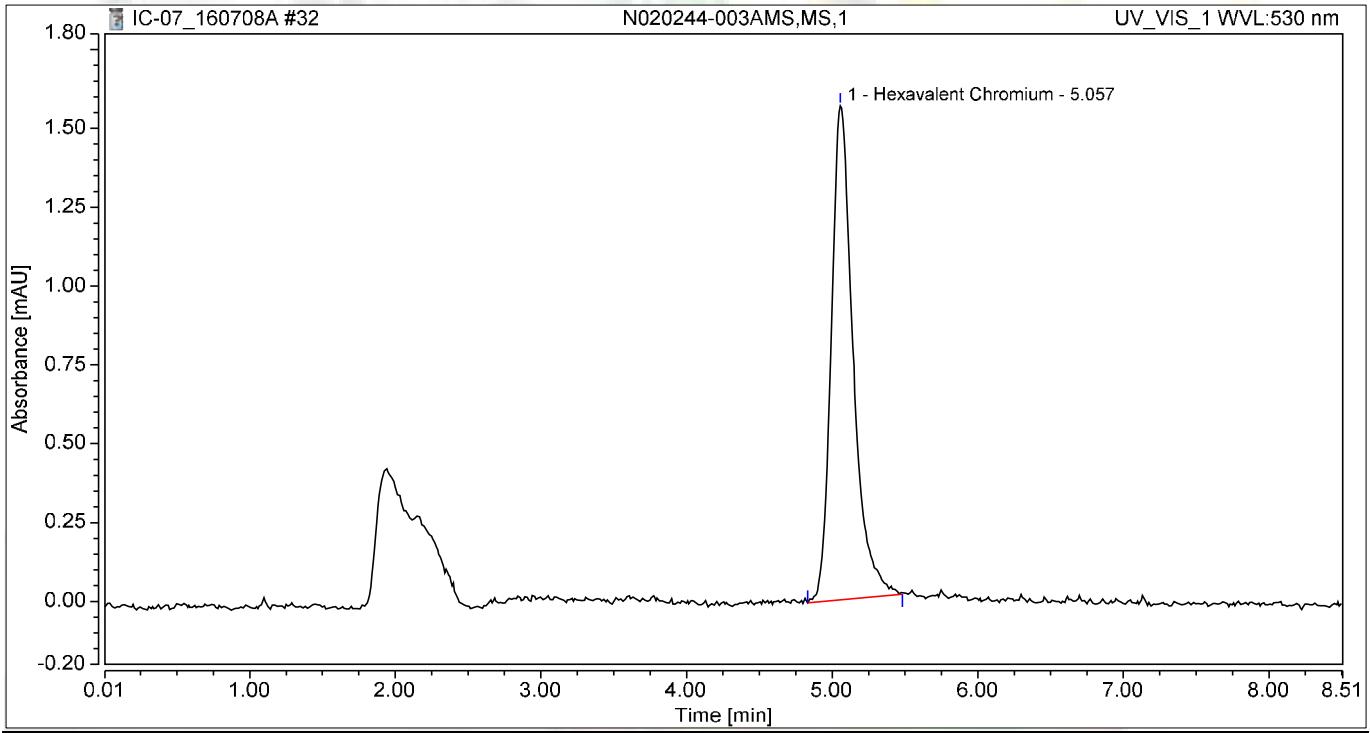
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	5.048	0.022	0.136	100.00	100.00	0.0853
Total:			**0.022**	**0.136**	**100.00**	**100.00**	

Chromatogram and Results

Injection Details

Injection Name:	**N020244-003AMS,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:	**160707_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**08/Jul/16 13:55**	*Sample Weight:*	**1.0000**

Chromatogram



Integration Results

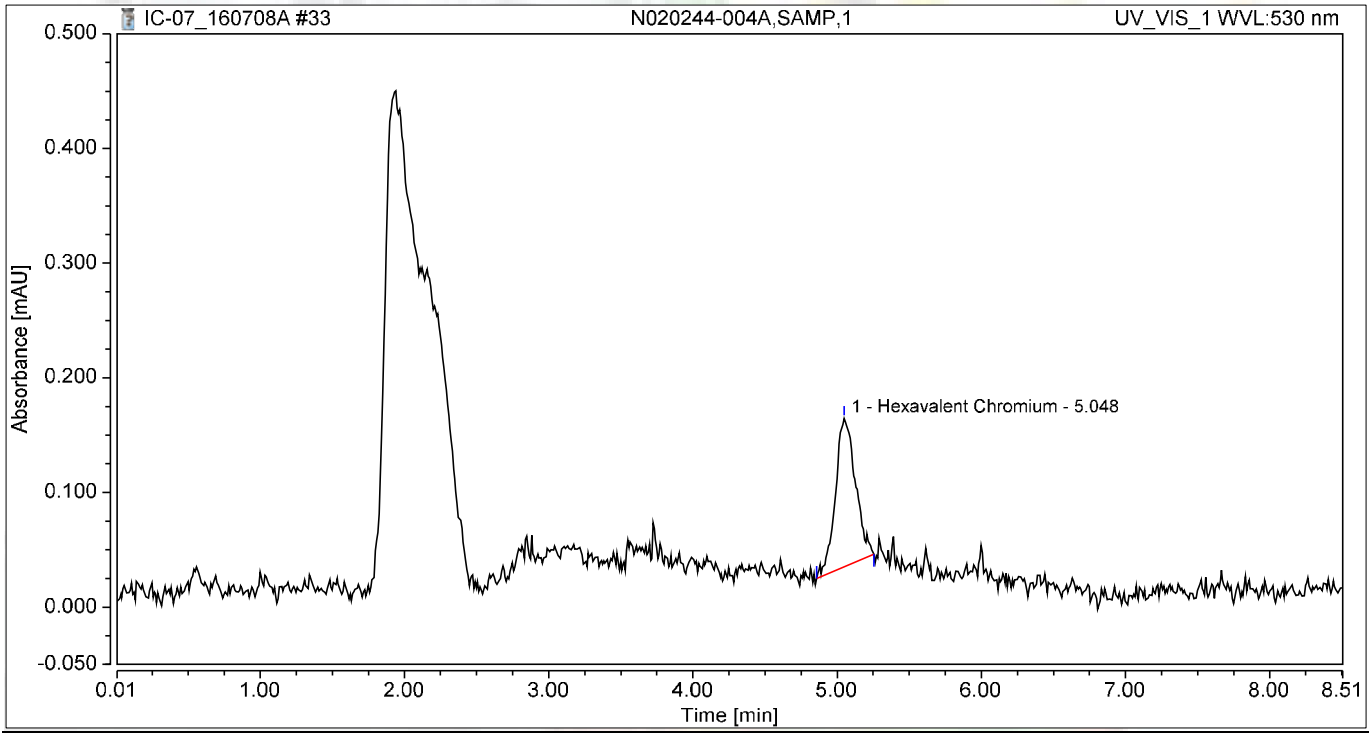
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	5.057	0.273	1.567	100.00	100.00	1.0764
Total:			**0.273**	**1.567**	**100.00**	**100.00**	

Chromatogram and Results

Injection Details

Injection Name:	**N020244-004A,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:	**160707_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**08/Jul/16 14:04**	*Sample Weight:*	**1.0000**

Chromatogram



Integration Results

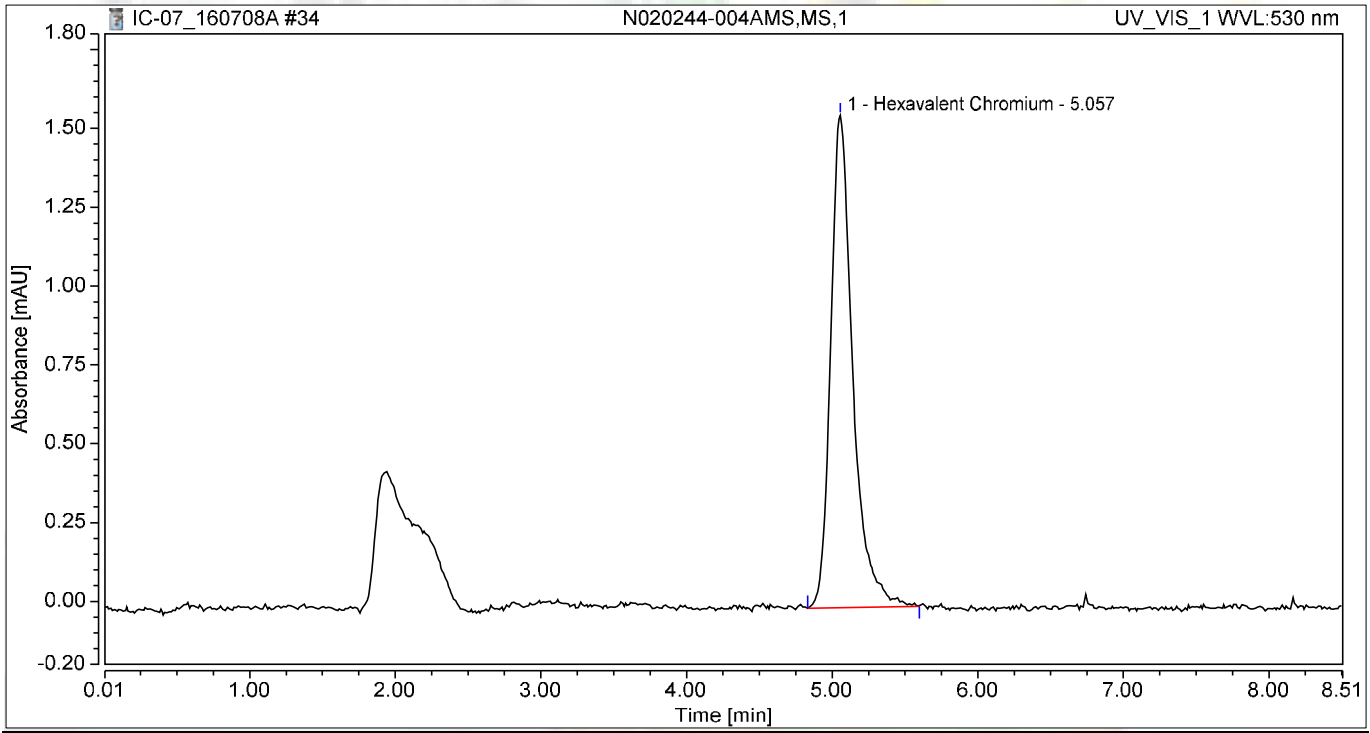
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	5.048	0.021	0.130	100.00	100.00	0.0820
Total:			**0.021**	**0.130**	**100.00**	**100.00**	

Chromatogram and Results

Injection Details

Injection Name:	**N020244-004AMS,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:	**160707_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**08/Jul/16 14:14**	*Sample Weight:*	**1.0000**

Chromatogram



Integration Results

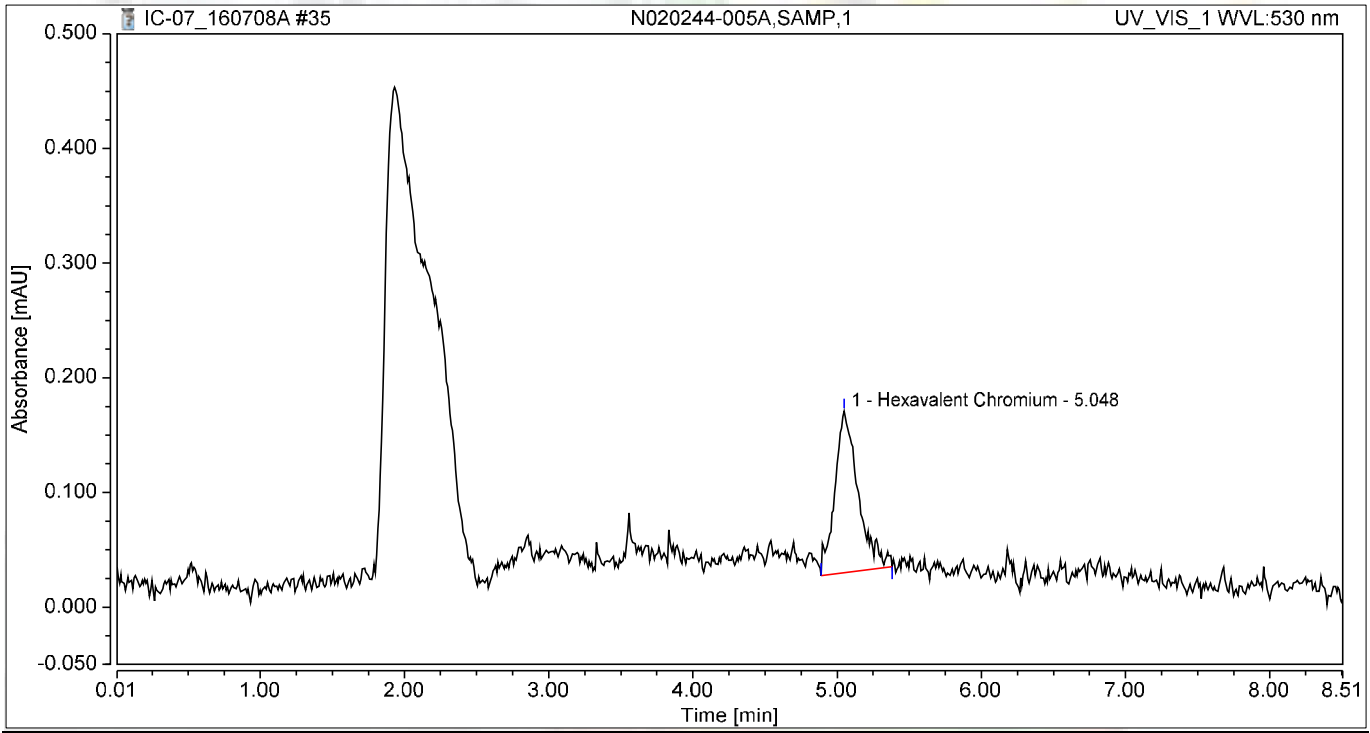
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	5.057	0.274	1.560	100.00	100.00	1.0812
Total:			**0.274**	**1.560**	**100.00**	**100.00**	

Chromatogram and Results

Injection Details

Injection Name:	**N020244-005A,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:	**160707_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**08/Jul/16 14:23**	*Sample Weight:*	**1.0000**

Chromatogram



Integration Results

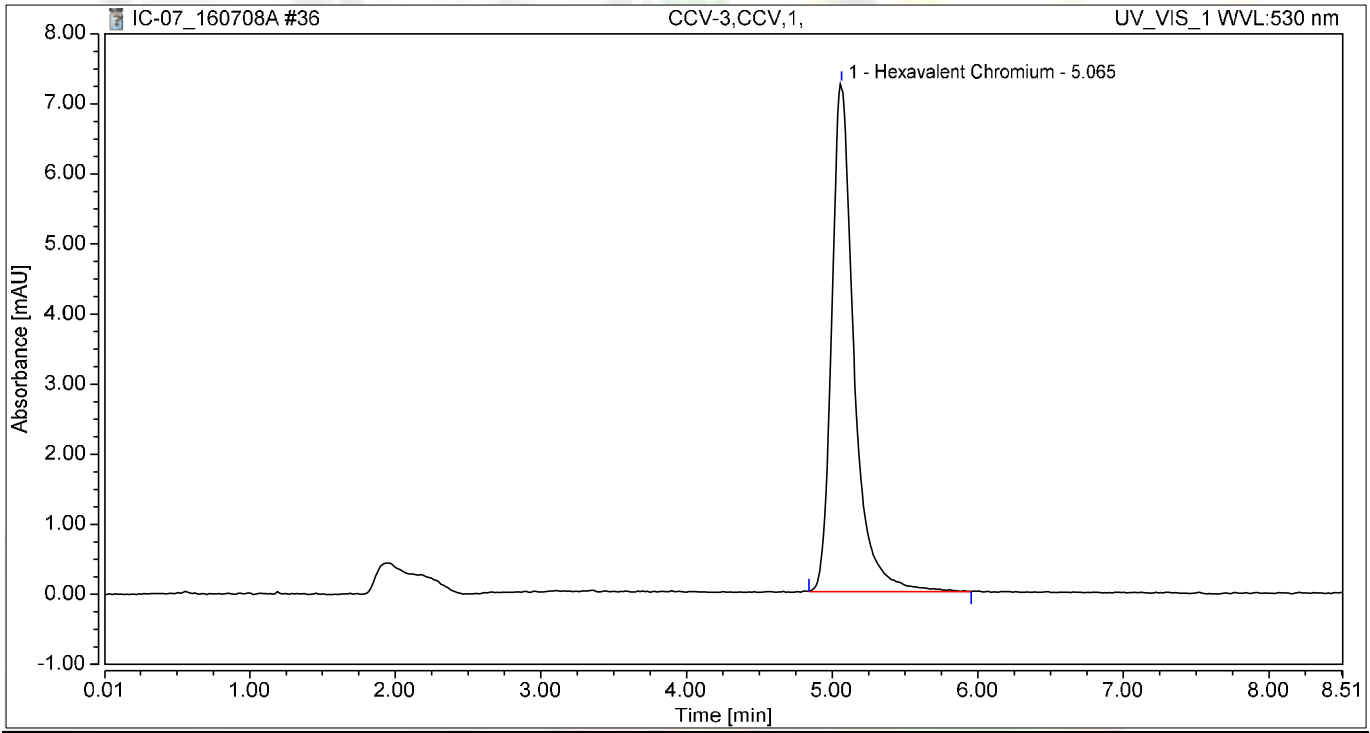
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	5.048	0.026	0.141	100.00	100.00	0.1041
Total:			**0.026**	**0.141**	**100.00**	**100.00**	

Chromatogram and Results

Injection Details

Injection Name:	**CCV-3,CCV,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:	**160707_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**08/Jul/16 14:33**	*Sample Weight:*	**1.0000**

Chromatogram



Integration Results

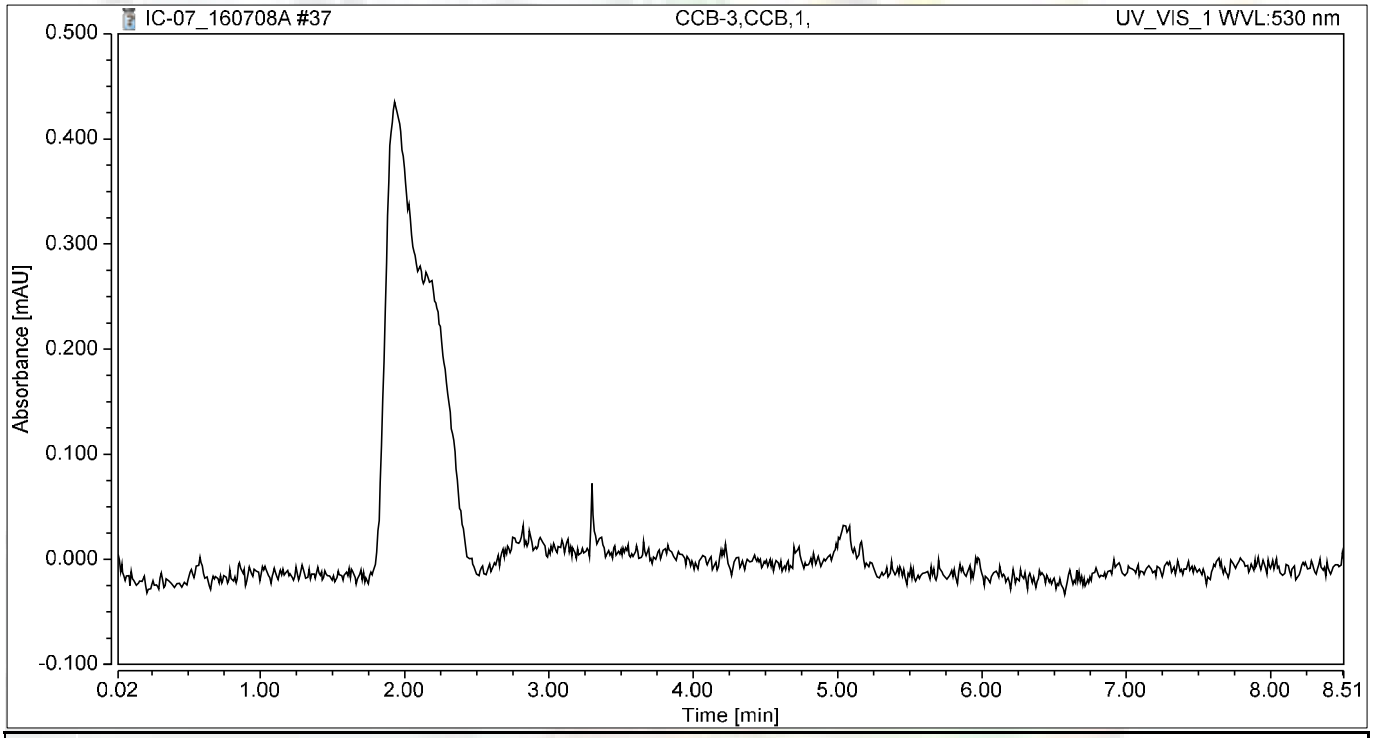
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	5.065	1.281	7.247	100.00	100.00	5.0496
Total:			**1.281**	**7.247**	**100.00**	**100.00**	

Chromatogram and Results

Injection Details

Injection Name:	**CCB-3,CCB,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:	**160707_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**08/Jul/16 14:42**	*Sample Weight:*	**1.0000**

Chromatogram



Integration Results

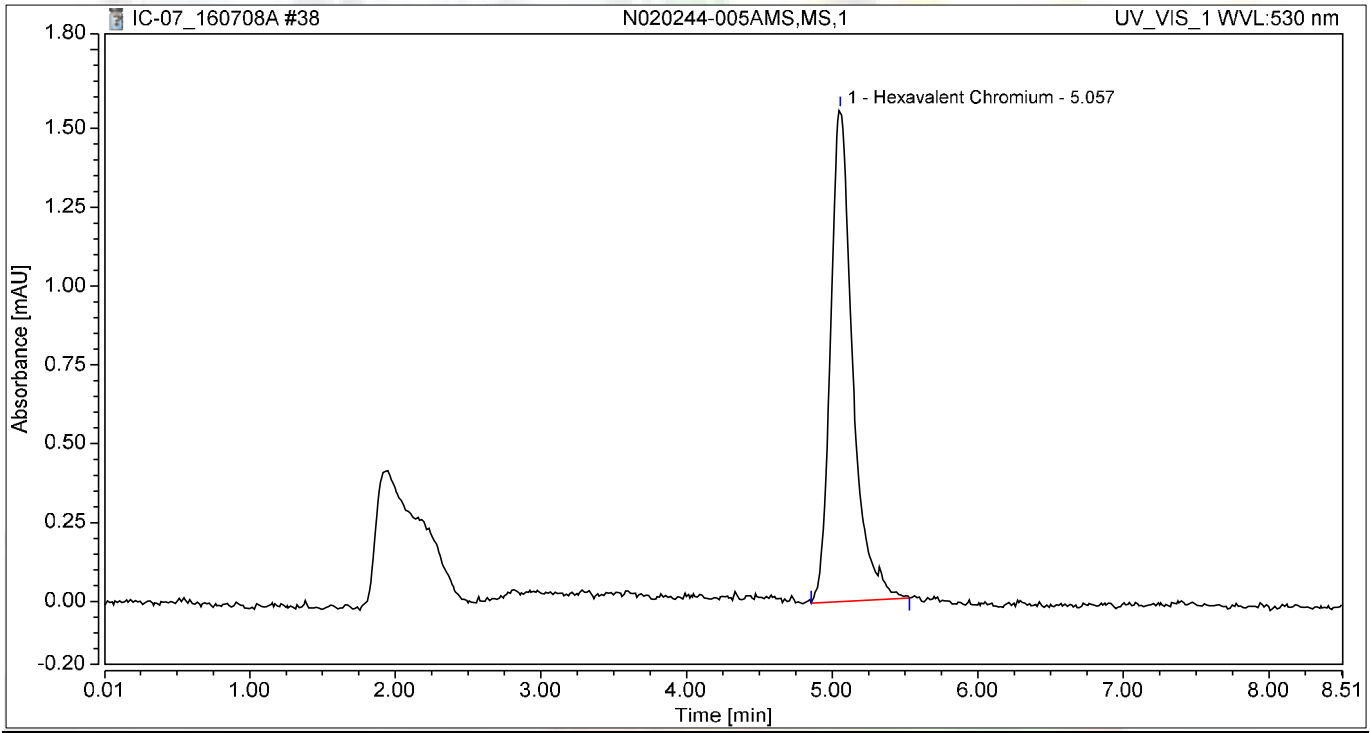
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
n.a.	Hexavalent Chromium	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Total:			**0.000**	**0.000**	**0.00**	**0.00**	

Chromatogram and Results

Injection Details

Injection Name:	**N020244-005AMS,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:	**160707_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**08/Jul/16 14:51**	*Sample Weight:*	**1.0000**

Chromatogram



Integration Results

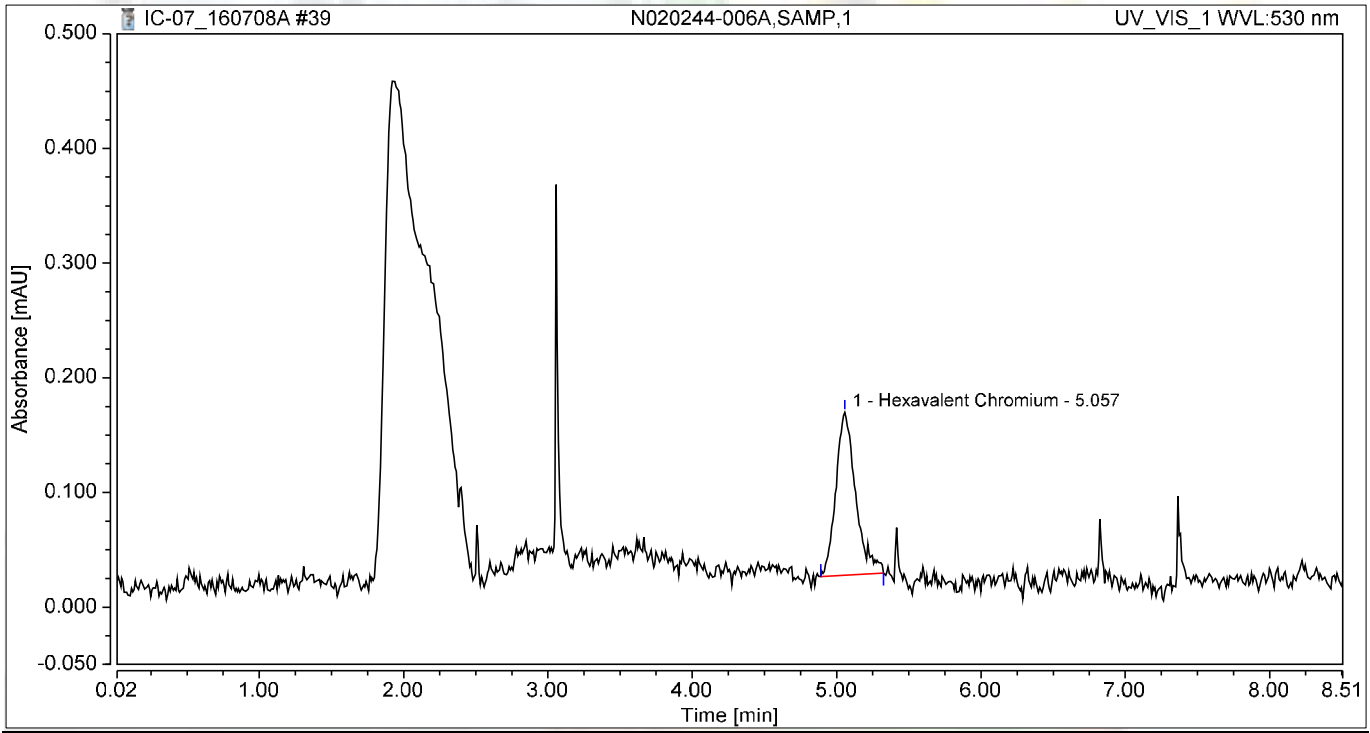
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	5.057	0.275	1.561	100.00	100.00	1.0862
Total:			**0.275**	**1.561**	**100.00**	**100.00**	

Chromatogram and Results

Injection Details

Injection Name:	**N020244-006A,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:	**160707_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**08/Jul/16 15:01**	*Sample Weight:*	**1.0000**

Chromatogram



Integration Results

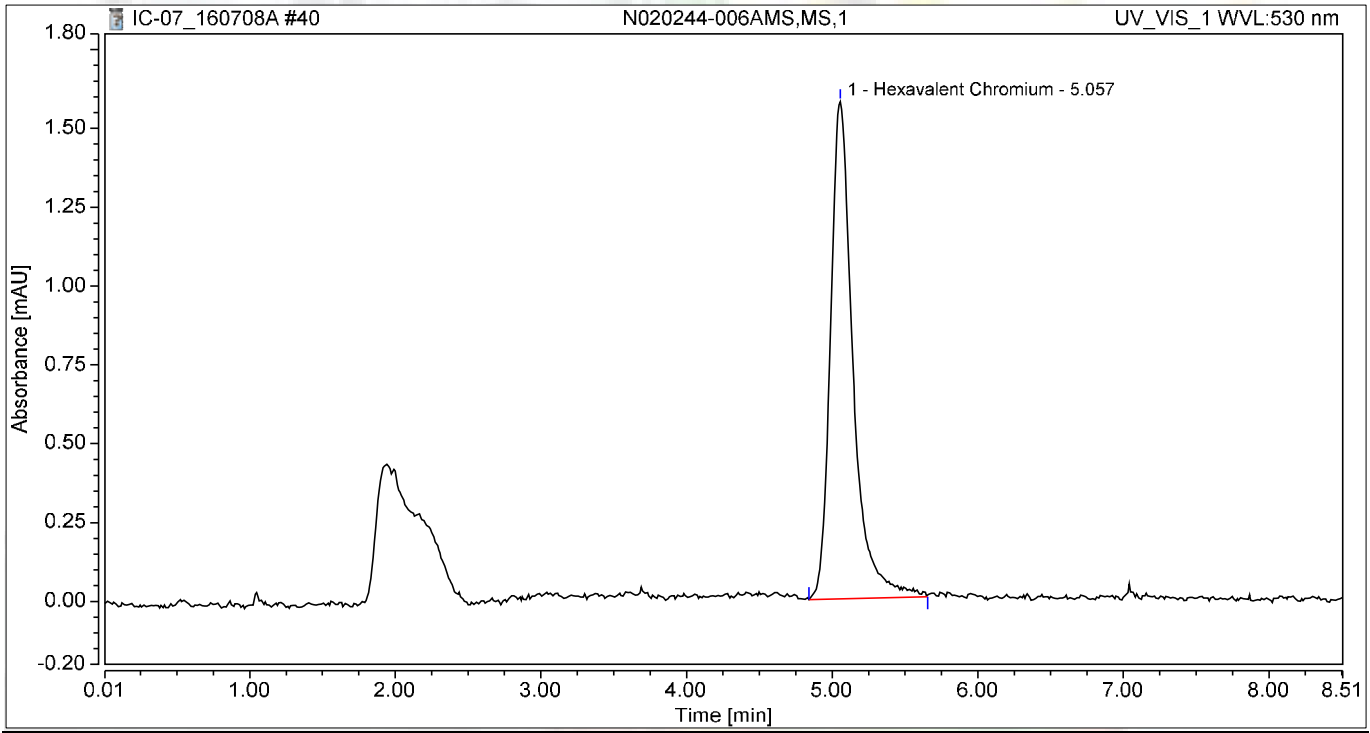
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	5.057	0.023	0.142	100.00	100.00	0.0891
Total:			**0.023**	**0.142**	**100.00**	**100.00**	

Chromatogram and Results

Injection Details

Injection Name:	**N020244-006AMS,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:	**160707_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**08/Jul/16 15:10**	*Sample Weight:*	**1.0000**

Chromatogram



Integration Results

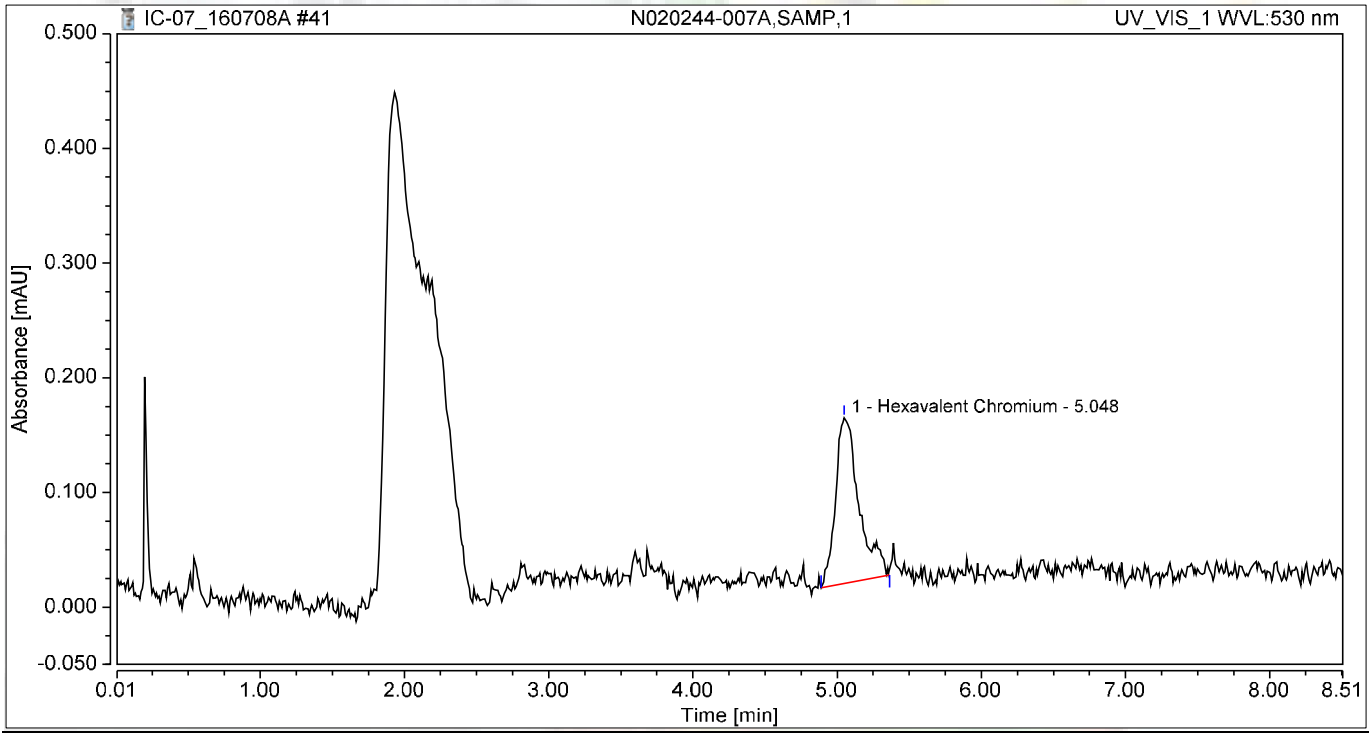
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	5.057	0.283	1.577	100.00	100.00	1.1172
Total:			**0.283**	**1.577**	**100.00**	**100.00**	

Chromatogram and Results

Injection Details

Injection Name:	**N020244-007A,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:	**160707_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**08/Jul/16 15:20**	*Sample Weight:*	**1.0000**

Chromatogram



Integration Results

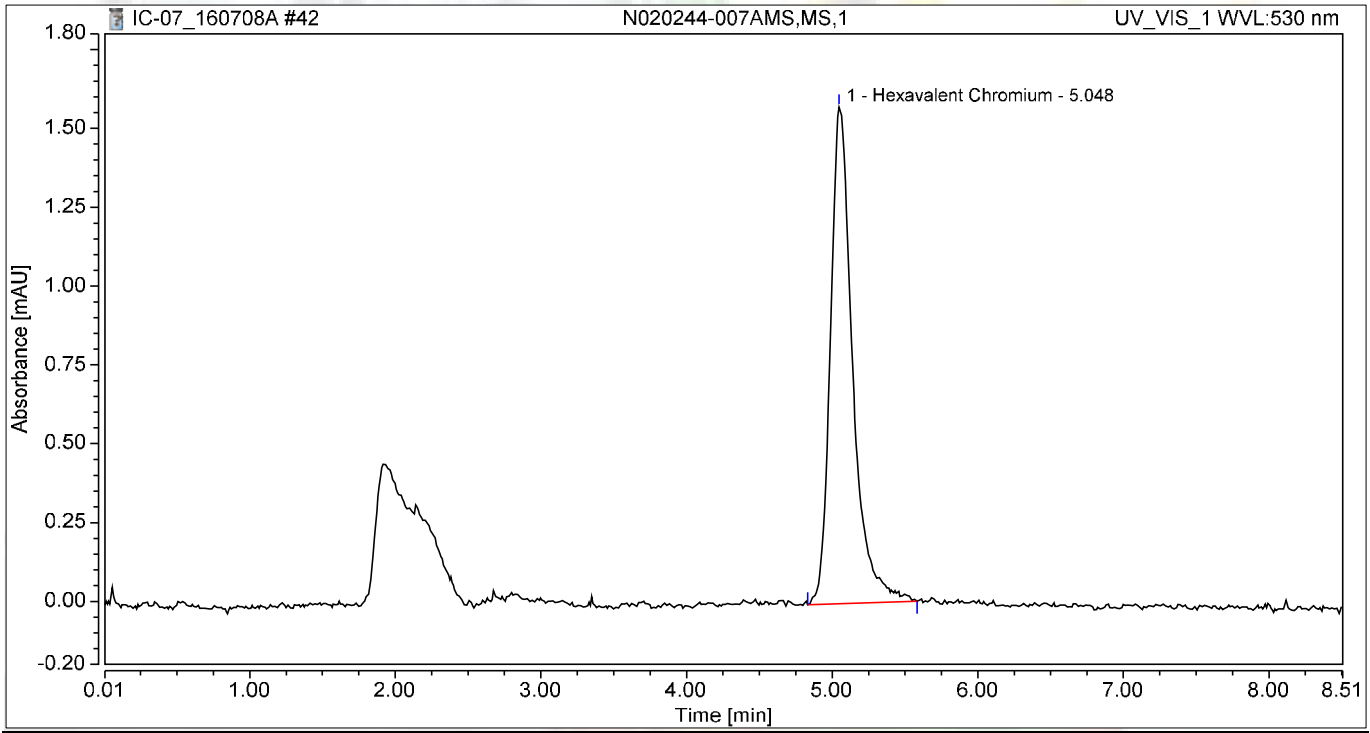
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	5.048	0.027	0.144	100.00	100.00	0.1070
Total:			**0.027**	**0.144**	**100.00**	**100.00**	

Chromatogram and Results

Injection Details

Injection Name:	**N020244-007AMS,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:	**160707_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**08/Jul/16 15:29**	*Sample Weight:*	**1.0000**

Chromatogram



Integration Results

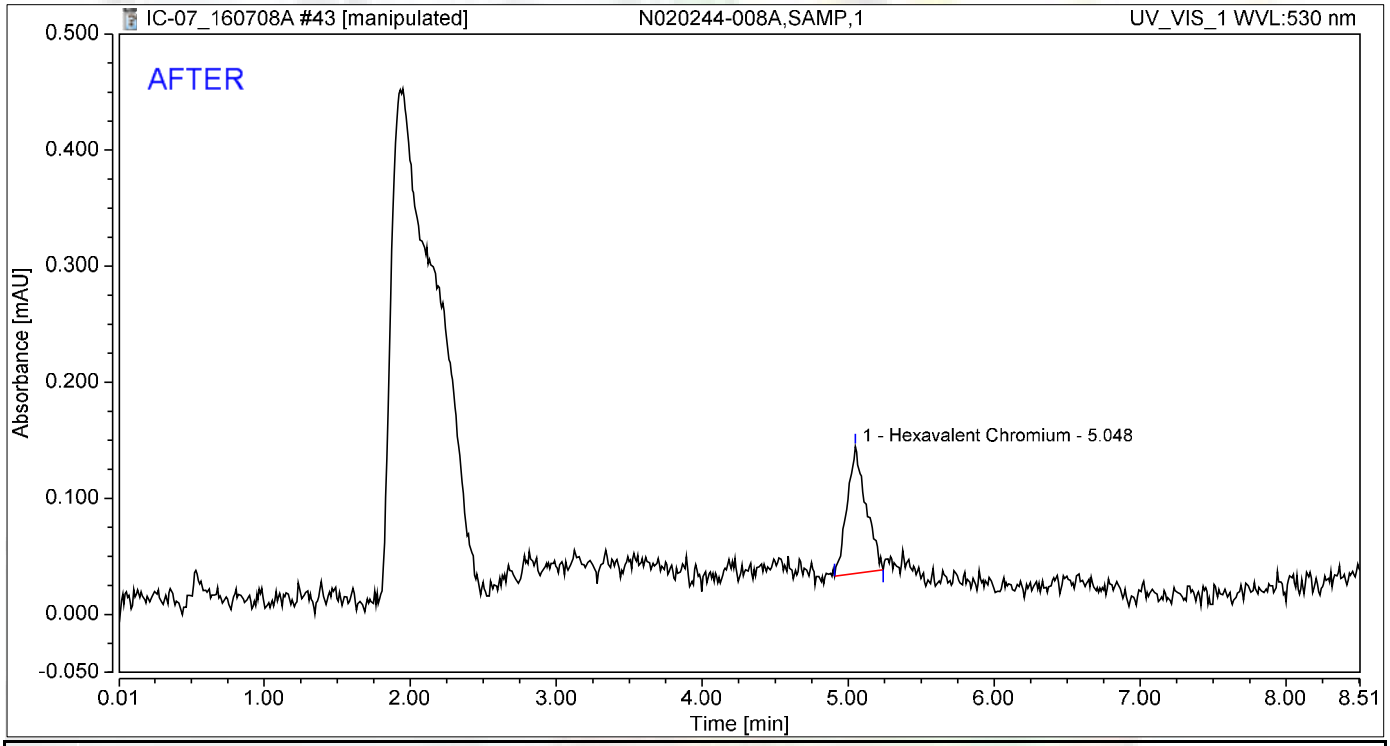
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	5.048	0.279	1.575	100.00	100.00	1.0999
Total:			**0.279**	**1.575**	**100.00**	**100.00**	

Chromatogram and Results

Injection Details

Injection Name:	**N020244-008A,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:	**160707_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**08/Jul/16 15:39**	*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	5.048	0.016	0.109	100.00	100.00	0.0640
Total:			**0.016**	**0.109**	**100.00**	**100.00**	

7/21/2016

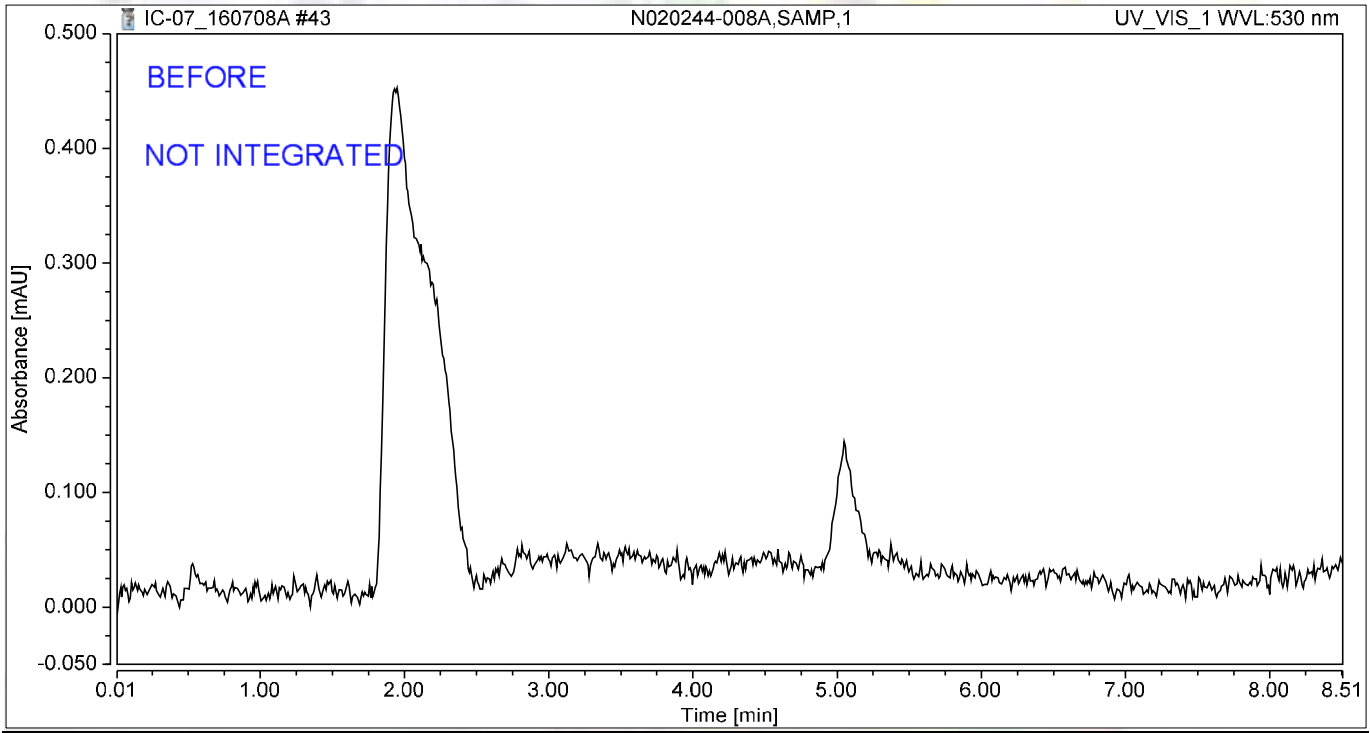
Reviewed by

Chromatogram and Results

Injection Details

Injection Name:	**N020244-008A,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:	**160707_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**08/Jul/16 15:39**	*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
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**	

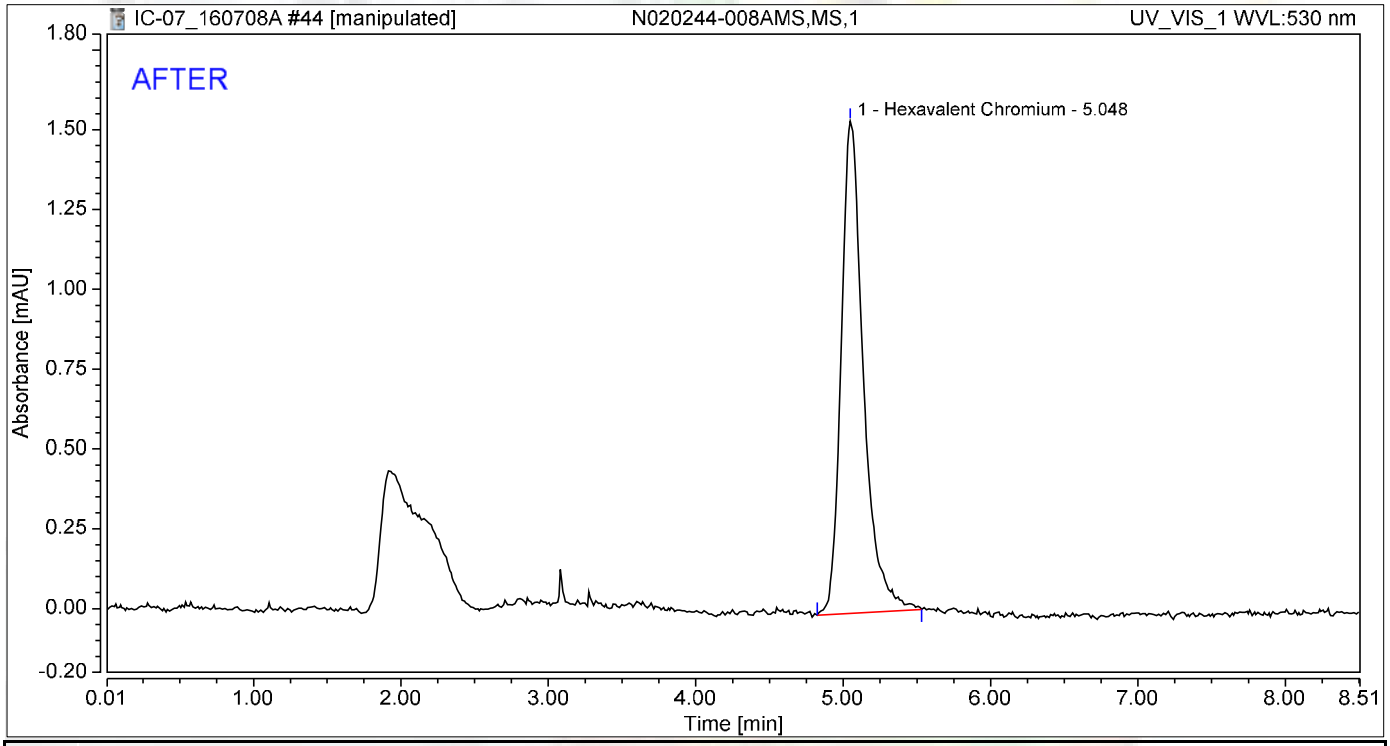
7/21/2016

Chromatogram and Results

Injection Details

Injection Name:	**N020244-008AMS,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:	**160707_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**08/Jul/16 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	5.048	0.269	1.541	100.00	100.00	1.0593
Total:			**0.269**	**1.541**	**100.00**	**100.00**	

7/21/2016

Reviewed by:

Chromeleon (c) Dionex
Version 7.1.1.1127

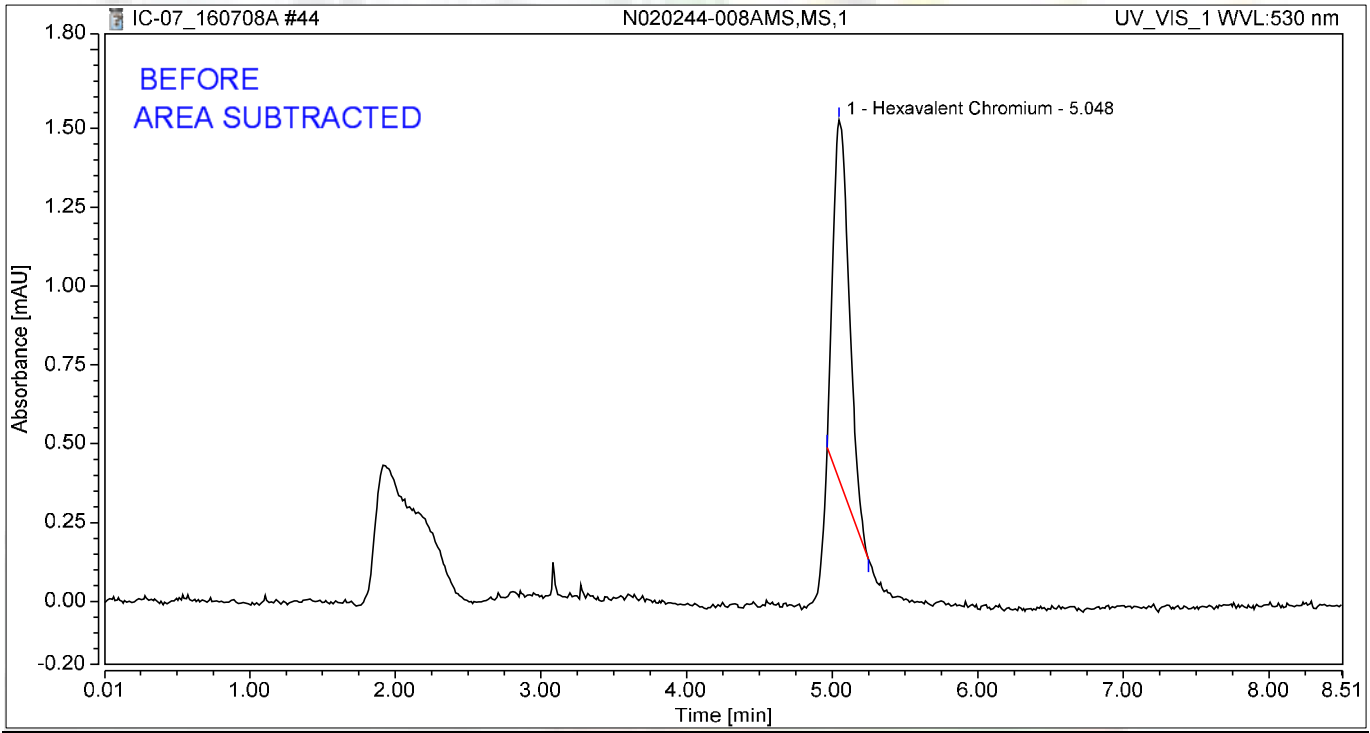
7/22/16

Chromatogram and Results

Injection Details

Injection Name:	**N020244-008AMS,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:	**160707_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**08/Jul/16 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	5.048	0.148	1.143	100.00	100.00	0.5847
Total:			**0.148**	**1.143**	**100.00**	**100.00**	

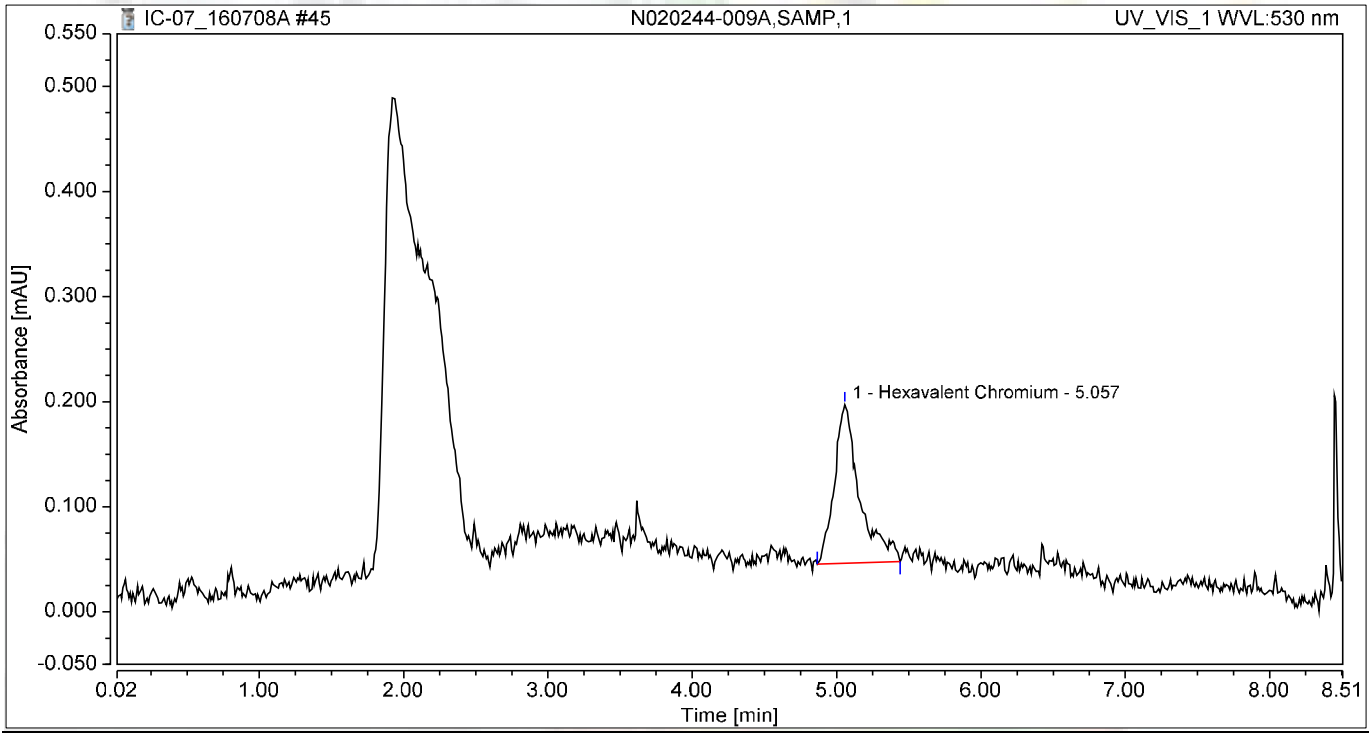
7/21/2016

Chromatogram and Results

Injection Details

Injection Name:	**N020244-009A,SAMP,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:	**160707_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**08/Jul/16 15:58**	*Sample Weight:*	**1.0000**

Chromatogram



Integration Results

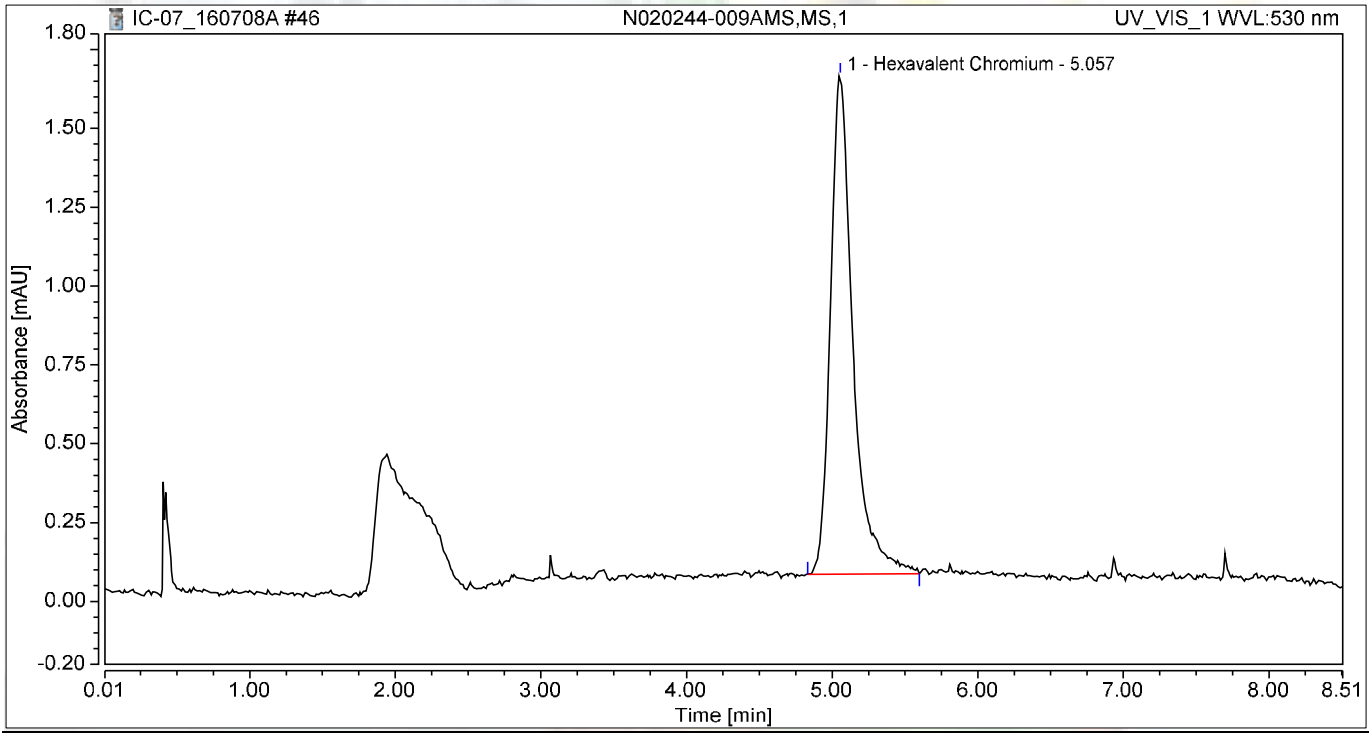
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	5.057	0.030	0.151	100.00	100.00	0.1202
Total:			**0.030**	**0.151**	**100.00**	**100.00**	

Chromatogram and Results

Injection Details

Injection Name:	**N020244-009AMS,MS,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:	**160707_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**08/Jul/16 16:07**	*Sample Weight:*	**1.0000**

Chromatogram



Integration Results

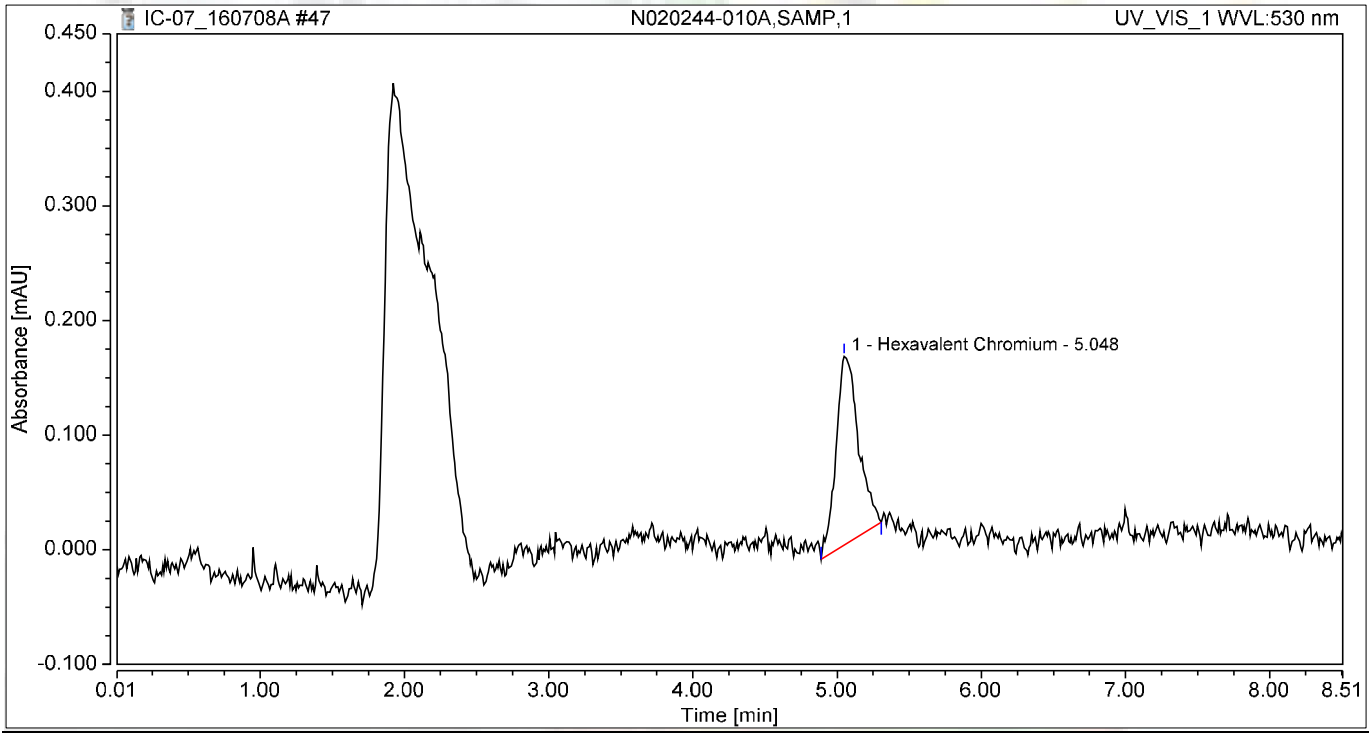
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	5.057	0.283	1.581	100.00	100.00	1.1158
Total:			**0.283**	**1.581**	**100.00**	**100.00**	

Chromatogram and Results

Injection Details

Injection Name:	**N020244-010A,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:	**160707_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**08/Jul/16 16:17**	*Sample Weight:*	**1.0000**

Chromatogram



Integration Results

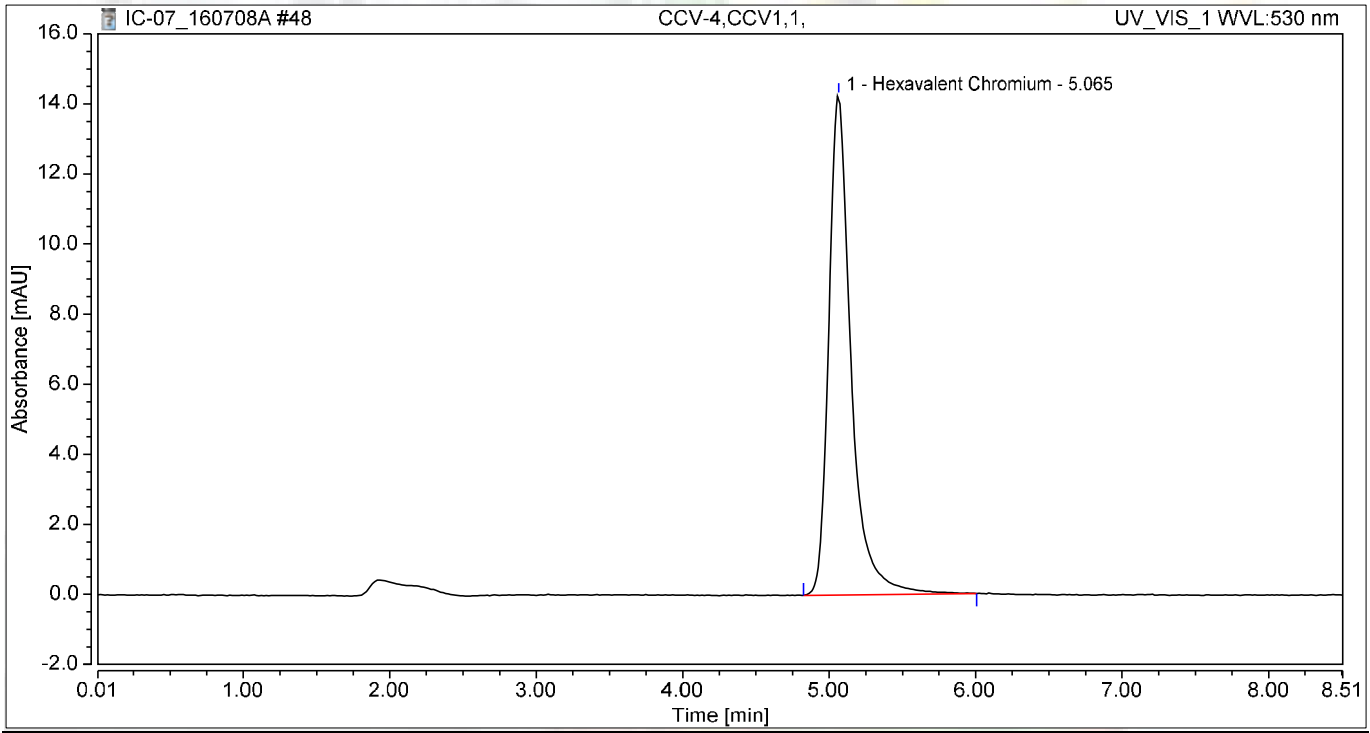
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	5.048	0.030	0.165	100.00	100.00	0.1176
Total:			**0.030**	**0.165**	**100.00**	**100.00**	

Chromatogram and Results

Injection Details

Injection Name:	**CCV-4,CCV1,1,**	*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:	**160707_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**08/Jul/16 16:26**	*Sample Weight:*	**1.0000**

Chromatogram



Integration Results

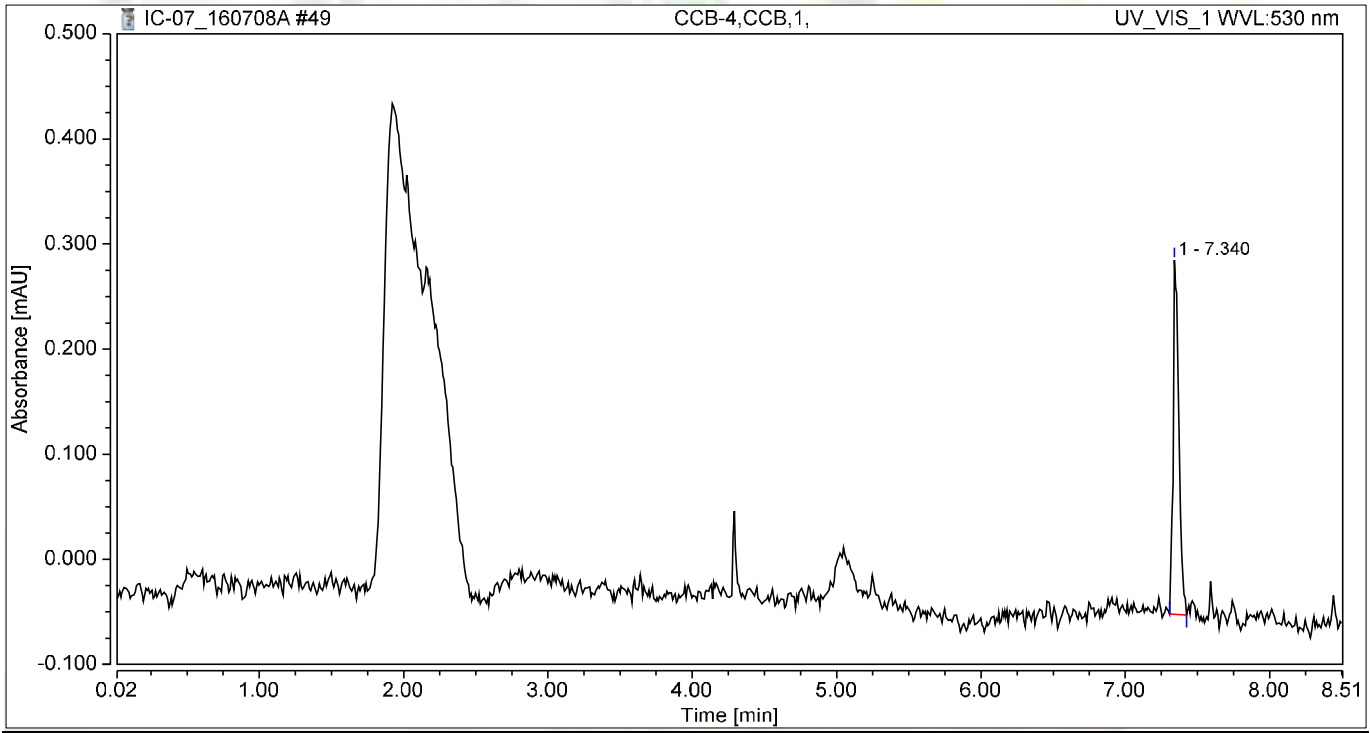
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	5.065	2.519	14.255	100.00	100.00	9.9327
Total:			**2.519**	**14.255**	**100.00**	**100.00**	

Chromatogram and Results

Injection Details

Injection Name:	**CCB-4,CCB,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:	**160707_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**08/Jul/16 16:36**	*Sample Weight:*	**1.0000**

Chromatogram



Integration Results

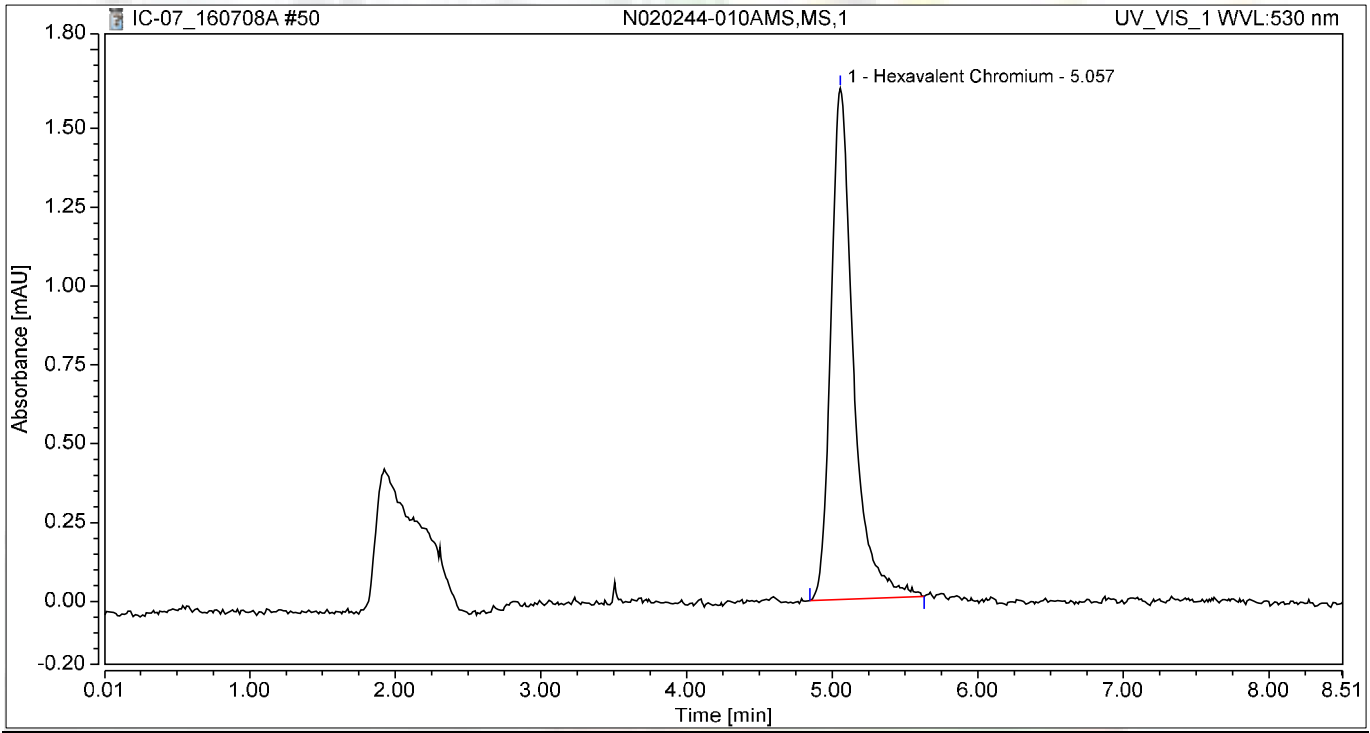
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
n.a.	Hexavalent Chromium	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
1		7.340	0.015	0.337	100.00	100.00	n.a.
Total:			**0.015**	**0.337**	**100.00**	**100.00**	

Chromatogram and Results

Injection Details

Injection Name:	**N020244-010AMS,MS,1**	*Run Time (min):*	**8.50**
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:	**160707_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**08/Jul/16 16:45**	*Sample Weight:*	**1.0000**

Chromatogram



Integration Results

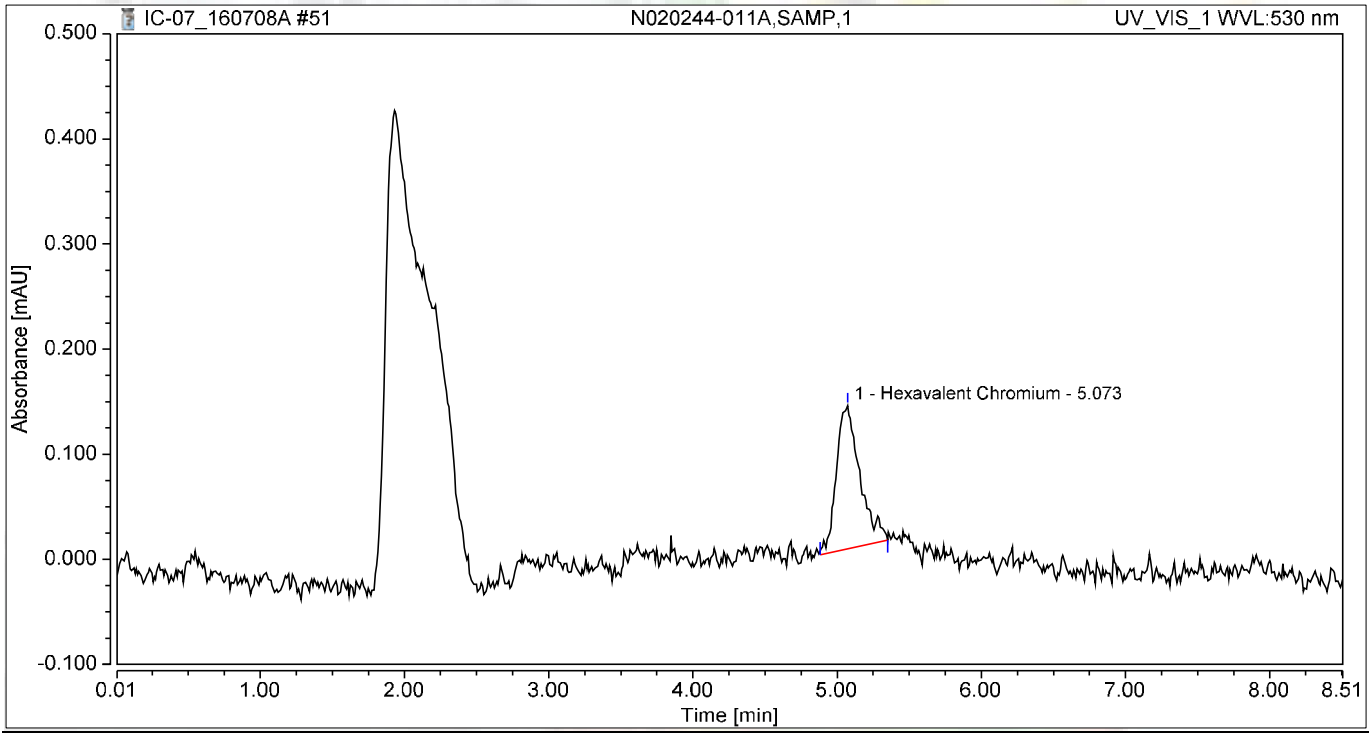
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	5.057	0.290	1.622	100.00	100.00	1.1451
Total:			**0.290**	**1.622**	**100.00**	**100.00**	

Chromatogram and Results

Injection Details

Injection Name:	**N020244-011A,SAMP,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:	**160707_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**08/Jul/16 16:54**	*Sample Weight:*	**1.0000**

Chromatogram



Integration Results

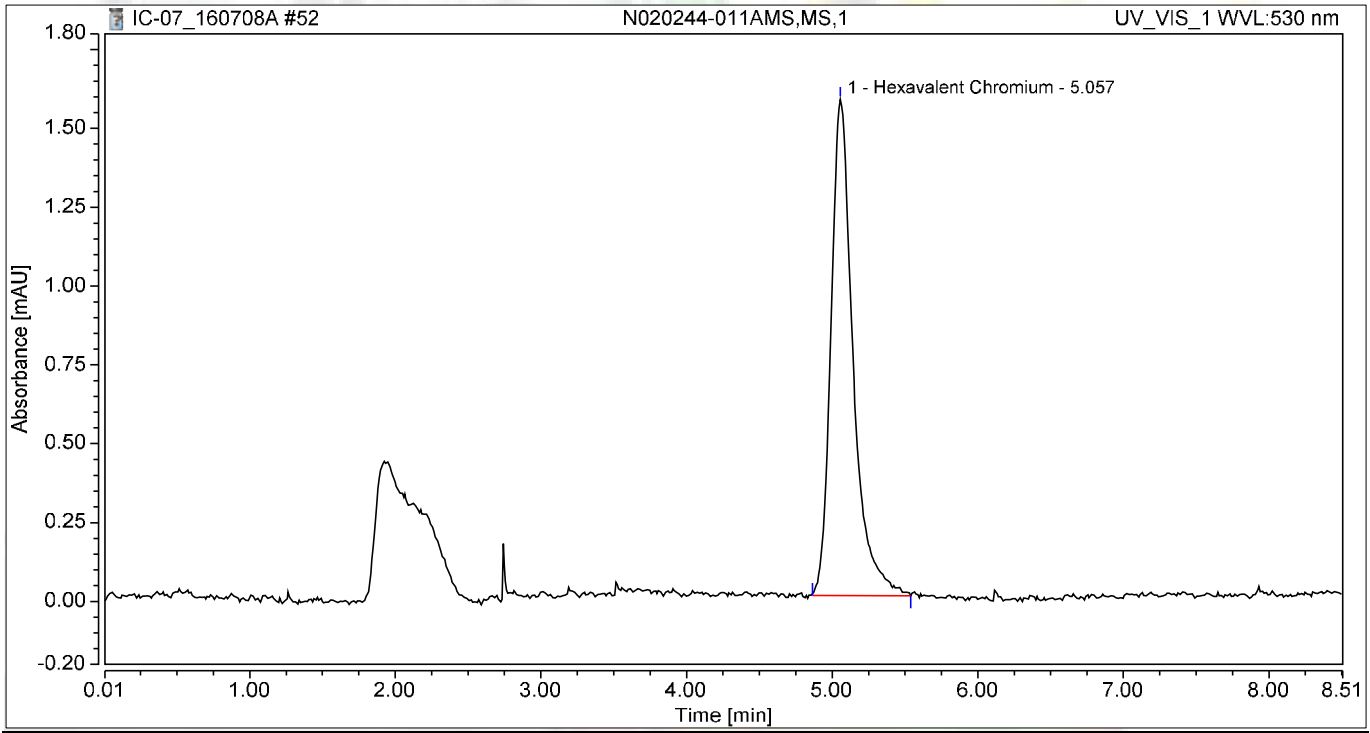
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	5.073	0.025	0.136	100.00	100.00	0.1004
Total:			**0.025**	**0.136**	**100.00**	**100.00**	

Chromatogram and Results

Injection Details

Injection Name:	**N020244-011AMS,MS,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:	**160707_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**08/Jul/16 17:04**	*Sample Weight:*	**1.0000**

Chromatogram



Integration Results

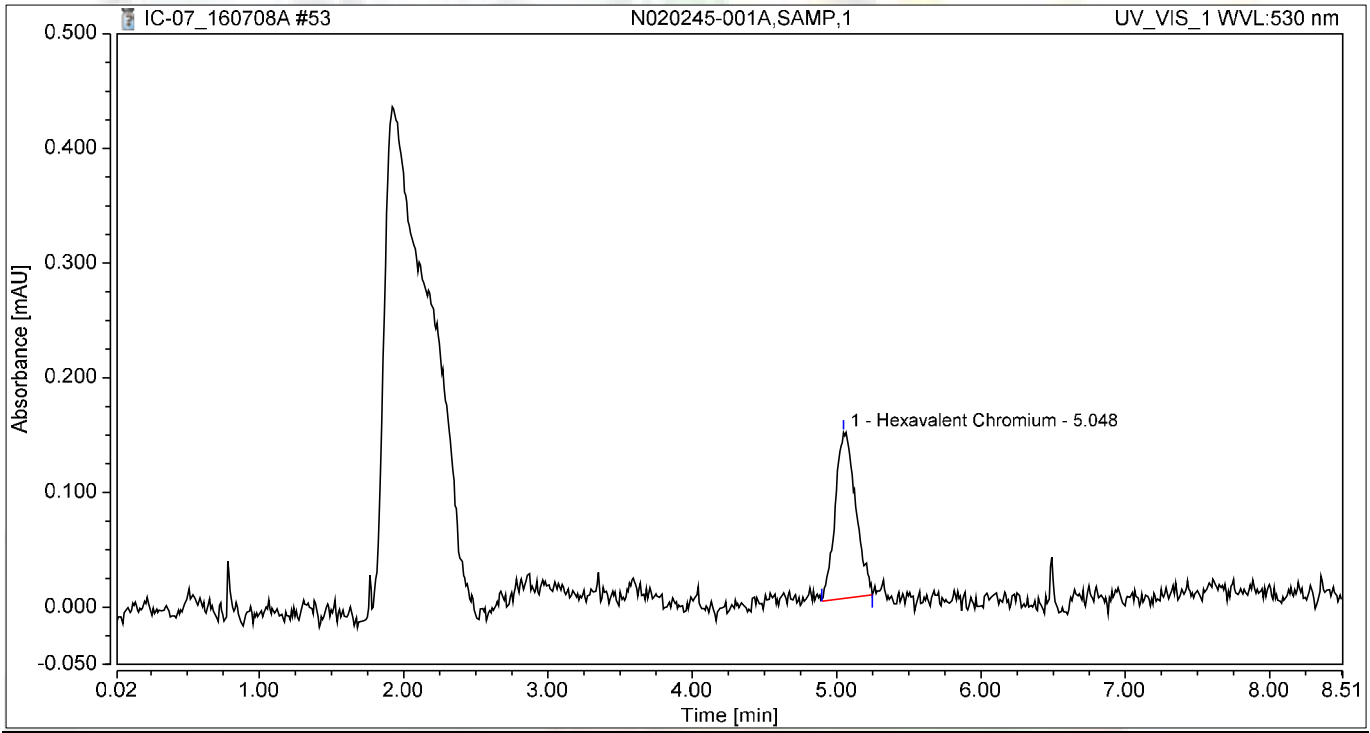
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	5.057	0.277	1.574	100.00	100.00	1.0928
Total:			**0.277**	**1.574**	**100.00**	**100.00**	

Chromatogram and Results

Injection Details

Injection Name:	**N020245-001A,SAMP,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:	**160707_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**08/Jul/16 17:13**	*Sample Weight:*	**1.0000**

Chromatogram



Integration Results

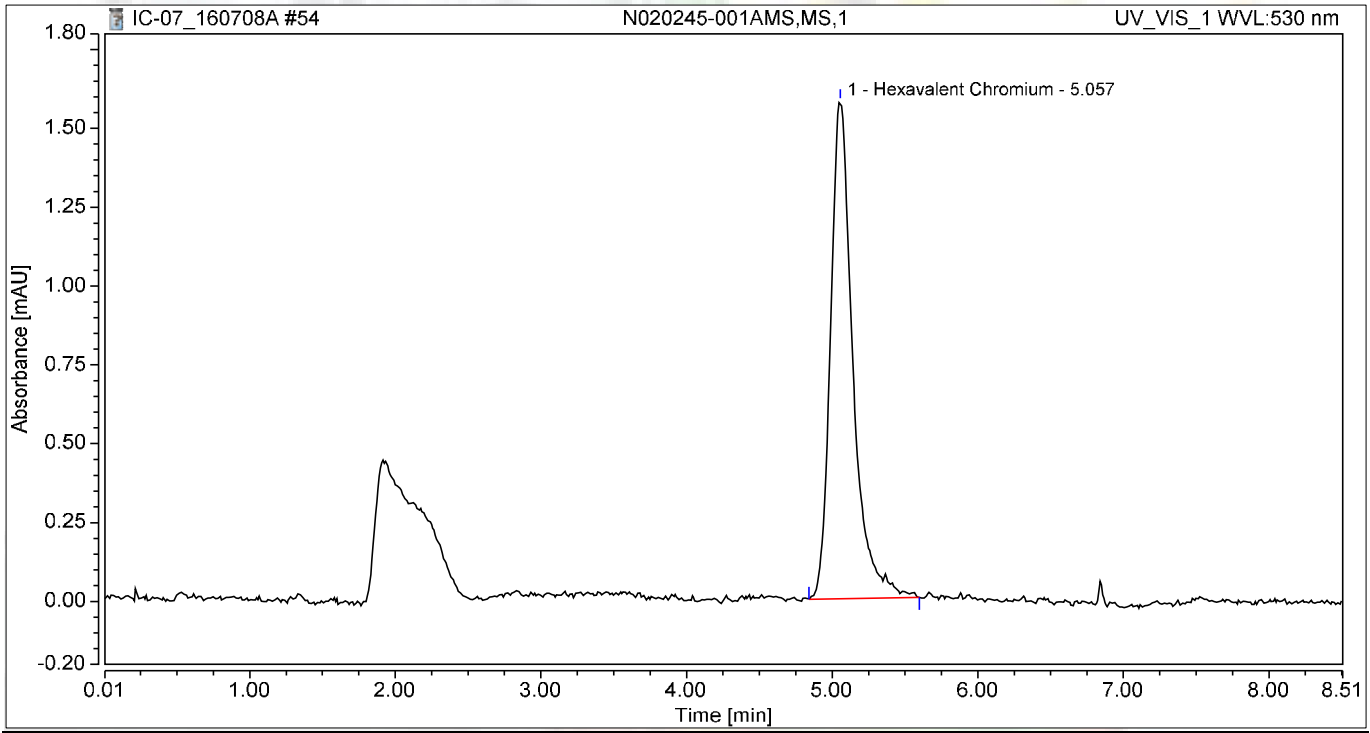
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	5.048	0.024	0.145	100.00	100.00	0.0939
Total:			**0.024**	**0.145**	**100.00**	**100.00**	

Chromatogram and Results

Injection Details

Injection Name:	**N020245-001AMS,MS,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:	**160707_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**08/Jul/16 17:23**	*Sample Weight:*	**1.0000**

Chromatogram



Integration Results

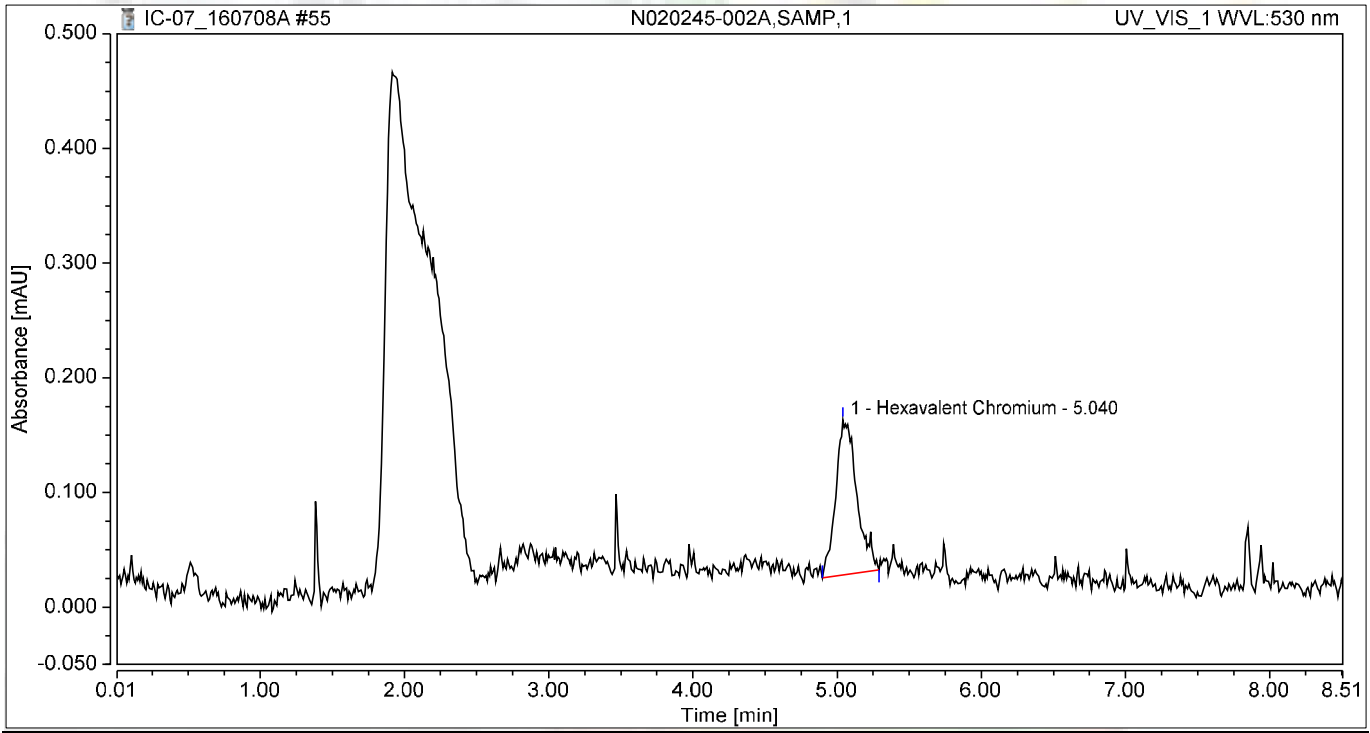
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	5.057	0.281	1.577	100.00	100.00	1.1081
Total:			**0.281**	**1.577**	**100.00**	**100.00**	

Chromatogram and Results

Injection Details

Injection Name:	**N020245-002A,SAMP,1**	*Run Time (min):*	**8.50**
Vial Number:	**47**	*Injection Volume:*	**1000.00**
Injection Type:	**Unknown**	*Channel:*	**UV_VIS_1**
Calibration Level:		*Wavelength:*	**530.0**
Instrument Method:	**Hex Chrom 4 mm**	*Bandwidth:*	**n.a.**
Processing Method:	**160707_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**08/Jul/16 17:32**	*Sample Weight:*	**1.0000**

Chromatogram



Integration Results

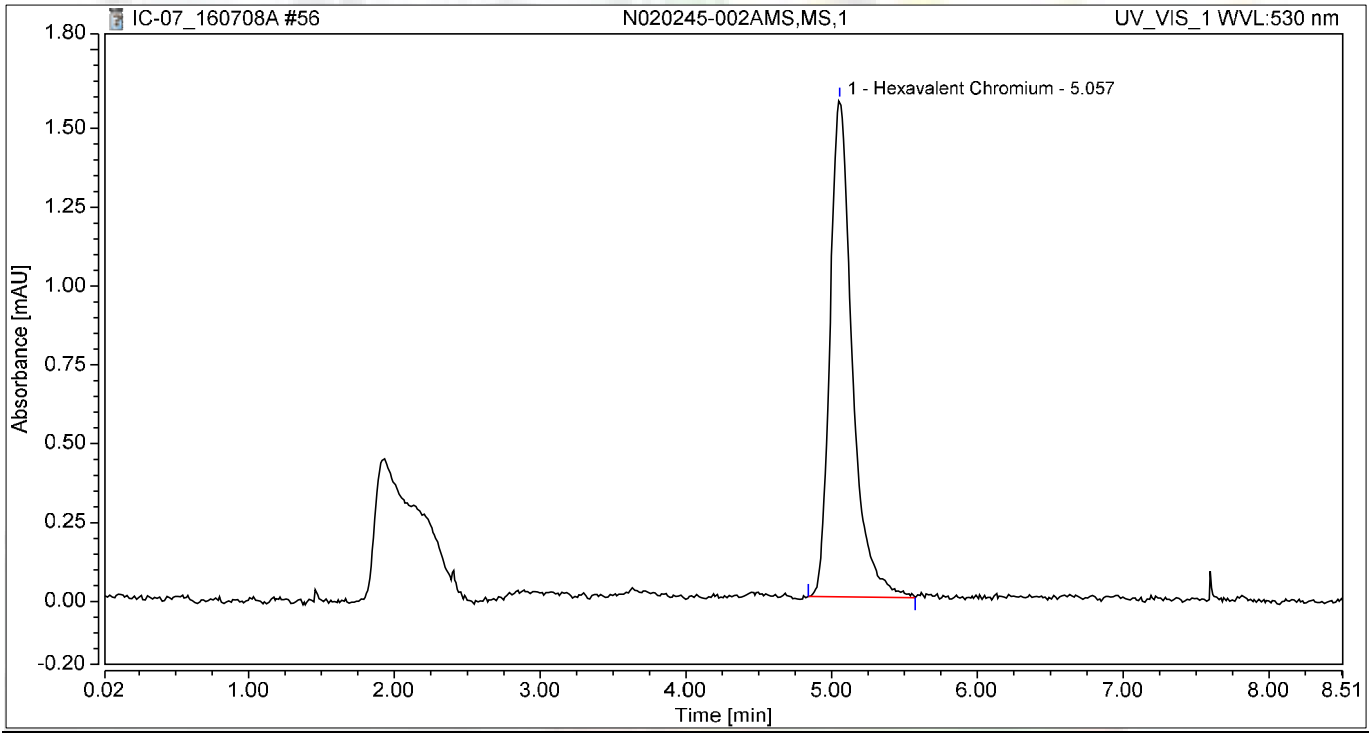
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	5.040	0.023	0.135	100.00	100.00	0.0903
Total:			**0.023**	**0.135**	**100.00**	**100.00**	

Chromatogram and Results

Injection Details

Injection Name:	**N020245-002AMS,MS,1**	*Run Time (min):*	**8.49**
Vial Number:	**48**	*Injection Volume:*	**1000.00**
Injection Type:	**Unknown**	*Channel:*	**UV_VIS_1**
Calibration Level:		*Wavelength:*	**530.0**
Instrument Method:	**Hex Chrom 4 mm**	*Bandwidth:*	**n.a.**
Processing Method:	**160707_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**08/Jul/16 17:42**	*Sample Weight:*	**1.0000**

Chromatogram



Integration Results

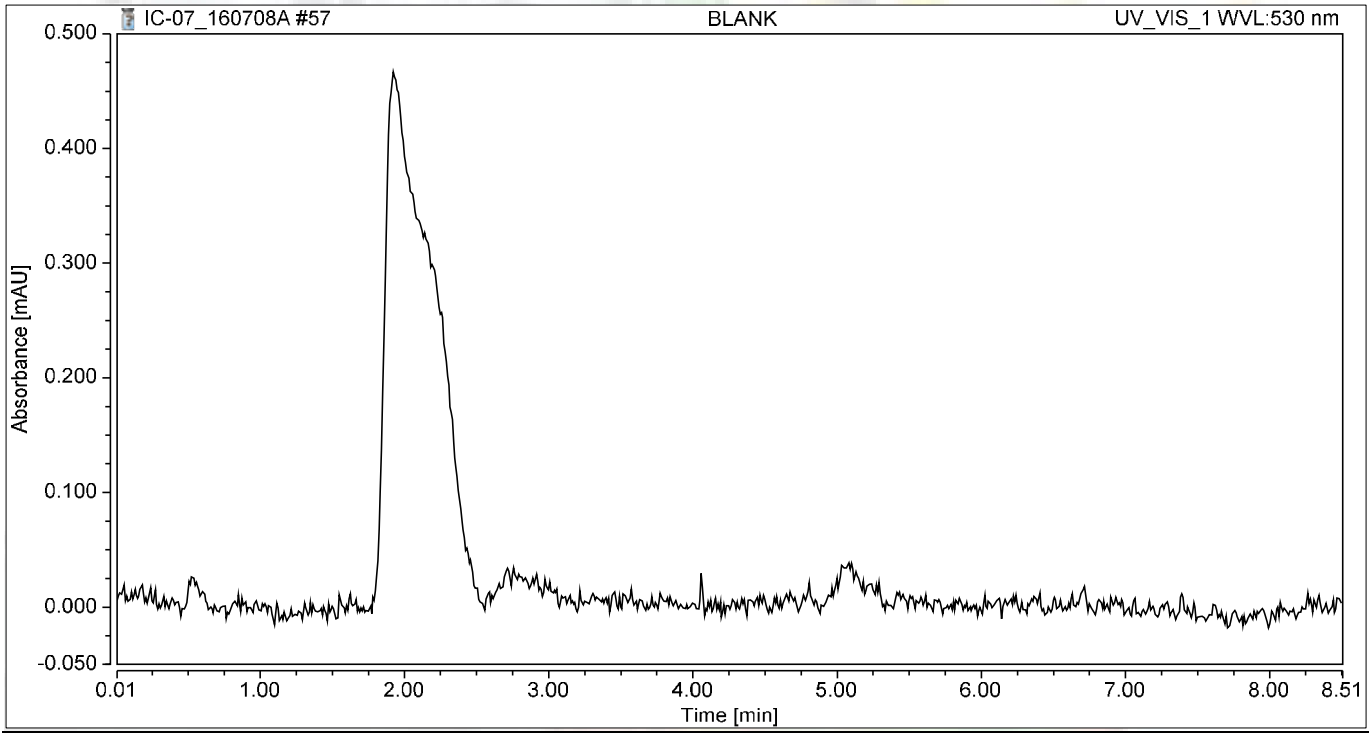
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	5.057	0.279	1.576	100.00	100.00	1.1008
Total:			**0.279**	**1.576**	**100.00**	**100.00**	

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:	**160707_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**08/Jul/16 18:00**	*Sample Weight:*	**1.0000**

Chromatogram



Integration Results

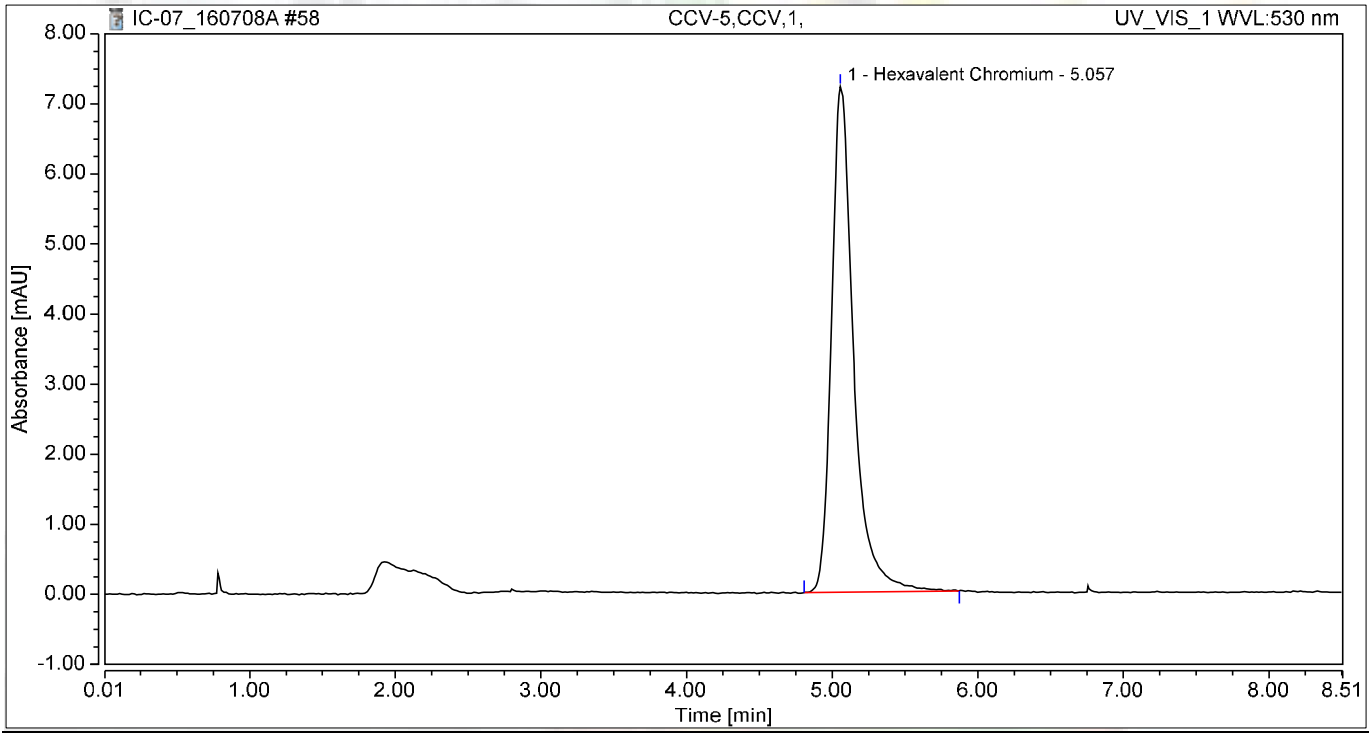
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
n.a.	Hexavalent Chromium	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Total:			**0.000**	**0.000**	**0.00**	**0.00**	

Chromatogram and Results

Injection Details

Injection Name:	**CCV-5,CCV,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:	**160707_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**08/Jul/16 18:11**	*Sample Weight:*	**1.0000**

Chromatogram



Integration Results

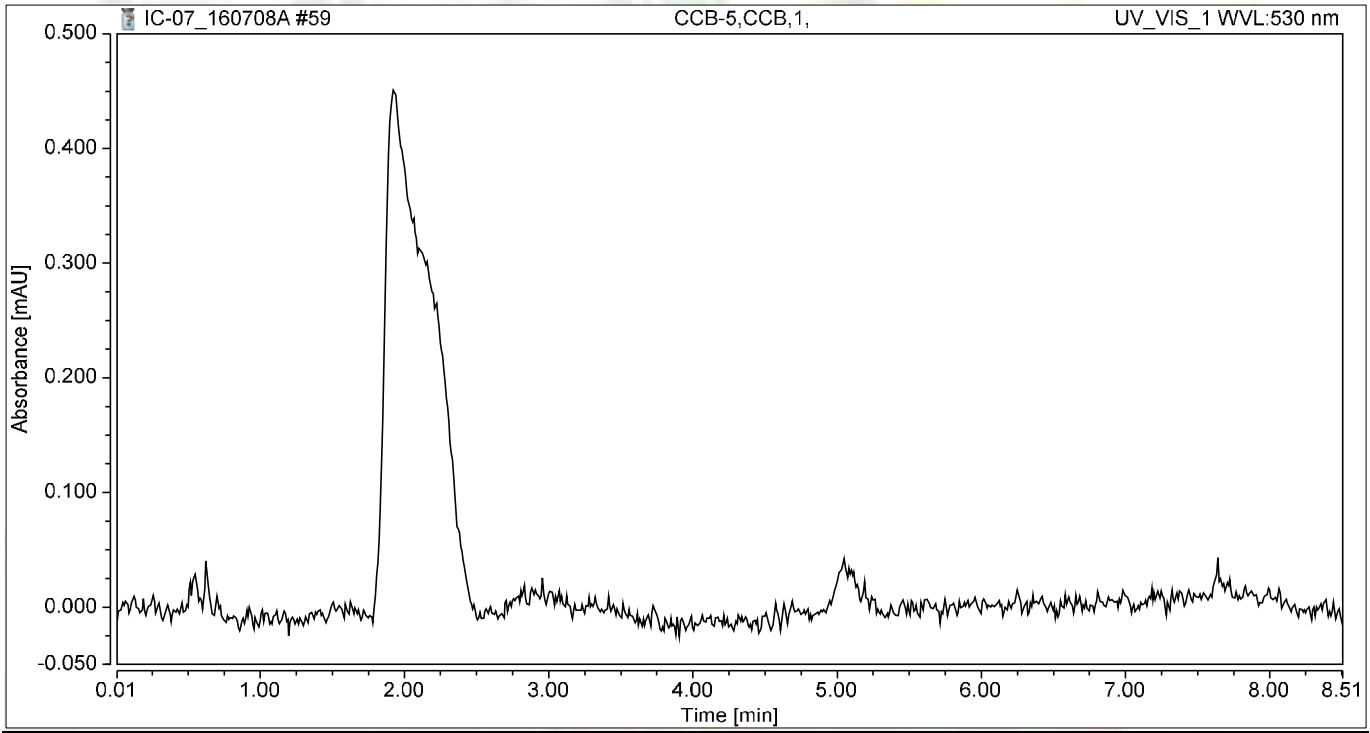
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	5.057	1.275	7.220	100.00	100.00	5.0286
Total:			**1.275**	**7.220**	**100.00**	**100.00**	

Chromatogram and Results

Injection Details

Injection Name:	**CCB-5,CCB,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:	**160707_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**08/Jul/16 18:20**	*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.
Total:			**0.000**	**0.000**	**0.00**	**0.00**	

RAW DATA

INJECTION LOG: 160711A

Instrument ID: IC-07

Sample No	Sample Name	Type	DF	Peak Name	Injection Date/Time	Comments
1	BLANK	BLANK	1	Hexavalent Chromium	07/07/16 10:12 AM	Not Reported
2	iBLANK	iBLANK	1	Hexavalent Chromium	07/07/16 10:23 AM	Not Reported
3	STD-0.2 ppb	ICAL	1	Hexavalent Chromium	07/07/16 10:32 AM	Reported
4	STD-1.0 ppb	ICAL	1	Hexavalent Chromium	07/07/16 10:42 AM	Reported
5	STD-5.0 ppb	ICAL	1	Hexavalent Chromium	07/07/16 10:51 AM	Reported
6	STD-10.0 ppb	ICAL	1	Hexavalent Chromium	07/07/16 11:00 AM	Reported
7	STD-15.0 ppb	ICAL	1	Hexavalent Chromium	07/07/16 11:10 AM	Reported
8	STD-20.0 ppb	ICAL	1	Hexavalent Chromium	07/07/16 11:19 AM	Reported
9	BLANK	BLANK	1	Hexavalent Chromium	07/11/16 8:43 AM	Not Reported
10	BLANK	BLANK	1	Hexavalent Chromium	07/11/16 8:54 AM	Not Reported
11	CCV-1	CCV	1	Hexavalent Chromium	07/11/16 9:03 AM	Reported
12	PQL@0.2ppb	CCV2	1	Hexavalent Chromium	07/11/16 9:13 AM	Reported
13	CCB-1	CCB	1	Hexavalent Chromium	07/11/16 9:22 AM	Reported
14	MB-109341	MBLK	1	Hexavalent Chromium	07/11/16 9:32 AM	Reported
15	LCS-109341	LCS	1	Hexavalent Chromium	07/11/16 9:41 AM	Reported
16	N020253-001A	SAMP	1	Hexavalent Chromium	07/11/16 10:12 AM	Reported
17	N020253-002A	SAMP	1	Hexavalent Chromium	07/11/16 10:22 AM	Reported
18	N020253-003A	SAMP	1	Hexavalent Chromium	07/11/16 10:32 AM	Reported
19	N020253-004A	SAMP	1	Hexavalent Chromium	07/11/16 10:41 AM	Reported
20	N020253-005A	SAMP	1	Hexavalent Chromium	07/11/16 10:51 AM	Reported
21	N020253-006A	SAMP	1	Hexavalent Chromium	07/11/16 11:00 AM	Reported
22	N020253-007A	SAMP	1	Hexavalent Chromium	07/11/16 11:10 AM	Reported
23	N020253-008A	SAMP	1	Hexavalent Chromium	07/11/16 11:19 AM	Reported
24	CCV-2	CCV1	1	Hexavalent Chromium	07/11/16 11:29 AM	Reported
25	CCB-2	CCB	1	Hexavalent Chromium	07/11/16 11:38 AM	Reported
26	N020253-009A	SAMP	1	Hexavalent Chromium	07/11/16 11:48 AM	Reported
27	N020253-010A	SAMP	1	Hexavalent Chromium	07/11/16 11:57 AM	Reported
28	N020253-011A	SAMP	1	Hexavalent Chromium	07/11/16 12:07 PM	Reported
29	N020253-012A	SAMP	1	Hexavalent Chromium	07/11/16 12:16 PM	Reported
30	N020253-013A	SAMP	1	Hexavalent Chromium	07/11/16 12:25 PM	Reported
31	N020253-014A	SAMP	1	Hexavalent Chromium	07/11/16 12:35 PM	Reported
32	N020253-014ADUP	DUP	1	Hexavalent Chromium	07/11/16 12:44 PM	Reported
33	N020245-003A	SAMP	1	Hexavalent Chromium	07/11/16 12:54 PM	Reported
34	N020245-003AMS	MS	1	Hexavalent Chromium	07/11/16 1:03 PM	Reported
35	N020245-003AMSD	MSD	1	Hexavalent Chromium	07/11/16 1:13 PM	Reported
36	CCV-3	CCV	1	Hexavalent Chromium	07/11/16 1:22 PM	Reported
37	CCB-3	CCB	1	Hexavalent Chromium	07/11/16 1:32 PM	Reported
38	N020245-004A	SAMP	1	Hexavalent Chromium	07/11/16 1:41 PM	Reported
39	N020245-004AMS	MS	1	Hexavalent Chromium	07/11/16 1:51 PM	Reported
40	N020232-004A	SAMP	1	Hexavalent Chromium	07/11/16 2:00 PM	Not Reported
41	N020232-004AMS	MS	1	Hexavalent Chromium	07/11/16 2:10 PM	Not Reported
42	N020232-005A	SAMP	1	Hexavalent Chromium	07/11/16 2:19 PM	Not Reported

7/23/2016

7/21/2016

IC-07 QBM 7/11/2016 10:29 PM

INJECTION LOG: 160711A

Instrument ID: IC-07

Sample No	Sample Name	Type	DF	Peak Name	Injection Date/Time	Comments
43	N020232-005AMS	MS	1	Hexavalent Chromium	07/11/16 2:29 PM	Not Reported
44	N020232-006A	SAMP	1	Hexavalent Chromium	07/11/16 2:38 PM	Not Reported
45	N020232-006AMS	MS	1	Hexavalent Chromium	07/11/16 2:47 PM	Not Reported
46	N020223-003B	SAMP	25	Hexavalent Chromium	07/11/16 2:57 PM	Not Reported
47	N020223-003BMS	MS	25	Hexavalent Chromium	07/11/16 3:06 PM	Not Reported
48	CCV-4	CCV1	1	Hexavalent Chromium	07/11/16 3:16 PM	Reported
49	CCB-4	CCB	1	Hexavalent Chromium	07/11/16 3:25 PM	Reported

7/21/2016

Injection Log Summary

Sequence Details

Name:	**IC-07_160711A**	*Created On:*	**24/Jul/12 17:17:21**
Directory:	**Instrument Data\IC-7\2016**	*Created By:*	**ics 5000**
Data Vault:	**ChromeleonLocal**	*Updated On:*	**11/Jul/16 15:59:48**
No. of Injections:	**52**	*Updated By:*	**ics 5000**

Injection Details

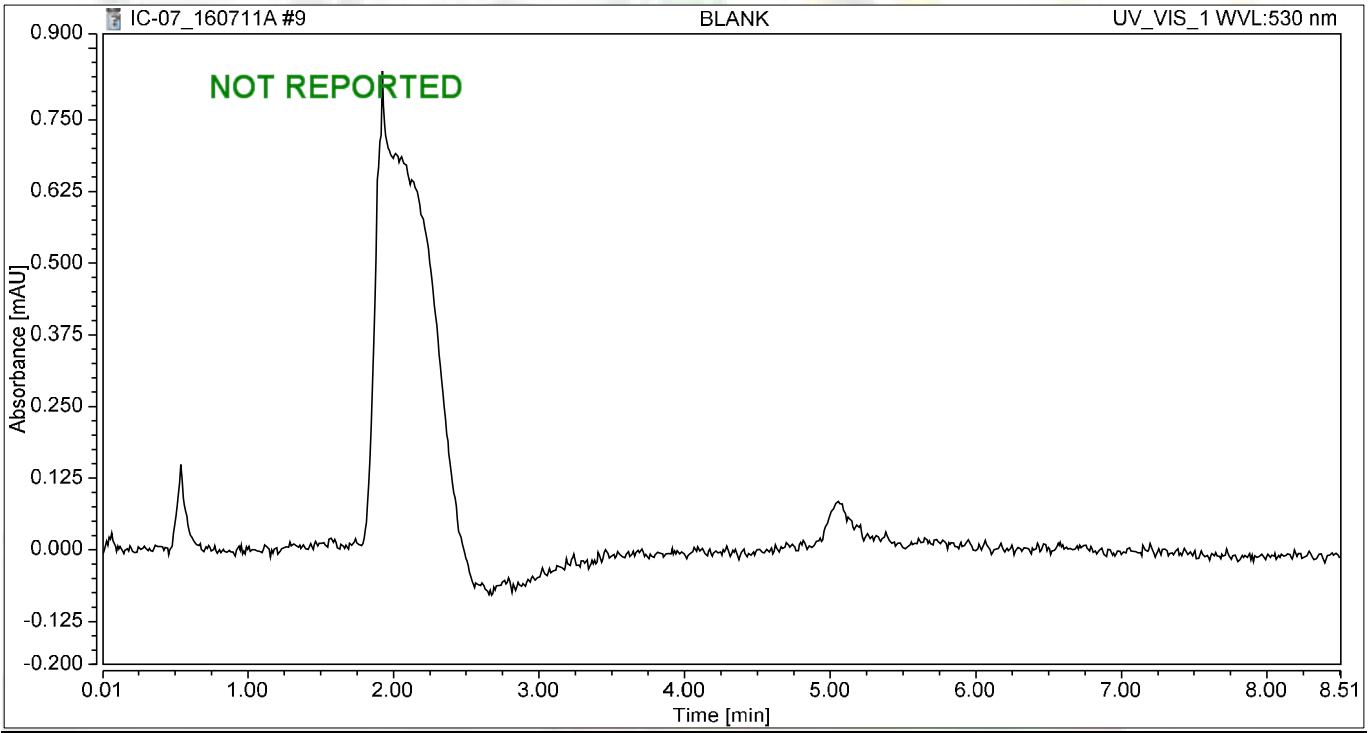
No.	Injection Name	Position	Volume µL	Type	Level	Inject Time	Status	Comment
1	BLANK	3	1000	Unknown		07/07/2016 10:12	Finished	
2	iBLANK	4	1000	Unknown		07/07/2016 10:23	Finished	INSTRUMENT BLANK
3	STD1-0.2 ppb	5	1000	Calibration Standard	01	07/07/2016 10:32	Finished	0.2 ppb, IWST160401A
4	STD2-1.0 ppb	6	1000	Calibration Standard	02	07/07/2016 10:42	Finished	1.0 ppb, IWST160401A
5	STD3-5.0 ppb	7	1000	Calibration Standard	03	07/07/2016 10:51	Finished	5.0 ppb, IWST160401A
6	STD4-10.0 ppb	8	1000	Calibration Standard	04	07/07/2016 11:00	Finished	10 ppb, IWST160401A
7	STD5-15.0 ppb	9	1000	Calibration Standard	05	07/07/2016 11:10	Finished	15 ppb, IWST160401A
8	STD6-20.0 ppb	10	1000	Calibration Standard	06	07/07/2016 11:19	Finished	20 ppb, IWST160401A
9	BLANK	1	1000	Unknown		07/11/2016 08:43	Finished	
10	BLANK	2	1000	Unknown		07/11/2016 08:54	Finished	
11	CCV-1,CCV,1,	3	1000	Unknown		07/11/2016 09:03	Finished	CCV @5ppb, IWST-160401A
12	PQL@0.2ppb,CCV2,1	4	1000	Unknown		07/11/2016 09:13	Finished	PQL @ 0.2ppb
13	CCB-1,CCB,1,	5	1000	Unknown		07/11/2016 09:22	Finished	CCB R160622B
14	MB-H2O,MBLK,1	6	1000	Unknown		07/11/2016 09:32	Finished	MB R160622B
15	LCS-H2O,LCS,1	7	1000	Unknown		07/11/2016 09:41	Finished	LCS, IWST-160401B
16	N020253-001A,SAMP	8	1000	Unknown		07/11/2016 10:12	Finished	SAMP, 10 mL
17	N020253-002A,SAMP	9	1000	Unknown		07/11/2016 10:22	Finished	SAMP, 10 mL
18	N020253-003A,SAMP	10	1000	Unknown		07/11/2016 10:32	Finished	SAMP, 10 mL
19	N020253-004A,SAMP	11	1000	Unknown		07/11/2016 10:41	Finished	SAMP, 10 mL
20	N020253-005A,SAMP	12	1000	Unknown		07/11/2016 10:51	Finished	SAMP, 10 mL
21	N020253-006A,SAMP	13	1000	Unknown		07/11/2016 11:00	Finished	SAMP, 10 mL
22	N020253-007A,SAMP	14	1000	Unknown		07/11/2016 11:10	Finished	SAMP, 10 mL
23	N020253-008A,SAMP	15	1000	Unknown		07/11/2016 11:19	Finished	SAMP, 10 mL
24	CCV-2,CCV1,1,	16	1000	Unknown		07/11/2016 11:29	Finished	CCV @10ppb, IWST-160401A
25	CCB-2,CCB,1,	17	1000	Unknown		07/11/2016 11:38	Finished	CCB, R160622B
26	N020253-009A,SAMP	18	1000	Unknown		07/11/2016 11:48	Finished	SAMP, 10 mL
27	N020253-010A,SAMP	19	1000	Unknown		07/11/2016 11:57	Finished	SAMP, 10 mL
28	N020253-011A,SAMP	20	1000	Unknown		07/11/2016 12:07	Finished	SAMP, 10 mL
29	N020253-012A,SAMP	21	1000	Unknown		07/11/2016 12:16	Finished	SAMP, 10 mL
30	N020253-013A,SAMP	22	1000	Unknown		07/11/2016 12:25	Finished	SAMP, 10 mL
31	N020253-014A,SAMP	23	1000	Unknown		07/11/2016 12:35	Finished	SAMP, 10 mL
32	N020253-014ADUP,D	24	1000	Unknown		07/11/2016 12:44	Finished	DUP, 10 mL
33	N020245-003A,SAMP	25	1000	Unknown		07/11/2016 12:54	Finished	SAMP, 10 mL
34	N020245-003AMS,MS	26	1000	Unknown		07/11/2016 13:03	Finished	MS (1ppb), IWST-160401B, 10
35	N020245-003AMSD,M	27	1000	Unknown		07/11/2016 13:13	Finished	MSD (1ppb), IWST-160401B, 1
36	CCV-3,CCV,1,	28	1000	Unknown		07/11/2016 13:22	Finished	CCV @5ppb, IWST-160401A
37	CCB-3,CCB,1,	29	1000	Unknown		07/11/2016 13:32	Finished	CCB R160629C
38	N020245-004A,SAMP	30	1000	Unknown		07/11/2016 13:41	Finished	SAMP, 10 mL
39	N020245-004AMS,MS	31	1000	Unknown		07/11/2016 13:51	Finished	MS (1ppb), IWST-160401B, 10
40	N020232-004A,SAMP	32	1000	Unknown		07/11/2016 14:00	Finished	SAMP, 10 mL
41	N020232-004AMS,MS	33	1000	Unknown		07/11/2016 14:10	Finished	MS (1ppb), IWST-160401B, 10
42	N020232-005A,SAMP	34	1000	Unknown		07/11/2016 14:19	Finished	SAMP, 10 mL
43	N020232-005AMS,MS	35	1000	Unknown		07/11/2016 14:29	Finished	MS (1ppb), IWST-160401B, 10
44	N020232-006A,SAMP	36	1000	Unknown		07/11/2016 14:38	Finished	SAMP, 10 mL
45	N020232-006AMS,MS	37	1000	Unknown		07/11/2016 14:47	Finished	MS (1ppb), IWST-160401B, 10
46	N020223-003B,SAMP	38	1000	Unknown		07/11/2016 14:57	Finished	SAMP, 0.4>10 mL
47	N020223-003BMS,MS	39	1000	Unknown		07/11/2016 15:06	Finished	MS (1ppb), IWST-160401B, 0.4
48	CCV-4,CCV1,1,	40	1000	Unknown		07/11/2016 15:16	Finished	CCV @10ppb, IWST-160401A
49	CCB-4,CCB,1,	41	1000	Unknown		07/11/2016 15:25	Finished	CCB, R160629C
50	SHUTDOWN	42	1000	Unknown		07/11/2016 15:35	Finished	
51	Eluent: R160708A	43	1000	Unknown		n.a.	Finished	Eluent
52	PCR: R160708B	44	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:	**160707_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**11/Jul/16 08:43**	*Sample Weight:*	**1.0000**

Chromatogram



Integration Results

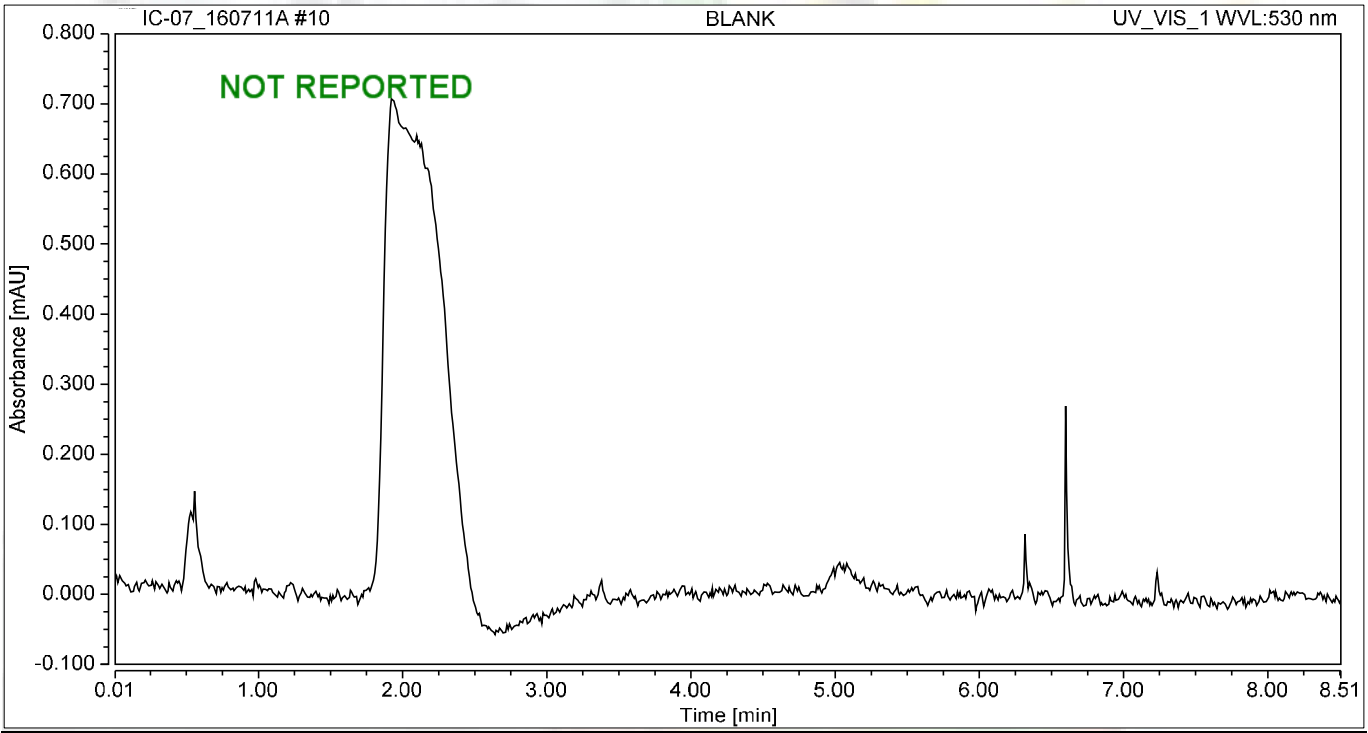
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
n.a.	Hexavalent Chromium	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Total:			**0.000**	**0.000**	**0.00**	**0.00**	

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:	**160707_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**11/Jul/16 08:54**	*Sample Weight:*	**1.0000**

Chromatogram



Integration Results

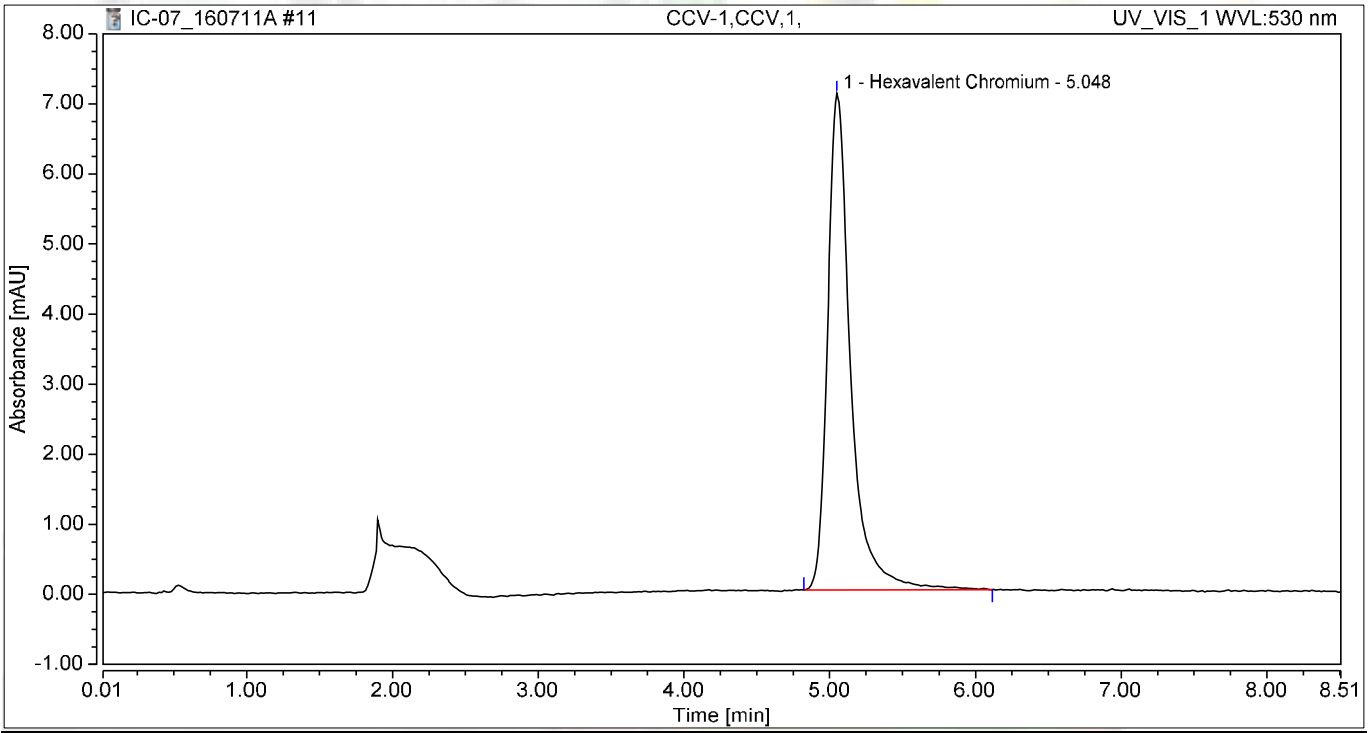
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
n.a.	Hexavalent Chromium	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Total:			**0.000**	**0.000**	**0.00**	**0.00**	

Chromatogram and Results

Injection Details

Injection Name:	**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:	**160707_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**11/Jul/16 09:03**	*Sample Weight:*	**1.0000**

Chromatogram



Integration Results

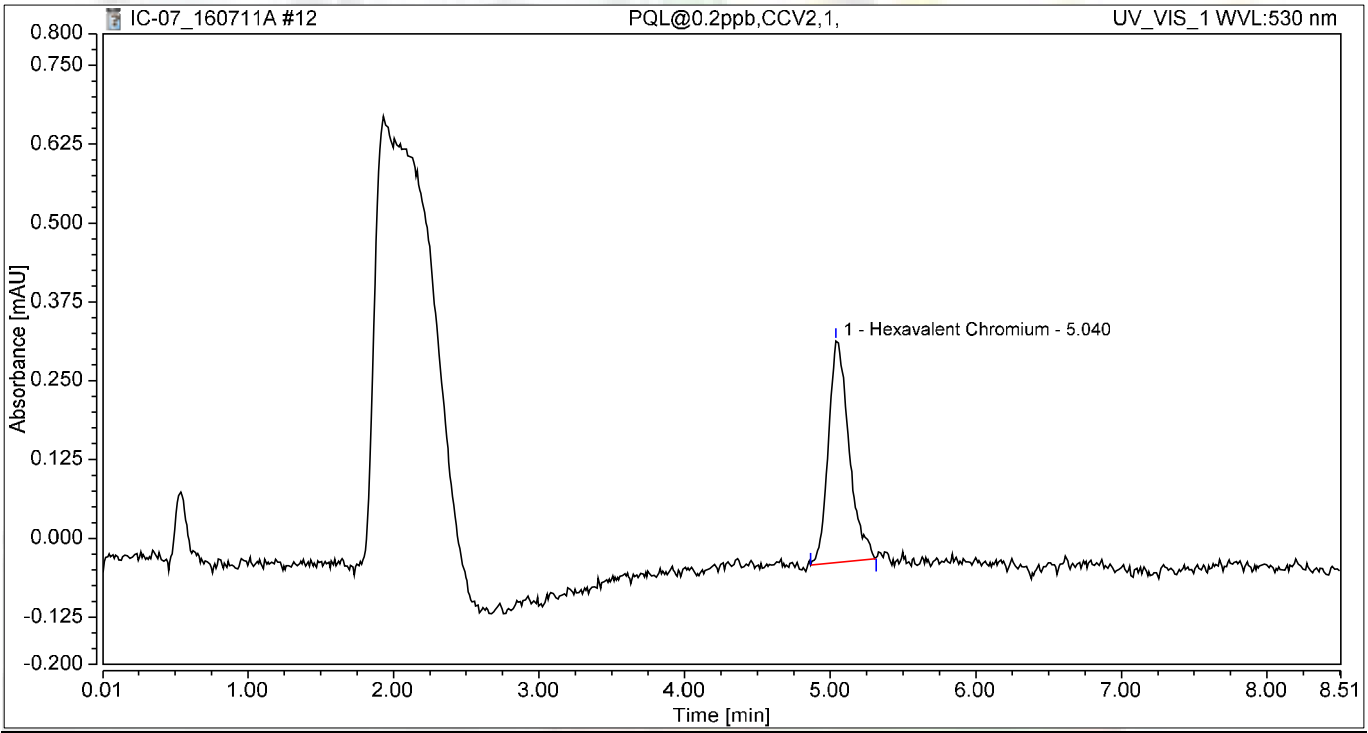
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	5.048	1.296	7.084	100.00	100.00	5.1084
Total:			**1.296**	**7.084**	**100.00**	**100.00**	

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:	**160707_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**11/Jul/16 09:13**	*Sample Weight:*	**1.0000**

Chromatogram



Integration Results

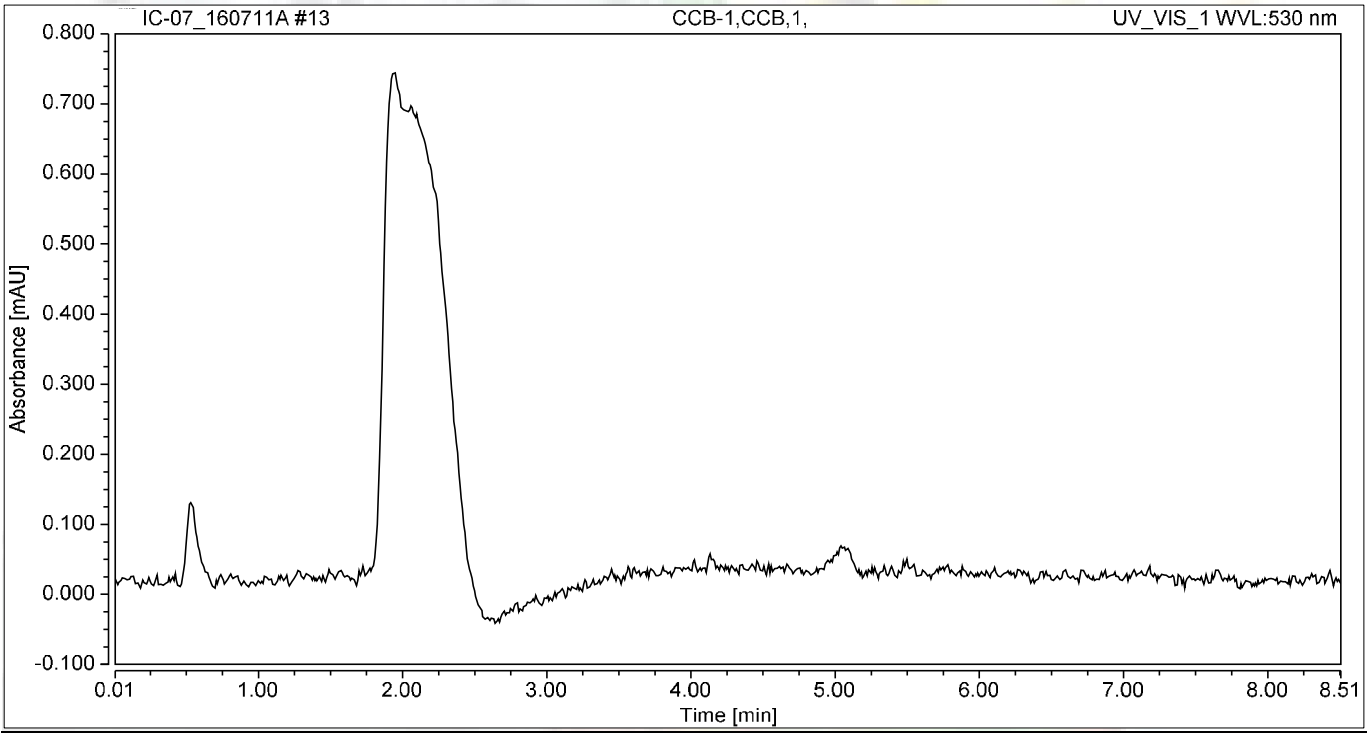
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	5.040	0.058	0.352	100.00	100.00	0.2290
Total:			**0.058**	**0.352**	**100.00**	**100.00**	

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:	**160707_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**11/Jul/16 09:22**	*Sample Weight:*	**1.0000**

Chromatogram



Integration Results

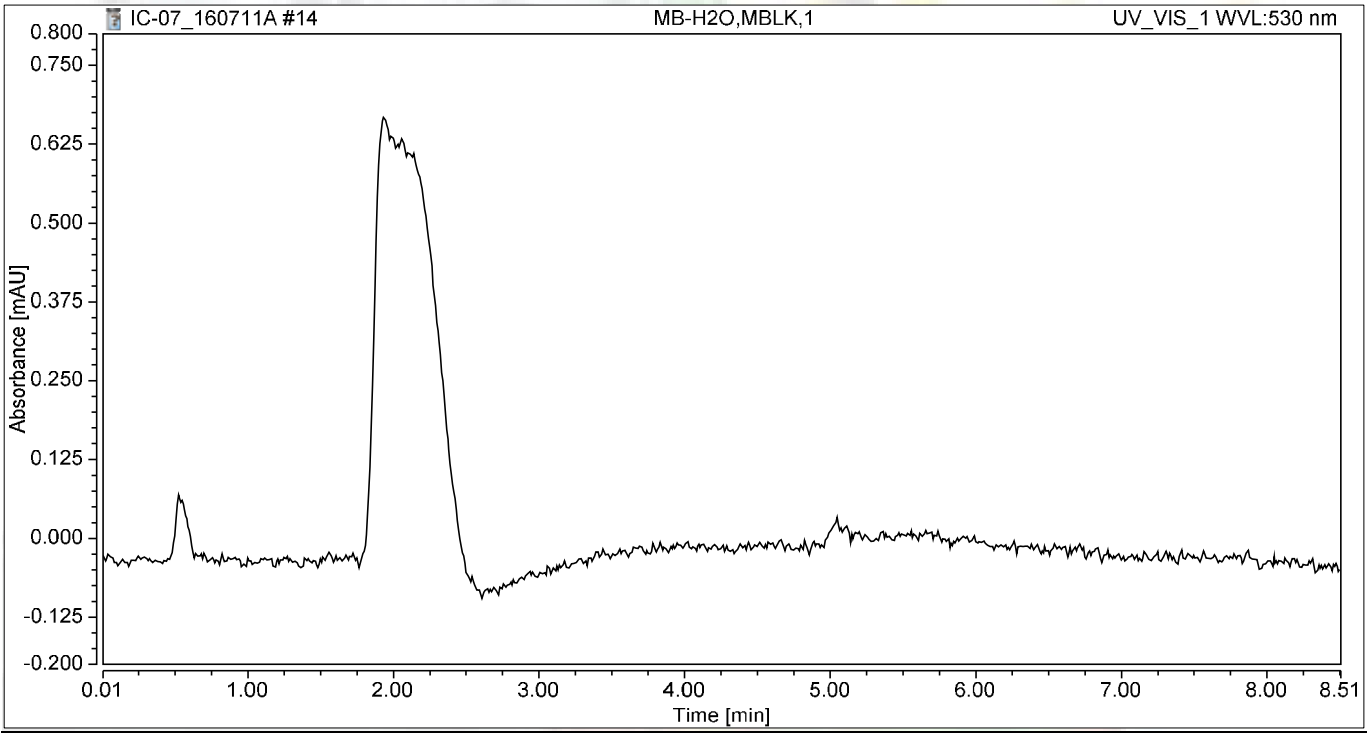
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
n.a.	Hexavalent Chromium	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Total:			**0.000**	**0.000**	**0.00**	**0.00**	

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:	**160707_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**11/Jul/16 09:32**	*Sample Weight:*	**1.0000**

Chromatogram



Integration Results

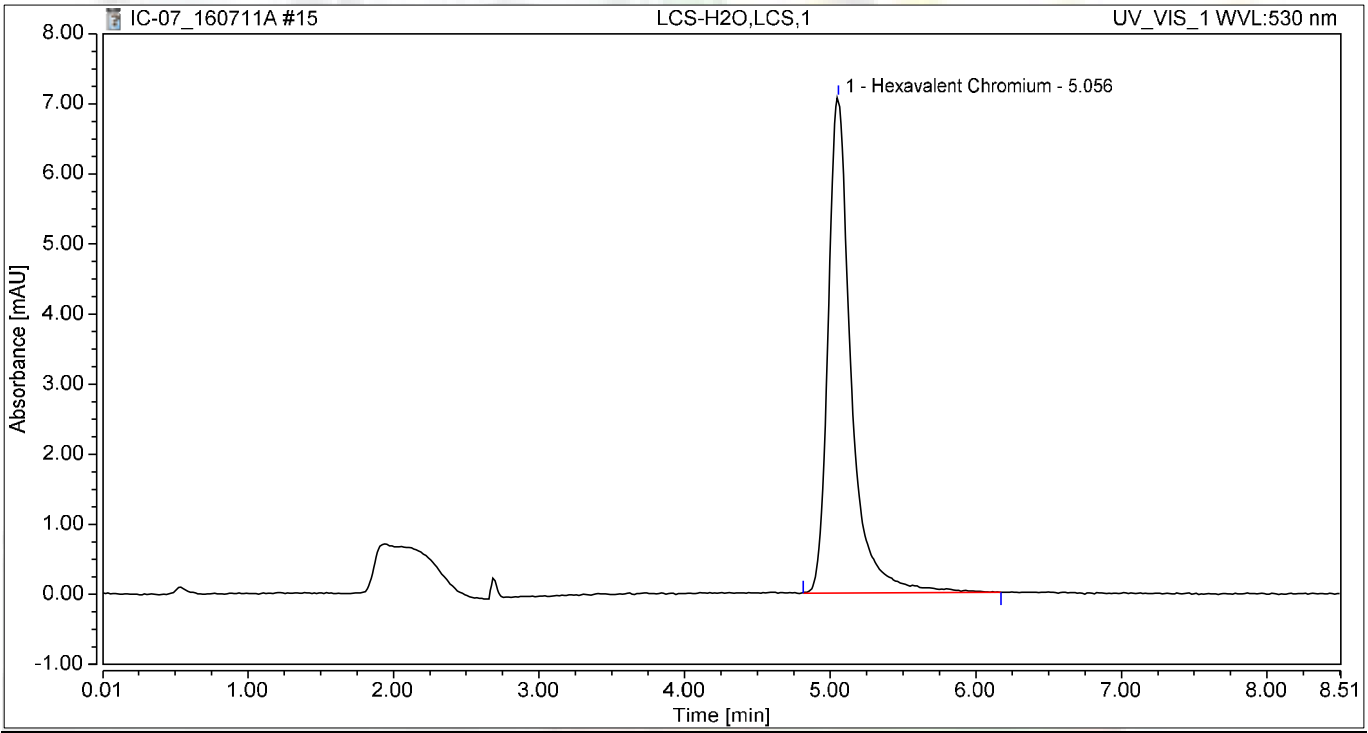
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
n.a.	Hexavalent Chromium	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Total:			**0.000**	**0.000**	**0.00**	**0.00**	

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:	**160707_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**11/Jul/16 09:41**	*Sample Weight:*	**1.0000**

Chromatogram



Integration Results

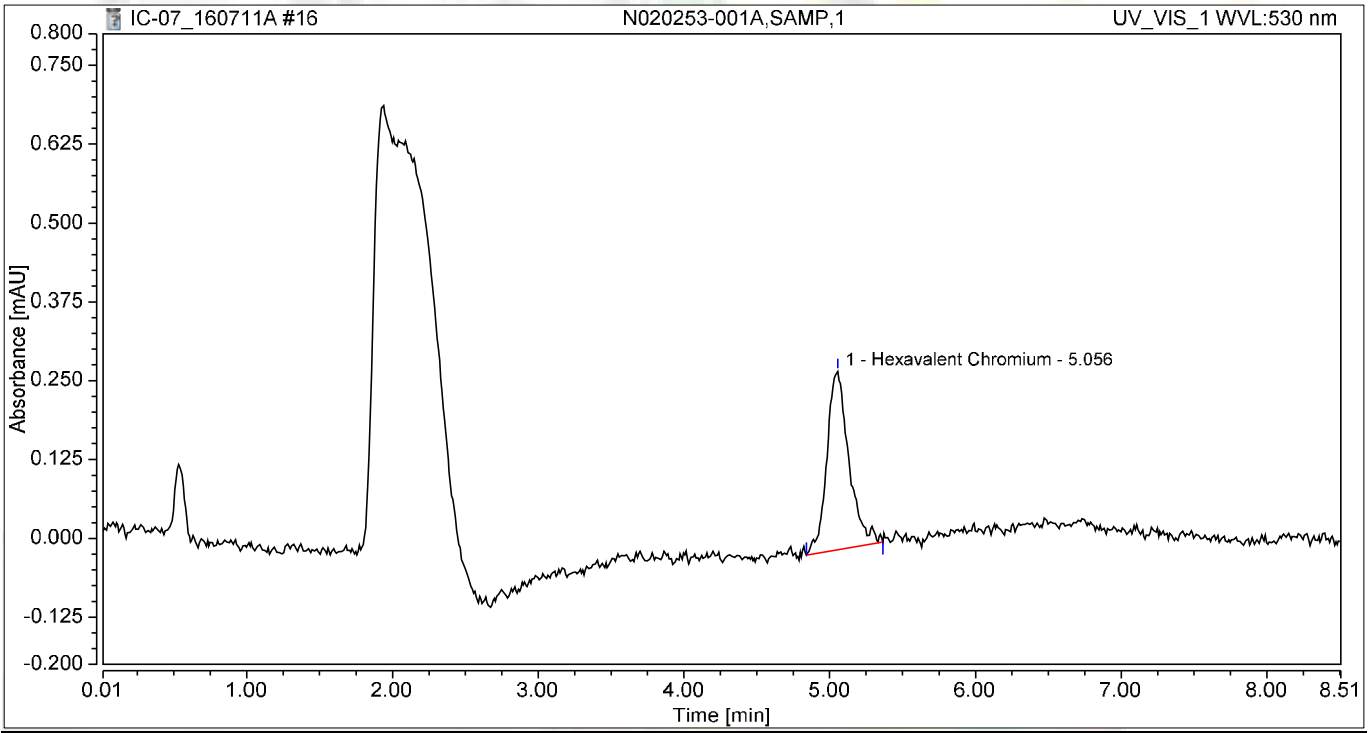
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	5.056	1.303	7.068	100.00	100.00	5.1380
Total:			**1.303**	**7.068**	**100.00**	**100.00**	

Chromatogram and Results

Injection Details

Injection Name:	**N020253-001A,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:	**160707_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**11/Jul/16 10:12**	*Sample Weight:*	**1.0000**

Chromatogram



Integration Results

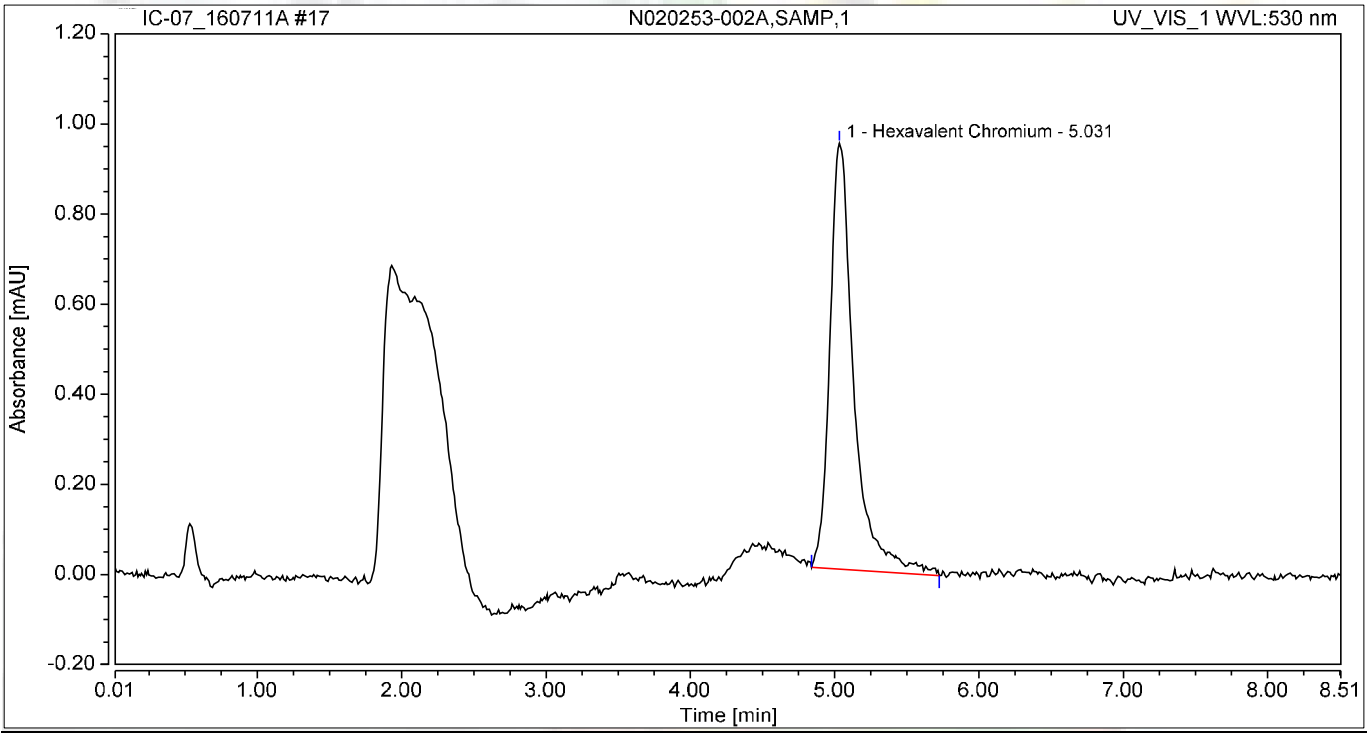
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	5.056	0.050	0.283	100.00	100.00	0.1953
Total:			**0.050**	**0.283**	**100.00**	**100.00**	

Chromatogram and Results

Injection Details

Injection Name:	**N020253-002A,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:	**160707_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**11/Jul/16 10:22**	*Sample Weight:*	**1.0000**

Chromatogram



Integration Results

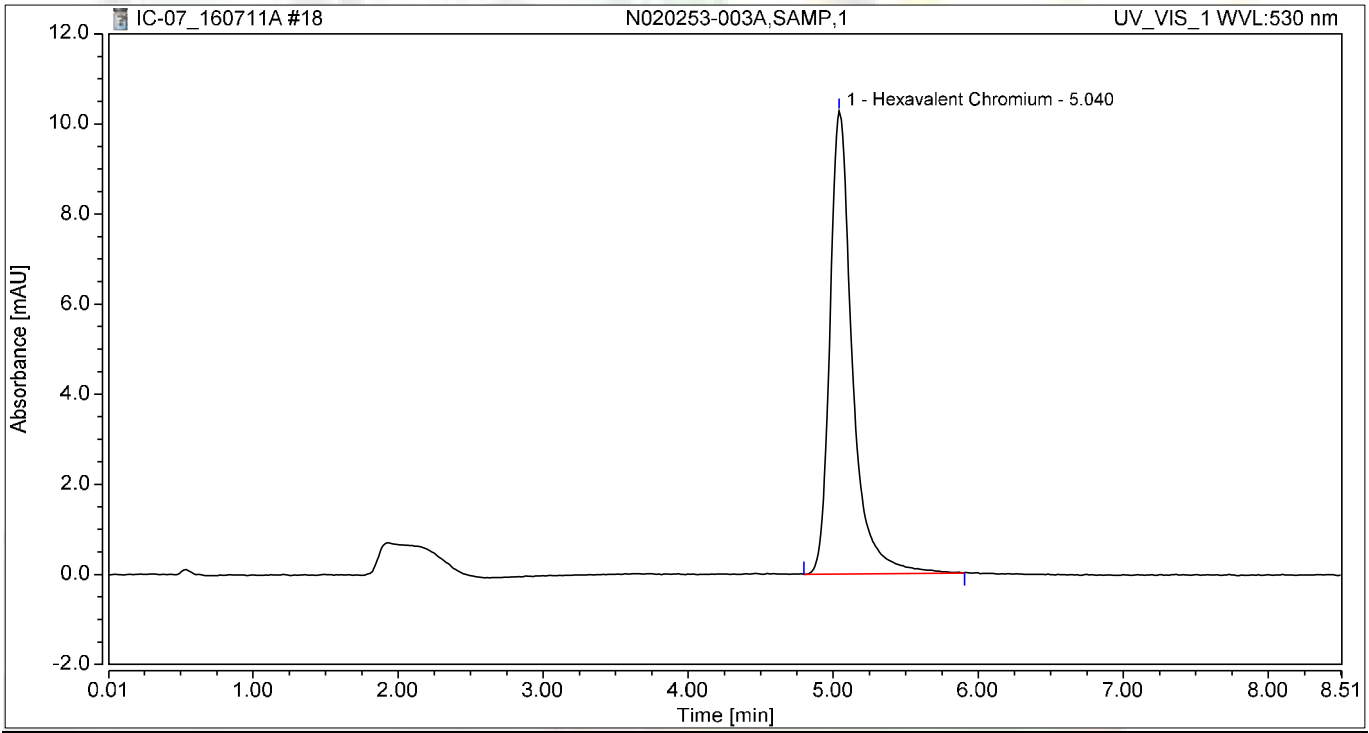
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	5.031	0.182	0.945	100.00	100.00	0.7168
Total:			**0.182**	**0.945**	**100.00**	**100.00**	

Chromatogram and Results

Injection Details

Injection Name:	**N020253-003A,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:	**160707_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**11/Jul/16 10:32**	*Sample Weight:*	**1.0000**

Chromatogram



Integration Results

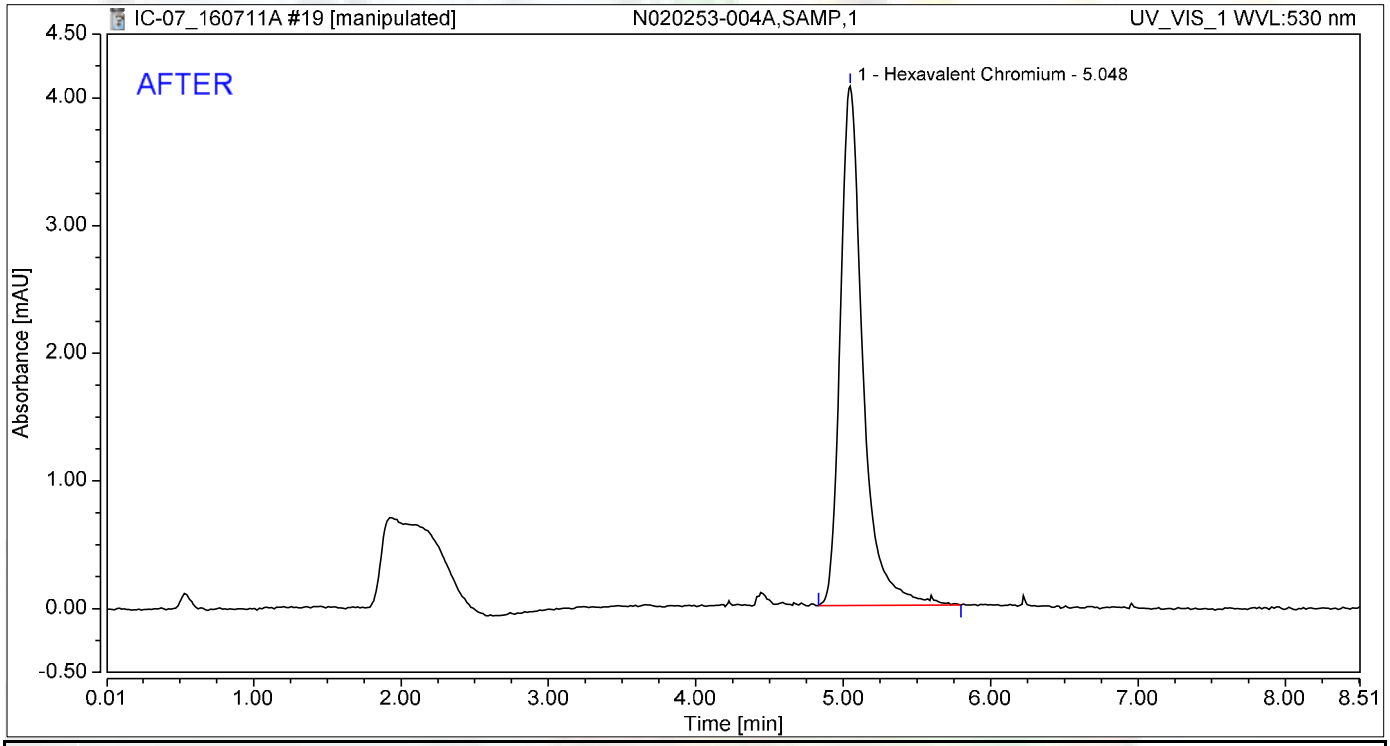
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	5.040	1.844	10.277	100.00	100.00	7.2692
Total:			**1.844**	**10.277**	**100.00**	**100.00**	

Chromatogram and Results

Injection Details

Injection Name:	**N020253-004A,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:	**160707_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**11/Jul/16 10:41**	*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	5.048	0.723	4.065	100.00	100.00	2.8501
Total:			**0.723**	**4.065**	**100.00**	**100.00**	

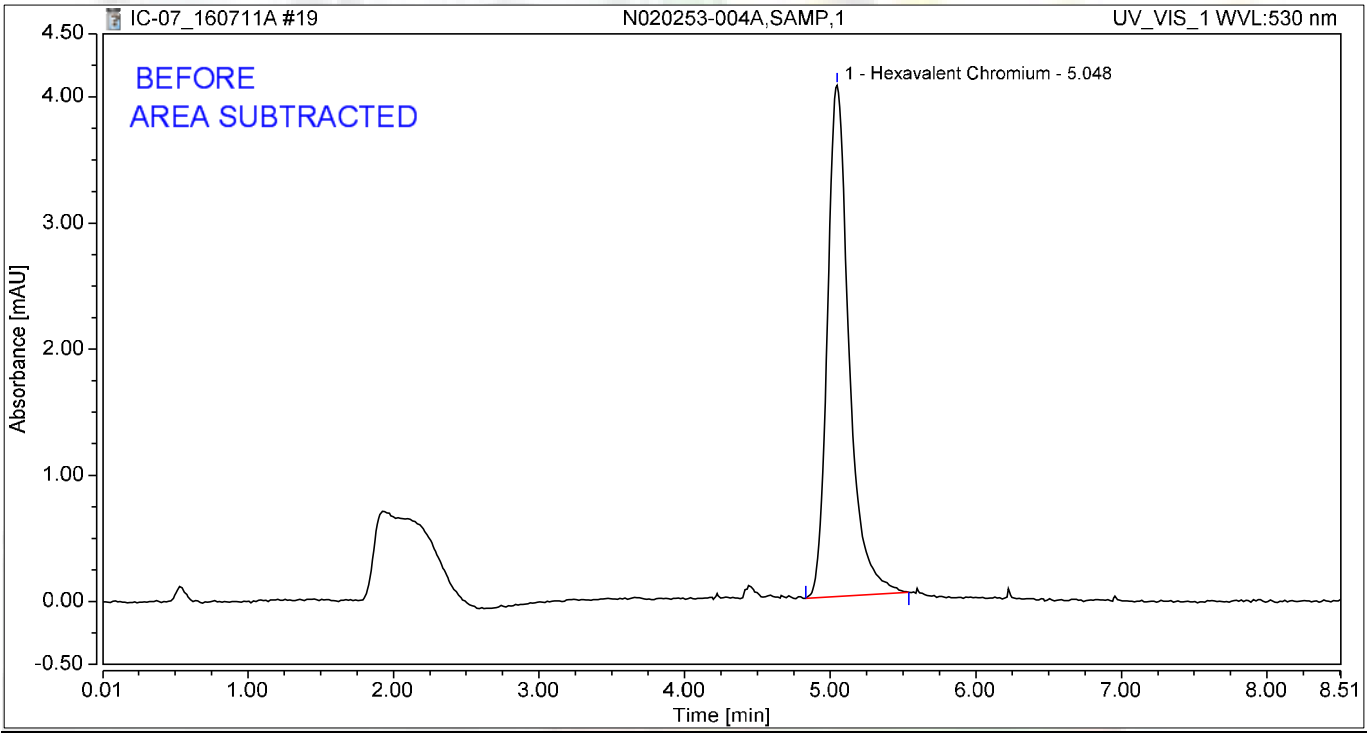
7/21/2016

Chromatogram and Results

Injection Details

Injection Name:	**N020253-004A,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:	**160707_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**11/Jul/16 10:41**	*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	5.048	0.700	4.052	100.00	100.00	2.7616
Total:			**0.700**	**4.052**	**100.00**	**100.00**	

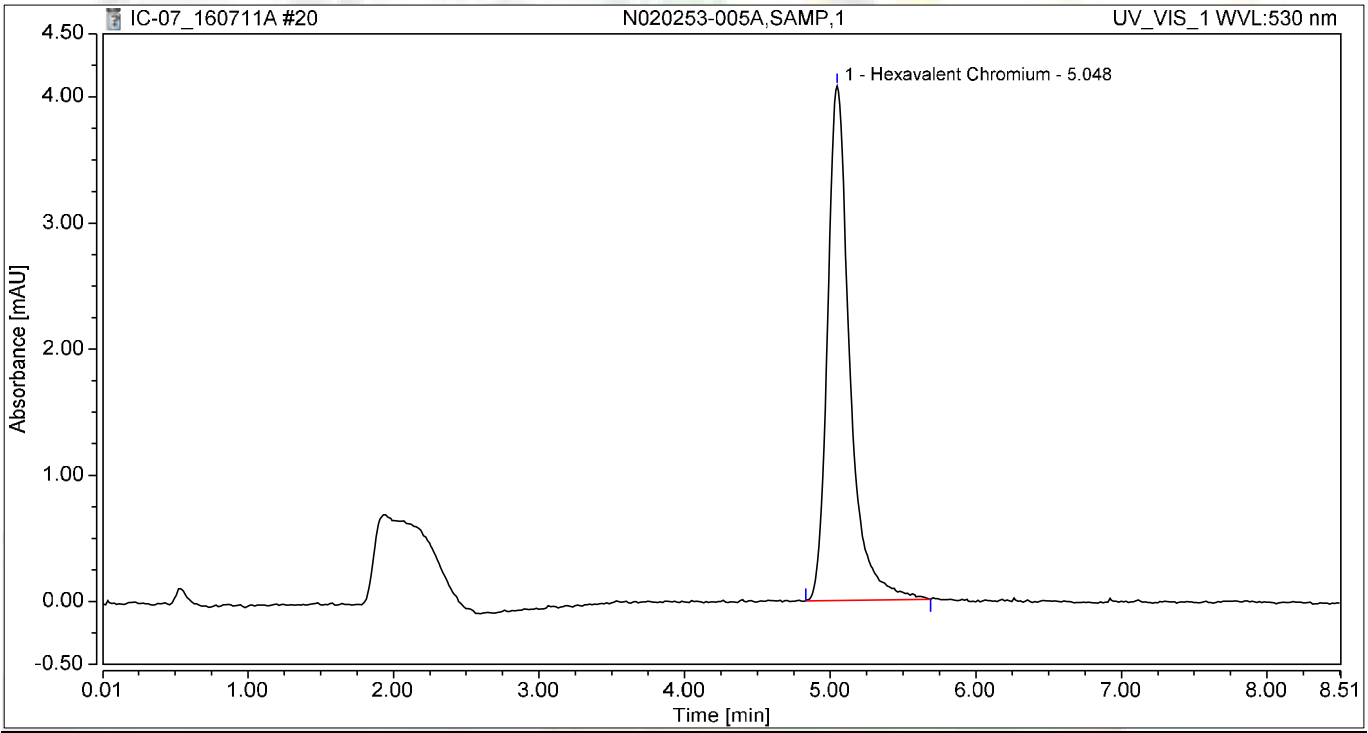
7/21/2016

Chromatogram and Results

Injection Details

Injection Name:	**N020253-005A,SAMP,1**	*Run Time (min):*	**8.50**
Vial Number:	**12**	*Injection Volume:*	**1000.00**
Injection Type:	**Unknown**	*Channel:*	**UV_VIS_1**
Calibration Level:		*Wavelength:*	**n.a.**
Instrument Method:	**Hex Chrom 4 mm**	*Bandwidth:*	**n.a.**
Processing Method:	**160707_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**11/Jul/16 10:51**	*Sample Weight:*	**1.0000**

Chromatogram



Integration Results

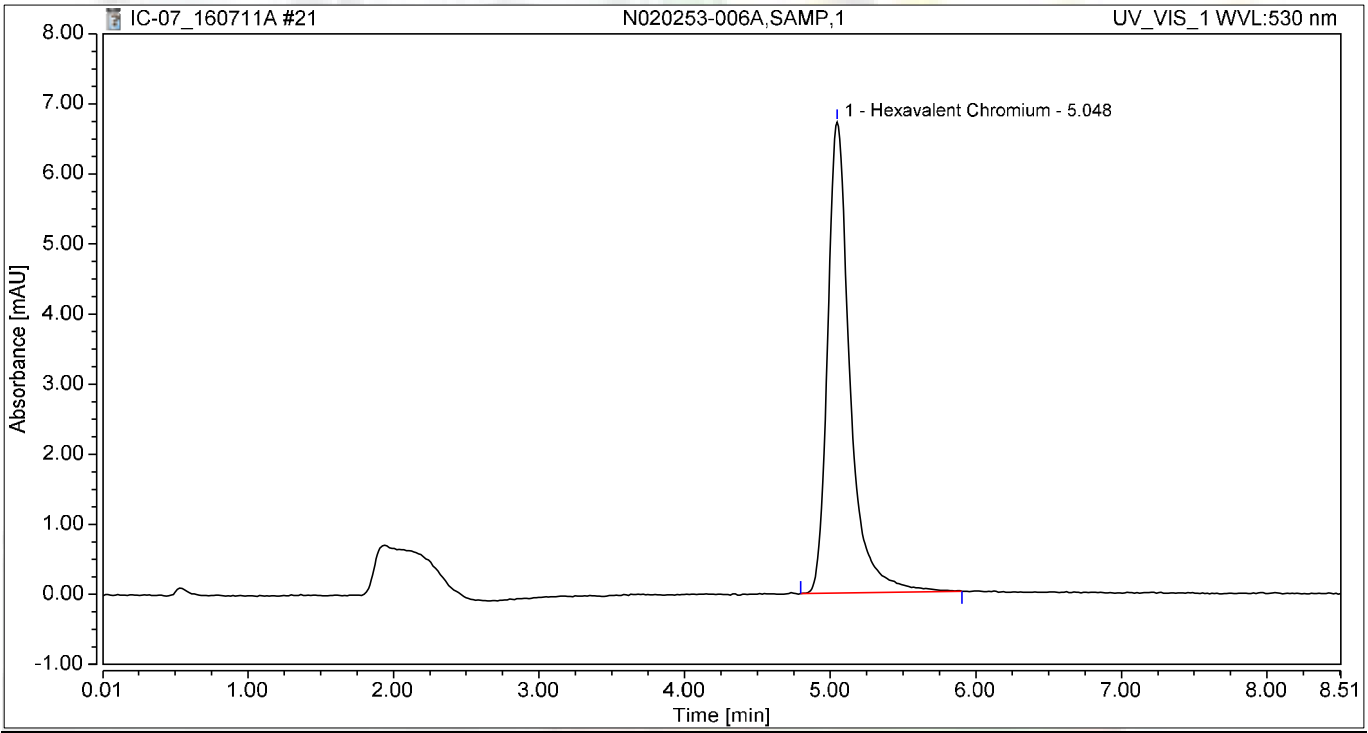
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	5.048	0.723	4.079	100.00	100.00	2.8503
Total:			**0.723**	**4.079**	**100.00**	**100.00**	

Chromatogram and Results

Injection Details

Injection Name:	**N020253-006A,SAMP,1**	*Run Time (min):*	**8.50**
Vial Number:	**13**	*Injection Volume:*	**1000.00**
Injection Type:	**Unknown**	*Channel:*	**UV_VIS_1**
Calibration Level:		*Wavelength:*	**n.a.**
Instrument Method:	**Hex Chrom 4 mm**	*Bandwidth:*	**n.a.**
Processing Method:	**160707_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**11/Jul/16 11:00**	*Sample Weight:*	**1.0000**

Chromatogram



Integration Results

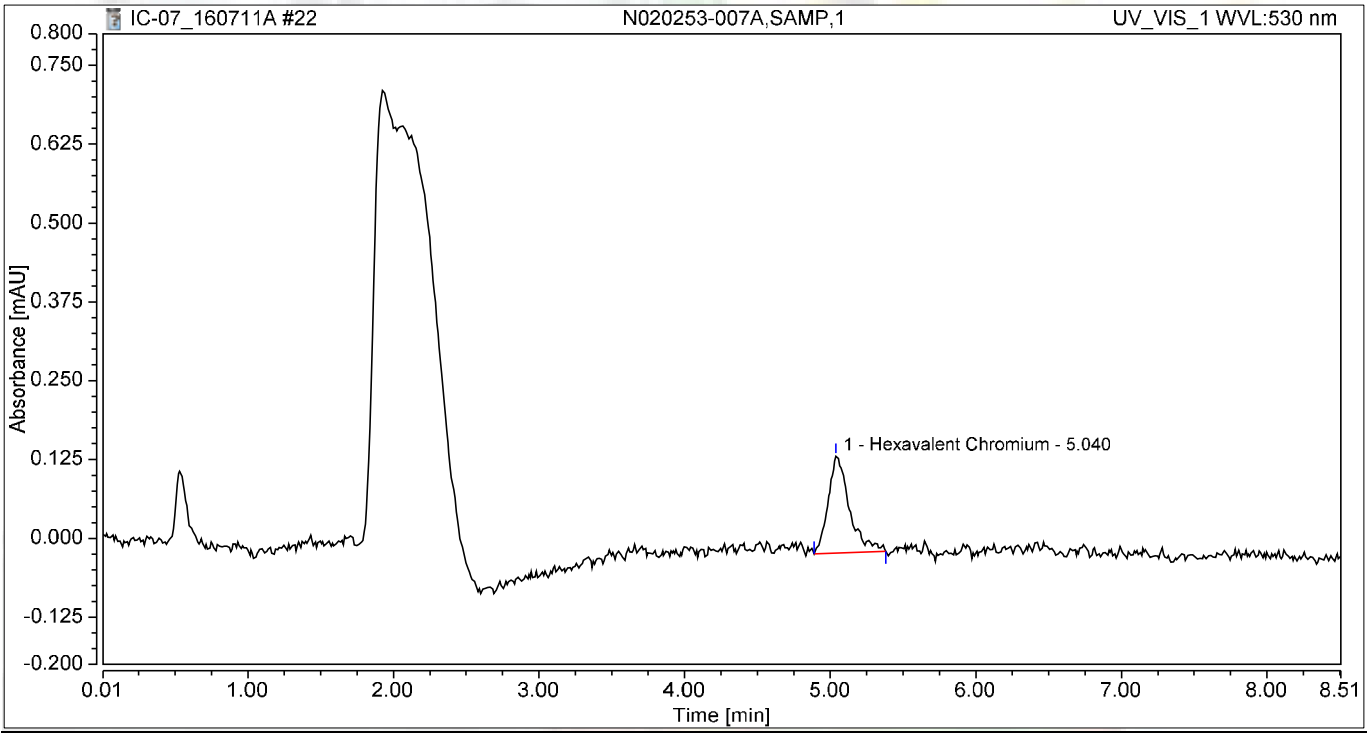
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	5.048	1.200	6.725	100.00	100.00	4.7309
Total:			**1.200**	**6.725**	**100.00**	**100.00**	

Chromatogram and Results

Injection Details

Injection Name:	**N020253-007A,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:	**160707_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**11/Jul/16 11:10**	*Sample Weight:*	**1.0000**

Chromatogram



Integration Results

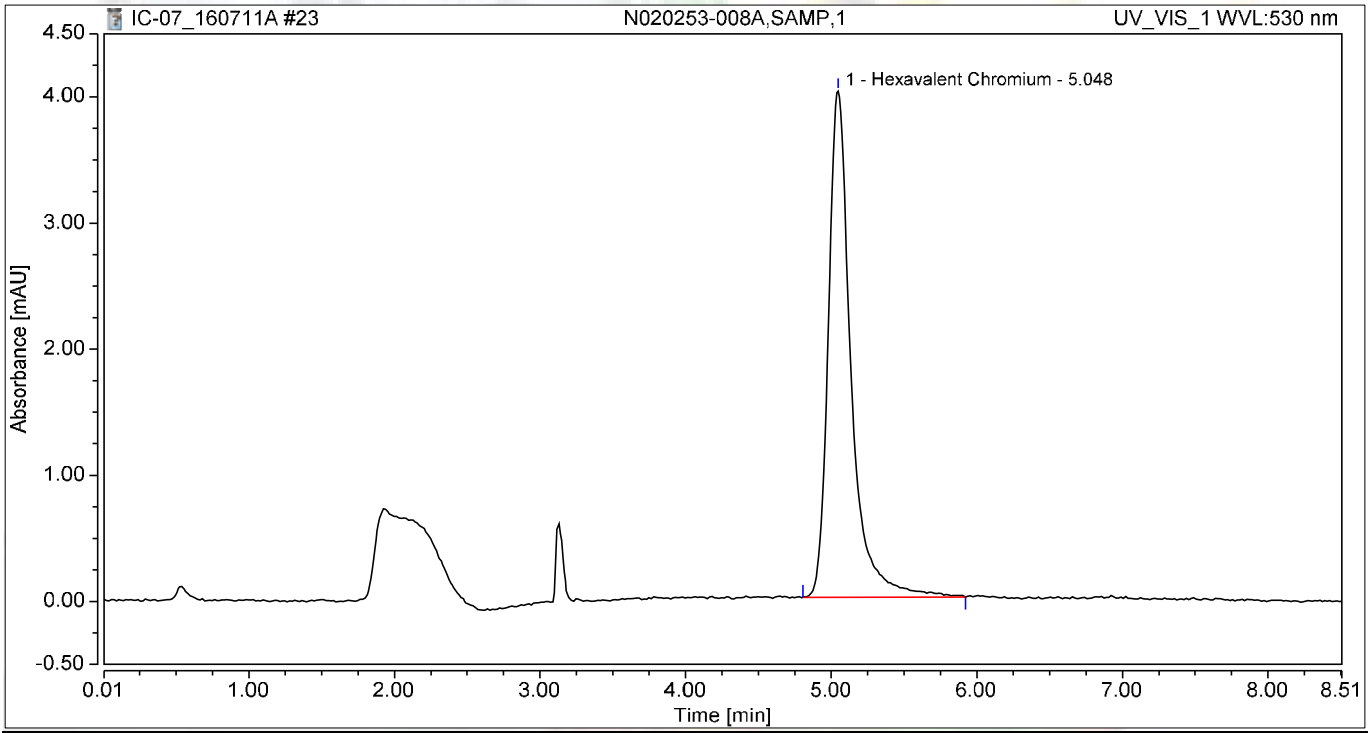
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	5.040	0.026	0.153	100.00	100.00	0.1024
Total:			**0.026**	**0.153**	**100.00**	**100.00**	

Chromatogram and Results

Injection Details

Injection Name:	**N020253-008A,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:	**160707_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**11/Jul/16 11:19**	*Sample Weight:*	**1.0000**

Chromatogram



Integration Results

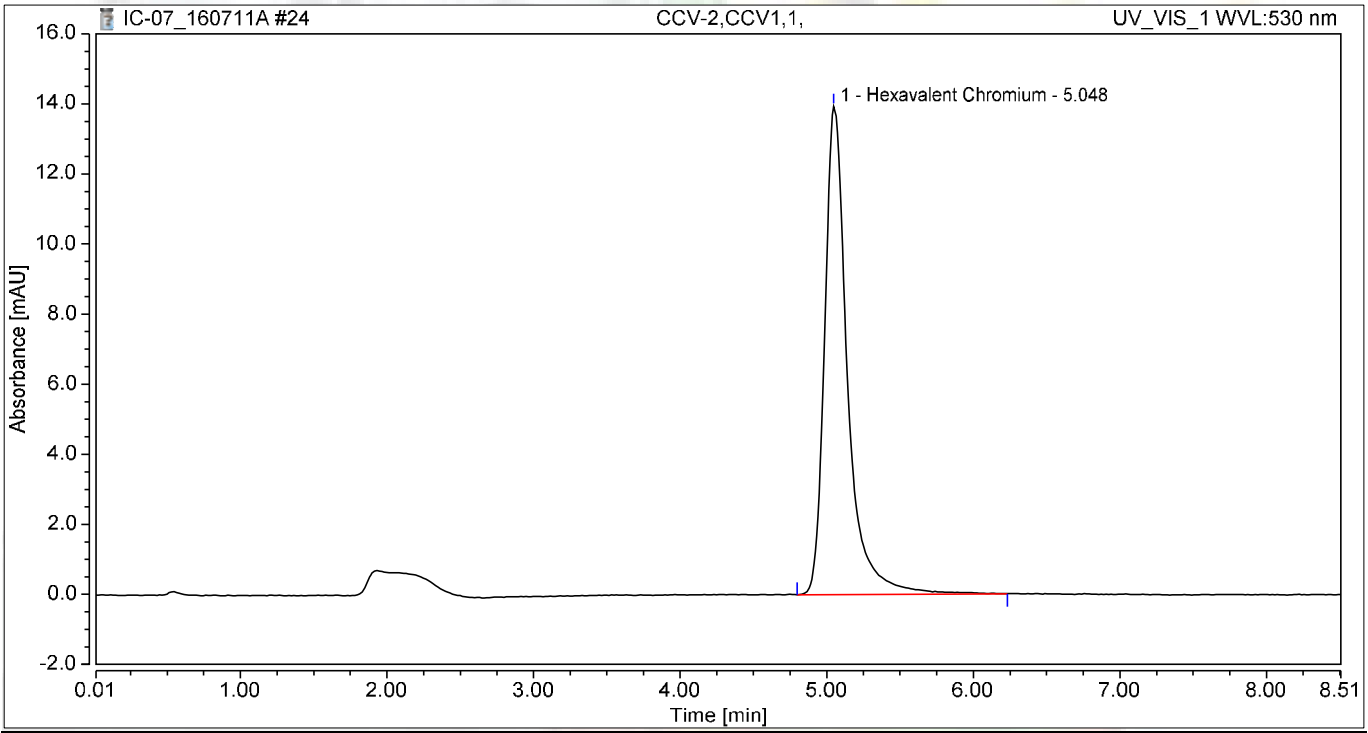
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	5.048	0.727	4.014	100.00	100.00	2.8681
Total:			**0.727**	**4.014**	**100.00**	**100.00**	

Chromatogram and Results

Injection Details

Injection Name:	**CCV-2,CCV1,1,**	*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:	**160707_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**11/Jul/16 11:29**	*Sample Weight:*	**1.0000**

Chromatogram



Integration Results

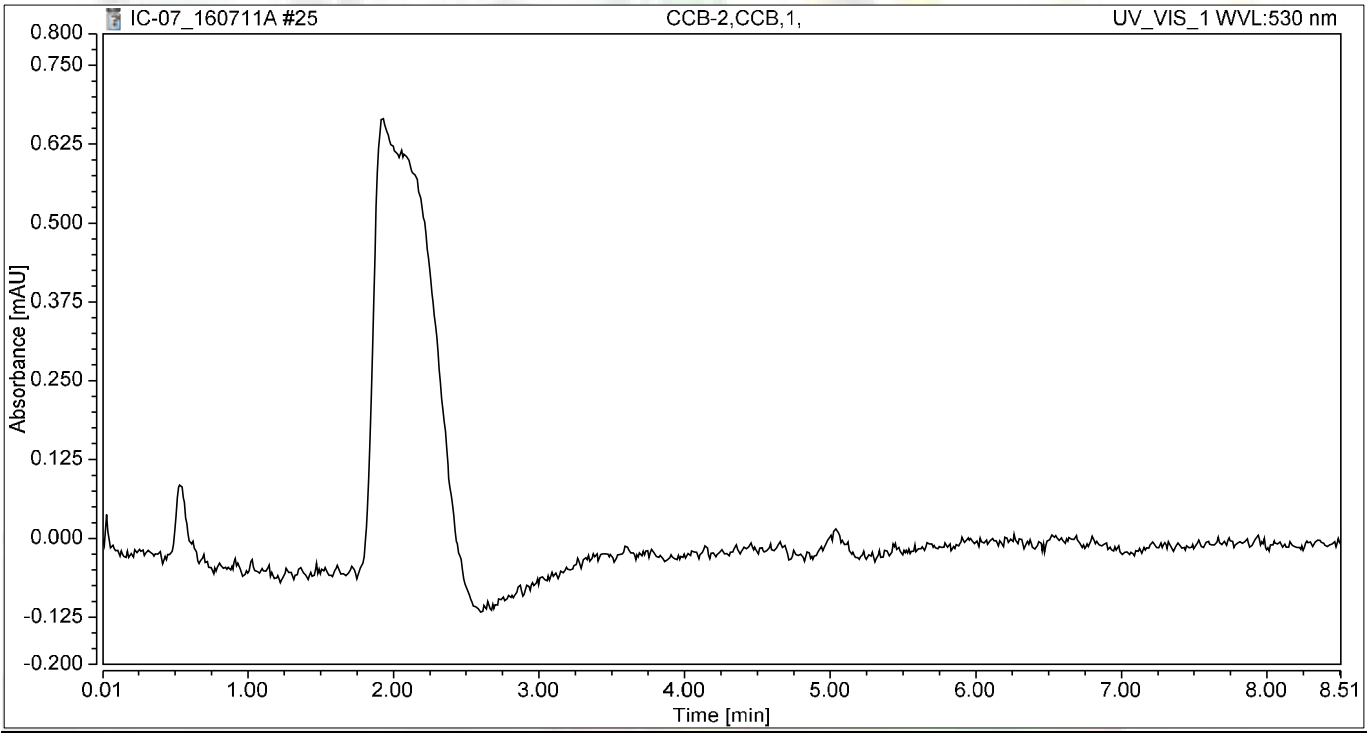
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	5.048	2.525	13.937	100.00	100.00	9.9549
Total:			**2.525**	**13.937**	**100.00**	**100.00**	

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:	**160707_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**11/Jul/16 11:38**	*Sample Weight:*	**1.0000**

Chromatogram



Integration Results

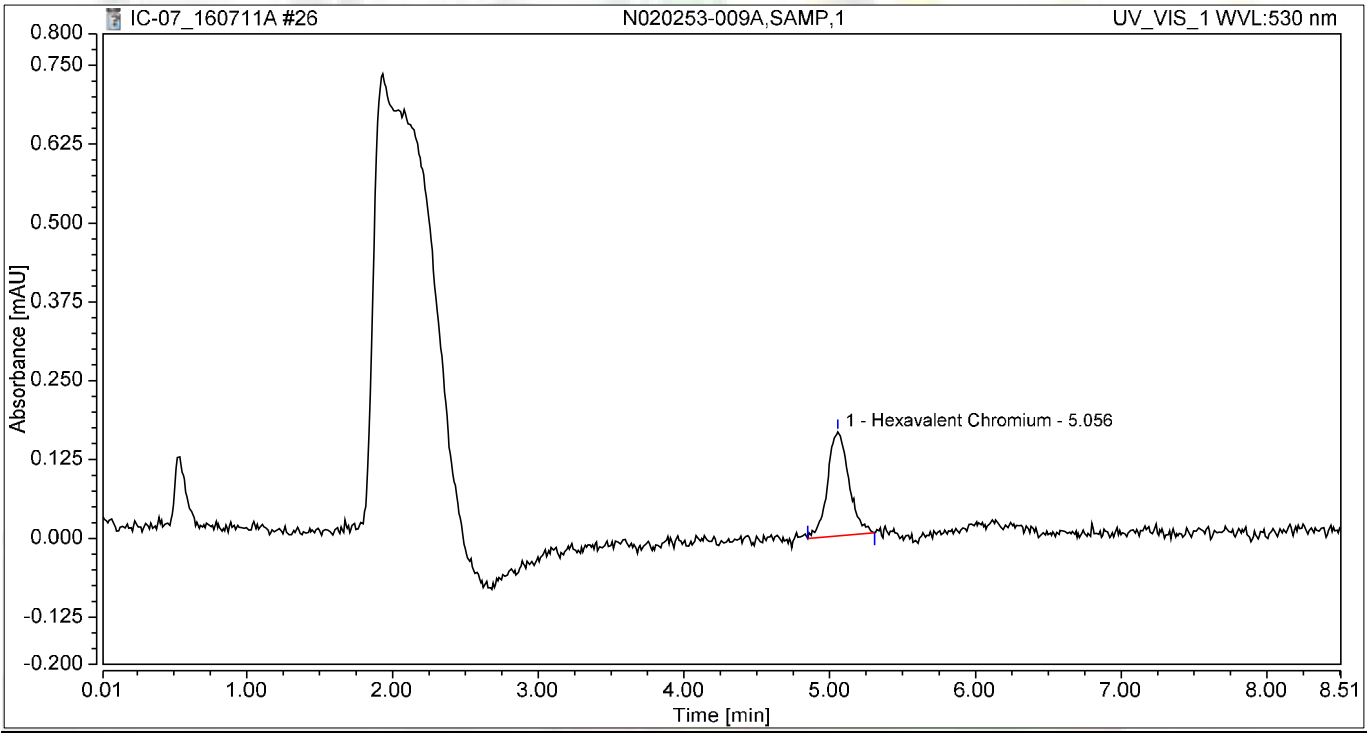
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
n.a.	Hexavalent Chromium	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Total:			**0.000**	**0.000**	**0.00**	**0.00**	

Chromatogram and Results

Injection Details

Injection Name:	**N020253-009A,SAMP,1**	*Run Time (min):*	**8.49**
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:	**160707_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**11/Jul/16 11:48**	*Sample Weight:*	**1.0000**

Chromatogram



Integration Results

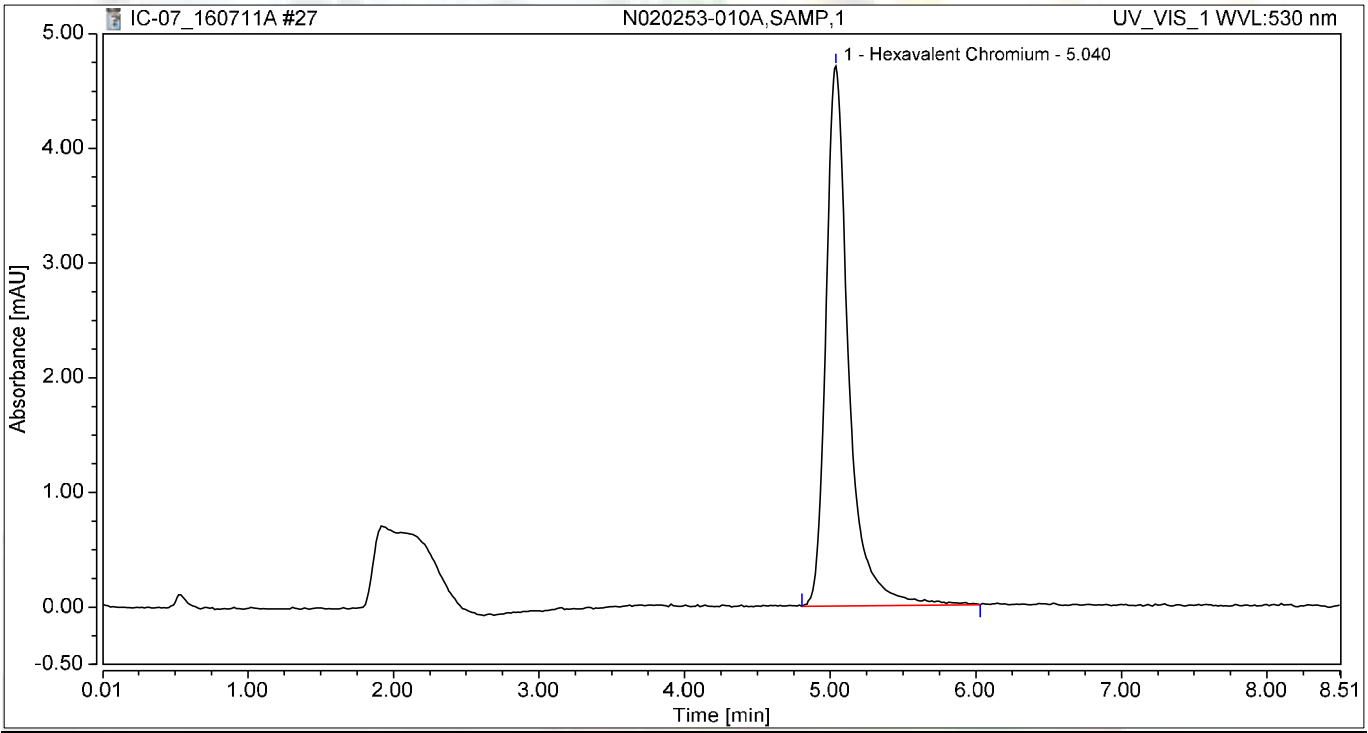
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	5.056	0.028	0.165	100.00	100.00	0.1105
Total:			**0.028**	**0.165**	**100.00**	**100.00**	

Chromatogram and Results

Injection Details

Injection Name:	**N020253-010A,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:	**160707_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**11/Jul/16 11:57**	*Sample Weight:*	**1.0000**

Chromatogram



Integration Results

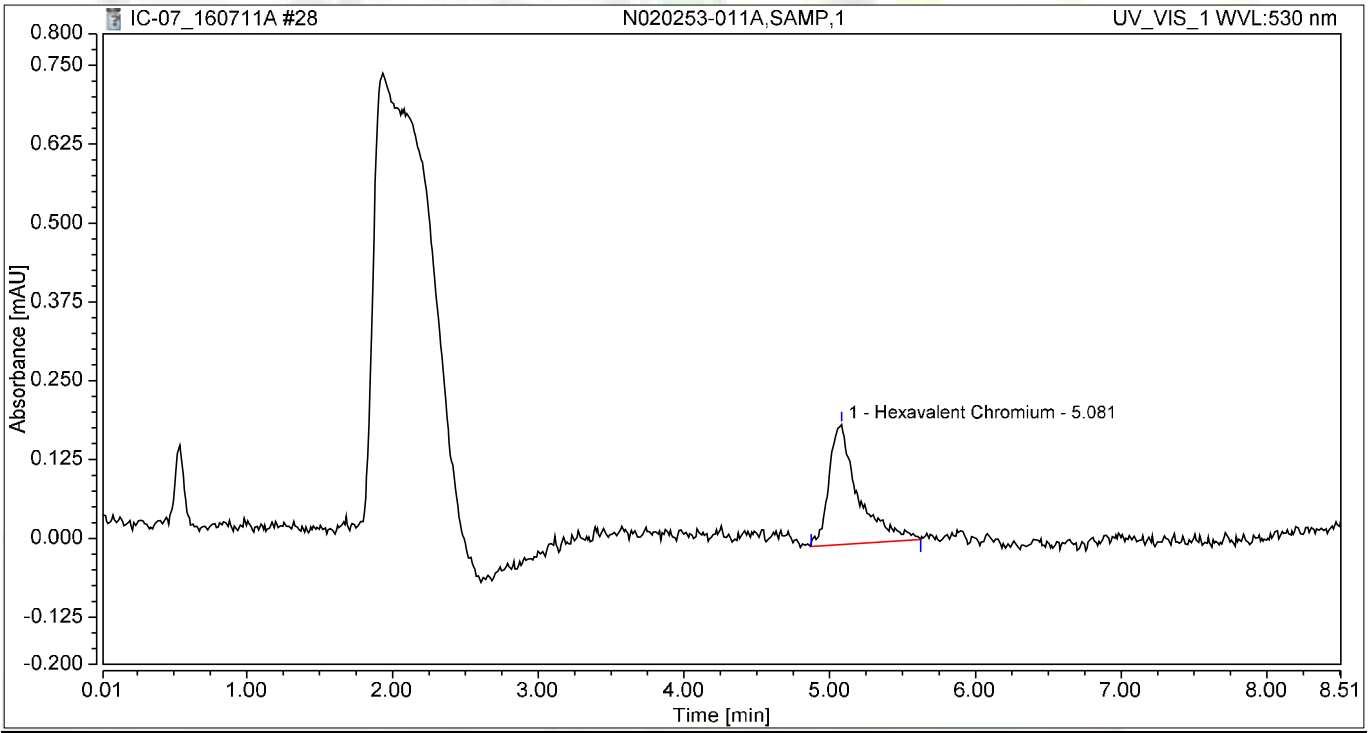
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	5.040	0.854	4.705	100.00	100.00	3.3662
Total:			**0.854**	**4.705**	**100.00**	**100.00**	

Chromatogram and Results

Injection Details

Injection Name:	**N020253-011A,SAMP,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:	**160707_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**11/Jul/16 12:07**	*Sample Weight:*	**1.0000**

Chromatogram



Integration Results

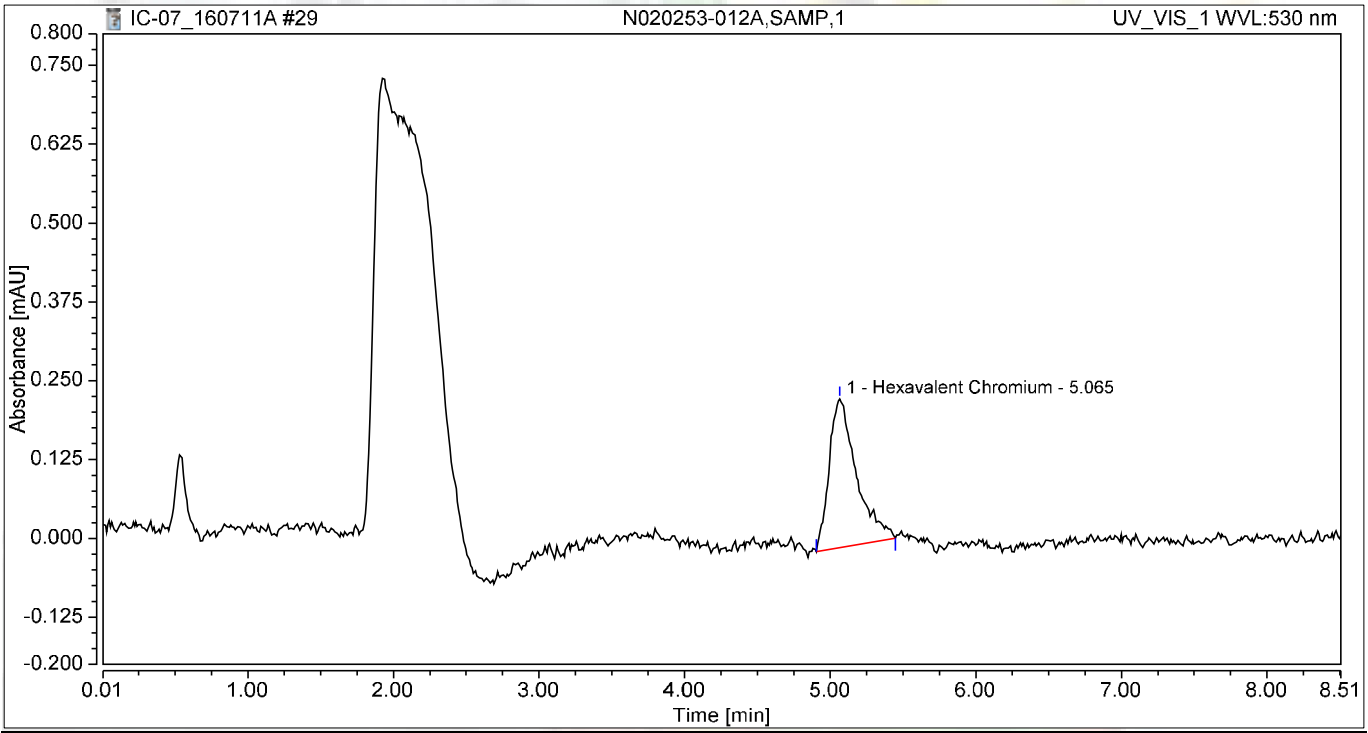
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	5.081	0.044	0.190	100.00	100.00	0.1748
Total:			**0.044**	**0.190**	**100.00**	**100.00**	

Chromatogram and Results

Injection Details

Injection Name:	**N020253-012A,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:	**160707_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**11/Jul/16 12:16**	*Sample Weight:*	**1.0000**

Chromatogram



Integration Results

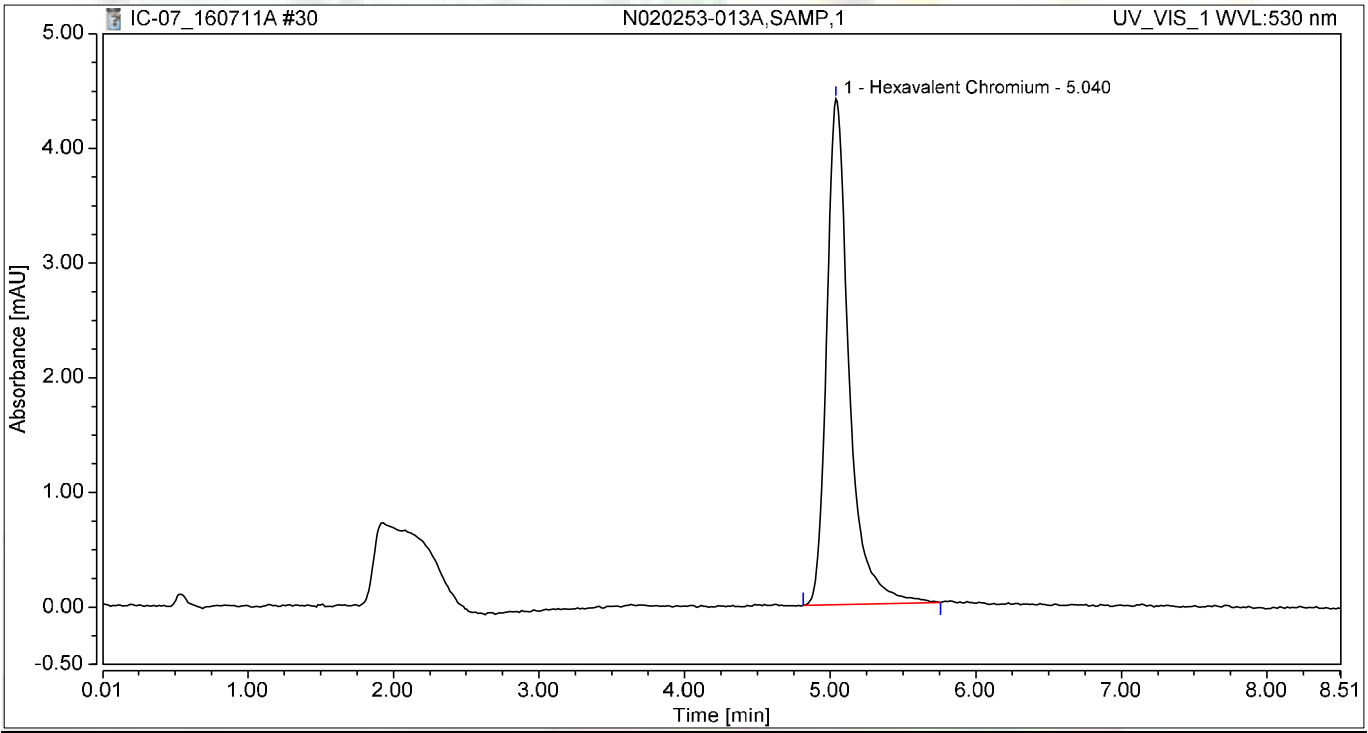
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	5.065	0.051	0.236	100.00	100.00	0.2016
Total:			**0.051**	**0.236**	**100.00**	**100.00**	

Chromatogram and Results

Injection Details

Injection Name:	**N020253-013A,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:	**160707_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**11/Jul/16 12:25**	*Sample Weight:*	**1.0000**

Chromatogram



Integration Results

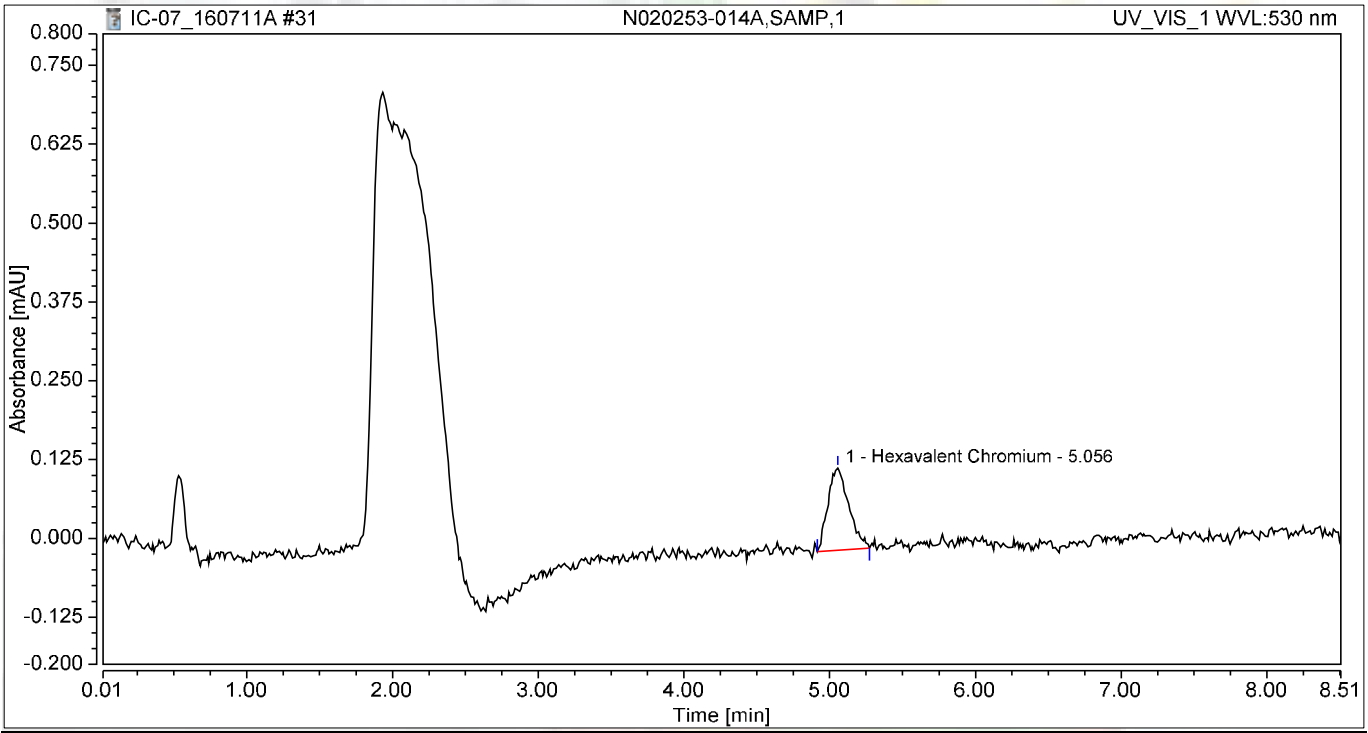
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	5.040	0.787	4.410	100.00	100.00	3.1037
Total:			**0.787**	**4.410**	**100.00**	**100.00**	

Chromatogram and Results

Injection Details

Injection Name:	**N020253-014A,SAMP,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:	**160707_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**11/Jul/16 12:35**	*Sample Weight:*	**1.0000**

Chromatogram



Integration Results

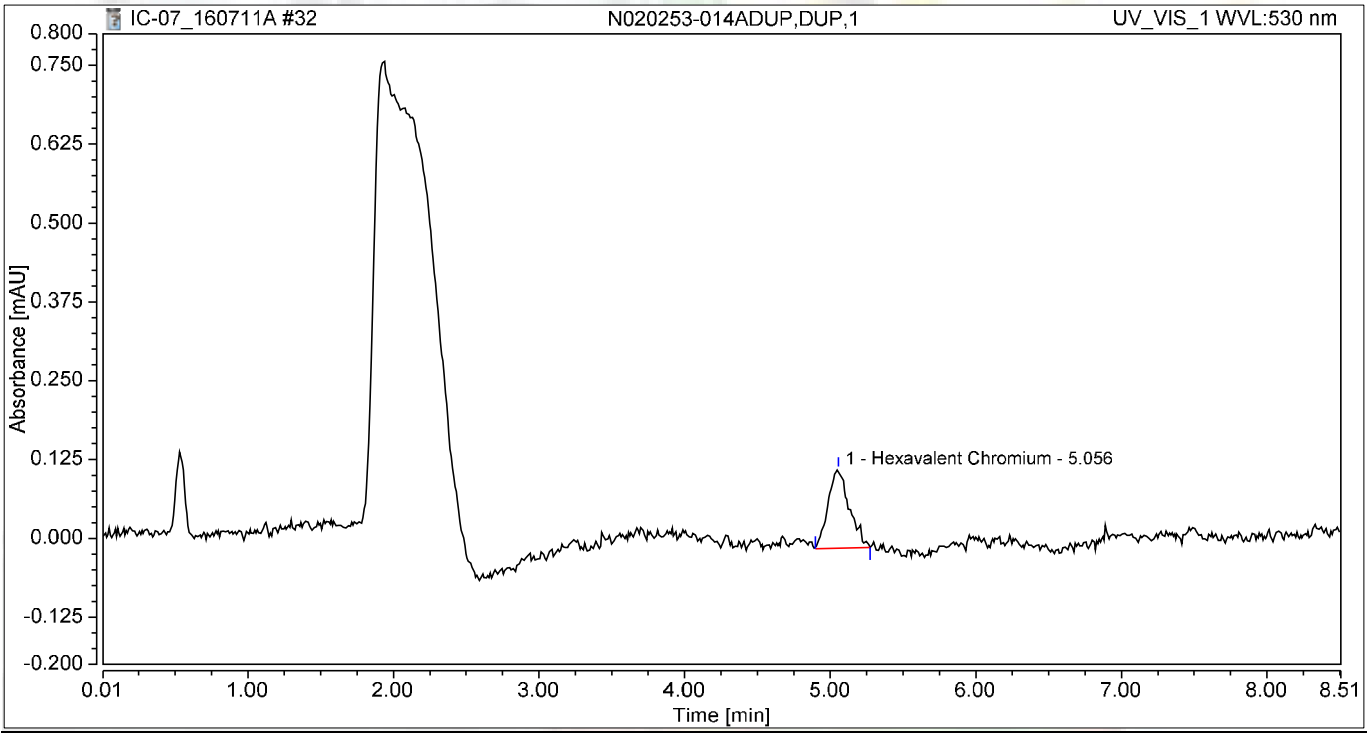
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	5.056	0.022	0.130	100.00	100.00	0.0851
Total:			**0.022**	**0.130**	**100.00**	**100.00**	

Chromatogram and Results

Injection Details

Injection Name:	**N020253-014ADUP,DUP,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:	**160707_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**11/Jul/16 12:44**	*Sample Weight:*	**1.0000**

Chromatogram



Integration Results

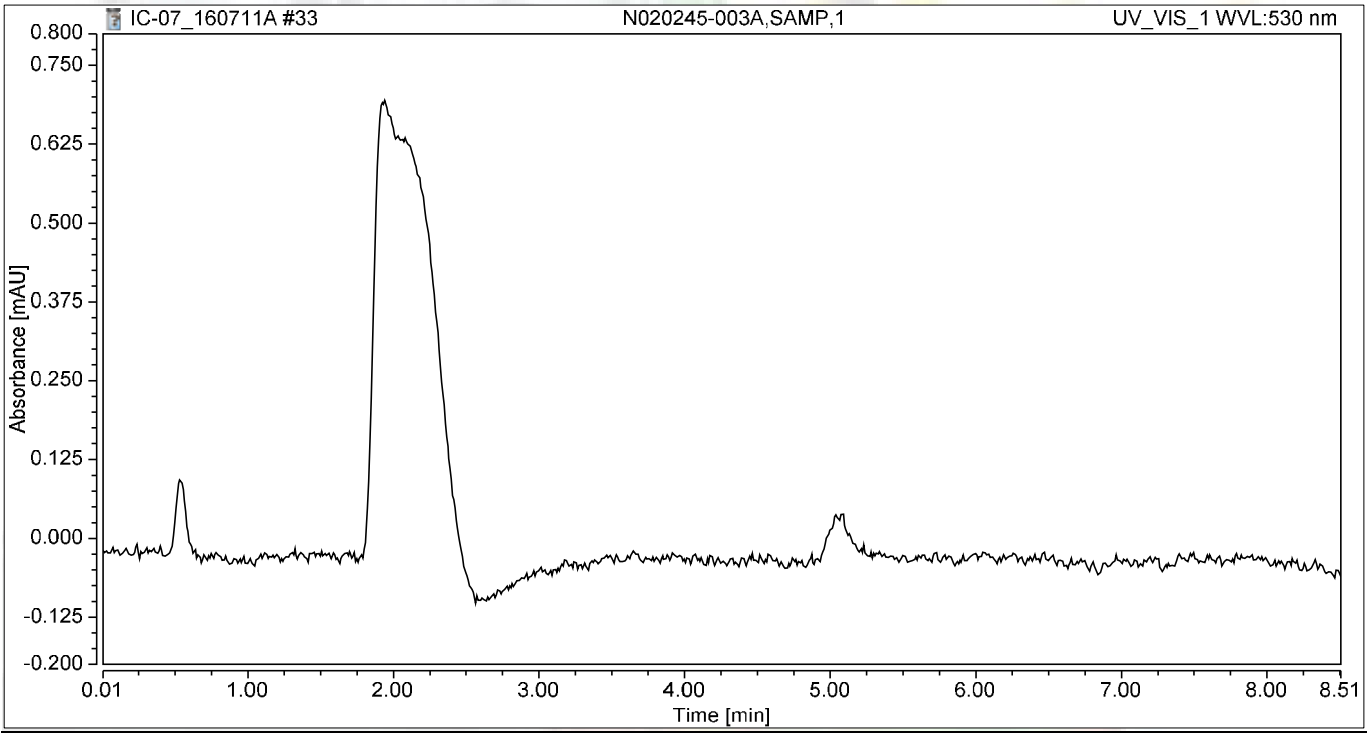
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	5.056	0.021	0.124	100.00	100.00	0.0833
Total:			**0.021**	**0.124**	**100.00**	**100.00**	

Chromatogram and Results

Injection Details

Injection Name:	**N020245-003A,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:	**160707_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**11/Jul/16 12:54**	*Sample Weight:*	**1.0000**

Chromatogram



Integration Results

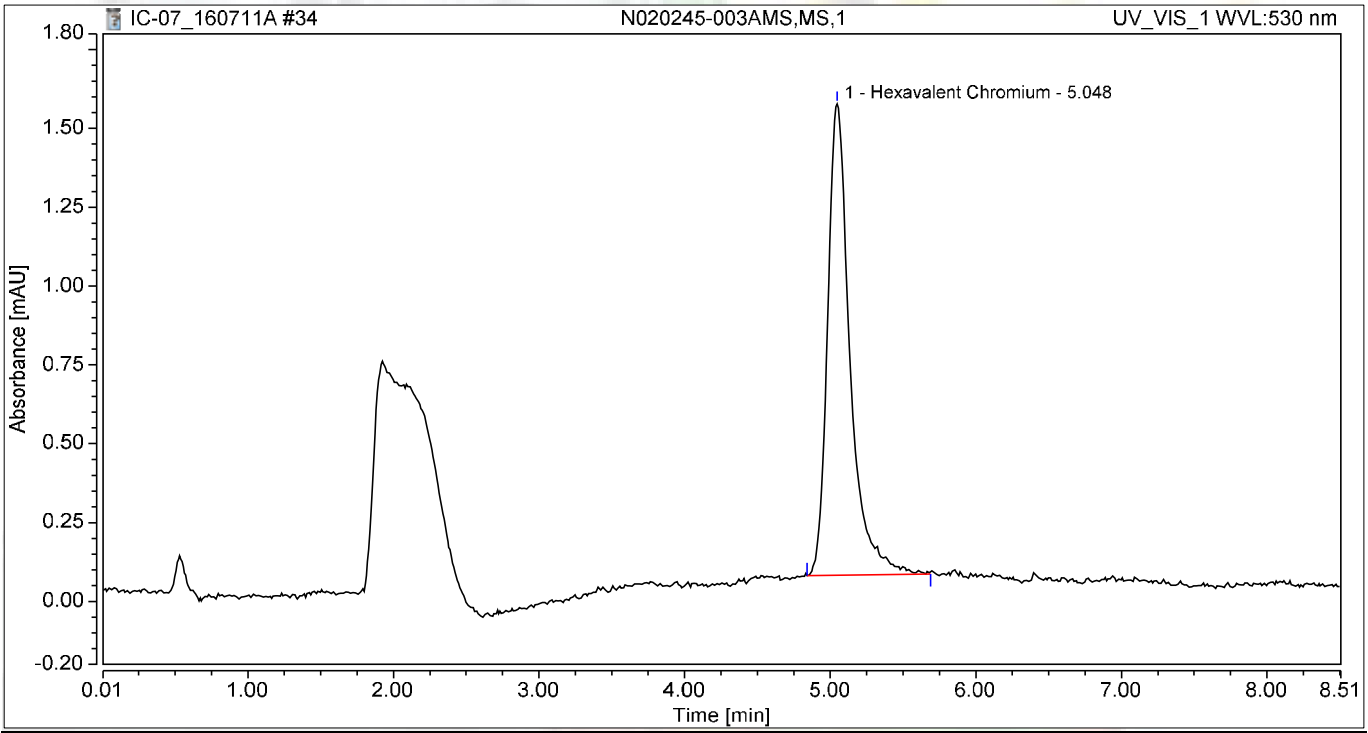
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
n.a.	Hexavalent Chromium	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Total:			**0.000**	**0.000**	**0.00**	**0.00**	

Chromatogram and Results

Injection Details

Injection Name:	**N020245-003AMS,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:	**160707_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**11/Jul/16 13:03**	*Sample Weight:*	**1.0000**

Chromatogram



Integration Results

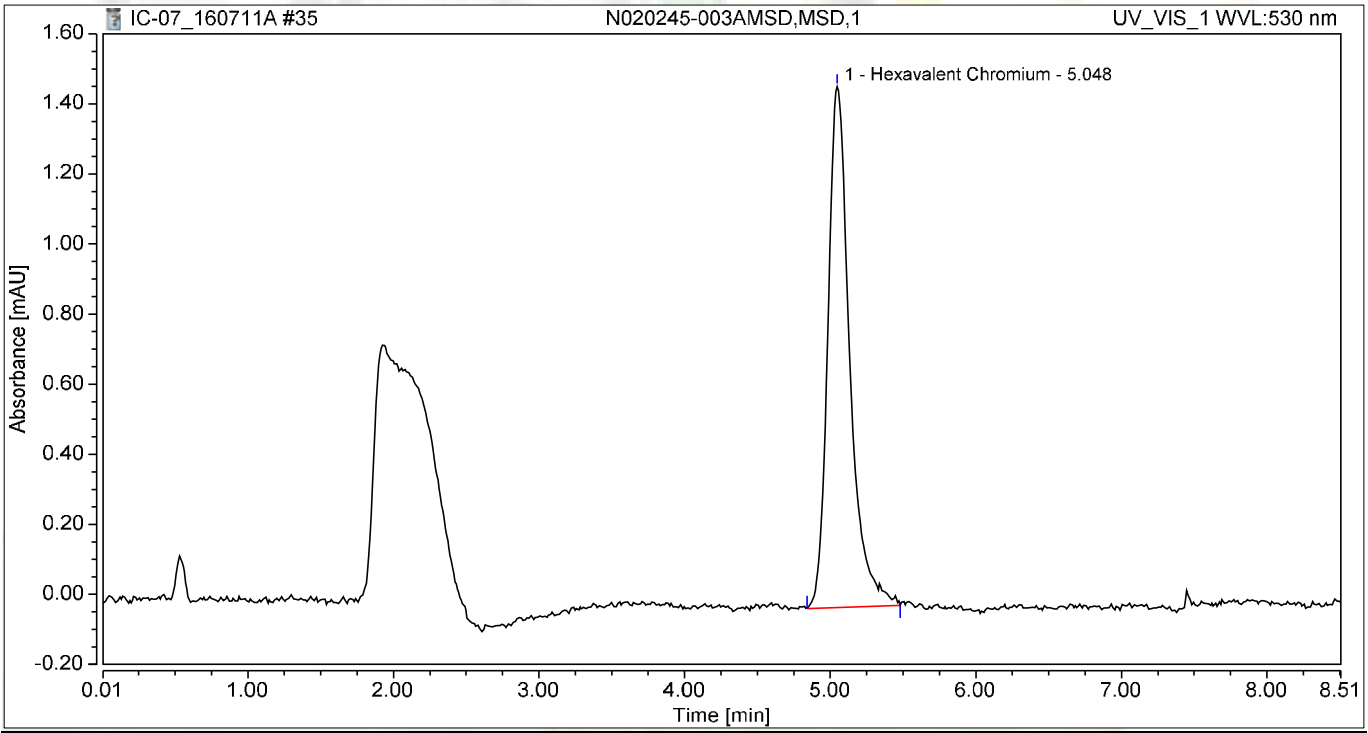
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	5.048	0.267	1.494	100.00	100.00	1.0513
Total:			**0.267**	**1.494**	**100.00**	**100.00**	

Chromatogram and Results

Injection Details

Injection Name:	**N020245-003AMSD,MSD,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:	**160707_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**11/Jul/16 13:13**	*Sample Weight:*	**1.0000**

Chromatogram



Integration Results

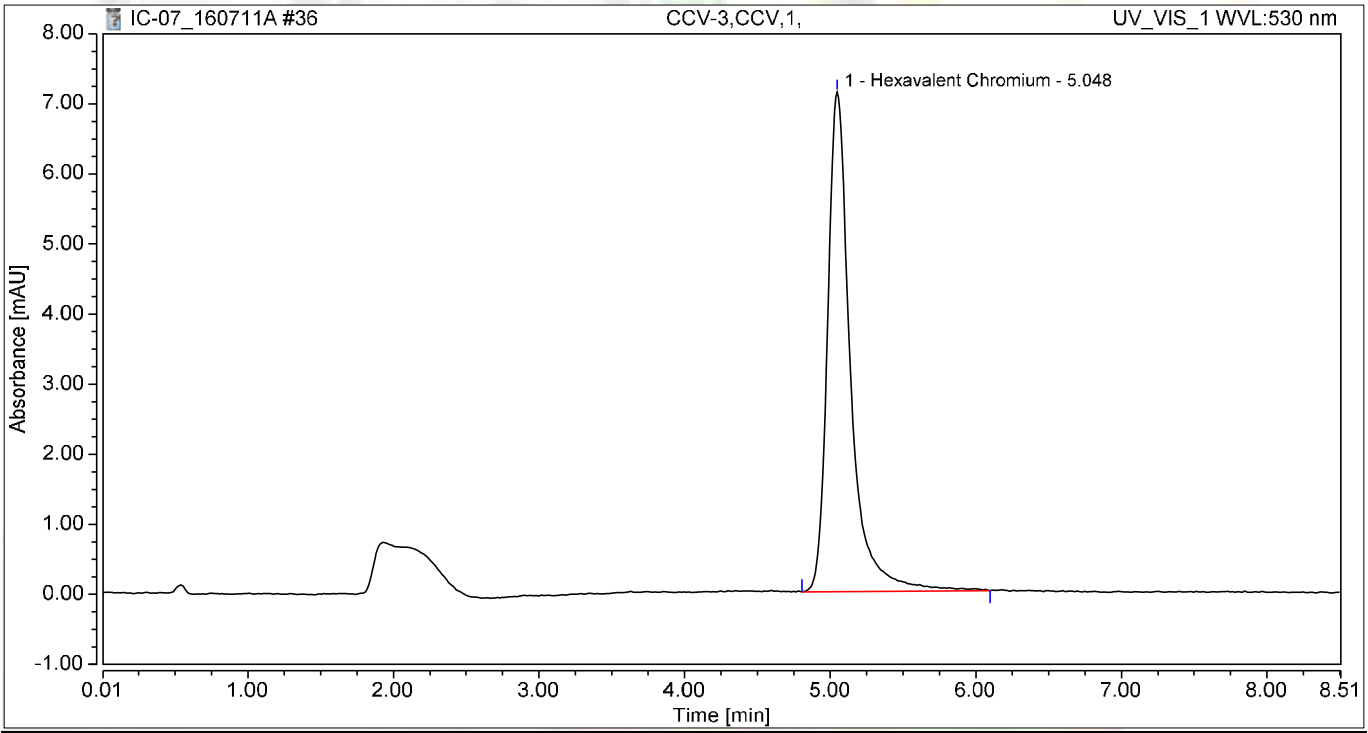
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	5.048	0.258	1.486	100.00	100.00	1.0188
Total:			**0.258**	**1.486**	**100.00**	**100.00**	

Chromatogram and Results

Injection Details

Injection Name:	**CCV-3,CCV,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:	**160707_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**11/Jul/16 13:22**	*Sample Weight:*	**1.0000**

Chromatogram



Integration Results

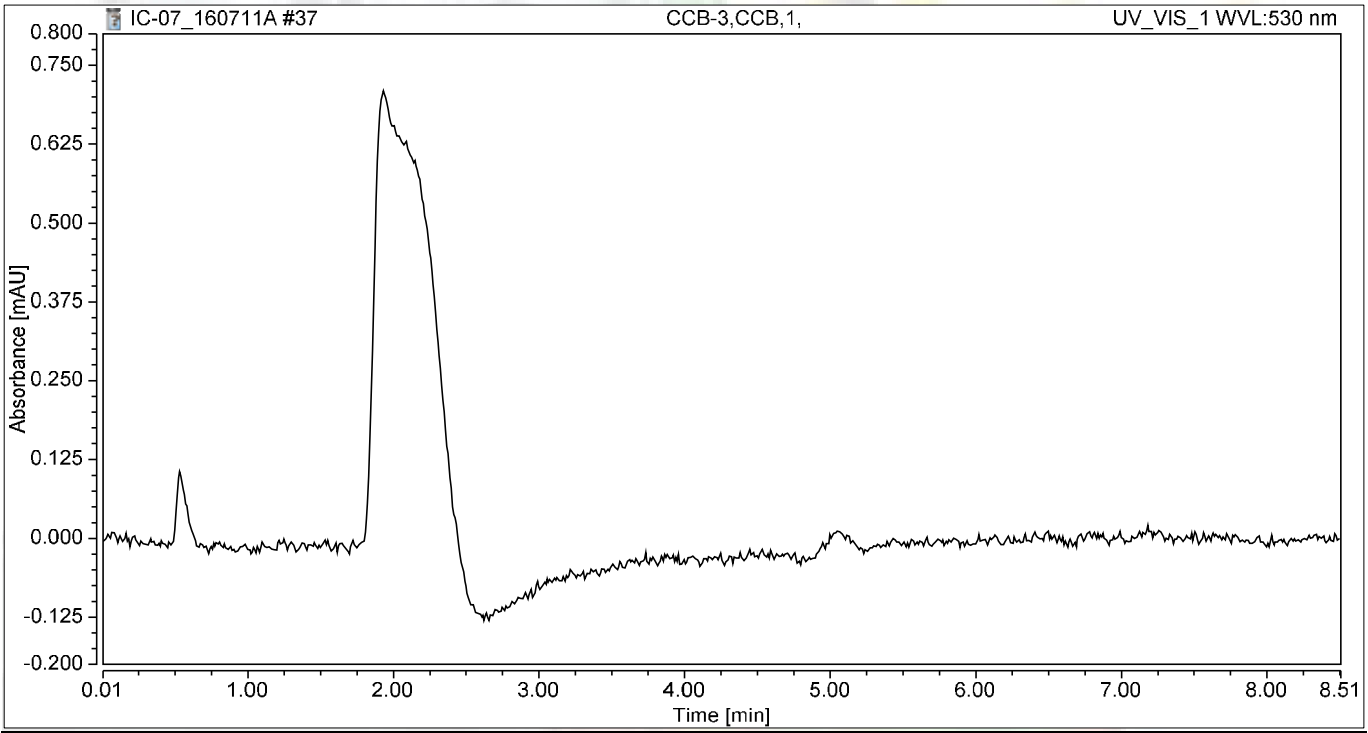
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	5.048	1.302	7.128	100.00	100.00	5.1357
Total:			**1.302**	**7.128**	**100.00**	**100.00**	

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:	**160707_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**11/Jul/16 13:32**	*Sample Weight:*	**1.0000**

Chromatogram



Integration Results

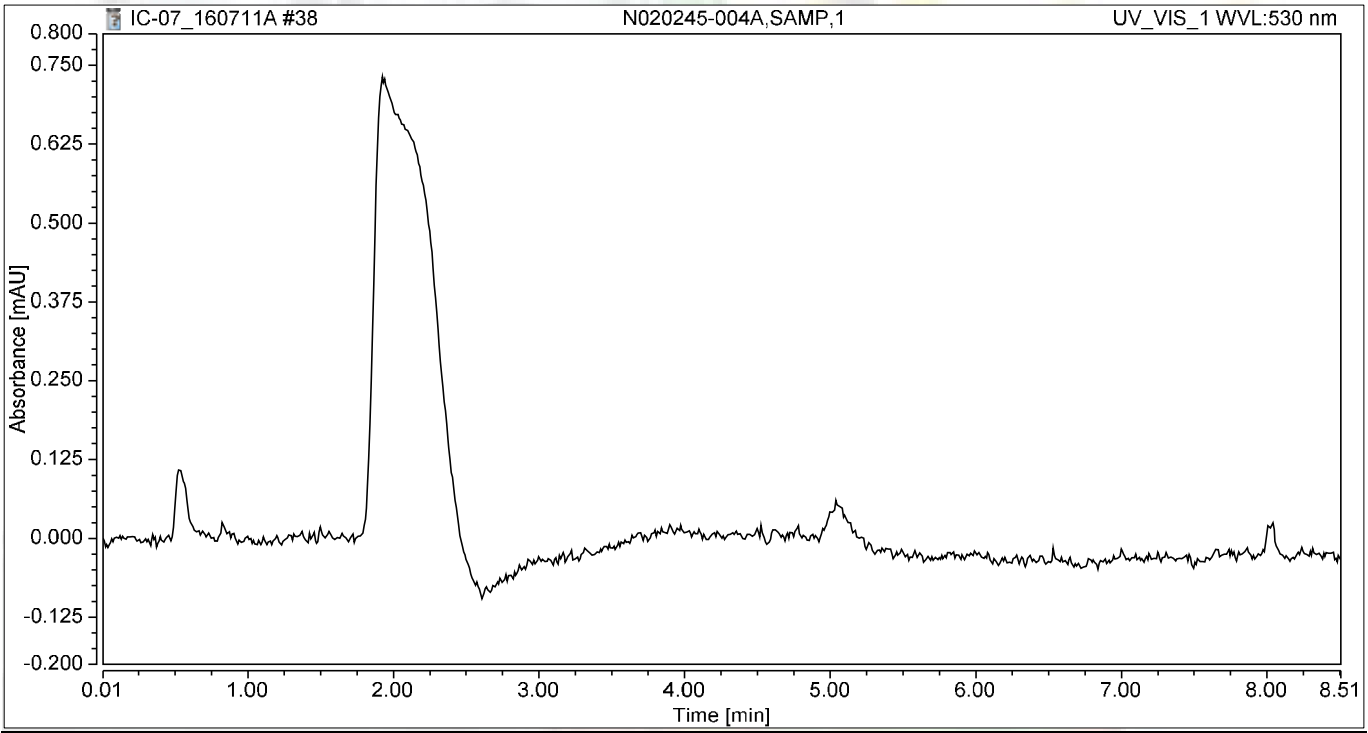
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
n.a.	Hexavalent Chromium	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Total:			**0.000**	**0.000**	**0.00**	**0.00**	

Chromatogram and Results

Injection Details

Injection Name:	**N020245-004A,SAMP,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:	**160707_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**11/Jul/16 13:41**	*Sample Weight:*	**1.0000**

Chromatogram



Integration Results

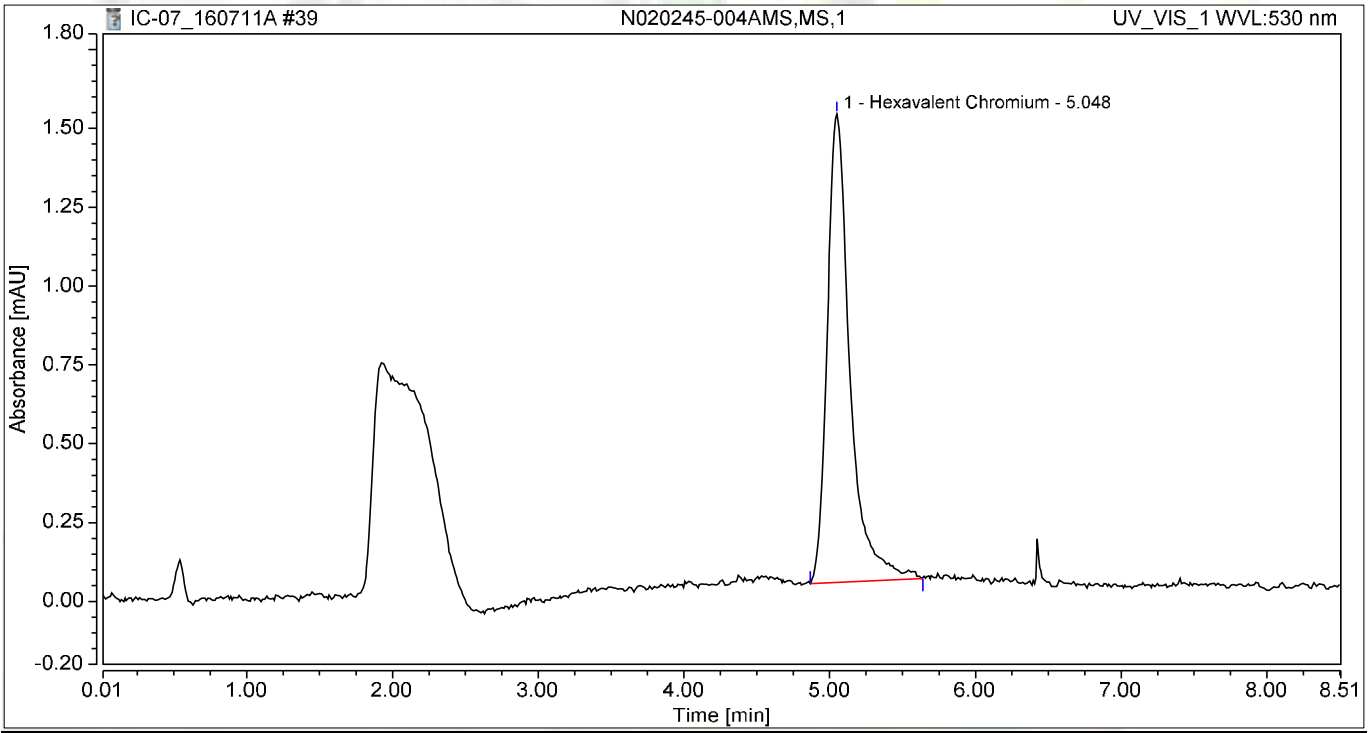
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
n.a.	Hexavalent Chromium	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Total:			**0.000**	**0.000**	**0.00**	**0.00**	

Chromatogram and Results

Injection Details

Injection Name:	**N020245-004AMS,MS,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:	**160707_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**11/Jul/16 13:51**	*Sample Weight:*	**1.0000**

Chromatogram



Integration Results

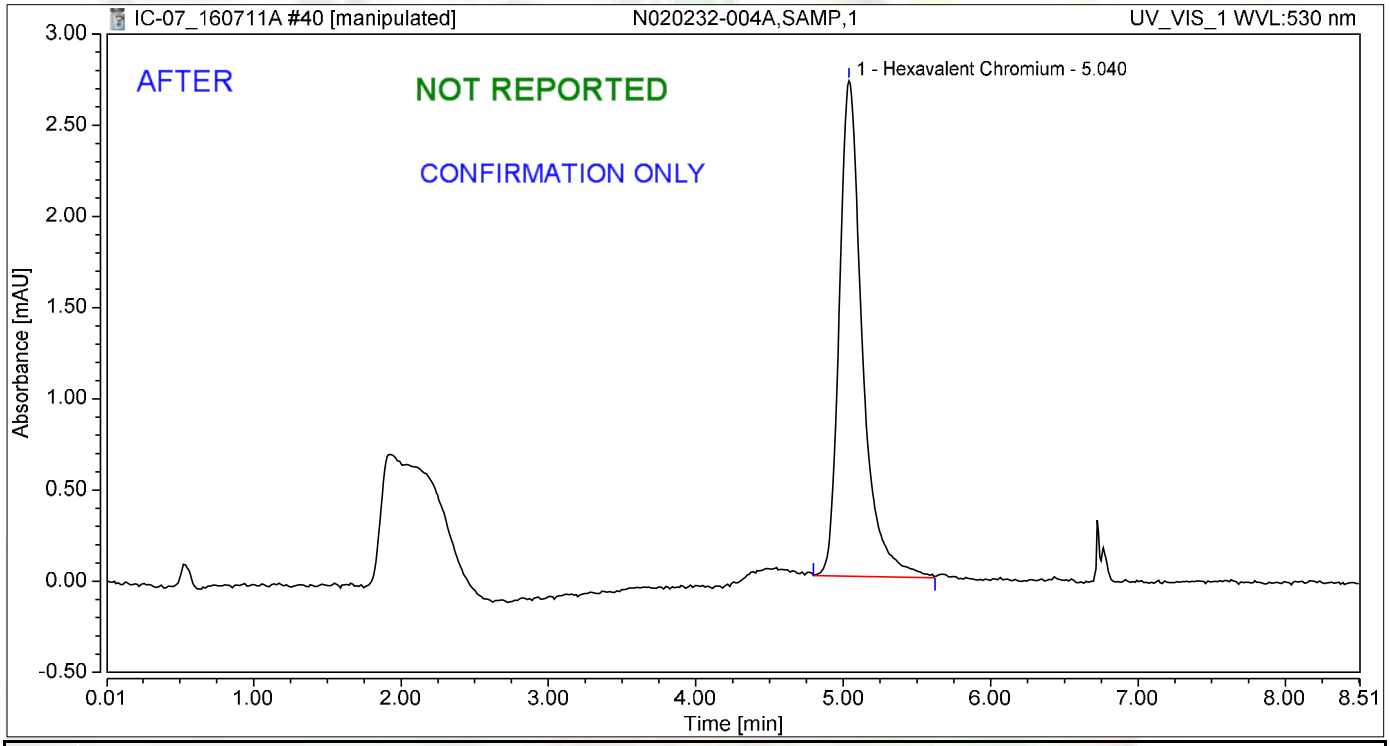
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	5.048	0.268	1.485	100.00	100.00	1.0576
Total:			**0.268**	**1.485**	**100.00**	**100.00**	

Chromatogram and Results

Injection Details

Injection Name:	**N020232-004A,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:	**160707_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**11/Jul/16 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	5.040	0.491	2.716	100.00	100.00	1.9350
Total:			**0.491**	**2.716**	**100.00**	**100.00**	

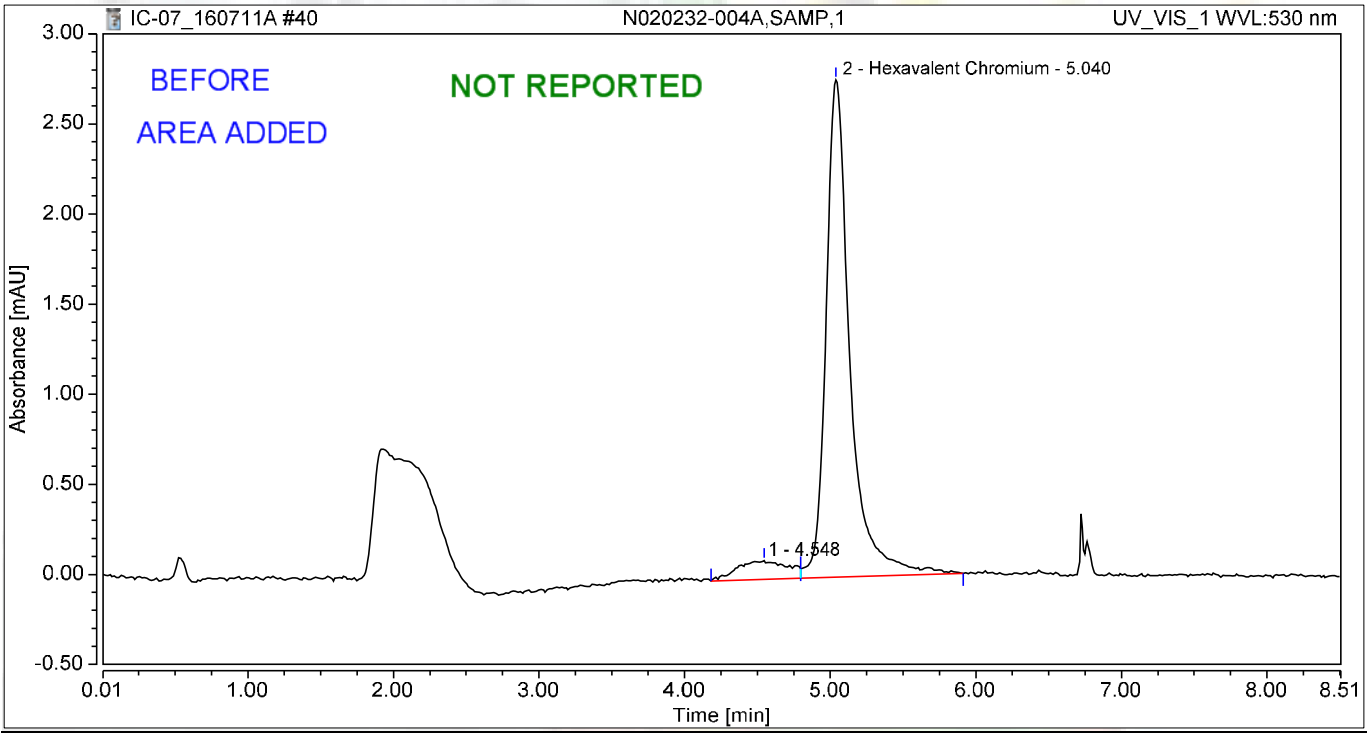
7/21/2016

Chromatogram and Results

Injection Details

Injection Name:	**N020232-004A,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:	**160707_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**11/Jul/16 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		4.548	0.042	0.104	7.41	3.64	n.a.
2	Hexavalent Chromium	5.040	0.527	2.760	92.59	96.36	2.0765
Total:			**0.569**	**2.865**	**100.00**	**100.00**	

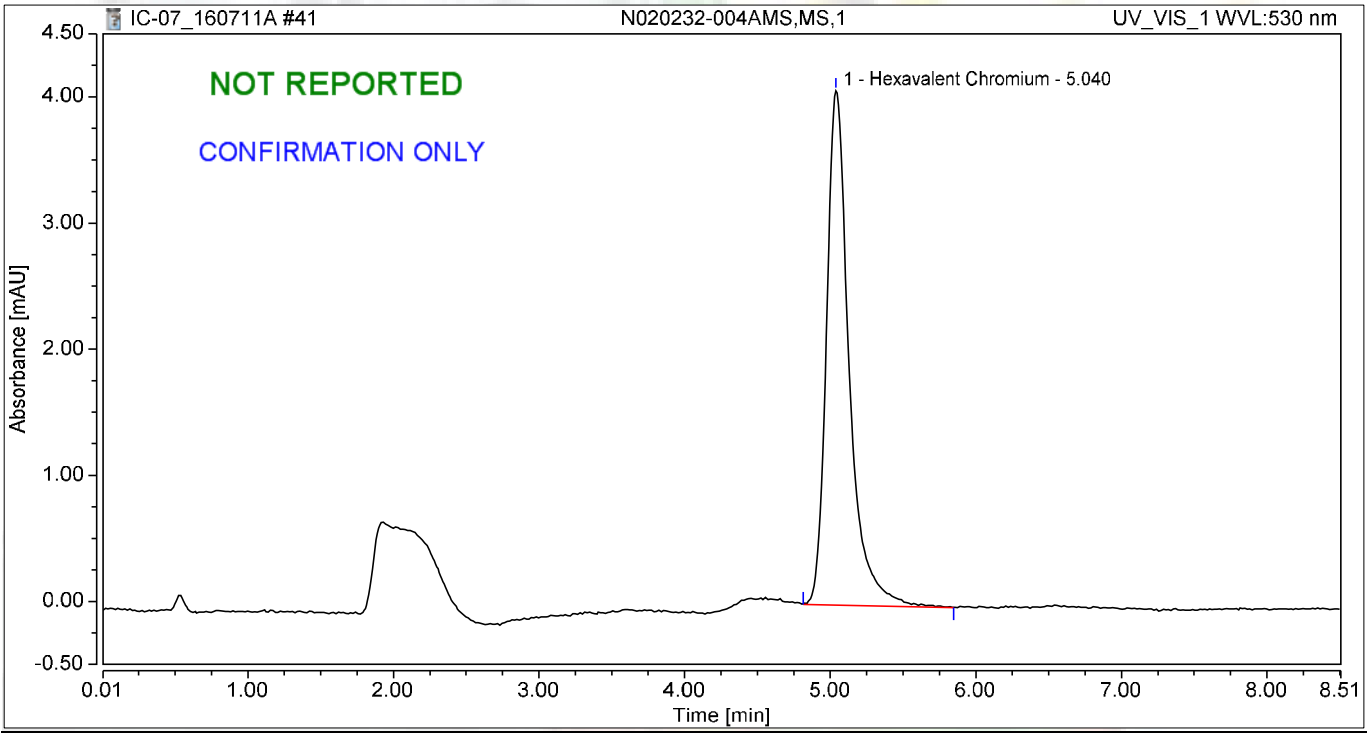
7/21/2016

Chromatogram and Results

Injection Details

Injection Name:	**N020232-004AMS,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:	**160707_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**11/Jul/16 14:10**	*Sample Weight:*	**1.0000**

Chromatogram



Integration Results

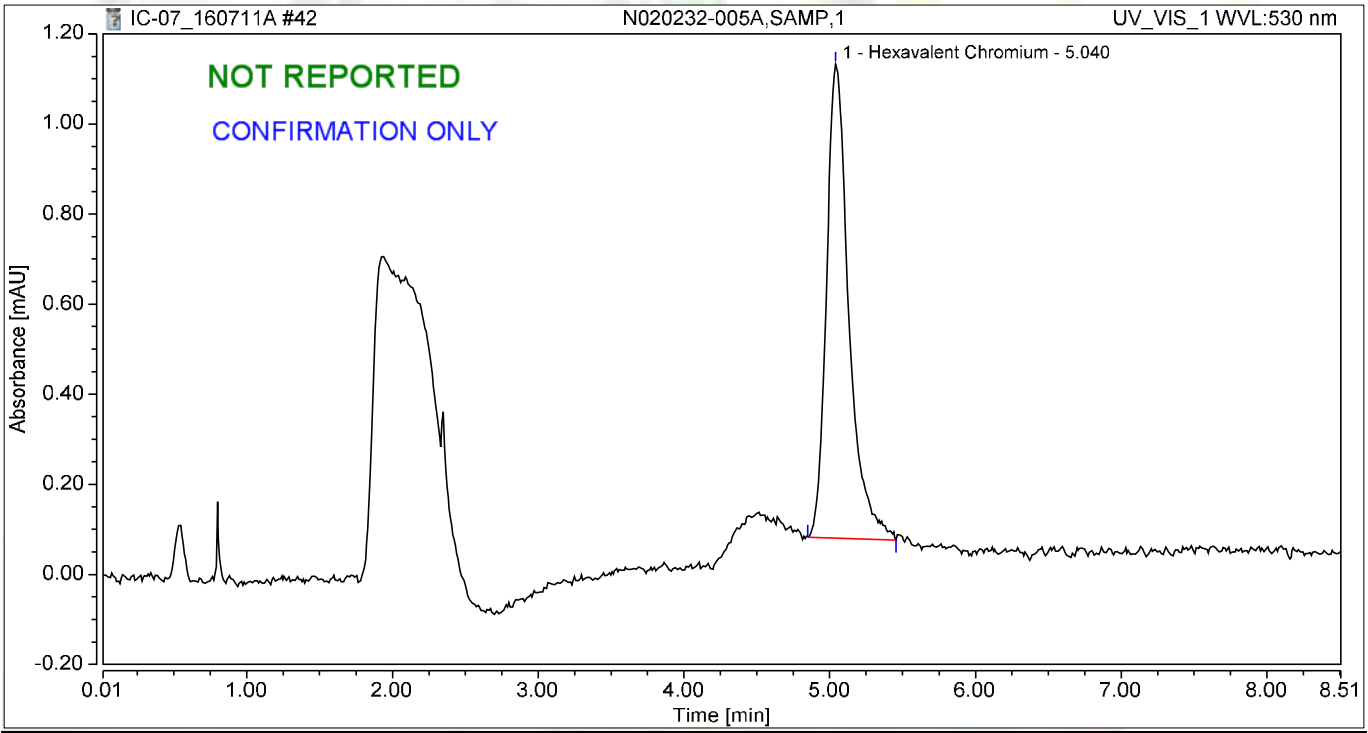
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	5.040	0.734	4.077	100.00	100.00	2.8961
Total:			**0.734**	**4.077**	**100.00**	**100.00**	

Chromatogram and Results

Injection Details

Injection Name:	**N020232-005A,SAMP,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:	**160707_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**11/Jul/16 14:19**	*Sample Weight:*	**1.0000**

Chromatogram



Integration Results

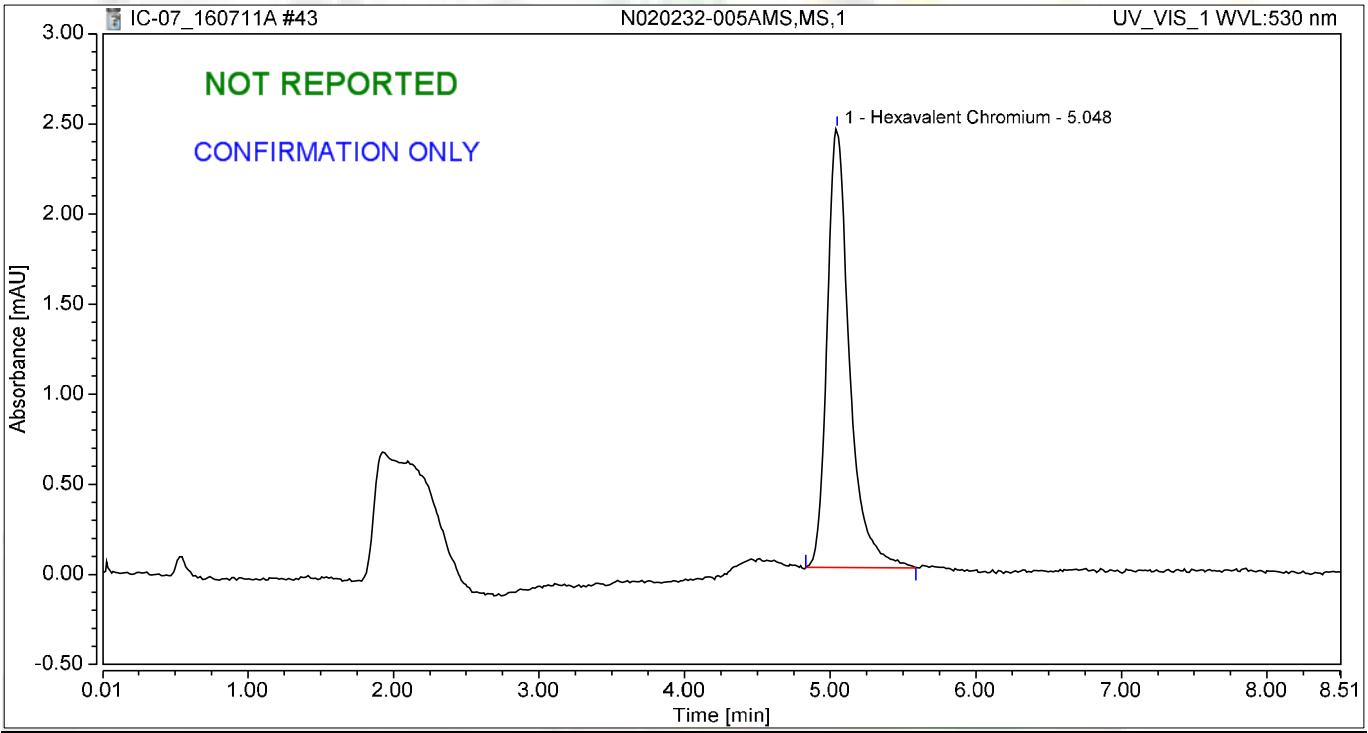
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	5.040	0.187	1.052	100.00	100.00	0.7373
Total:			**0.187**	**1.052**	**100.00**	**100.00**	

Chromatogram and Results

Injection Details

Injection Name:	**N020232-005AMS,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:	**160707_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**11/Jul/16 14:29**	*Sample Weight:*	**1.0000**

Chromatogram



Integration Results

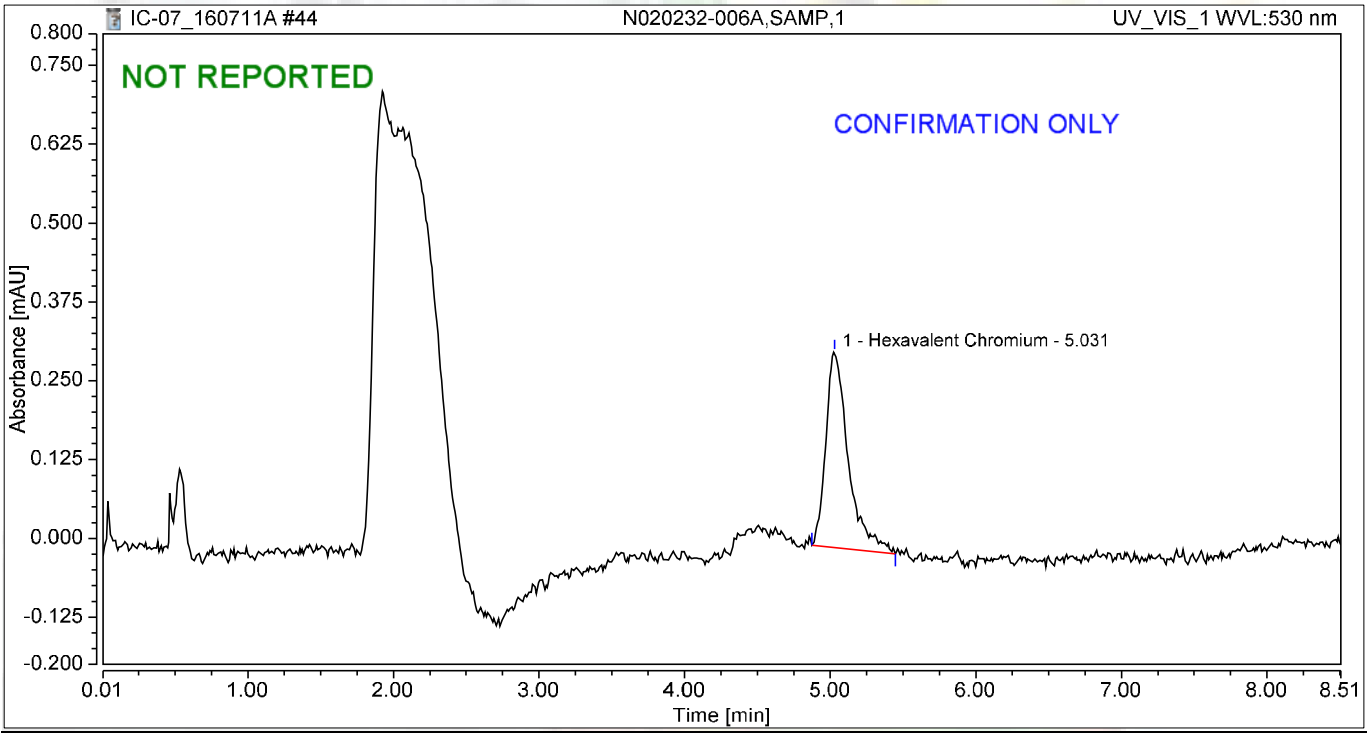
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	5.048	0.435	2.433	100.00	100.00	1.7155
Total:			**0.435**	**2.433**	**100.00**	**100.00**	

Chromatogram and Results

Injection Details

Injection Name:	**N020232-006A,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:	**160707_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**11/Jul/16 14:38**	*Sample Weight:*	**1.0000**

Chromatogram



Integration Results

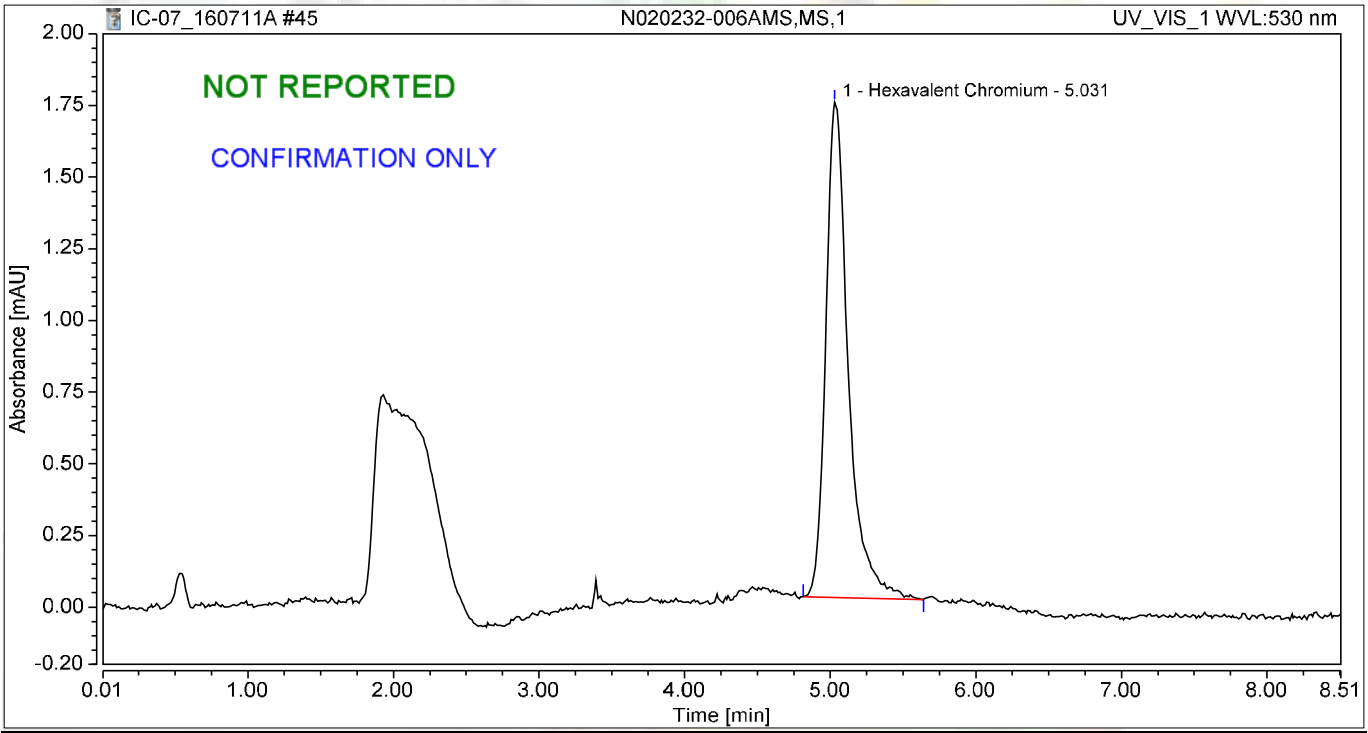
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	5.031	0.056	0.310	100.00	100.00	0.2194
Total:			**0.056**	**0.310**	**100.00**	**100.00**	

Chromatogram and Results

Injection Details

Injection Name:	**N020232-006AMS,MS,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:	**160707_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**11/Jul/16 14:47**	*Sample Weight:*	**1.0000**

Chromatogram



Integration Results

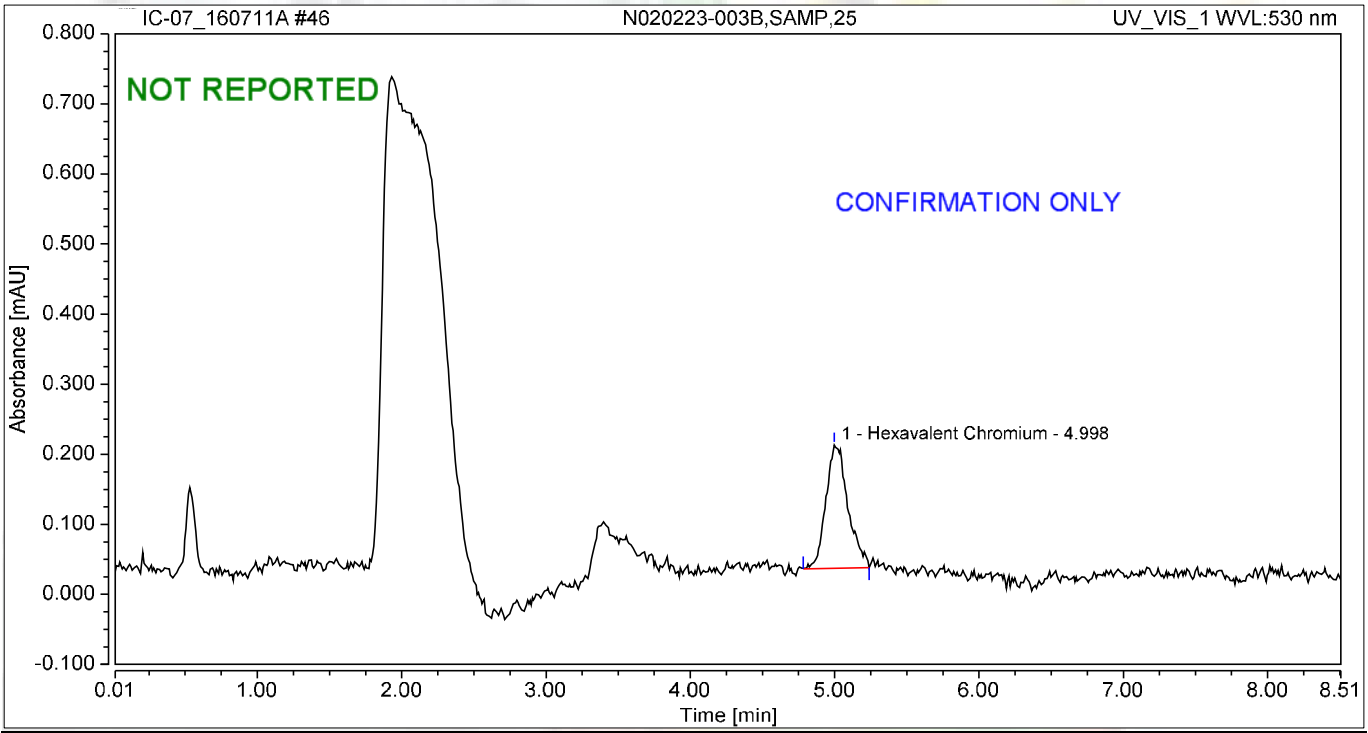
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	5.031	0.309	1.728	100.00	100.00	1.2194
Total:			**0.309**	**1.728**	**100.00**	**100.00**	

Chromatogram and Results

Injection Details

Injection Name:	**N020223-003B,SAMP,25**	*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:	**160707_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**11/Jul/16 14:57**	*Sample Weight:*	**1.0000**

Chromatogram



Integration Results

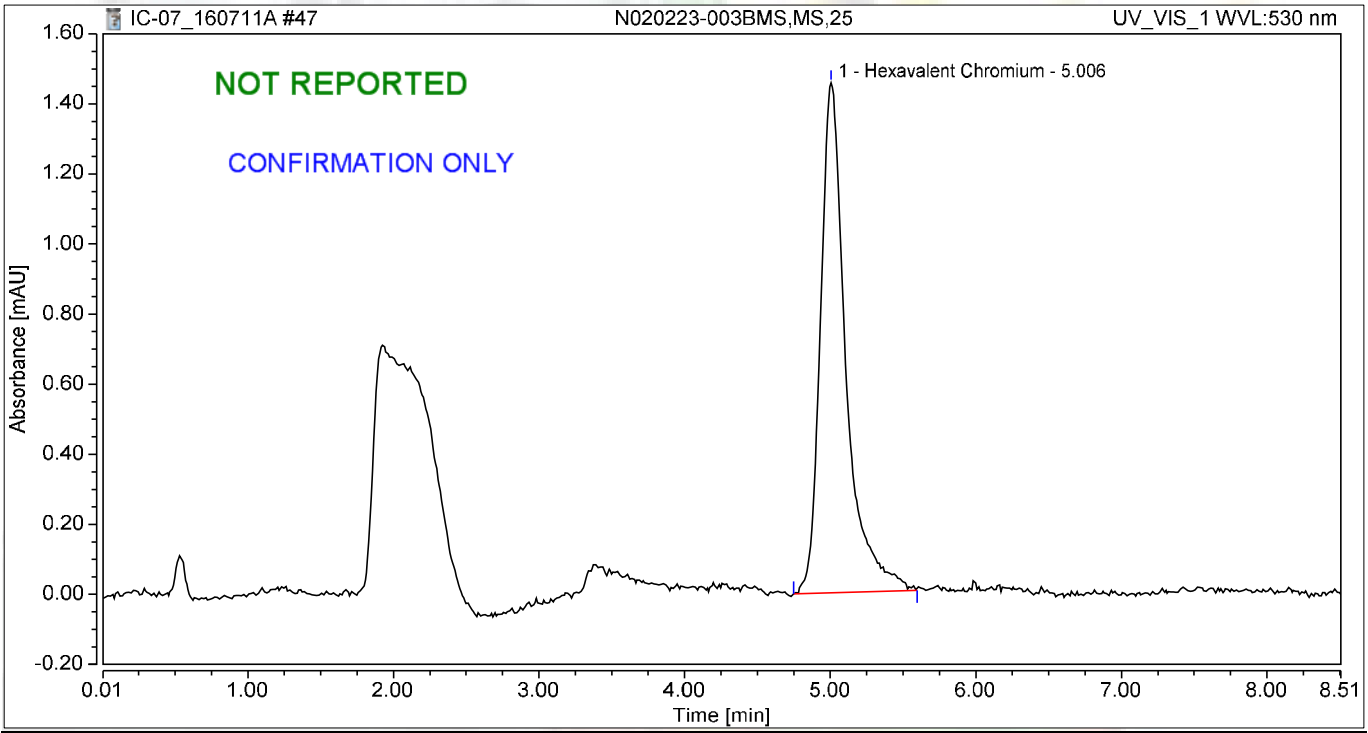
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.998	0.031	0.176	100.00	100.00	0.1235
Total:			**0.031**	**0.176**	**100.00**	**100.00**	

Chromatogram and Results

Injection Details

Injection Name:	**N020223-003BMS,MS,25**	*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:	**160707_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**11/Jul/16 15:06**	*Sample Weight:*	**1.0000**

Chromatogram



Integration Results

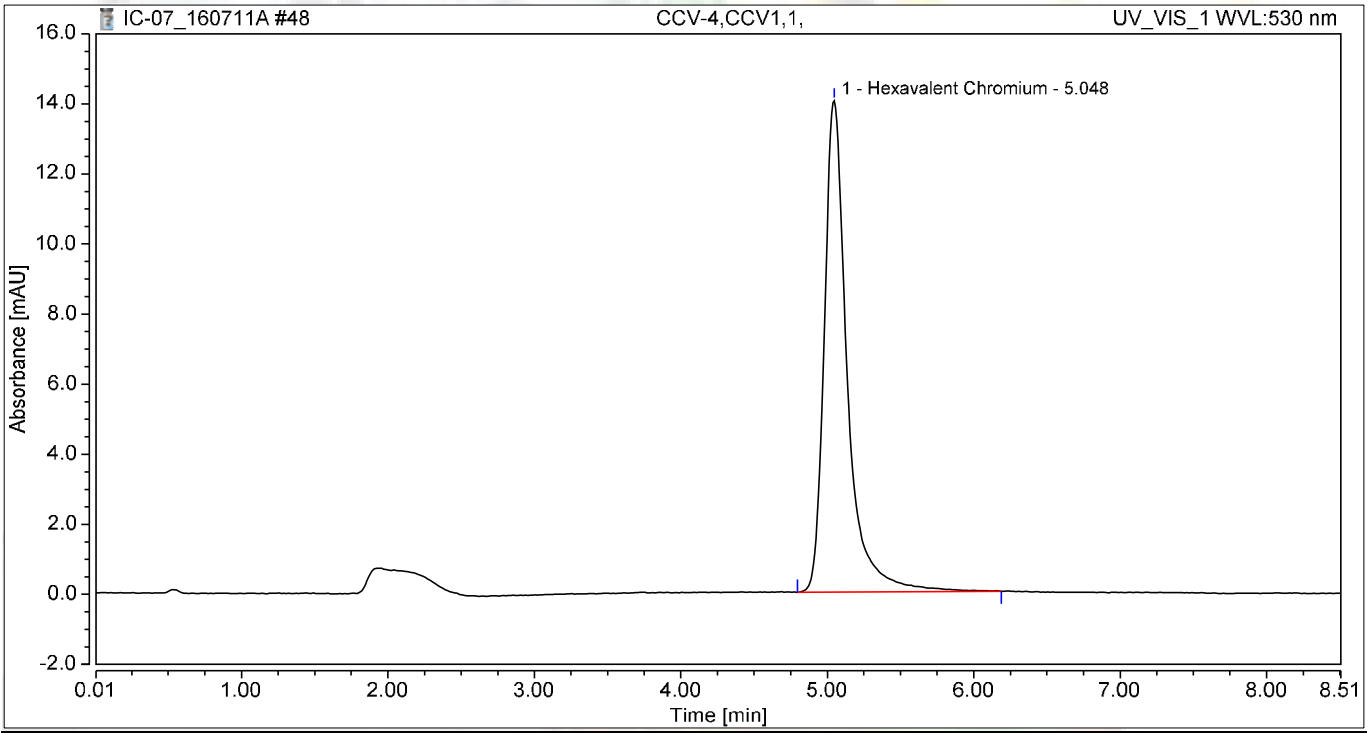
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	5.006	0.295	1.456	100.00	100.00	1.1640
Total:			**0.295**	**1.456**	**100.00**	**100.00**	

Chromatogram and Results

Injection Details

Injection Name:	**CCV-4,CCV1,1,**	*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:	**160707_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**11/Jul/16 15:16**	*Sample Weight:*	**1.0000**

Chromatogram



Integration Results

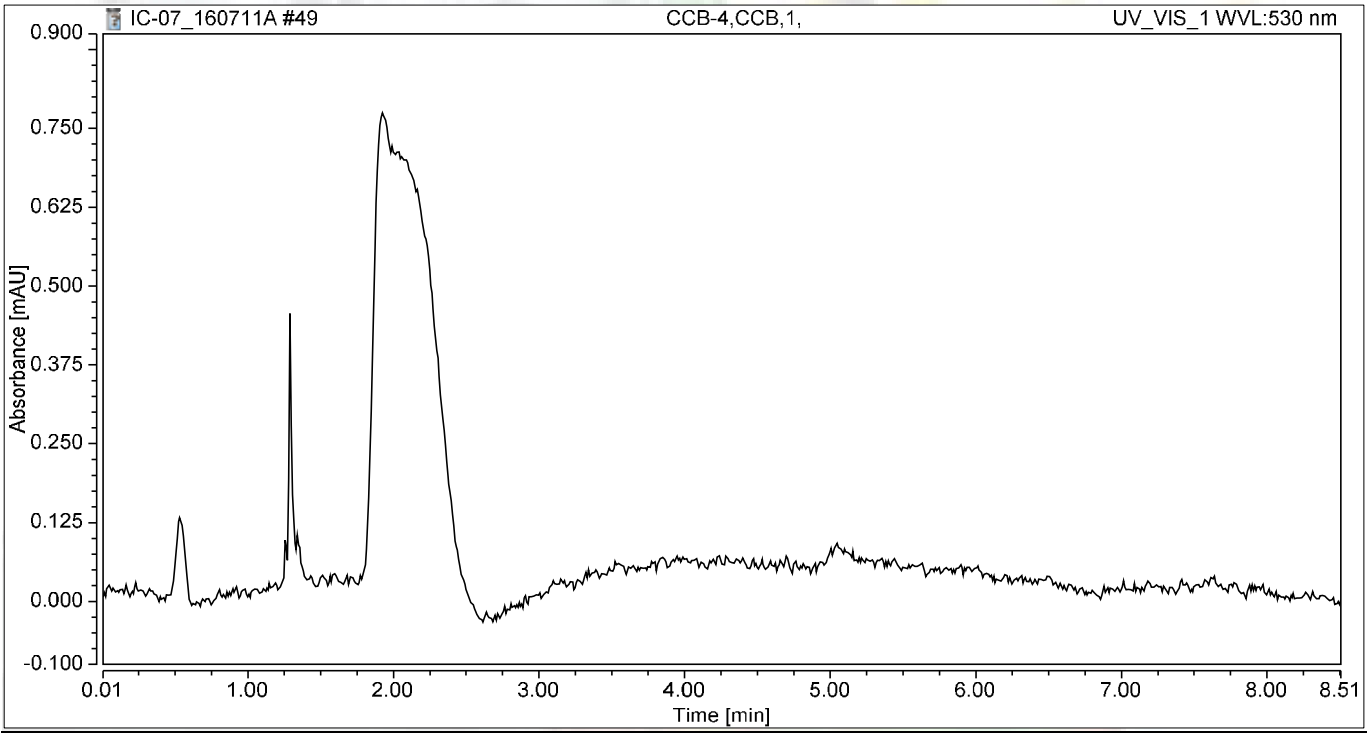
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	5.048	2.547	14.020	100.00	100.00	10.0424
Total:			**2.547**	**14.020**	**100.00**	**100.00**	

Chromatogram and Results

Injection Details

Injection Name:	**CCB-4,CCB,1,**	*Run Time (min):*	**8.50**
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:	**160707_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**11/Jul/16 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
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**	

SM 4500-NO3F

Wet Chemistry Technical Batch Review Checklist (ARCUS02)

ASSET LABORATORIES - LAS VEGAS

FIRST LEVEL REVIEW:

QC Batch Number: R109386 **Analyst:** REB

ASSET #: N020245 **Date Analyzed:** 7/12/2016

Method: 4500_NO3

Initial Calibration	1st Level Review Y	N	N/A	2nd Level Review 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:

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 Reb 07/21/2016 Date: —

2nd Level Reviewer Mary 7/23/2016 Date: —

SAMPLE CALCULATION

Sample Calculation

METHOD: EPA 4500NO3F
TEST NAME: Nitrate/Nitrite-N by Automated Cadmium Reduction
MATRIX: ~~Water~~ Groundwater

FORMULA:

Calculate the Nitrate/Nitrite-N concentration, in mg/L, in the original sample as follows:

Nitrate/Nitrite-N, mg/L = A * DF

where:

A = mg/L, Nitrate/Nitrite-N instrument calculated concentration
DF = dilution factor

For **N020245-001E**, concentration in mg/L is calculated as follows:

Nitrate/Nitrite-N, mg/L = 0.3828*1

= 0.3828 mg/L

Reporting results in two significant figures:

Nitrate/Nitrite-N, mg/L = 0.38

Rob 07/21/2016

INITIAL CALIBRATION DATA SUMMARY

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

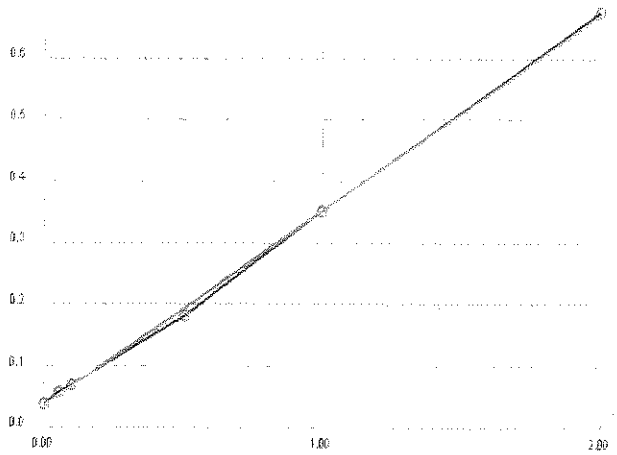
N.	Value	Tolerance
1	1	0.1

Calibration

Curve type	Linear (Calibrants)
Curve forced to zero	No
Blank inclusion	No

Formula	y = 0.3182x + 0.0352
Correlation	.999685

Calibrant	Energy	Set	Conc
1	0.0385	0.0000	0.0104
2	0.0561	0.0500	0.0657
3	0.0687	0.1000	0.1053
4	0.1825	0.5000	0.4630
5	0.3515	1.0000	0.9941
6	0.6752	2.0000	2.0115



Notes:

2% CuSO4- R160619A
R1 Buffer- R160619B
R2 Coloring reagent- R160620B

STD 1°- ISST160211J
STD 2°- ISST150730E

Reb 07/21/2016

INITIAL CALIBRATION AND CONTINUING CALIBRATION VERIFICATION SUMMARY

CLIENT: ARCADIS U.S., Inc. - California
Work Order: N020245
Project: PG&E Topock - RMP, RC000753.0801

ANALYTICAL QC SUMMARY REPORT

TestCode: 4500N03F_W

Sample ID **ICV**	SampType: **ICV**	TestCode: **4500N03F_W**	Units: **mg/L**	Prep Date:	RunNo: **109386**
Client ID: **ICV**	Batch ID: **R109386**	TestNo: **SM4500-NO3**		Analysis Date: **7/12/2016**	SeqNo: **2370899**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrate/Nitrite as N	0.502	0.050	0.5000	0	100	90	110				

Sample ID **CCV-1**	SampType: **CCV**	TestCode: **4500N03F_W**	Units: **mg/L**	Prep Date:	RunNo: **109386**
Client ID: **CCV**	Batch ID: **R109386**	TestNo: **SM4500-NO3**		Analysis Date: **7/12/2016**	SeqNo: **2370911**

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 **CCV-2**	SampType: **CCV**	TestCode: **4500N03F_W**	Units: **mg/L**	Prep Date:	RunNo: **109386**
Client ID: **CCV**	Batch ID: **R109386**	TestNo: **SM4500-NO3**		Analysis Date: **7/12/2016**	SeqNo: **2370922**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrate/Nitrite as N	0.482	0.050	0.5000	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
DO	Surrogate Diluted Out		Calculations are based on raw values		

INITIAL CALIBRATION AND CONTINUING CALIBRATION BLANK SUMMARY

CLIENT: ARCADIS U.S., Inc. - California
Work Order: N020245
Project: PG&E Topock - RMP, RC000753.0801

ANALYTICAL QC SUMMARY REPORT

TestCode: 4500N03F_W

Sample ID **ICB**	SampType: **ICB**	TestCode: **4500N03F_W**	Units: **mg/L**	Prep Date:	RunNo: **109386**
Client ID: **ICB**	Batch ID: **R109386**	TestNo: **SM4500-NO3**		Analysis Date: **7/12/2016**	SeqNo: **2370900**

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 **CCB-1**	SampType: **CCB**	TestCode: **4500N03F_W**	Units: **mg/L**	Prep Date:	RunNo: **109386**
Client ID: **CCB**	Batch ID: **R109386**	TestNo: **SM4500-NO3**		Analysis Date: **7/12/2016**	SeqNo: **2370912**

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 **CCB-2**	SampType: **CCB**	TestCode: **4500N03F_W**	Units: **mg/L**	Prep Date:	RunNo: **109386**
Client ID: **CCB**	Batch ID: **R109386**	TestNo: **SM4500-NO3**		Analysis Date: **7/12/2016**	SeqNo: **2370923**

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
DO	Surrogate Diluted Out		Calculations are based on raw values		

LOGBOOK DATA, QUANTITATION REPORT and/or SPECTRA

Advanced Technology Laboratories, Inc.

3151 W. Post Rd.
Las Vegas, NV. 89118
702-307-2659
702-307-2691
www.atl-labs.com

Time start: 07-12-2016 15:16
Time end: 07-12-2016 17:26

			EPA 353.2 NO3 as N		
			ppm	Flags	OD
1	<BLANK>	16:57:36	0.0173		0.0407
2	<BLANK>	16:58:31	0.0129		0.0393
3	<CAL1>	16:59:31	0.0104	[0]	0.0385
4	<CAL2>	17:00:26	0.0657	[0.05]	0.0561
5	<CAL3>	17:01:22	0.1053	[0.1]	0.0687
6	<CAL4>	17:02:17	0.4630	[0.5]	0.1825
7	<CAL5>	17:03:17	0.9941	[1]	0.3515
8	<CAL6>	17:04:12	2.0115	[2]	0.6752
9	,BLANK,BLANK,1,	17:05:14	0.0424		0.0487
10	,ICV,ICV,1,	17:06:08	0.5019		0.1949
11	,ICB,ICB,1,	17:07:03	0.0217		0.0421
12	,MB-H2O,MBLK,1,	17:08:04	0.0119		0.0390
13	,LCS-H2O,LCS,1,	17:09:00	0.4702		0.1848
14	,N020244-001E,SAMP,1,	17:10:00	0.4262		0.1708
15	,N020244-001EDUP,DUP,1,	17:10:43	0.3982		0.1619
16	,N020244-001EMS,MS,1,	17:11:33	0.9919		0.3508
17	,N020244-001EMSD,MSD,1,	17:12:15	1.0086		0.3561
18	,N020244-002E,SAMP,1,	17:12:58	0.4451		0.1768
19	,N020244-003E,SAMP,1,	17:13:46	0.4441		0.1765
20	,N020244-004E,SAMP,1,	17:14:29	0.3841		0.1574
21	,BLANK,BLANK,1	17:15:17	0.0176		0.0408
22	,CCV-1,CCV,1,	17:16:01	0.4781		0.1873
23	,CCB-1,CCB,1,	17:16:42	0.0176		0.0408
24	,N020244-005E,SAMP,1,	17:17:32	0.4108		0.1659
25	,N020244-006E,SAMP,1,	17:18:15	0.3762		0.1549
26	,N020244-007E,SAMP,1,	17:18:57	0.4243		0.1702

Reb 07/21/2016

			EPA 353.2 NO3 as N		
			ppm	Flags	OD
27	,N020244-008E,SAMP,1,	17:19:46	0.4051		0.1641
28	,N020244-009E,SAMP,1,	17:20:28	0.3775		0.1553
29	,N020245-001E,SAMP,1,	17:21:12	0.3828		0.1570
30	,N020245-002E,SAMP,1,	17:22:00	0.4394		0.1750
31	,BLANK,BLANK,1	17:22:43	0.0119		0.0390
32	,CCV-2,CCV,1,	17:23:26	0.4815		0.1884
33	,CCB-2,CCB,1,	17:24:14	0.0132		0.0394

Reb 07/21/2016

Nitrate/Nitrite as N by Cadmium Reduction Preparation and Runlog

Matrix:

Method: SM 4500-NO3-F/ EPA 353.2
Insturument: Easy Chem Analyzer

Slope: 95.0%
pH4: 4.00
pH7: 7.00
pH10: 10.04

LCS- 7.01 @ pH7

Reagent ID #
Ammonium Chloride reagent/Buffer: R160619B
Color reagent: R160620B
2% Copper Sulfate: R160619A
Ammonium Hydroxide: CINV-160615A

Date Analyzed: 07/12/2016
Time Analyzed: 15:16PM
Analyzed By: REB

	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)
1)	N020244-001E		7.91						
2)	N020244-002E		8.30						
3)	N020244-003E		7.70						
4)	N020244-004E		8.43						
5)	N020244-005E		8.66						
6)	N020244-006E		8.22						
7)	N020244-007E		8.19						
8)	N020244-008E		8.72						
9)	N020244-009E		8.31						
10)	N020245-001E		8.12						
11)	N020245-002E		8.04						
12)									
13)									
14)									
15)									
16)									
17)									
18)									
19)									
20)									
21)									
22)									
23)									

Advanced Technology Laboratories, Inc.
Book # 1

Reb 07/21/2016

EPA 6010B
Dissolved

Metals Technical Batch Review Checklist (ARCUS02)

ASSET LABORATORIES - LAS VEGAS

FIRST LEVEL REVIEW:

QC Batch Number: 58946
ASSET #: N020245

Instrument ID: ICPMS-02
Analyst: CEI
Date Analyzed: 7/12/2016

Method:

- [x] EPA 6010B / 200.7 Dissolved
- [x] EPA 6020 / 200.8
- [ ] EPA 7470A / 7471A/245.1
- [ ] 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					
Interference Check						
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					
Continuing Calibration						
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 ICVand CCV analysis.	X					
11. Do all calibration blanks (ICB and CCBs) meet criteria? (< PQL)	X					
12 Is low level check twice during 8 hr period or at end within ± 30% of expected value? (ICP/ICPMS only)	X					
Sample Information						
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			
QC Items						
22. IS are within control limits (70-125% for ICPMS).	X					
23. Method blank values are below the PQL .	X					
24. LCS compounds within control limits.	X					
25. MS/MSD, RPD's are within control limits	X					
Raw Data and Miscellaneous Information						
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					
Preliminary Report						
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:

	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 7/22/2016 Date: —

2nd Level Reviewer 7/23/2016 Date: —

SAMPLE CALCULATION

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:

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 **N020245-001B** , the concentration ir ug/L is calculated as follows:

Iron , ug/L = 0.03291 * 1 * (25/25) * 1000

Iron , ug/L = 32.91

Reporting results in two significant figures,

Iron , ug/L = 33

% RSD SUMMARY

RSD SUMMARY: 160712A

Instrument ID: ICP-02

Sample Name	Type	DF	Analyte	Reported Conc	RSD	Criteria	Comment
CalBlk	IBLK	1	Fe	0	198.14	15	<PQL
Standard1	ICAL	1	Fe	0.02	1.86	15	PASS
Standard2	ICAL	1	Fe	0.05	1.12	15	PASS
Standard3	ICAL	1	Fe	2	0.28	15	PASS
Standard4	ICAL	1	Fe	5	0.1	15	PASS
Standard5	ICAL	1	Fe	7.5	0.098	15	PASS
Standard6	ICAL	1	Fe	10	0.12	15	PASS
Standard7	ICAL	1	Fe	20	0.14	15	PASS
ICV	ICV	1	Fe	9.99	0.14	15	PASS
ICB	ICB	1	Fe	-0.0066	2.89	15	PASS
LLICV	CCV1	1	Fe	0.014	0.6	20	PASS
ICSA1	ICSA	1	Fe	183.15	0.73	15	PASS
ICSAB1	ICSAB	1	Fe	186.26	0.3	15	PASS
LLICV	CCV1	1	Fe	0.016	1.22	20	PASS
MB-58946	MBLK	1	Fe	0.00045	145.24	15	<PQL
LCS-58946	LCS	1	Fe	0.11	0.29	15	PASS
N020244-001B	SAMP	1	Fe	0.0022	16.51	15	<PQL
N020244-001B	SAMP	5	Fe	-0.0054	5.012	15	PASS
N020244-001B-PS	PS	1	Fe	0.11	0.29	15	PASS
N020244-001B-MS	MS	1	Fe	0.1	0.26	15	PASS
N020244-001B-MSD	MSD	1	Fe	0.1	0.69	15	PASS
N020244-002B	SAMP	1	Fe	0.0048	39.34	15	<PQL
N020244-003B	SAMP	1	Fe	0.0044	27.37	15	<PQL
N020244-004B	SAMP	1	Fe	0.014	9.21	15	PASS
CCV1	CCV	1	Fe	9.63	0.059	15	PASS
CCB1	CCB	1	Fe	-0.0069	10.0099	15	PASS
N020244-005B	SAMP	1	Fe	0.017	1.7	15	PASS
N020244-006B	SAMP	1	Fe	0.026	1.96	15	PASS
N020244-007B	SAMP	1	Fe	0.025	2.85	15	PASS
N020244-008B	SAMP	1	Fe	0.0072	8.47	15	PASS
N020244-009B	SAMP	1	Fe	-0.00032	130.33	15	<PQL
N020245-001B	SAMP	1	Fe	0.033	1.48	15	PASS
N020245-002B	SAMP	1	Fe	0.022	4.31	15	PASS
N020245-002B-MS	MS	1	Fe	0.12	0.74	15	PASS
CCV2	CCV	1	Fe	9.59	0.15	15	PASS
CCB2	CCB	1	Fe	-0.0072	9.89	15	PASS
CCV3	CCV	1	Fe	9.62	0.088	15	PASS
CCB3	CCB	1	Fe	-0.0072	7.38	15	PASS
CCV4	CCV	1	Fe	9.58	0.058	15	PASS
CCB4	CCB	1	Fe	-0.0076	3.72	15	PASS
LLCCV1	CCV2	1	Fe	0.016	1.96	20	PASS
ICSA2	ICSA	1	Fe	174.91	0.65	15	PASS

RSD SUMMARY: 160712A

Instrument ID: ICP-02

Sample Name	Type	DF	Analyte	Reported Conc	RSD	Criteria	Comment
ICSA2	ICSA	1	Fe	176.26	0.39	15	PASS
ICSAB2	ICSAB	1	Fe	179.61	0.12	15	PASS

ANALYSIS RUN LOG

INJECTION LOG: 160712A

Instrument ID: ICP-02

STANDARD CODE	
Standard1	MWST-160608A,0.5<50mL
Standard2	MWST-160608F
Standard3	MWST-160608J,5<50mL
Standard4	MWST-160608J,12.5<50mL
Standard5	MWST-160608J,15<40mL
Standard6	MWST-160608J,25<50mL
Standard7	MWST-160608J
ICV	MWST-160701B
CCV	MWST-160608J,25<50mL
ICSA/ICSAB	MWST-160523A/MWST-160608K
Int. Std. (Y)	MSST-160323C
PS Spike	MWST-160201H/MWST-160531G/MWST-160701E

A/S Loc	Sample Name	Type	DF	Acq Date	Acq Time
3	CalBlk	IBLK	1	07/12/2016	03:55:16 AM
2	Standard1	ICAL	1	07/12/2016	04:00:59 AM
10	Standard2	ICAL	1	07/12/2016	04:06:40 AM
11	Standard3	ICAL	1	07/12/2016	04:12:21 AM
12	Standard4	ICAL	1	07/12/2016	04:18:03 AM
13	Standard5	ICAL	1	07/12/2016	04:23:18 AM
7	Standard6	ICAL	1	07/12/2016	04:28:35 AM
8	Standard7	ICAL	1	07/12/2016	04:33:48 AM
14	ICV	ICV	1	07/12/2016	04:40:03 AM
3	ICB	ICB	1	07/12/2016	04:45:17 AM
2	LLICV	CCV1	1	07/12/2016	04:53:43 AM
4	ICSA1	ICSA	1	07/12/2016	04:59:24 AM
5	ICSAB1	ICSAB	1	07/12/2016	05:06:16 AM
2	LLICV	CCV1	1	07/12/2016	05:17:35 AM
122	MB-58946	MBLK	1	07/12/2016	05:23:41 AM
123	LCS-58946	LCS	1	07/12/2016	05:28:54 AM
124	N020244-001B	SAMP	1	07/12/2016	05:34:37 AM
125	N020244-001B	SAMP	5	07/12/2016	05:40:21 AM
126	N020244-001B-PS	PS	1	07/12/2016	05:46:04 AM
127	N020244-001B-MS	MS	1	07/12/2016	05:51:48 AM
128	N020244-001B-MSD	MSD	1	07/12/2016	05:57:31 AM
129	N020244-002B	SAMP	1	07/12/2016	06:03:15 AM
130	N020244-003B	SAMP	1	07/12/2016	06:08:58 AM
131	N020244-004B	SAMP	1	07/12/2016	06:14:42 AM
7	CCV1	CCV	1	07/12/2016	06:20:26 AM
3	CCB1	CCB	1	07/12/2016	06:25:50 AM
132	N020244-005B	SAMP	1	07/12/2016	06:31:01 AM

A/S Loc	Sample Name	Type	DF	Acq Date	Acq Time
133	N020244-006B	SAMP	1	07/12/2016	06:36:44 AM
134	N020244-007B	SAMP	1	07/12/2016	06:42:28 AM
135	N020244-008B	SAMP	1	07/12/2016	06:48:11 AM
136	N020244-009B	SAMP	1	07/12/2016	06:53:55 AM
137	N020245-001B	SAMP	1	07/12/2016	06:59:39 AM
138	N020245-002B	SAMP	1	07/12/2016	07:05:22 AM
139	N020245-002B-MS	MS	1	07/12/2016	07:11:06 AM
140	MB-58945	MBLK	1	07/12/2016	07:16:21 AM
141	LCS-58945	LCS	1	07/12/2016	07:21:33 AM
7	CCV2	CCV	1	07/12/2016	07:27:16 AM
3	CCB2	CCB	1	07/12/2016	07:32:30 AM
142	N020244-001C	SAMP	1	07/12/2016	07:37:41 AM
143	N020244-001C	SAMP	5	07/12/2016	07:43:25 AM
144	N020244-001C-PS	PS	1	07/12/2016	07:49:08 AM
145	N020244-001C-MS	MS	1	07/12/2016	07:54:52 AM
146	N020244-001C-MSD	MSD	1	07/12/2016	08:00:36 AM
147	N020244-002C	SAMP	1	07/12/2016	08:06:20 AM
148	N020244-003C	SAMP	1	07/12/2016	08:12:04 AM
149	N020244-004C	SAMP	1	07/12/2016	08:17:49 AM
150	N020244-005C	SAMP	1	07/12/2016	08:23:33 AM
151	N020244-006C	SAMP	1	07/12/2016	08:29:16 AM
7	CCV3	CCV	1	07/12/2016	08:35:01 AM
3	CCB3	CCB	1	07/12/2016	08:40:14 AM
152	N020244-007C	SAMP	1	07/12/2016	08:45:24 AM
153	N020244-008C	SAMP	1	07/12/2016	08:51:07 AM
154	N020244-009C	SAMP	1	07/12/2016	08:56:50 AM
155	N020245-001C	SAMP	1	07/12/2016	09:02:33 AM
156	N020245-002C	SAMP	1	07/12/2016	09:08:16 AM
157	N020245-002C-MS	MS	1	07/12/2016	09:14:00 AM
7	CCV4	CCV	1	07/12/2016	09:19:44 AM
3	CCB4	CCB	1	07/12/2016	09:24:58 AM
2	LLCCV1	CCV2	1	07/12/2016	10:02:51 AM
4	ICSA2	ICSA	1	07/12/2016	10:08:30 AM
4	ICSA2	ICSA	1	07/12/2016	10:19:59 AM
5	ICSAB2	ICSAB	1	07/12/2016	10:26:51 AM

SAMPLE PREPARATION LOG

ASSET Laboratories

PREP BATCH REPORT

Prep Start Date: **7/8/2016 12:05:00 P**
Prep End Date: **7/8/2016 4:30:00 P**
Prep Batch **58946** Prep Code: **3010_W_DISS**

Reviewed/ Date: _____
Initials/ Date: 7/22/2016
Technician: **Claire Ignacio**

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-58946	Aqueous		25	☐	0	0	25	1.000		
MB-58946	Aqueous		25	☐	0	0	25	1.000		
N020244-001B	Groundwater	<2	25	☐	0	0	25	1.000		
N020244-001B-MS	Groundwater	<2	25	☐	0	0	25	1.000		
N020244-001B-MS	Groundwater	<2	25	☐	0	0	25	1.000		
N020244-002B	Groundwater	<2	25	☐	0	0	25	1.000		
N020244-003B	Groundwater	<2	25	☐	0	0	25	1.000		
N020244-004B	Groundwater	<2	25	☐	0	0	25	1.000		
N020244-005B	Groundwater	<2	25	☐	0	0	25	1.000		
N020244-006B	Groundwater	<2	25	☐	0	0	25	1.000		
N020244-007B	Groundwater	<2	25	☐	0	0	25	1.000		
N020244-008B	Groundwater	<2	25	☐	0	0	25	1.000		
N020244-009B	Groundwater	<2	25	☐	0	0	25	1.000		
N020245-001B	Groundwater	<2	25	☐	0	0	25	1.000		

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

Number	Reagent Name
8446	NITRIC ACID
8493	HYDROCHLORIC ACID

Spk ID	Spike Name	SampType	AmtAdd
MWST-160201H	ICP Solution B	LCS,MS,MSD	0.5
MWST-160531G	ICP Solution C	LCS,MS,MSD	0.5
MWST-160701E	ICP Solution A	LCS,MS,MSD	0.5

ASSET Laboratories

PREP BATCH REPORT

Prep Start Date: **7/8/2016 12:05:00 P**
Prep End Date: **7/8/2016 4:30:00 P**
Prep Batch **58946** Prep Code: **3010_W_DISS**

Reviewed/ Date: _____
Initials/ Date: _____ 7/22/2016
Technician: **Claire Ignacio**

Prep Factor Units: **mL / mL**

Sample ID	Matrix	pH	SampAmt	3 Replicates	Sol Added	Sol Recov	Fin Vol	factor	Clean Up Code	TURB Check
N020245-002B	Groundwater	<2	25	☐	0	0	25	1.000		
N020245-002B-MS	Groundwater	<2	25	☐	0	0	25	1.000		

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

Number	Reagent Name
8446	NITRIC ACID
8493	HYDROCHLORIC ACID

Spk ID	Spike Name	SampType	AmtAdd
MWST-160201H	ICP Solution B	LCS,MS,MSD	0.5
MWST-160531G	ICP Solution C	LCS,MS,MSD	0.5
MWST-160701E	ICP Solution A	LCS,MS,MSD	0.5

INITIAL CALIBRATION DATA SUMMARY

INITIAL CALIBRATION SUMMARY: 160712A

Instrument ID: ICP-02

Sample ID	Date	Time	Elem	Wavelength	Corrected Intensity	Concentration	Units	R
Iron								
CalBlk	07/12/2016	03:55:16 AM	Fe	273.953	96	0.00	mg/L	
Standard1	07/12/2016	04:00:59 AM	Fe	273.953	547	0.0200	mg/L	
Standard2	07/12/2016	04:06:40 AM	Fe	273.953	1668	0.050	mg/L	
Standard3	07/12/2016	04:12:21 AM	Fe	273.953	72110	2.000	mg/L	
Standard4	07/12/2016	04:18:03 AM	Fe	273.953	186357	5.000	mg/L	
Standard5	07/12/2016	04:23:18 AM	Fe	273.953	260194	7.500	mg/L	
Standard6	07/12/2016	04:28:35 AM	Fe	273.953	364187	10.000	mg/L	
Standard7	07/12/2016	04:33:48 AM	Fe	273.953	731714	20.000	mg/L	0.9999

INITIAL CALIBRATION AND CONTINUING CALIBRATION VERIFICATION SUMMARY

CLIENT: ARCADIS U.S., Inc. - California
Work Order: N020245
Project: PG&E Topock - RMP, RC000753.0801

ANALYTICAL QC SUMMARY REPORT

TestCode: 6010_WDPGEPPB

Sample ID **ICV**	SampType: **ICV**	TestCode: **6010_WDPG**	Units: **ug/L**	Prep Date:	RunNo: **109377**
Client ID: **ICV**	Batch ID: **R109377**	TestNo: **EPA 6010B**		Analysis Date: **7/12/2016**	SeqNo: **2370439**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Iron	9994.446	20	10000	0	99.9	90	110				

Sample ID **LLICV**	SampType: **CCV1**	TestCode: **6010_WDPG**	Units: **ug/L**	Prep Date:	RunNo: **109377**
Client ID: **ZZZZZZ**	Batch ID: **R109377**	TestNo: **EPA 6010B**		Analysis Date: **7/12/2016**	SeqNo: **2370444**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Iron	16.352	20	20.00	0	81.8	80	120				

Sample ID **CCV1**	SampType: **CCV**	TestCode: **6010_WDPG**	Units: **ug/L**	Prep Date:	RunNo: **109377**
Client ID: **CCV**	Batch ID: **R109377**	TestNo: **EPA 6010B**		Analysis Date: **7/12/2016**	SeqNo: **2370455**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Iron	9634.280	20	10000	0	96.3	90	110				

Sample ID **CCV2**	SampType: **CCV**	TestCode: **6010_WDPG**	Units: **ug/L**	Prep Date:	RunNo: **109377**
Client ID: **CCV**	Batch ID: **R109377**	TestNo: **EPA 6010B**		Analysis Date: **7/12/2016**	SeqNo: **2370467**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Iron	9585.295	20	10000	0	95.9	90	110				

Sample ID **CCV3**	SampType: **CCV**	TestCode: **6010_WDPG**	Units: **ug/L**	Prep Date:	RunNo: **109377**
Client ID: **CCV**	Batch ID: **R109377**	TestNo: **EPA 6010B**		Analysis Date: **7/12/2016**	SeqNo: **2370479**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Iron	9615.094	20	10000	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
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: ARCADIS U.S., Inc. - California
Work Order: N020245
Project: PG&E Topock - RMP, RC000753.0801

ANALYTICAL QC SUMMARY REPORT

TestCode: 6010_WDPGEPPB

Sample ID **CCV4**	SampType: **CCV**	TestCode: **6010_WDPG**	Units: **ug/L**	Prep Date:	RunNo: **109377**
Client ID: **CCV**	Batch ID: **R109377**	TestNo: **EPA 6010B**		Analysis Date: **7/12/2016**	SeqNo: **2370487**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Iron	9583.725	20	10000	0	95.8	90	110				

Sample ID **LLCCV1**	SampType: **CCV2**	TestCode: **6010_WDPG**	Units: **ug/L**	Prep Date:	RunNo: **109377**
Client ID: **ZZZZZZ**	Batch ID: **R109377**	TestNo: **EPA 6010B**		Analysis Date: **7/12/2016**	SeqNo: **2370489**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Iron	16.473	20	20.00	0	82.4	70	130				

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

CLIENT: ARCADIS U.S., Inc. - California
Work Order: N020245
Project: PG&E Topock - RMP, RC000753.0801

ANALYTICAL QC SUMMARY REPORT

TestCode: 6010_WDPGEPPB

Sample ID **ICB**	SampType: **ICB**	TestCode: **6010_WDPG**	Units: **ug/L**	Prep Date:	RunNo: **109377**
Client ID: **ICB**	Batch ID: **R109377**	TestNo: **EPA 6010B**		Analysis Date: **7/12/2016**	SeqNo: **2370440**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Iron	-6.583806	20									

Sample ID **CCB1**	SampType: **CCB**	TestCode: **6010_WDPG**	Units: **ug/L**	Prep Date:	RunNo: **109377**
Client ID: **CCB**	Batch ID: **R109377**	TestNo: **EPA 6010B**		Analysis Date: **7/12/2016**	SeqNo: **2370456**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Iron	-6.89617	20									

Sample ID **CCB2**	SampType: **CCB**	TestCode: **6010_WDPG**	Units: **ug/L**	Prep Date:	RunNo: **109377**
Client ID: **CCB**	Batch ID: **R109377**	TestNo: **EPA 6010B**		Analysis Date: **7/12/2016**	SeqNo: **2370468**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Iron	-7.18646	20									

Sample ID **CCB3**	SampType: **CCB**	TestCode: **6010_WDPG**	Units: **ug/L**	Prep Date:	RunNo: **109377**
Client ID: **CCB**	Batch ID: **R109377**	TestNo: **EPA 6010B**		Analysis Date: **7/12/2016**	SeqNo: **2370480**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Iron	-7.233435	20									

Sample ID **CCB4**	SampType: **CCB**	TestCode: **6010_WDPG**	Units: **ug/L**	Prep Date:	RunNo: **109377**
Client ID: **CCB**	Batch ID: **R109377**	TestNo: **EPA 6010B**		Analysis Date: **7/12/2016**	SeqNo: **2370488**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Iron	-7.566048	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
DO	Surrogate Diluted Out		Calculations are based on raw values		

SUMMARY OF INSTRUMENT CHECK (ICSA & ICSAB)

CLIENT: ARCADIS U.S., Inc. - California
Work Order: N020245
Project: PG&E Topock - RMP, RC000753.0801

ANALYTICAL QC SUMMARY REPORT

TestCode: 6010_WDPGEPPB

Sample ID **ICSA1** SampType: **ICSA** TestCode: **6010_WDPG** Units: **ug/L** Prep Date: RunNo: **109377**
Client ID: **ICSA** Batch ID: **R109377** TestNo: **EPA 6010B** Analysis Date: **7/12/2016** SeqNo: **2370442**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aluminum	545391.490	50	500000	0	109	80	120				
Calcium	526942.640	500	500000	0	105	80	120				
Iron	183152.449	20	200000	0	91.6	80	120				
Magnesium	486309.524	100	500000	0	97.3	80	120				

Sample ID **ICSAB1** SampType: **ICSAB** TestCode: **6010_WDPG** Units: **ug/L** Prep Date: RunNo: **109377**
Client ID: **ICSAB** Batch ID: **R109377** TestNo: **EPA 6010B** Analysis Date: **7/12/2016** SeqNo: **2370443**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aluminum	557662.338	50	500000	0	112	80	120				
Calcium	535246.792	500	500000	0	107	80	120				
Iron	186264.222	20	200000	0	93.1	80	120				
Magnesium	484938.178	100	500000	0	97.0	80	120				

Sample ID **ICSA2** SampType: **ICSA** TestCode: **6010_WDPG** Units: **ug/L** Prep Date: RunNo: **109377**
Client ID: **ICSA** Batch ID: **R109377** TestNo: **EPA 6010B** Analysis Date: **7/12/2016** SeqNo: **2370491**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aluminum	534180.516	50	500000	0	107	80	120				
Calcium	450101.752	500	500000	0	90.0	80	120				
Iron	176261.004	20	200000	0	88.1	80	120				
Magnesium	425661.178	100	500000	0	85.1	80	120				

Sample ID **ICSAB2** SampType: **ICSAB** TestCode: **6010_WDPG** Units: **ug/L** Prep Date: RunNo: **109377**
Client ID: **ICSAB** Batch ID: **R109377** TestNo: **EPA 6010B** Analysis Date: **7/12/2016** SeqNo: **2370492**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aluminum	544340.743	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: N020245
Project: PG&E Topock - RMP, RC000753.0801

ANALYTICAL QC SUMMARY REPORT

TestCode: 6010_WDPGEPPB

Sample ID **ICSAB2**	SampType: **ICSAB**	TestCode: **6010_WDPG**	Units: **ug/L**	Prep Date:	RunNo: **109377**
Client ID: **ICSAB**	Batch ID: **R109377**	TestNo: **EPA 6010B**		Analysis Date: **7/12/2016**	SeqNo: **2370492**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Calcium	457450.229	500	500000	0	91.5	80	120				
Iron	179607.382	20	200000	0	89.8	80	120				
Magnesium	429786.484	100	500000	0	86.0	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
DO	Surrogate Diluted Out		Calculations are based on raw values		

INTERNAL STANDARD SUMMARY

INTERNAL STANDARD: 160712A

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	99.31	65-125	PASS
Standard2	ICAL	1	0.98	97.94	65-125	PASS
Standard3	ICAL	1	1.01	101.04	65-125	PASS
Standard4	ICAL	1	0.99	99.13	65-125	PASS
Standard5	ICAL	1	1.012	101.18	65-125	PASS
Standard6	ICAL	1	0.98	97.6	65-125	PASS
Standard7	ICAL	1	0.95	94.64	65-125	PASS
ICV	ICV	1	0.95	95.067	65-125	PASS
ICB	ICB	1	0.99	99.32	65-125	PASS
LLICV	CCV1	1	1.0002	100.02	65-125	PASS
ICSA1	ICSA	1	0.93	93.12	65-125	PASS
ICSAB1	ICSAB	1	0.92	92.035	65-125	PASS
LLICV	CCV1	1	1.0024	100.24	65-125	PASS
MB-58946	MBLK	1	1.047	104.69	65-125	PASS
LCS-58946	LCS	1	1.027	102.66	65-125	PASS
N020244-001B	SAMP	1	0.98	98.31	65-125	PASS
N020244-001B	SAMP	5	0.99	98.55	65-125	PASS
N020244-001B-PS	PS	1	0.97	96.62	65-125	PASS
N020244-001B-MS	MS	1	0.99	99.071	65-125	PASS
N020244-001B-MSD	MSD	1	0.99	99.12	65-125	PASS
N020244-002B	SAMP	1	0.99	98.8	65-125	PASS
N020244-003B	SAMP	1	1.0044	100.44	65-125	PASS
N020244-004B	SAMP	1	1.0067	100.67	65-125	PASS
CCV1	CCV	1	0.98	98.32	65-125	PASS
CCB1	CCB	1	1.0025	100.25	65-125	PASS
N020244-005B	SAMP	1	1.12	111.71	65-125	PASS
N020244-006B	SAMP	1	1.0092	100.92	65-125	PASS
N020244-007B	SAMP	1	1.0051	100.51	65-125	PASS
N020244-008B	SAMP	1	1.0069	100.69	65-125	PASS
N020244-009B	SAMP	1	1.0018	100.18	65-125	PASS
N020245-001B	SAMP	1	1.0068	100.68	65-125	PASS
N020245-002B	SAMP	1	1.0048	100.48	65-125	PASS
N020245-002B-MS	MS	1	1.011	101.06	65-125	PASS
CCV2	CCV	1	0.99	99.22	65-125	PASS
CCB2	CCB	1	1.01	101.05	65-125	PASS
CCV3	CCV	1	1	99.69	65-125	PASS
CCB3	CCB	1	1.017	101.73	65-125	PASS
CCV4	CCV	1	1.0048	100.48	65-125	PASS
CCB4	CCB	1	1.024	102.39	65-125	PASS
LLCCV1	CCV2	1	1.0011	100.11	65-125	PASS

INTERNAL STANDARD: 160712A

Instrument ID: ICP-02

Sample Name	Type	DF	Yttrium, 1.0 mg/L			
			Reported Conc	%REC	Criteria	Comment
ICSA2	ICSA	1	0.98	98.42	65-125	PASS
ICSA2	ICSA	1	0.87	87.2	65-125	PASS
ICSAB2	ICSAB	1	0.88	88.016	65-125	PASS

SERIAL DILUTION/
POST DIGESTION SPIKE

ASSET Laboratories

ICP-Metals in Water

Dilution Test Summary

Work Order No.: N020245
Test Method: EPA 6010B
Analysis Date: 7/12/2016

Matrix: Groundwater
Batch No.: 58946

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
N020244-001B DT 5X	Iron	ug/L	0	NA	2.150222	100.00%	10

Note: NA - Not applicable

CLIENT: ARCADIS U.S., Inc. - California
Work Order: N020245
Project: PG&E Topock - RMP, RC000753.0801

ANALYTICAL QC SUMMARY REPORT

TestCode: 6010_WDPGEPPB

Sample ID	**N020244-001B-PS**	SampType: **PS**	TestCode: **6010_WDPG**	Units: **ug/L**	Prep Date:	RunNo: **109377**
Client ID:	**ZZZZZZ**	Batch ID: **58946**	TestNo: **EPA 6010B**	**EPA 3010A**	Analysis Date: **7/12/2016**	SeqNo: **2370449**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Iron	111.496	20	100.0	2.150	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
DO	Surrogate Diluted Out		Calculations are based on raw values		

MDL STUDY

METHOD DETECTION LIMIT 2016

Method Name: **Metals by ICP**
Method Number: EPA 200.7/ 6010
Analysis Date(s): 4/1/2016, 4/4/2016
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	0.0021	0.0020	0.0020	0.0020	0.0019	0.0020	0.0020	0.00125	0.00005062	**0.00016**	**0.0025**
Al	237.312	0.0272	0.0288	0.0288	0.0267	0.0269	0.0277	0.0276	0.025	0.00085451	**0.00269**	**0.050**
As	188.983	0.0054	0.0049	0.0037	0.0044	0.0060	0.0041	0.0048	0.005	0.00075065	**0.00236**	**0.010**
B	249.679	0.0735	0.0561	0.0463	0.0445	0.0396	0.0464	0.0398	0.05	0.01193786	**0.03752**	**0.10**
Ba	233.529	0.0007	0.0007	0.0006	0.0006	0.0006	0.0007	0.0007	0.000625	0.00003047	**0.00010**	**0.0025**
Be	313.104	0.0007	0.0006	0.0006	0.0006	0.0006	0.0006	0.0007	0.0005	0.00004386	**0.00014**	**0.0010**
Ca	227.546	0.0967	0.1086	0.0893	0.0864	0.0826	0.0978	0.0988	0.1	0.00880307	**0.02767**	**0.20**
Cd	214.437	0.0006	0.0006	0.0007	0.0006	0.0007	0.0006	0.0006	0.000313	0.00003910	**0.00012**	**0.0025**
Co	228.614	0.0011	0.0011	0.0010	0.0010	0.0009	0.0010	0.0011	0.00125	0.00005473	**0.00017**	**0.0025**
Cr	267.719	0.0004	0.0003	0.0004	0.0004	0.0004	0.0003	0.0004	0.0005	0.00004860	**0.00015**	**0.0010**
Cu	324.753	0.0013	0.0015	0.0015	0.0022	0.0022	0.0016	0.0015	0.0025	0.00034907	**0.00110**	**0.0050**
Fe	273.953	0.0115	0.0117	0.0112	0.0102	0.0105	0.0114	0.0114	0.01	0.00057502	**0.00181**	**0.020**
Mg	279.079	0.0227	0.0231	0.0204	0.0225	0.0221	0.0222	0.0250	0.025	0.00138863	**0.00436**	**0.10**
Mn	257.607	0.0013	0.0013	0.0013	0.0012	0.0012	0.0012	0.0012	0.00125	0.00004429	**0.00014**	**0.010**
Mo	202.03	0.0031	0.0032	0.0031	0.0030	0.0026	0.0029	0.0029	0.0025	0.00018274	**0.00057**	**0.0050**
Ni	231.604	0.0019	0.0020	0.0020	0.0022	0.0022	0.0021	0.0021	0.0025	0.00012429	**0.00039**	**0.0050**
Pb	220.351	0.0049	0.0049	0.0048	0.0044	0.0048	0.0048	0.0050	0.005	0.00018831	**0.00059**	**0.010**
Sb	206.836	0.0035	0.0038	0.0020	0.0034	0.0033	0.0032	0.0046	0.005	0.00076686	**0.00241**	**0.010**
Se	196.025	0.0017	0.0033	0.0025	0.0025	0.0015	0.0034	0.0025	0.005	0.00070697	**0.00222**	**0.010**
Sn	189.927	0.0051	0.0048	0.0052	0.0051	0.0044	0.0045	0.0050	0.005	0.00031282	**0.00098**	**0.010**
Ti	334.943	0.0011	0.0011	0.0011	0.0010	0.0011	0.0010	0.0010	0.00125	0.00005159	**0.00016**	**0.010**
Tl	190.794	0.0067	0.0060	0.0064	0.0047	0.0062	0.0067	0.0062	0.0075	0.00070505	**0.00222**	**0.015**
V	292.404	0.0007	0.0007	0.0007	0.0006	0.0006	0.0007	0.0007	0.00125	0.00006264	**0.00020**	**0.0025**
Zn	206.201	0.0024	0.0026	0.0024	0.0024	0.0024	0.0024	0.0033	0.0025	0.00034911	**0.00110**	**0.010**

EPA 6010B

Metals Technical Batch Review Checklist (ARCUS02)

ASSET LABORATORIES - LAS VEGAS

FIRST LEVEL REVIEW:

QC Batch Number: 58945
ASSET #: N020245

Instrument ID: ICPMS-02
Analyst: CEI
Date Analyzed: 7/12/2016

Method:

- [ ] EPA 6010B / 200.7 Total
- [X] EPA 6020 / 200.8
- [ ] EPA 7470A / 7471A/245.1
- [ ] Other

Initial Calibration and Initial Calibration Verification	1st Level Review Y	N	N/A	2nd Level Review 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					
Interference Check						
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					
Continuing Calibration						
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 ICVand CCV analysis.	X					
11. Do all calibration blanks (ICB and CCBs) meet criteria? (< PQL)	X					
12 Is low level check twice during 8 hr period or at end within ± 30% of expected value? (ICP/ICPMS only)	X					
Sample Information						
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			
QC Items						
22. IS are within control limits (70-125% for ICPMS).	X					
23. Method blank values are below the PQL .	X					
24. LCS compounds within control limits.	X					
25. MS/MSD, RPD's are within control limits		X				
Raw Data and Miscellaneous Information						
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					
Preliminary Report						
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 Fe in N020245-002C MS & N020244-001C PS 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 7/22/2016 Date:

2nd Level Reviewer 7/23/2016 Date:

SAMPLE CALCULATION

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:

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 **N020245-001C** , the concentration ir ug/L is calculated as follows:

Iron , ug/L = 0.07123 * 1 * (25/25) * 1000

Iron , ug/L = 71.23

Reporting results in two significant figures,

Iron , ug/L = 71

% RSD SUMMARY

RSD SUMMARY: 160712A

Instrument ID: ICP-02

Sample Name	Type	DF	Analyte	Reported Conc	RSD	Criteria	Comment
CalBlk	IBLK	1	Fe	0	198.14	15	<PQL
Standard1	ICAL	1	Fe	0.02	1.86	15	PASS
Standard2	ICAL	1	Fe	0.05	1.12	15	PASS
Standard3	ICAL	1	Fe	2	0.28	15	PASS
Standard4	ICAL	1	Fe	5	0.1	15	PASS
Standard5	ICAL	1	Fe	7.5	0.098	15	PASS
Standard6	ICAL	1	Fe	10	0.12	15	PASS
Standard7	ICAL	1	Fe	20	0.14	15	PASS
ICV	ICV	1	Fe	9.99	0.14	15	PASS
ICB	ICB	1	Fe	-0.0066	2.89	15	PASS
LLICV	CCV1	1	Fe	0.014	0.6	20	PASS
ICSA1	ICSA	1	Fe	183.15	0.73	15	PASS
ICSAB1	ICSAB	1	Fe	186.26	0.3	15	PASS
LLICV	CCV1	1	Fe	0.016	1.22	20	PASS
CCV1	CCV	1	Fe	9.63	0.059	15	PASS
CCB1	CCB	1	Fe	-0.0069	10.0099	15	PASS
MB-58945	MBLK	1	Fe	-0.0025	6.18	15	PASS
LCS-58945	LCS	1	Fe	0.097	1.42	15	PASS
CCV2	CCV	1	Fe	9.59	0.15	15	PASS
CCB2	CCB	1	Fe	-0.0072	9.89	15	PASS
N020244-001C	SAMP	1	Fe	0.14	0.61	15	PASS
N020244-001C	SAMP	5	Fe	0.022	1.18	15	PASS
N020244-001C-PS	PS	1	Fe	0.22	0.95	15	PASS
N020244-001C-MS	MS	1	Fe	0.22	0.28	15	PASS
N020244-001C-MSD	MSD	1	Fe	0.22	0.48	15	PASS
N020244-002C	SAMP	1	Fe	0.099	0.34	15	PASS
N020244-003C	SAMP	1	Fe	0.1	1.14	15	PASS
N020244-004C	SAMP	1	Fe	0.058	0.28	15	PASS
N020244-005C	SAMP	1	Fe	0.12	1.027	15	PASS
N020244-006C	SAMP	1	Fe	0.062	0.61	15	PASS
CCV3	CCV	1	Fe	9.62	0.088	15	PASS
CCB3	CCB	1	Fe	-0.0072	7.38	15	PASS
N020244-007C	SAMP	1	Fe	0.091	0.74	15	PASS
N020244-008C	SAMP	1	Fe	0.049	1.16	15	PASS
N020244-009C	SAMP	1	Fe	0.047	1.27	15	PASS
N020245-001C	SAMP	1	Fe	0.071	0.26	15	PASS
N020245-002C	SAMP	1	Fe	0.083	1.13	15	PASS
N020245-002C-MS	MS	1	Fe	0.15	1.085	15	PASS
CCV4	CCV	1	Fe	9.58	0.058	15	PASS
CCB4	CCB	1	Fe	-0.0076	3.72	15	PASS
LLCCV1	CCV2	1	Fe	0.016	1.96	20	PASS
ICSA2	ICSA	1	Fe	174.91	0.65	15	PASS

RSD SUMMARY: 160712A

Instrument ID: ICP-02

Sample Name	Type	DF	Analyte	Reported Conc	RSD	Criteria	Comment
ICSA2	ICSA	1	Fe	176.26	0.39	15	PASS
ICSAB2	ICSAB	1	Fe	179.61	0.12	15	PASS

ANALYSIS RUN LOG

INJECTION LOG: 160712A

Instrument ID: ICP-02

STANDARD CODE	
Standard1	MWST-160608A,0.5<50mL
Standard2	MWST-160608F
Standard3	MWST-160608J,5<50mL
Standard4	MWST-160608J,12.5<50mL
Standard5	MWST-160608J,15<40mL
Standard6	MWST-160608J,25<50mL
Standard7	MWST-160608J
ICV	MWST-160701B
CCV	MWST-160608J,25<50mL
ICSA/ICSAB	MWST-160523A/MWST-160608K
Int. Std. (Y)	MSST-160323C
PS Spike	MWST-160201H/MWST-160531G/MWST-160701E

A/S Loc	Sample Name	Type	DF	Acq Date	Acq Time
3	CalBlk	IBLK	1	07/12/2016	03:55:16 AM
2	Standard1	ICAL	1	07/12/2016	04:00:59 AM
10	Standard2	ICAL	1	07/12/2016	04:06:40 AM
11	Standard3	ICAL	1	07/12/2016	04:12:21 AM
12	Standard4	ICAL	1	07/12/2016	04:18:03 AM
13	Standard5	ICAL	1	07/12/2016	04:23:18 AM
7	Standard6	ICAL	1	07/12/2016	04:28:35 AM
8	Standard7	ICAL	1	07/12/2016	04:33:48 AM
14	ICV	ICV	1	07/12/2016	04:40:03 AM
3	ICB	ICB	1	07/12/2016	04:45:17 AM
2	LLICV	CCV1	1	07/12/2016	04:53:43 AM
4	ICSA1	ICSA	1	07/12/2016	04:59:24 AM
5	ICSAB1	ICSAB	1	07/12/2016	05:06:16 AM
2	LLICV	CCV1	1	07/12/2016	05:17:35 AM
122	MB-58946	MBLK	1	07/12/2016	05:23:41 AM
123	LCS-58946	LCS	1	07/12/2016	05:28:54 AM
124	N020244-001B	SAMP	1	07/12/2016	05:34:37 AM
125	N020244-001B	SAMP	5	07/12/2016	05:40:21 AM
126	N020244-001B-PS	PS	1	07/12/2016	05:46:04 AM
127	N020244-001B-MS	MS	1	07/12/2016	05:51:48 AM
128	N020244-001B-MSD	MSD	1	07/12/2016	05:57:31 AM
129	N020244-002B	SAMP	1	07/12/2016	06:03:15 AM
130	N020244-003B	SAMP	1	07/12/2016	06:08:58 AM
131	N020244-004B	SAMP	1	07/12/2016	06:14:42 AM
7	CCV1	CCV	1	07/12/2016	06:20:26 AM
3	CCB1	CCB	1	07/12/2016	06:25:50 AM
132	N020244-005B	SAMP	1	07/12/2016	06:31:01 AM

A/S Loc	Sample Name	Type	DF	Acq Date	Acq Time
133	N020244-006B	SAMP	1	07/12/2016	06:36:44 AM
134	N020244-007B	SAMP	1	07/12/2016	06:42:28 AM
135	N020244-008B	SAMP	1	07/12/2016	06:48:11 AM
136	N020244-009B	SAMP	1	07/12/2016	06:53:55 AM
137	N020245-001B	SAMP	1	07/12/2016	06:59:39 AM
138	N020245-002B	SAMP	1	07/12/2016	07:05:22 AM
139	N020245-002B-MS	MS	1	07/12/2016	07:11:06 AM
140	MB-58945	MBLK	1	07/12/2016	07:16:21 AM
141	LCS-58945	LCS	1	07/12/2016	07:21:33 AM
7	CCV2	CCV	1	07/12/2016	07:27:16 AM
3	CCB2	CCB	1	07/12/2016	07:32:30 AM
142	N020244-001C	SAMP	1	07/12/2016	07:37:41 AM
143	N020244-001C	SAMP	5	07/12/2016	07:43:25 AM
144	N020244-001C-PS	PS	1	07/12/2016	07:49:08 AM
145	N020244-001C-MS	MS	1	07/12/2016	07:54:52 AM
146	N020244-001C-MSD	MSD	1	07/12/2016	08:00:36 AM
147	N020244-002C	SAMP	1	07/12/2016	08:06:20 AM
148	N020244-003C	SAMP	1	07/12/2016	08:12:04 AM
149	N020244-004C	SAMP	1	07/12/2016	08:17:49 AM
150	N020244-005C	SAMP	1	07/12/2016	08:23:33 AM
151	N020244-006C	SAMP	1	07/12/2016	08:29:16 AM
7	CCV3	CCV	1	07/12/2016	08:35:01 AM
3	CCB3	CCB	1	07/12/2016	08:40:14 AM
152	N020244-007C	SAMP	1	07/12/2016	08:45:24 AM
153	N020244-008C	SAMP	1	07/12/2016	08:51:07 AM
154	N020244-009C	SAMP	1	07/12/2016	08:56:50 AM
155	N020245-001C	SAMP	1	07/12/2016	09:02:33 AM
156	N020245-002C	SAMP	1	07/12/2016	09:08:16 AM
157	N020245-002C-MS	MS	1	07/12/2016	09:14:00 AM
7	CCV4	CCV	1	07/12/2016	09:19:44 AM
3	CCB4	CCB	1	07/12/2016	09:24:58 AM
2	LLCCV1	CCV2	1	07/12/2016	10:02:51 AM
4	ICSA2	ICSA	1	07/12/2016	10:08:30 AM
4	ICSA2	ICSA	1	07/12/2016	10:19:59 AM
5	ICSAB2	ICSAB	1	07/12/2016	10:26:51 AM

SAMPLE PREPARATION LOG

ASSET Laboratories

PREP BATCH REPORT

Prep Start Date: **7/8/2016 12:00:00 P**
Prep End Date: **7/8/2016 4:15:00 P**
Prep Batch **58945** Prep Code: **3010_W**

Reviewed/ Date: _____
Initials/ Date: 7/22/2016
Technician: **Claire Ignacio**

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-58945	Aqueous		25	☐	0	0	25	1.000		
MB-58945	Aqueous		25	☐	0	0	25	1.000		
N020244-001C	Groundwater	<2	25	☐	0	0	25	1.000		
N020244-001C-MS	Groundwater	<2	25	☐	0	0	25	1.000		
N020244-001C-MS	Groundwater	<2	25	☐	0	0	25	1.000		
N020244-002C	Groundwater	<2	25	☐	0	0	25	1.000		
N020244-003C	Groundwater	<2	25	☐	0	0	25	1.000		
N020244-004C	Groundwater	<2	25	☐	0	0	25	1.000		
N020244-005C	Groundwater	<2	25	☐	0	0	25	1.000		
N020244-006C	Groundwater	<2	25	☐	0	0	25	1.000		
N020244-007C	Groundwater	<2	25	☐	0	0	25	1.000		
N020244-008C	Groundwater	<2	25	☐	0	0	25	1.000		
N020244-009C	Groundwater	<2	25	☐	0	0	25	1.000		
N020245-001C	Groundwater	<2	25	☐	0	0	25	1.000		

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

Number	Reagent Name
8446	NITRIC ACID
8493	HYDROCHLORIC ACID

Spk ID	Spike Name	SampType	AmtAdd
MWST-160201H	ICP Solution B	LCS,MS,MSD	0.5
MWST-160531G	ICP Solution C	LCS,MS,MSD	0.5
MWST-160701E	ICP Solution A	LCS,MS,MSD	0.5

ASSET Laboratories

PREP BATCH REPORT

Prep Start Date: **7/8/2016 12:00:00 P**
Prep End Date: **7/8/2016 4:15:00 P**
Prep Batch **58945** Prep Code: **3010_W**

Reviewed/ Date: _____
Initials/ Date: _____ 7/22/2016
Technician: **Claire Ignacio**

Prep Factor Units: **mL / mL**

Sample ID	Matrix	pH	SampAmt	3 Replicates	Sol Added	Sol Recov	Fin Vol	factor	Clean Up Code	TURB Check
N020245-002C	Groundwater	<2	25	☐	0	0	25	1.000		
N020245-002C-MS	Groundwater	<2	25	☐	0	0	25	1.000		

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

Number	Reagent Name
8446	NITRIC ACID
8493	HYDROCHLORIC ACID

Spk ID	Spike Name	SampType	AmtAdd
MWST-160201H	ICP Solution B	LCS,MS,MSD	0.5
MWST-160531G	ICP Solution C	LCS,MS,MSD	0.5
MWST-160701E	ICP Solution A	LCS,MS,MSD	0.5

INITIAL CALIBRATION DATA SUMMARY

INITIAL CALIBRATION SUMMARY: 160712A

Instrument ID: ICP-02

Sample ID	Date	Time	Elem	Wavelength	Corrected Intensity	Concentration	Units	R
Iron								
CalBlk	07/12/2016	03:55:16 AM	Fe	273.953	96	0.00	mg/L	
Standard1	07/12/2016	04:00:59 AM	Fe	273.953	547	0.0200	mg/L	
Standard2	07/12/2016	04:06:40 AM	Fe	273.953	1668	0.050	mg/L	
Standard3	07/12/2016	04:12:21 AM	Fe	273.953	72110	2.000	mg/L	
Standard4	07/12/2016	04:18:03 AM	Fe	273.953	186357	5.000	mg/L	
Standard5	07/12/2016	04:23:18 AM	Fe	273.953	260194	7.500	mg/L	
Standard6	07/12/2016	04:28:35 AM	Fe	273.953	364187	10.000	mg/L	
Standard7	07/12/2016	04:33:48 AM	Fe	273.953	731714	20.000	mg/L	0.9999

INITIAL CALIBRATION AND CONTINUING CALIBRATION VERIFICATION SUMMARY

CLIENT: ARCADIS U.S., Inc. - California
Work Order: N020245
Project: PG&E Topock - RMP, RC000753.0801

ANALYTICAL QC SUMMARY REPORT

TestCode: 6010_WPGEPPB

Sample ID **ICV**	SampType: **ICV**	TestCode: **6010_WPGE**	Units: **ug/L**	Prep Date:	RunNo: **109377**
Client ID: **ICV**	Batch ID: **R109377**	TestNo: **EPA 6010B**		Analysis Date: **7/12/2016**	SeqNo: **2370493**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Iron	9994.446	20	10000	0	99.9	90	110				

Sample ID **LLICV**	SampType: **CCV1**	TestCode: **6010_WPGE**	Units: **ug/L**	Prep Date:	RunNo: **109377**
Client ID: **ZZZZZZ**	Batch ID: **R109377**	TestNo: **EPA 6010B**		Analysis Date: **7/12/2016**	SeqNo: **2370498**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Iron	16.352	20	20.00	0	81.8	80	120				

Sample ID **CCV1**	SampType: **CCV**	TestCode: **6010_WPGE**	Units: **ug/L**	Prep Date:	RunNo: **109377**
Client ID: **CCV**	Batch ID: **R109377**	TestNo: **EPA 6010B**		Analysis Date: **7/12/2016**	SeqNo: **2370509**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Iron	9634.280	20	10000	0	96.3	90	110				

Sample ID **CCV2**	SampType: **CCV**	TestCode: **6010_WPGE**	Units: **ug/L**	Prep Date:	RunNo: **109377**
Client ID: **CCV**	Batch ID: **R109377**	TestNo: **EPA 6010B**		Analysis Date: **7/12/2016**	SeqNo: **2370521**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Iron	9585.295	20	10000	0	95.9	90	110				

Sample ID **CCV3**	SampType: **CCV**	TestCode: **6010_WPGE**	Units: **ug/L**	Prep Date:	RunNo: **109377**
Client ID: **CCV**	Batch ID: **R109377**	TestNo: **EPA 6010B**		Analysis Date: **7/12/2016**	SeqNo: **2370533**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Iron	9615.094	20	10000	0	96.2	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: N020245
Project: PG&E Topock - RMP, RC000753.0801

ANALYTICAL QC SUMMARY REPORT

TestCode: 6010_WPGEPPB

Sample ID **CCV4**	SampType: **CCV**	TestCode: **6010_WPGE**	Units: **ug/L**	Prep Date:	RunNo: **109377**
Client ID: **CCV**	Batch ID: **R109377**	TestNo: **EPA 6010B**		Analysis Date: **7/12/2016**	SeqNo: **2370541**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Iron	9583.725	20	10000	0	95.8	90	110				

Sample ID **LLCCV1**	SampType: **CCV2**	TestCode: **6010_WPGE**	Units: **ug/L**	Prep Date:	RunNo: **109377**
Client ID: **ZZZZZZ**	Batch ID: **R109377**	TestNo: **EPA 6010B**		Analysis Date: **7/12/2016**	SeqNo: **2370543**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Iron	16.473	20	20.00	0	82.4	70	130				

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

CLIENT: ARCADIS U.S., Inc. - California
Work Order: N020245
Project: PG&E Topock - RMP, RC000753.0801

ANALYTICAL QC SUMMARY REPORT

TestCode: 6010_WPGEPPB

Sample ID **ICB**	SampType: **ICB**	TestCode: **6010_WPGE**	Units: **ug/L**	Prep Date:	RunNo: **109377**
Client ID: **ICB**	Batch ID: **R109377**	TestNo: **EPA 6010B**		Analysis Date: **7/12/2016**	SeqNo: **2370494**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Iron	-6.583806	20									

Sample ID **CCB1**	SampType: **CCB**	TestCode: **6010_WPGE**	Units: **ug/L**	Prep Date:	RunNo: **109377**
Client ID: **CCB**	Batch ID: **R109377**	TestNo: **EPA 6010B**		Analysis Date: **7/12/2016**	SeqNo: **2370510**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Iron	-6.89617	20									

Sample ID **CCB2**	SampType: **CCB**	TestCode: **6010_WPGE**	Units: **ug/L**	Prep Date:	RunNo: **109377**
Client ID: **CCB**	Batch ID: **R109377**	TestNo: **EPA 6010B**		Analysis Date: **7/12/2016**	SeqNo: **2370522**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Iron	-7.18646	20									

Sample ID **CCB3**	SampType: **CCB**	TestCode: **6010_WPGE**	Units: **ug/L**	Prep Date:	RunNo: **109377**
Client ID: **CCB**	Batch ID: **R109377**	TestNo: **EPA 6010B**		Analysis Date: **7/12/2016**	SeqNo: **2370534**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Iron	-7.233435	20									

Sample ID **CCB4**	SampType: **CCB**	TestCode: **6010_WPGE**	Units: **ug/L**	Prep Date:	RunNo: **109377**
Client ID: **CCB**	Batch ID: **R109377**	TestNo: **EPA 6010B**		Analysis Date: **7/12/2016**	SeqNo: **2370542**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Iron	-7.566048	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

SUMMARY OF INSTRUMENT CHECK (ICSA & ICSAB)

CLIENT: ARCADIS U.S., Inc. - California
Work Order: N020245
Project: PG&E Topock - RMP, RC000753.0801

ANALYTICAL QC SUMMARY REPORT

TestCode: 6010_WPGEPPB

Sample ID **ICSA1**	SampType: **ICSA**	TestCode: **6010_WPGE**	Units: **ug/L**	Prep Date:	RunNo: **109377**
Client ID: **ICSA**	Batch ID: **R109377**	TestNo: **EPA 6010B**		Analysis Date: **7/12/2016**	SeqNo: **2370496**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aluminum	545391.490	50	500000	0	109	80	120				
Calcium	526942.640	500	500000	0	105	80	120				
Iron	183152.449	20	200000	0	91.6	80	120				
Magnesium	486309.524	100	500000	0	97.3	80	120				

Sample ID **ICSAB1**	SampType: **ICSAB**	TestCode: **6010_WPGE**	Units: **ug/L**	Prep Date:	RunNo: **109377**
Client ID: **ICSAB**	Batch ID: **R109377**	TestNo: **EPA 6010B**		Analysis Date: **7/12/2016**	SeqNo: **2370497**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aluminum	557662.338	50	500000	0	112	80	120				
Calcium	535246.792	500	500000	0	107	80	120				
Iron	186264.222	20	200000	0	93.1	80	120				
Magnesium	484938.178	100	500000	0	97.0	80	120				

Sample ID **ICSA2**	SampType: **ICSA**	TestCode: **6010_WPGE**	Units: **ug/L**	Prep Date:	RunNo: **109377**
Client ID: **ICSA**	Batch ID: **R109377**	TestNo: **EPA 6010B**		Analysis Date: **7/12/2016**	SeqNo: **2370545**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aluminum	534180.516	50	500000	0	107	80	120				
Calcium	450101.752	500	500000	0	90.0	80	120				
Iron	176261.004	20	200000	0	88.1	80	120				
Magnesium	425661.178	100	500000	0	85.1	80	120				

Sample ID **ICSAB2**	SampType: **ICSAB**	TestCode: **6010_WPGE**	Units: **ug/L**	Prep Date:	RunNo: **109377**
Client ID: **ICSAB**	Batch ID: **R109377**	TestNo: **EPA 6010B**		Analysis Date: **7/12/2016**	SeqNo: **2370546**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aluminum	544340.743	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
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: ARCADIS U.S., Inc. - California
Work Order: N020245
Project: PG&E Topock - RMP, RC000753.0801

ANALYTICAL QC SUMMARY REPORT

TestCode: 6010_WPGEPPB

Sample ID **ICSAB2**	SampType: **ICSAB**	TestCode: **6010_WPGE**	Units: **ug/L**	Prep Date:	RunNo: **109377**
Client ID: **ICSAB**	Batch ID: **R109377**	TestNo: **EPA 6010B**		Analysis Date: **7/12/2016**	SeqNo: **2370546**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Calcium	457450.229	500	500000	0	91.5	80	120				
Iron	179607.382	20	200000	0	89.8	80	120				
Magnesium	429786.484	100	500000	0	86.0	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
DO	Surrogate Diluted Out		Calculations are based on raw values		

INTERNAL STANDARD SUMMARY

INTERNAL STANDARD: 160712A

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	99.31	65-125	PASS
Standard2	ICAL	1	0.98	97.94	65-125	PASS
Standard3	ICAL	1	1.01	101.04	65-125	PASS
Standard4	ICAL	1	0.99	99.13	65-125	PASS
Standard5	ICAL	1	1.012	101.18	65-125	PASS
Standard6	ICAL	1	0.98	97.6	65-125	PASS
Standard7	ICAL	1	0.95	94.64	65-125	PASS
ICV	ICV	1	0.95	95.067	65-125	PASS
ICB	ICB	1	0.99	99.32	65-125	PASS
LLICV	CCV1	1	1.0002	100.02	65-125	PASS
ICSA1	ICSA	1	0.93	93.12	65-125	PASS
ICSAB1	ICSAB	1	0.92	92.035	65-125	PASS
LLICV	CCV1	1	1.0024	100.24	65-125	PASS
CCV1	CCV	1	0.98	98.32	65-125	PASS
CCB1	CCB	1	1.0025	100.25	65-125	PASS
MB-58945	MBLK	1	1.065	106.5	65-125	PASS
LCS-58945	LCS	1	1.059	105.91	65-125	PASS
CCV2	CCV	1	0.99	99.22	65-125	PASS
CCB2	CCB	1	1.01	101.05	65-125	PASS
N020244-001C	SAMP	1	1.0056	100.56	65-125	PASS
N020244-001C	SAMP	5	1.019	101.86	65-125	PASS
N020244-001C-PS	PS	1	1.038	103.78	65-125	PASS
N020244-001C-MS	MS	1	1.018	101.84	65-125	PASS
N020244-001C-MSD	MSD	1	1.011	101.06	65-125	PASS
N020244-002C	SAMP	1	1.015	101.54	65-125	PASS
N020244-003C	SAMP	1	1.055	105.52	65-125	PASS
N020244-004C	SAMP	1	1.036	103.6	65-125	PASS
N020244-005C	SAMP	1	1.015	101.48	65-125	PASS
N020244-006C	SAMP	1	1.019	101.89	65-125	PASS
CCV3	CCV	1	1	99.69	65-125	PASS
CCB3	CCB	1	1.017	101.73	65-125	PASS
N020244-007C	SAMP	1	1.026	102.58	65-125	PASS
N020244-008C	SAMP	1	1.039	103.88	65-125	PASS
N020244-009C	SAMP	1	1.04	103.95	65-125	PASS
N020245-001C	SAMP	1	1.061	106.09	65-125	PASS
N020245-002C	SAMP	1	1.0051	100.51	65-125	PASS
N020245-002C-MS	MS	1	1.011	101.08	65-125	PASS
CCV4	CCV	1	1.0048	100.48	65-125	PASS
CCB4	CCB	1	1.024	102.39	65-125	PASS
LLCCV1	CCV2	1	1.0011	100.11	65-125	PASS

INTERNAL STANDARD: 160712A

Instrument ID: ICP-02

Sample Name	Type	DF	Yttrium, 1.0 mg/L			
			Reported Conc	%REC	Criteria	Comment
ICSA2	ICSA	1	0.98	98.42	65-125	PASS
ICSA2	ICSA	1	0.87	87.2	65-125	PASS
ICSAB2	ICSAB	1	0.88	88.016	65-125	PASS

SERIAL DILUTION/
POST DIGESTION SPIKE

ASSET Laboratories

ICP-Metals in Water

Dilution Test Summary

Work Order No.: N020245
Test Method: EPA 6010B
Analysis Date: 7/12/2016

Matrix: Groundwater
Batch No.: 58945

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
N020244-001C DT 5X	Iron	ug/L	112.39	NA	142.1784	20.95%	10

Note: NA - Not applicable

CLIENT: ARCADIS U.S., Inc. - California
Work Order: N020245
Project: PG&E Topock - RMP, RC000753.0801

ANALYTICAL QC SUMMARY REPORT

TestCode: 6010_WPGEPPB

Sample ID	**N020244-001C-PS**	SampType: **PS**	TestCode: **6010_WPGE**	Units: **ug/L**	Prep Date:	RunNo: **109377**
Client ID:	**ZZZZZZ**	Batch ID: **58945**	TestNo: **EPA 6010B**	**EPA 3010A**	Analysis Date: **7/12/2016**	SeqNo: **2370525**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Iron	219.626	20	100.0	142.2	77.4	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
DO	Surrogate Diluted Out		Calculations are based on raw values		

MDL STUDY

METHOD DETECTION LIMIT 2016

Method Name: **Metals by ICP**
Method Number: EPA 200.7/ 6010
Analysis Date(s): 4/1/2016, 4/4/2016
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	0.0021	0.0020	0.0020	0.0020	0.0019	0.0020	0.0020	0.00125	0.00005062	**0.00016**	**0.0025**
Al	237.312	0.0272	0.0288	0.0288	0.0267	0.0269	0.0277	0.0276	0.025	0.00085451	**0.00269**	**0.050**
As	188.983	0.0054	0.0049	0.0037	0.0044	0.0060	0.0041	0.0048	0.005	0.00075065	**0.00236**	**0.010**
B	249.679	0.0735	0.0561	0.0463	0.0445	0.0396	0.0464	0.0398	0.05	0.01193786	**0.03752**	**0.10**
Ba	233.529	0.0007	0.0007	0.0006	0.0006	0.0006	0.0007	0.0007	0.000625	0.00003047	**0.00010**	**0.0025**
Be	313.104	0.0007	0.0006	0.0006	0.0006	0.0006	0.0006	0.0007	0.0005	0.00004386	**0.00014**	**0.0010**
Ca	227.546	0.0967	0.1086	0.0893	0.0864	0.0826	0.0978	0.0988	0.1	0.00880307	**0.02767**	**0.20**
Cd	214.437	0.0006	0.0006	0.0007	0.0006	0.0007	0.0006	0.0006	0.000313	0.00003910	**0.00012**	**0.0025**
Co	228.614	0.0011	0.0011	0.0010	0.0010	0.0009	0.0010	0.0011	0.00125	0.00005473	**0.00017**	**0.0025**
Cr	267.719	0.0004	0.0003	0.0004	0.0004	0.0004	0.0003	0.0004	0.0005	0.00004860	**0.00015**	**0.0010**
Cu	324.753	0.0013	0.0015	0.0015	0.0022	0.0022	0.0016	0.0015	0.0025	0.00034907	**0.00110**	**0.0050**
Fe	273.953	0.0115	0.0117	0.0112	0.0102	0.0105	0.0114	0.0114	0.01	0.00057502	**0.00181**	**0.020**
Mg	279.079	0.0227	0.0231	0.0204	0.0225	0.0221	0.0222	0.0250	0.025	0.00138863	**0.00436**	**0.10**
Mn	257.607	0.0013	0.0013	0.0013	0.0012	0.0012	0.0012	0.0012	0.00125	0.00004429	**0.00014**	**0.010**
Mo	202.03	0.0031	0.0032	0.0031	0.0030	0.0026	0.0029	0.0029	0.0025	0.00018274	**0.00057**	**0.0050**
Ni	231.604	0.0019	0.0020	0.0020	0.0022	0.0022	0.0021	0.0021	0.0025	0.00012429	**0.00039**	**0.0050**
Pb	220.351	0.0049	0.0049	0.0048	0.0044	0.0048	0.0048	0.0050	0.005	0.00018831	**0.00059**	**0.010**
Sb	206.836	0.0035	0.0038	0.0020	0.0034	0.0033	0.0032	0.0046	0.005	0.00076686	**0.00241**	**0.010**
Se	196.025	0.0017	0.0033	0.0025	0.0025	0.0015	0.0034	0.0025	0.005	0.00070697	**0.00222**	**0.010**
Sn	189.927	0.0051	0.0048	0.0052	0.0051	0.0044	0.0045	0.0050	0.005	0.00031282	**0.00098**	**0.010**
Ti	334.943	0.0011	0.0011	0.0011	0.0010	0.0011	0.0010	0.0010	0.00125	0.00005159	**0.00016**	**0.010**
Tl	190.794	0.0067	0.0060	0.0064	0.0047	0.0062	0.0067	0.0062	0.0075	0.00070505	**0.00222**	**0.015**
V	292.404	0.0007	0.0007	0.0007	0.0006	0.0006	0.0007	0.0007	0.00125	0.00006264	**0.00020**	**0.0025**
Zn	206.201	0.0024	0.0026	0.0024	0.0024	0.0024	0.0024	0.0033	0.0025	0.00034911	**0.00110**	**0.010**

EPA 6020
Dissolved

Metals Technical Batch Review Checklist (ARCUS02)

ASSET LABORATORIES - LAS VEGAS

FIRST LEVEL REVIEW:

QC Batch Number: 58959
ASSET #: N020245

Instrument ID: ICPMS-02
Analyst: CEI
Date Analyzed: 7/11/2016

Method:

[ ] EPA 6010B / 200.7
[ ] EPA 7470A / 7471A/245.1
[X] 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					
Interference Check						
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					
Continuing Calibration						
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 ICVand CCV analysis.	X					
11. Do all calibration blanks (ICB and CCBs) meet criteria? (< PQL)	X					
12 Is low level check twice during 8 hr period or at end within ± 30% of expected value? (ICP/ICPMS only)	X					
Sample Information						
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			
QC Items						
22. IS are within control limits (70-125% for ICPMS).	X					
23. Method blank values are below the PQL .	X					
24. LCS compounds within control limits.	X					
25. MS/MSD, RPD's are within control limits	X					
Raw Data and Miscellaneous Information						
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					
Preliminary Report						
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:

	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 7/22/2016 Date: _____

2nd Level Reviewer 7/23/2016 Date: _____

SAMPLE CALCULATION

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:

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 **N020245-001B** , the concentration in ug/L is calculated as follows:

Arsenic , ug/L = 2.32586 * 1 * (25/25)

Arsenic , ug/L = 2.32586

Reporting results in two significant figures,

Arsenic , ug/L = 2.3

% RSD SUMMARY

PERCENT RSD SUMMARY: 160711A

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	0.13	3.5	15	PASS	0.11	10.18	15	PASS
Std2-0.5/5 ppb	ICAL	1	0.55	1.36	15	PASS	0.53	4.11	15	PASS
Std3-5/50 ppb	ICAL	1	5.25	0.45	15	PASS	5.18	1.3	15	PASS
Std4-10/100 ppb	ICAL	1	10.46	0.26	15	PASS	10.33	1.57	15	PASS
Std5-20/200 ppb	ICAL	1	20.8	0.52	15	PASS	20.54	0.9	15	PASS
Std6-40/400 ppb	ICAL	1	41.4	0.47	15	PASS	40.27	1.039	15	PASS
Std7-100/1000 ppb	ICAL	1	101.15	0.43	15	PASS	102.27	0.67	15	PASS
Std8-200/2000 ppb	ICAL	1	199.036	0.71	15	PASS	198.74	0.72	15	PASS
ICV	ICV	1	100.97	0.43	15	PASS	9.96	0.68	15	PASS
ICB	ICB	1	0.012	10.18	15	PASS	<0.000	N/A	15	<PQL
LLICV	CCV1	1	1.13	1.89	20	PASS	1.089	3.1	20	PASS
ICSA1	ICSA	1	<0.000	N/A	15	<PQL	0.35	5.91	15	PASS
ICSAB1	ICSAB	1	19.3	0.27	15	PASS	18.86	0.81	15	PASS
MB-58959	MBLK	1	<0.000	N/A	15	<PQL	<0.000	N/A	15	<PQL
LCS-58959	LCS	1	103.14	0.77	15	PASS	9.54	0.73	15	PASS
N020245-001B	SAMP	1	132.89	1.16	15	PASS	0.05	8.63	15	PASS
N020245-001B	SAMP	5	27.7	0.52	15	PASS	0.012	43.56	15	<PQL
N020245-001B-PS	PS	1	228.37	1.0097	15	PASS	9.28	0.73	15	PASS
N020245-001B-MS	MS	1	220.34	0.42	15	PASS	9.24	0.79	15	PASS
N020245-001B-MSD	MSD	1	220.0016	0.14	15	PASS	9.28	1.19	15	PASS
N020245-002B	SAMP	1	134.81	1.42	15	PASS	0.035	10.56	15	PASS
N020252-001B	SAMP	1	80.17	1.7	15	PASS	1.63	0.49	15	PASS
N020252-002B	SAMP	1	81.91	0.12	15	PASS	2.029	1.51	15	PASS
CCV1	CCV	1	20.92	1.19	15	PASS	20.2	0.62	15	PASS
CCB1	CCB	1	0.0064	20.38	15	<PQL	<0.000	N/A	15	<PQL
N020252-003B	SAMP	1	63.84	0.6	15	PASS	1.83	1.74	15	PASS
N020252-005B	SAMP	1	23.84	0.15	15	PASS	3.22	1.14	15	PASS
N020253-001B	SAMP	1	10.19	0.6	15	PASS	0.28	2.35	15	PASS
N020253-002B	SAMP	1	35.51	0.83	15	PASS	0.99	2.41	15	PASS
N020253-003B	SAMP	1	5.041	0.86	15	PASS	7.73	0.91	15	PASS
N020253-004B	SAMP	1	4.39	0.5	15	PASS	3.012	1.86	15	PASS
N020253-005B	SAMP	1	4.19	0.91	15	PASS	2.9	1.69	15	PASS
N020253-005B-MS	MS	1	105.081	0.52	15	PASS	12.31	1.37	15	PASS
N020253-006B	SAMP	1	73.86	1.7	15	PASS	5.32	0.31	15	PASS
N020253-008B	SAMP	1	43.94	0.44	15	PASS	2.94	1.28	15	PASS
CCV2	CCV	1	20.72	0.14	15	PASS	20.37	0.55	15	PASS
CCB2	CCB	1	0.0076	14.98	15	PASS	<0.000	N/A	15	<PQL
N020253-009B	SAMP	1	5.86	0.014	15	PASS	0.21	6.76	15	PASS
N020253-010B	SAMP	1	95.1	0.94	15	PASS	3.68	0.78	15	PASS
N020253-011B	SAMP	1	3.97	0.47	15	PASS	0.13	11.087	15	PASS

PERCENT RSD SUMMARY: 160711A

Instrument ID: ICPMS-02

Sample Name	Type	DF	137 Ba [3]				52 Cr [2]			
			Conc. [ppb]	RSD	Criteria	Comment	Conc. [ppb]	RSD	Criteria	Comment
N020253-012B	SAMP	1	3.84	0.36	15	PASS	0.073	8.25	15	PASS
N020253-013B	SAMP	1	101.82	1.17	15	PASS	3.52	0.9	15	PASS
N020245-001B	SAMP	25	5.62	0.41	15	PASS	<0.000	N/A	15	<PQL
N020245-001B-PS	PS	5	48.43	0.58	15	PASS	2.096	0.84	15	PASS
N020245-001B-MS	MS	5	46.96	0.47	15	PASS	2.095	1.37	15	PASS
N020245-001B-MSD	MSD	5	47.015	0.016	15	PASS	2.075	2.84	15	PASS
N020253-002B	SAMP	1	35.27	0.28	15	PASS	1	1.35	15	PASS
CCV3	CCV	1	20.94	0.35	15	PASS	20.69	0.86	15	PASS
CCB3	CCB	1	0.0081	22.56	15	<PQL	<0.000	N/A	15	<PQL
MB-58959	MBLK	1	<0.000	N/A	15	<PQL	<0.000	N/A	15	<PQL
N020245-001B-MS	MS	1	218.029	0.3	15	PASS	9.48	0.86	15	PASS
N020245-001B-MSD	MSD	1	218.96	0.31	15	PASS	9.34	1.94	15	PASS
CCV4	CCV	1	20.83	0.44	15	PASS	20.62	0.57	15	PASS
CCB4	CCB	1	0.0086	34.34	15	<PQL	<0.000	N/A	15	<PQL
LLCCV1	CCV2	1	1.21	1	20	PASS	1.087	2.29	20	PASS
ICSA2	ICSA	1	<0.000	N/A	15	<PQL	0.35	1.82	15	PASS
ICSAB2	ICSAB	1	19.53	0.47	15	PASS	19.36	0.89	15	PASS

PERCENT RSD SUMMARY: 160711A

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	0.16	11.98	15	PASS	0.089	2.4	15	PASS
Std2-0.5/5 ppb	ICAL	1	0.54	2.26	15	PASS	0.5	4.85	15	PASS
Std3-5/50 ppb	ICAL	1	5.15	3.73	15	PASS	5.042	2.4	15	PASS
Std4-10/100 ppb	ICAL	1	10.49	2.29	15	PASS	10.049	1.12	15	PASS
Std5-20/200 ppb	ICAL	1	20.51	1.07	15	PASS	20.053	0.88	15	PASS
Std6-40/400 ppb	ICAL	1	40.4	0.63	15	PASS	40.1	0.45	15	PASS
Std7-100/1000 ppb	ICAL	1	100.84	0.43	15	PASS	99.58	1.55	15	PASS
Std8-200/2000 ppb	ICAL	1	199.42	0.47	15	PASS	200.18	0.75	15	PASS
ICV	ICV	1	98.67	0.54	15	PASS	9.99	3.0098	15	PASS
ICB	ICB	1	<0.000	N/A	15	<PQL	<0.000	N/A	15	<PQL
LLICV	CCV1	1	0.59	2.85	20	PASS	0.095	13.28	20	PASS
ICSA1	ICSA	1	<0.000	N/A	15	<PQL	<0.000	N/A	15	<PQL
ICSAB1	ICSAB	1	16.56	0.48	15	PASS	19.41	0.53	15	PASS
MB-58959	MBLK	1	<0.000	N/A	15	<PQL	<0.000	N/A	15	<PQL
LCS-58959	LCS	1	95.81	0.46	15	PASS	9.58	2.012	15	PASS
N020245-001B	SAMP	1	1.81	2.55	15	PASS	2.33	1.65	15	PASS
N020245-001B	SAMP	5	0.4	6.81	15	PASS	0.48	8.22	15	PASS
N020245-001B-PS	PS	1	92.83	0.37	15	PASS	12.043	1.19	15	PASS
N020245-001B-MS	MS	1	92.93	0.18	15	PASS	11.92	0.91	15	PASS
N020245-001B-MSD	MSD	1	92.89	0.74	15	PASS	11.95	0.95	15	PASS
N020245-002B	SAMP	1	1.6	4.82	15	PASS	2.32	2.069	15	PASS
N020252-001B	SAMP	1	0.047	10.8	15	PASS	4.52	1.4	15	PASS
N020252-002B	SAMP	1	<0.000	N/A	15	<PQL	2	3.66	15	PASS
CCV1	CCV	1	20.34	0.4	15	PASS	19.85	0.62	15	PASS
CCB1	CCB	1	<0.000	N/A	15	<PQL	<0.000	N/A	15	<PQL
N020252-003B	SAMP	1	0.4	3.77	15	PASS	6.85	1.54	15	PASS
N020252-005B	SAMP	1	0.51	1.53	15	PASS	25.82	0.81	15	PASS
N020253-001B	SAMP	1	3.87	1.71	15	PASS	372.23	0.37	15	PASS
N020253-002B	SAMP	1	29.65	0.46	15	PASS	144.4	0.73	15	PASS
N020253-003B	SAMP	1	1.19	3.26	15	PASS	20.62	1.0044	15	PASS
N020253-004B	SAMP	1	1.56	2.19	15	PASS	41.004	0.094	15	PASS
N020253-005B	SAMP	1	1.41	3.6	15	PASS	39.55	0.92	15	PASS
N020253-005B-MS	MS	1	94.64	0.13	15	PASS	49.79	0.67	15	PASS
N020253-006B	SAMP	1	2.27	1.22	15	PASS	3.066	2.63	15	PASS
N020253-008B	SAMP	1	14.34	0.84	15	PASS	2.64	2.68	15	PASS
CCV2	CCV	1	20.39	0.57	15	PASS	19.66	1.47	15	PASS
CCB2	CCB	1	<0.000	N/A	15	<PQL	<0.000	N/A	15	<PQL
N020253-009B	SAMP	1	20.084	1.97	15	PASS	23.031	1.76	15	PASS
N020253-010B	SAMP	1	0.98	5.074	15	PASS	1.76	1	15	PASS
N020253-011B	SAMP	1	17.84	1.15	15	PASS	8.51	1.43	15	PASS

PERCENT RSD SUMMARY: 160711A

Instrument ID: ICPMS-02

Sample Name	Type	DF	55 Mn [2]				75 As [2]			
			Conc. [ppb]	RSD	Criteria	Comment	Conc. [ppb]	RSD	Criteria	Comment
N020253-012B	SAMP	1	17.57	0.88	15	PASS	8.66	0.64	15	PASS
N020253-013B	SAMP	1	1.37	2.34	15	PASS	1.45	5.54	15	PASS
N020245-001B	SAMP	25	0.12	9.083	15	PASS	0.076	17.54	15	<PQL
N020245-001B-PS	PS	5	20.5	1.7	15	PASS	2.56	0.86	15	PASS
N020245-001B-MS	MS	5	20.6	1.71	15	PASS	2.51	3.67	15	PASS
N020245-001B-MSD	MSD	5	20.54	0.5	15	PASS	2.47	1.36	15	PASS
N020253-002B	SAMP	1	29.93	1.34	15	PASS	143.009	0.35	15	PASS
CCV3	CCV	1	20.46	0.85	15	PASS	20.077	0.87	15	PASS
CCB3	CCB	1	<0.000	N/A	15	<PQL	<0.000	N/A	15	<PQL
MB-58959	MBLK	1	<0.000	N/A	15	<PQL	<0.000	N/A	15	<PQL
N020245-001B-MS	MS	1	93.37	0.58	15	PASS	11.81	1.15	15	PASS
N020245-001B-MSD	MSD	1	93.056	0.87	15	PASS	11.97	0.66	15	PASS
CCV4	CCV	1	20.52	1.073	15	PASS	20.079	0.82	15	PASS
CCB4	CCB	1	<0.000	N/A	15	<PQL	<0.000	N/A	15	<PQL
LLCCV1	CCV2	1	0.55	3.6	20	PASS	0.1	18.79	20	PASS
ICSA2	ICSA	1	<0.000	N/A	15	<PQL	<0.000	N/A	15	<PQL
ICSAB2	ICSAB	1	16.98	0.33	15	PASS	19.14	0.13	15	PASS

PERCENT RSD SUMMARY: 160711A

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	0.074	25.47	15	<PQL	0.093	4.76	15	PASS
Std2-0.5/5 ppb	ICAL	1	0.55	9.047	15	PASS	0.47	2.24	15	PASS
Std3-5/50 ppb	ICAL	1	5.015	2.38	15	PASS	5.013	2.27	15	PASS
Std4-10/100 ppb	ICAL	1	10.18	3.41	15	PASS	10.17	0.63	15	PASS
Std5-20/200 ppb	ICAL	1	20.11	1.26	15	PASS	20.23	1.035	15	PASS
Std6-40/400 ppb	ICAL	1	40.071	0.29	15	PASS	40.43	1.066	15	PASS
Std7-100/1000 ppb	ICAL	1	101.33	0.89	15	PASS	100.82	1.49	15	PASS
Std8-200/2000 ppb	ICAL	1	199.3	0.19	15	PASS	199.47	1.34	15	PASS
ICV	ICV	1	10.31	2.34	15	PASS	10.26	0.81	15	PASS
ICB	ICB	1	0.014	66.35	15	<PQL	0.085	8.85	15	PASS
LLICV	CCV1	1	0.49	3.2	20	PASS	0.53	6.31	20	PASS
ICSA1	ICSA	1	0.03	43.74	15	<PQL	0.045	15.12	15	<PQL
ICSAB1	ICSAB	1	18.17	2.6	15	PASS	22.043	0.29	15	PASS
MB-58959	MBLK	1	0.019	59.78	15	<PQL	0.035	22.054	15	<PQL
LCS-58959	LCS	1	8.94	2.31	15	PASS	10.049	1.038	15	PASS
N020245-001B	SAMP	1	1.6	8.25	15	PASS	5.43	0.91	15	PASS
N020245-001B	SAMP	5	0.39	10.91	15	PASS	1.021	1.9	15	PASS
N020245-001B-PS	PS	1	10.43	5.47	15	PASS	16.53	1.55	15	PASS
N020245-001B-MS	MS	1	10.56	2.68	15	PASS	16.2	0.57	15	PASS
N020245-001B-MSD	MSD	1	10.54	5.39	15	PASS	16.19	0.69	15	PASS
N020245-002B	SAMP	1	1.55	5.099	15	PASS	5.44	1.33	15	PASS
N020252-001B	SAMP	1	0.58	8.21	15	PASS	5.22	0.55	15	PASS
N020252-002B	SAMP	1	0.48	7.052	15	PASS	3.21	0.17	15	PASS
CCV1	CCV	1	20.23	1.34	15	PASS	20.19	1.22	15	PASS
CCB1	CCB	1	0.013	58.19	15	<PQL	0.033	3.63	15	PASS
N020252-003B	SAMP	1	0.28	3.2	15	PASS	5.73	1.44	15	PASS
N020252-005B	SAMP	1	0.36	21.65	15	<PQL	7.41	1.84	15	PASS
N020253-001B	SAMP	1	0.046	48.74	15	<PQL	11.95	0.88	15	PASS
N020253-002B	SAMP	1	0.24	7.42	15	PASS	21.98	0.059	15	PASS
N020253-003B	SAMP	1	0.39	15.17	15	<PQL	6.12	1.26	15	PASS
N020253-004B	SAMP	1	0.26	3.23	15	PASS	9.62	0.93	15	PASS
N020253-005B	SAMP	1	0.25	14.002	15	PASS	9.41	0.75	15	PASS
N020253-005B-MS	MS	1	9.4	2.42	15	PASS	20.41	1.049	15	PASS
N020253-006B	SAMP	1	0.36	21.79	15	<PQL	3.55	0.83	15	PASS
N020253-008B	SAMP	1	0.15	41.48	15	<PQL	4.57	1.15	15	PASS
CCV2	CCV	1	21	1.33	15	PASS	20.22	1.01	15	PASS
CCB2	CCB	1	0.0079	69.41	15	<PQL	0.021	8.2	15	PASS
N020253-009B	SAMP	1	0.03	0.83	15	PASS	13.52	0.6	15	PASS
N020253-010B	SAMP	1	0.48	10.48	15	PASS	3.11	2.55	15	PASS
N020253-011B	SAMP	1	0.0016	173.21	15	<PQL	5.49	1.073	15	PASS

PERCENT RSD SUMMARY: 160711A

Instrument ID: ICPMS-02

Sample Name	Type	DF	78 Se [1]				95 Mo [2]			
			Conc. [ppb]	RSD	Criteria	Comment	Conc. [ppb]	RSD	Criteria	Comment
N020253-012B	SAMP	1	0.015	68.92	15	<PQL	5.41	2.012	15	PASS
N020253-013B	SAMP	1	0.36	21.8	15	<PQL	2.88	2.052	15	PASS
N020245-001B	SAMP	25	0.092	27.016	15	<PQL	0.19	4.35	15	PASS
N020245-001B-PS	PS	5	2.44	1.27	15	PASS	3.15	1.16	15	PASS
N020245-001B-MS	MS	5	2.42	7.7	15	PASS	3.089	1.58	15	PASS
N020245-001B-MSD	MSD	5	2.48	1.9	15	PASS	3.056	0.35	15	PASS
N020253-002B	SAMP	1	0.2	16.064	15	<PQL	21.61	1.016	15	PASS
CCV3	CCV	1	21.25	0.49	15	PASS	20.035	1.84	15	PASS
CCB3	CCB	1	0.016	45.37	15	<PQL	0.02	11.91	15	PASS
MB-58959	MBLK	1	0.0048	0.44	15	PASS	<0.000	N/A	15	<PQL
N020245-001B-MS	MS	1	10.98	3.59	15	PASS	16.03	0.41	15	PASS
N020245-001B-MSD	MSD	1	11.2	0.78	15	PASS	16.11	0.32	15	PASS
CCV4	CCV	1	20.62	1.99	15	PASS	20.082	0.89	15	PASS
CCB4	CCB	1	0.0016	173.21	15	<PQL	0.027	10.54	15	PASS
LLCCV1	CCV2	1	0.54	3.26	20	PASS	0.51	4.23	20	PASS
ICSA2	ICSA	1	0.037	33.42	15	<PQL	0.024	18.72	15	<PQL
ICSAB2	ICSAB	1	18.55	1.7	15	PASS	21.92	1.6	15	PASS

ANALYSIS RUN LOG

INJECTION LOG: 160711A

Instrument ID: ICPMS-02

Data File	Sample Name	Type	DF	Acq. Date-Time
A0711001.D	RINSE	RINSE	1	07/11/16 10:14 AM
A0711002.D	Cal Blank	IBLK	1	07/11/16 10:20 AM
A0711003.D	Std1-0.1/1 ppb	ICAL	1	07/11/16 10:25 AM
A0711004.D	Std2-0.5/5 ppb	ICAL	1	07/11/16 10:31 AM
A0711005.D	Std3-5/50 ppb	ICAL	1	07/11/16 10:36 AM
A0711006.D	Std4-10/100 ppb	ICAL	1	07/11/16 10:42 AM
A0711007.D	Std5-20/200 ppb	ICAL	1	07/11/16 10:47 AM
A0711008.D	Std6-40/400 ppb	ICAL	1	07/11/16 10:53 AM
A0711009.D	Std7-100/1000 ppb	ICAL	1	07/11/16 10:57 AM
A0711010.D	Std8-200/2000 ppb	ICAL	1	07/11/16 11:03 AM
A0711011.D	ICV	ICV	1	07/11/16 11:08 AM
A0711012.D	ICB	ICB	1	07/11/16 11:14 AM
A0711013.D	LLICV	CCV1	1	07/11/16 11:22 AM
A0711014.D	ICSA1	ICSA	1	07/11/16 11:28 AM
A0711015.D	ICSAB1	ICSAB	1	07/11/16 11:33 AM
A0711016.D	MB-58959	MBLK	1	07/11/16 11:39 AM
A0711017.D	LCS-58959	LCS	1	07/11/16 11:44 AM
A0711018.D	N020245-001B	SAMP	1	07/11/16 11:50 AM
A0711019.D	N020245-001B	SAMP	5	07/11/16 11:55 AM
A0711020.D	N020245-001B-PS	PS	1	07/11/16 12:01 PM
A0711021.D	N020245-001B-MS	MS	1	07/11/16 12:06 PM
A0711022.D	N020245-001B-MSD	MSD	1	07/11/16 12:12 PM
A0711023.D	N020245-002B	SAMP	1	07/11/16 12:17 PM
A0711024.D	N020252-001B	SAMP	1	07/11/16 12:23 PM
A0711025.D	N020252-002B	SAMP	1	07/11/16 12:28 PM
A0711026.D	CCV1	CCV	1	07/11/16 12:34 PM
A0711027.D	CCB1	CCB	1	07/11/16 12:39 PM
A0711028.D	N020252-003B	SAMP	1	07/11/16 12:45 PM
A0711029.D	N020252-005B	SAMP	1	07/11/16 12:51 PM
A0711030.D	N020253-001B	SAMP	1	07/11/16 12:56 PM
A0711031.D	N020253-002B	SAMP	1	07/11/16 1:02 PM
A0711032.D	N020253-003B	SAMP	1	07/11/16 1:07 PM
A0711033.D	N020253-004B	SAMP	1	07/11/16 1:13 PM
A0711034.D	N020253-005B	SAMP	1	07/11/16 1:18 PM
A0711035.D	N020253-005B-MS	MS	1	07/11/16 1:24 PM
A0711036.D	N020253-006B	SAMP	1	07/11/16 1:29 PM
A0711037.D	N020253-008B	SAMP	1	07/11/16 1:35 PM
A0711038.D	CCV2	CCV	1	07/11/16 1:40 PM
A0711039.D	CCB2	CCB	1	07/11/16 1:46 PM
A0711040.D	N020253-009B	SAMP	1	07/11/16 1:51 PM
A0711041.D	N020253-010B	SAMP	1	07/11/16 1:57 PM
A0711042.D	N020253-011B	SAMP	1	07/11/16 2:02 PM

INJECTION LOG: 160711A

Instrument ID: ICPMS-02

Data File	Sample Name	Type	DF	Acq. Date-Time
A0711043.D	N020253-012B	SAMP	1	07/11/16 2:08 PM
A0711044.D	N020253-013B	SAMP	1	07/11/16 2:14 PM
A0711045.D	N020245-001B	SAMP	25	07/11/16 2:20 PM
A0711046.D	N020245-001B-PS	PS	5	07/11/16 2:25 PM
A0711047.D	N020245-001B-MS	MS	5	07/11/16 2:30 PM
A0711048.D	N020245-001B-MSD	MSD	5	07/11/16 2:36 PM
A0711049.D	N020253-002B	SAMP	1	07/11/16 2:41 PM
A0711050.D	CCV3	CCV	1	07/11/16 2:47 PM
A0711051.D	CCB3	CCB	1	07/11/16 2:52 PM
A0711052.D	MB-58959	MBLK	1	07/11/16 2:58 PM
A0711053.D	N020245-001B-MS	MS	1	07/11/16 3:03 PM
A0711054.D	N020245-001B-MSD	MSD	1	07/11/16 3:09 PM
A0711055.D	N020244-002B	SAMP	5	07/11/16 3:20 PM
A0711056.D	N020244-002B-MS	MS	5	07/11/16 3:25 PM
A0711057.D	CCV4	CCV	1	07/11/16 3:31 PM
A0711058.D	CCB4	CCB	1	07/11/16 3:37 PM
A0711059.D	LLCCV1	CCV2	1	07/11/16 3:42 PM
A0711060.D	ICSA2	ICSA	1	07/11/16 3:48 PM
A0711061.D	ICSAB2	ICSAB	1	07/11/16 3:53 PM

SAMPLE PREPARATION LOG

ASSET Laboratories

PREP BATCH REPORT

Prep Start Date: **7/11/2016 6:58:38 A**
Prep End Date: **7/11/2016 11:00:00**
Prep Batch **58959** Prep Code: **3010_W_MSDI**

Reviewed/ Date: _____
Initials/ Date: _____ 7/22/2016
Technician: **Claire Ignacio**

Prep Factor Units:	Temp. (°C):	Location:
mL / mL	**94.6**	**02-10**

Sample ID	Matrix	pH	SampAmt	3 Replicates	Sol Added	Sol Recov	Fin Vol	factor	Clean Up Code	TURB Check
LCS-58959	Aqueous		25	☐	0	0	25	1.000		
MB-58959	Aqueous		25	☐	0	0	25	1.000		
N020245-001B	Groundwater	<2	25	☐	0	0	25	1.000		
N020245-001B-MS	Groundwater	<2	25	☐	0	0	25	1.000		
N020245-001B-MS	Groundwater	<2	25	☐	0	0	25	1.000		
N020245-002B	Groundwater	<2	25	☐	0	0	25	1.000		
N020252-001B	Groundwater	<2	25	☐	0	0	25	1.000		
N020252-002B	Groundwater	<2	25	☐	0	0	25	1.000		
N020252-003B	Groundwater	<2	25	☐	0	0	25	1.000		
N020252-005B	Groundwater	<2	25	☐	0	0	25	1.000		
N020253-001B	Groundwater	<2	25	☐	0	0	25	1.000		
N020253-002B	Groundwater	<2	25	☐	0	0	25	1.000		
N020253-003B	Groundwater	<2	25	☐	0	0	25	1.000		
N020253-004B	Groundwater	<2	25	☐	0	0	25	1.000		

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

Number	Reagent Name
8441	HYDROCHLORIC ACID
8442	NITRIC ACID

Spk ID	Spike Name	SampType	AmtAdd
2MWST-160201	ICV/MS/MSD/LCS/LCSD Solution B		0.25
2MWST-160606	ICV/MS/MSD/LCS/LCSD Solution A		0.25
2MWST-160606	ICV/MS/MSD/LCS/LCSD Solution C		0.25
2MWST-160606	ICV/MS/MSD/LCS/LCSD Solution D		0.25

ASSET Laboratories

PREP BATCH REPORT

Prep Start Date: **7/11/2016 6:58:38 A**
Prep End Date: **7/11/2016 11:00:00**
Prep Batch **58959** Prep Code: **3010_W_MSDI**

Reviewed/ Date: _____
Initials/ Date: 7/22/2016
Technician: **Claire Ignacio**

Prep Factor Units:	Temp. (°C):	Location:
mL / mL	**94.6**	**02-10**

Sample ID	Matrix	pH	SampAmt	3 Replicates	Sol Added	Sol Recov	Fin Vol	factor	Clean Up Code	TURB Check
N020253-005B	Groundwater	<2	25	☐	0	0	25	1.000		
N020253-005B-MS	Groundwater	<2	25	☐	0	0	25	1.000		
N020253-006B	Groundwater	<2	25	☐	0	0	25	1.000		
N020253-008B	Groundwater	<2	25	☐	0	0	25	1.000		
N020253-009B	Groundwater	<2	25	☐	0	0	25	1.000		
N020253-010B	Groundwater	<2	25	☐	0	0	25	1.000		
N020253-011B	Groundwater	<2	25	☐	0	0	25	1.000		
N020253-012B	Groundwater	<2	25	☐	0	0	25	1.000		
N020253-013B	Groundwater	<2	25	☐	0	0	25	1.000		

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

Number	Reagent Name
8441	HYDROCHLORIC ACID
8442	NITRIC ACID

Spk ID	Spike Name	SampType	AmtAdd
2MWST-160201	ICV/MS/MSD/LCS/LCSD Solution B		0.25
2MWST-160606	ICV/MS/MSD/LCS/LCSD Solution A		0.25
2MWST-160606	ICV/MS/MSD/LCS/LCSD Solution C		0.25
2MWST-160606	ICV/MS/MSD/LCS/LCSD Solution D		0.25

INSTRUMENT TUNING CHECK

QC Tune Report

Data File: C:\ICPMH\1\7500\QCTUNE.D
Date Acquired: 11 Jul 2016 10:04:31 am
Operator:
Misc Info:
Vial Number: 0
Current Method: C:\ICPMH\1\METHODS\TuneCHK.m

Minimum Response(CPS)

Element		Actual	Required	Flag
9	Be	118669.00	0.00	
24	Mg	578069.00	0.00	
25	Mg	77415.20	0.00	
26	Mg	91809.70	0.00	
59	Co	1074450.00	0.00	
115	In	2043090.00	0.00	
206	Pb	578578.00	0.00	
207	Pb	502290.00	0.00	
208	Pb	1236370.00	0.00	

RSD (%)

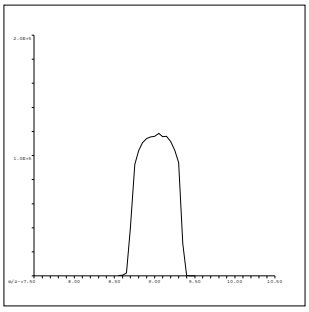
Element		Actual	Required	Flag
9	Be	1.30	5.00	
24	Mg	0.49	5.00	
25	Mg	0.55	5.00	
26	Mg	1.31	5.00	
59	Co	0.56	5.00	
115	In	1.23	5.00	
206	Pb	0.60	5.00	
207	Pb	1.12	5.00	
208	Pb	0.60	5.00	

Ion Ratio

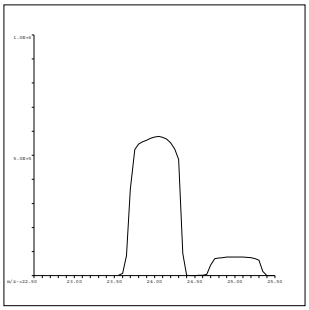
Element		Actual	Required	Flag
9	Be			
24	Mg			
25	Mg			
26	Mg			
59	Co			
115	In			
206	Pb			
207	Pb			
208	Pb			

Maximum Bkg. Count(CPS)

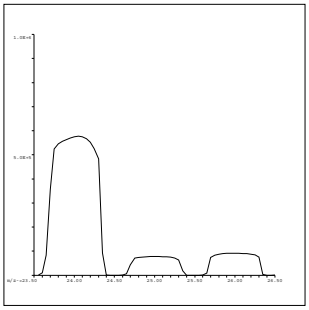
Element	Actual	Required	Flag



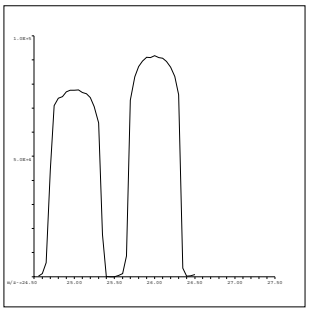
9 Be
Mass Calib.
Actual: 9.05
Required: 8.90-9.10
Flag:
Peak Width
Actual: 0.65
Required: 0.75
Flag:



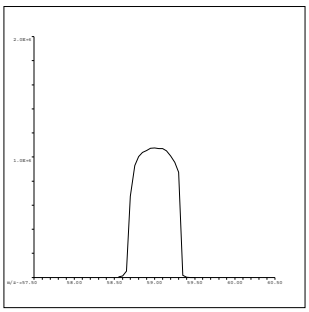
24 Mg
Mass Calib.
Actual: 24.05
Required: 23.90-24.10
Flag:
Peak Width
Actual: 0.70
Required: 0.75
Flag:



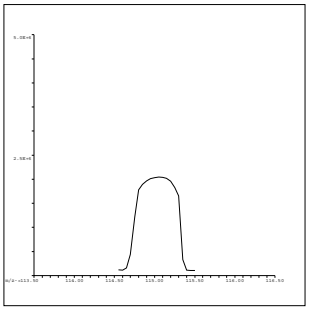
25 Mg
Mass Calib.
Actual: 25.00
Required: 24.90-25.10
Flag:
Peak Width
Actual: 0.70
Required: 0.75
Flag:



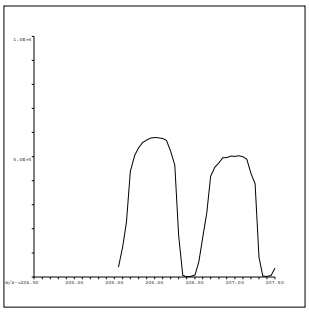
26 Mg
Mass Calib.
Actual: 26.00
Required: 25.90-26.10
Flag:
Peak Width
Actual: 0.65
Required: 0.75
Flag:



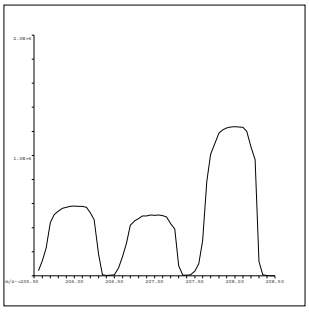
59 Co
Mass Calib.
Actual: 59.00
Required: 58.90-59.10
Flag:
Peak Width
Actual: 0.60
Required: 0.75
Flag:



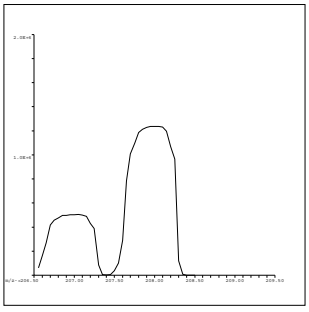
115 In
Mass Calib.
Actual: 115.05
Required: 114.90-115.10
Flag:
Peak Width
Actual: 0.65
Required: 0.75
Flag:



206 Pb
Mass Calib.
Actual: 206.00
Required: 205.90-206.10
Flag:
Peak Width
Actual: 0.70
Required: 0.75
Flag:



207 Pb
Mass Calib.
Actual: 207.00
Required: 206.90-207.10
Flag:
Peak Width
Actual: 0.75
Required: 0.75
Flag:



208 Pb
Mass Calib.
Actual: 208.00
Required: 207.90-208.10
Flag:
Peak Width
Actual: 0.70
Required: 0.75
Flag:

QC Tune Result:Pass

INITIAL CALIBRATION DATA SUMMARY

INITIAL CALIBRATION SUMMARY: 160711A

Instrument ID: ICPMS-02

Analyte	Data File	A0711002.D	A0711003.D	A0711004.D	A0711005.D	A0711006.D	A0711007.D	A0711008.D	A0711009.D	A0711010.D	
	Acq. Date-Time	07/11/2016 10:20 AM	07/11/2016 10:25 AM	07/11/2016 10:31 AM	07/11/2016 10:36 AM	07/11/2016 10:42 AM	07/11/2016 10:47 AM	07/11/2016 10:53 AM	07/11/2016 10:57 AM	07/11/2016 11:03 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	R
45 Sc (ISTD) [2]	CPS	164766.5		166221.9	166361.2	166339.7	167150.7	169567.4	154617.6	163914.9	
55 Mn [2]	CPS	188.7		4124.2	37433.1	76016.6	149283.9	298035.8	678111.9	1421570.3	1.0000
52 Cr [2]	CPS	417.7		7088.4	65392.2	130030.5	259309.4	515438	1192885	2457375	0.9999
72 Ge (ISTD) [1]	CPS	167118.4		166264	167903	166088.8	167691.6	167114	147632	159248.4	
78 Se [1]	CPS	0		386.7	3581.7	7193	14344.6	28486	63635.6	135007.4	1.0000
72 Ge (ISTD) [2]	CPS	139525.1	141286.1	142116.4	141594.2	140714.2	140700.7	139981.9	129051	134050.6	
75 As [2]	CPS	56	197.8	849.8	8067	15920.8	31710.5	63033.3	144184.6	301102.8	1.0000
103 Rh (ISTD) [2]	CPS	3783096.4		3829457.9	3777557.8	3763725.7	3767509	3743311.3	3526402	3635163.2	
95 Mo [2]	CPS	274.5		4501.9	44554	89799.9	178468.2	354167.7	831670.6	1695896.1	1.0000
159 Tb (ISTD) [3]	CPS	12545513		12549717.6	12460738.6	12455768.3	12442295.2	12277877.3	12223803.4	12309386.6	
137 Ba [3]	CPS	118.3		11499.6	107940	215012.1	426954.8	838710.7	2039716.1	4041595.3	1.0000

Standard Code
ICAL: 2MSST-151207C
ICAL: 2MSST-151207D
ICAL: 2MWST-160606G
IS Mix: 2MWST-160606A

Calibration Acceptance Criteria: > 0.995 Correlation

INITIAL CALIBRATION AND CONTINUING CALIBRATION VERIFICATION SUMMARY

CLIENT: ARCADIS U.S., Inc. - California
Work Order: N020245
Project: PG&E Topock - RMP, RC000753.0801

ANALYTICAL QC SUMMARY REPORT

TestCode: 6020_DIS

Sample ID **ICV**	SampType: **ICV**	TestCode: **6020_DIS**	Units: **µg/L**	Prep Date:	RunNo: **109348**
Client ID: **ICV**	Batch ID: **R109348**	TestNo: **EPA 6020**		Analysis Date: **7/11/2016**	SeqNo: **2368334**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	9.995	0.10	10.00	0	99.9	90	110				
Barium	100.972	1.0	100.0	0	101	90	110				
Manganese	98.674	0.50	100.0	0	98.7	90	110				
Molybdenum	10.259	0.50	10.00	0	103	90	110				
Selenium	10.310	0.50	10.00	0	103	90	110				

Sample ID **LLICV**	SampType: **CCV1**	TestCode: **6020_DIS**	Units: **µg/L**	Prep Date:	RunNo: **109348**
Client ID: **ZZZZZZ**	Batch ID: **R109348**	TestNo: **EPA 6020**		Analysis Date: **7/11/2016**	SeqNo: **2368336**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	0.095	0.10	0.1000	0	94.5	80	120				
Barium	1.134	1.0	1.000	0	113	80	120				
Manganese	0.590	0.50	0.5000	0	118	80	120				
Molybdenum	0.532	0.50	0.5000	0	106	80	120				
Selenium	0.492	0.50	0.5000	0	98.4	80	120				

Sample ID **CCV1**	SampType: **CCV**	TestCode: **6020_DIS**	Units: **µg/L**	Prep Date:	RunNo: **109348**
Client ID: **CCV**	Batch ID: **R109348**	TestNo: **EPA 6020**		Analysis Date: **7/11/2016**	SeqNo: **2368349**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	19.847	0.10	20.00	0	99.2	90	110				
Barium	20.924	1.0	20.00	0	105	90	110				
Manganese	20.341	0.50	20.00	0	102	90	110				
Molybdenum	20.186	0.50	20.00	0	101	90	110				
Selenium	20.229	0.50	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		

CLIENT: ARCADIS U.S., Inc. - California
Work Order: N020245
Project: PG&E Topock - RMP, RC000753.0801

ANALYTICAL QC SUMMARY REPORT

TestCode: 6020_DIS

Sample ID **CCV2**	SampType: **CCV**	TestCode: **6020_DIS**	Units: **µg/L**	Prep Date:	RunNo: **109348**
Client ID: **CCV**	Batch ID: **R109348**	TestNo: **EPA 6020**		Analysis Date: **7/11/2016**	SeqNo: **2368361**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	19.663	0.10	20.00	0	98.3	90	110				
Barium	20.716	1.0	20.00	0	104	90	110				
Manganese	20.390	0.50	20.00	0	102	90	110				
Molybdenum	20.215	0.50	20.00	0	101	90	110				
Selenium	20.995	0.50	20.00	0	105	90	110				

Sample ID **CCV3**	SampType: **CCV**	TestCode: **6020_DIS**	Units: **µg/L**	Prep Date:	RunNo: **109348**
Client ID: **CCV**	Batch ID: **R109348**	TestNo: **EPA 6020**		Analysis Date: **7/11/2016**	SeqNo: **2368373**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	20.077	0.10	20.00	0	100	90	110				
Barium	20.936	1.0	20.00	0	105	90	110				
Manganese	20.456	0.50	20.00	0	102	90	110				
Molybdenum	20.035	0.50	20.00	0	100	90	110				
Selenium	21.245	0.50	20.00	0	106	90	110				

Sample ID **CCV4**	SampType: **CCV**	TestCode: **6020_DIS**	Units: **µg/L**	Prep Date:	RunNo: **109348**
Client ID: **CCV**	Batch ID: **R109348**	TestNo: **EPA 6020**		Analysis Date: **7/11/2016**	SeqNo: **2368380**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	20.079	0.10	20.00	0	100	90	110				
Barium	20.833	1.0	20.00	0	104	90	110				
Manganese	20.522	0.50	20.00	0	103	90	110				
Molybdenum	20.082	0.50	20.00	0	100	90	110				
Selenium	20.615	0.50	20.00	0	103	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: N020245
Project: PG&E Topock - RMP, RC000753.0801

ANALYTICAL QC SUMMARY REPORT

TestCode: 6020_DIS

Sample ID	**LLCCV1**	SampType:	**CCV2**	TestCode:	**6020_DIS**	Units:	**µg/L**	Prep Date:		RunNo:	**109348**
Client ID:	**ZZZZZZ**	Batch ID:	**R109348**	TestNo:	**EPA 6020**			Analysis Date:	**7/11/2016**	SeqNo:	**2368382**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	0.105	0.10	0.1000	0	105	70	130				
Barium	1.213	1.0	1.000	0	121	70	130				
Manganese	0.554	0.50	0.5000	0	111	70	130				
Molybdenum	0.515	0.50	0.5000	0	103	70	130				
Selenium	0.541	0.50	0.5000	0	108	70	130				

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: N020245
Project: PG&E Topock - RMP, RC000753.0801

ANALYTICAL QC SUMMARY REPORT

TestCode: 6020DIS_CrPGE

Sample ID **ICV**	SampType: **ICV**	TestCode: **6020DIS_CrP**	Units: **µg/L**	Prep Date:	RunNo: **109348**
Client ID: **ICV**	Batch ID: **R109348**	TestNo: **EPA 6020**		Analysis Date: **7/11/2016**	SeqNo: **2368267**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium	9.963	1.0	10.00	0	99.6	90	110				

Sample ID **LLICV**	SampType: **CCV1**	TestCode: **6020DIS_CrP**	Units: **µg/L**	Prep Date:	RunNo: **109348**
Client ID: **ZZZZZZ**	Batch ID: **R109348**	TestNo: **EPA 6020**		Analysis Date: **7/11/2016**	SeqNo: **2368269**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium	1.089	1.0	1.000	0	109	80	120				

Sample ID **CCV1**	SampType: **CCV**	TestCode: **6020DIS_CrP**	Units: **µg/L**	Prep Date:	RunNo: **109348**
Client ID: **CCV**	Batch ID: **R109348**	TestNo: **EPA 6020**		Analysis Date: **7/11/2016**	SeqNo: **2368282**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium	20.201	1.0	20.00	0	101	90	110				

Sample ID **CCV2**	SampType: **CCV**	TestCode: **6020DIS_CrP**	Units: **µg/L**	Prep Date:	RunNo: **109348**
Client ID: **CCV**	Batch ID: **R109348**	TestNo: **EPA 6020**		Analysis Date: **7/11/2016**	SeqNo: **2368294**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium	20.372	1.0	20.00	0	102	90	110				

Sample ID **CCV3**	SampType: **CCV**	TestCode: **6020DIS_CrP**	Units: **µg/L**	Prep Date:	RunNo: **109348**
Client ID: **CCV**	Batch ID: **R109348**	TestNo: **EPA 6020**		Analysis Date: **7/11/2016**	SeqNo: **2368306**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium	20.686	1.0	20.00	0	103	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: N020245
Project: PG&E Topock - RMP, RC000753.0801

ANALYTICAL QC SUMMARY REPORT

TestCode: 6020DIS_CrPGE

Sample ID **CCV4**	SampType: **CCV**	TestCode: **6020DIS_CrP**	Units: **µg/L**	Prep Date:	RunNo: **109348**
Client ID: **CCV**	Batch ID: **R109348**	TestNo: **EPA 6020**		Analysis Date: **7/11/2016**	SeqNo: **2368313**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium	20.619	1.0	20.00	0	103	90	110				

Sample ID **LLCCV1**	SampType: **CCV2**	TestCode: **6020DIS_CrP**	Units: **µg/L**	Prep Date:	RunNo: **109348**
Client ID: **ZZZZZZ**	Batch ID: **R109348**	TestNo: **EPA 6020**		Analysis Date: **7/11/2016**	SeqNo: **2368315**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium	1.087	1.0	1.000	0	109	70	130				

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis 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

CLIENT: ARCADIS U.S., Inc. - California
Work Order: N020245
Project: PG&E Topock - RMP, RC000753.0801

ANALYTICAL QC SUMMARY REPORT

TestCode: 6020_DIS

Sample ID **ICB**	SampType: **ICB**	TestCode: **6020_DIS**	Units: **µg/L**	Prep Date:	RunNo: **109348**
Client ID: **ICB**	Batch ID: **R109348**	TestNo: **EPA 6020**		Analysis Date: **7/11/2016**	SeqNo: **2368335**

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	0.085	0.50									
Selenium	ND	0.50									

Sample ID **CCB1**	SampType: **CCB**	TestCode: **6020_DIS**	Units: **µg/L**	Prep Date:	RunNo: **109348**
Client ID: **CCB**	Batch ID: **R109348**	TestNo: **EPA 6020**		Analysis Date: **7/11/2016**	SeqNo: **2368350**

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									
Selenium	ND	0.50									

Sample ID **CCB2**	SampType: **CCB**	TestCode: **6020_DIS**	Units: **µg/L**	Prep Date:	RunNo: **109348**
Client ID: **CCB**	Batch ID: **R109348**	TestNo: **EPA 6020**		Analysis Date: **7/11/2016**	SeqNo: **2368362**

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									
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
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: ARCADIS U.S., Inc. - California
Work Order: N020245
Project: PG&E Topock - RMP, RC000753.0801

ANALYTICAL QC SUMMARY REPORT

TestCode: 6020_DIS

Sample ID **CCB3**	SampType: **CCB**	TestCode: **6020_DIS**	Units: **µg/L**	Prep Date:	RunNo: **109348**
Client ID: **CCB**	Batch ID: **R109348**	TestNo: **EPA 6020**		Analysis Date: **7/11/2016**	SeqNo: **2368374**

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									
Selenium	ND	0.50									

Sample ID **CCB4**	SampType: **CCB**	TestCode: **6020_DIS**	Units: **µg/L**	Prep Date:	RunNo: **109348**
Client ID: **CCB**	Batch ID: **R109348**	TestNo: **EPA 6020**		Analysis Date: **7/11/2016**	SeqNo: **2368381**

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									
Selenium	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: N020245
Project: PG&E Topock - RMP, RC000753.0801

ANALYTICAL QC SUMMARY REPORT

TestCode: 6020DIS_CrPGE

Sample ID	ICB	SampType:	ICB	TestCode:	6020DIS_CrP	Units:	µg/L	Prep Date:		RunNo:	109348
Client ID:	ICB	Batch ID:	R109348	TestNo:	EPA 6020			Analysis Date:	7/11/2016	SeqNo:	2368268

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium	ND	1.0									

Sample ID	CCB1	SampType:	CCB	TestCode:	6020DIS_CrP	Units:	µg/L	Prep Date:		RunNo:	109348
Client ID:	CCB	Batch ID:	R109348	TestNo:	EPA 6020			Analysis Date:	7/11/2016	SeqNo:	2368283

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium	ND	1.0									

Sample ID	CCB2	SampType:	CCB	TestCode:	6020DIS_CrP	Units:	µg/L	Prep Date:		RunNo:	109348
Client ID:	CCB	Batch ID:	R109348	TestNo:	EPA 6020			Analysis Date:	7/11/2016	SeqNo:	2368295

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium	ND	1.0									

Sample ID	CCB3	SampType:	CCB	TestCode:	6020DIS_CrP	Units:	µg/L	Prep Date:		RunNo:	109348
Client ID:	CCB	Batch ID:	R109348	TestNo:	EPA 6020			Analysis Date:	7/11/2016	SeqNo:	2368307

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium	ND	1.0									

Sample ID	CCB4	SampType:	CCB	TestCode:	6020DIS_CrP	Units:	µg/L	Prep Date:		RunNo:	109348
Client ID:	CCB	Batch ID:	R109348	TestNo:	EPA 6020			Analysis Date:	7/11/2016	SeqNo:	2368314

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
- 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 CHECK (ICSA & ICSAB)

CLIENT: ARCADIS U.S., Inc. - California
Work Order: N020245
Project: PG&E Topock - RMP, RC000753.0801

ANALYTICAL QC SUMMARY REPORT

TestCode: 6020_DIS

Sample ID **ICSA1**	SampType: **ICSA**	TestCode: **6020_DIS**	Units: **µg/L**	Prep Date:	RunNo: **109348**
Client ID: **ICSA**	Batch ID: **R109348**	TestNo: **EPA 6020**		Analysis Date: **7/11/2016**	SeqNo: **2368337**

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	0.045	0.50									
Selenium	0.030	0.50									

Sample ID **ICSAB1**	SampType: **ICSAB**	TestCode: **6020_DIS**	Units: **µg/L**	Prep Date:	RunNo: **109348**
Client ID: **ICSAB**	Batch ID: **R109348**	TestNo: **EPA 6020**		Analysis Date: **7/11/2016**	SeqNo: **2368338**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	19.411	0.10	20.00	0	97.1	80	120				
Barium	19.302	1.0	20.00	0	96.5	80	120				
Manganese	16.561	0.50	20.00	0	82.8	80	120				
Molybdenum	22.043	0.50	20.00	0	110	80	120				
Selenium	18.172	0.50	20.00	0	90.9	80	120				

Sample ID **ICSA2**	SampType: **ICSA**	TestCode: **6020_DIS**	Units: **µg/L**	Prep Date:	RunNo: **109348**
Client ID: **ICSA**	Batch ID: **R109348**	TestNo: **EPA 6020**		Analysis Date: **7/11/2016**	SeqNo: **2368383**

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									
Selenium	0.037	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		

CLIENT: ARCADIS U.S., Inc. - California
Work Order: N020245
Project: PG&E Topock - RMP, RC000753.0801

ANALYTICAL QC SUMMARY REPORT

TestCode: 6020_DIS

Sample ID **ICSAB2**	SampType: **ICSAB**	TestCode: **6020_DIS**	Units: **µg/L**	Prep Date:	RunNo: **109348**
Client ID: **ICSAB**	Batch ID: **R109348**	TestNo: **EPA 6020**		Analysis Date: **7/11/2016**	SeqNo: **2368384**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	19.140	0.10	20.00	0	95.7	80	120				
Barium	19.531	1.0	20.00	0	97.7	80	120				
Manganese	16.977	0.50	20.00	0	84.9	80	120				
Molybdenum	21.924	0.50	20.00	0	110	80	120				
Selenium	18.550	0.50	20.00	0	92.7	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: N020245
Project: PG&E Topock - RMP, RC000753.0801

ANALYTICAL QC SUMMARY REPORT

TestCode: 6020DIS_CrPGE

Sample ID **ICSA1**	SampType: **ICSA**	TestCode: **6020DIS_CrP**	Units: **µg/L**	Prep Date:	RunNo: **109348**
Client ID: **ICSA**	Batch ID: **R109348**	TestNo: **EPA 6020**		Analysis Date: **7/11/2016**	SeqNo: **2368270**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium	0.347	1.0									

Sample ID **ICSAB1**	SampType: **ICSAB**	TestCode: **6020DIS_CrP**	Units: **µg/L**	Prep Date:	RunNo: **109348**
Client ID: **ICSAB**	Batch ID: **R109348**	TestNo: **EPA 6020**		Analysis Date: **7/11/2016**	SeqNo: **2368271**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium	18.861	1.0	20.00	0	94.3	80	120				

Sample ID **ICSA2**	SampType: **ICSA**	TestCode: **6020DIS_CrP**	Units: **µg/L**	Prep Date:	RunNo: **109348**
Client ID: **ICSA**	Batch ID: **R109348**	TestNo: **EPA 6020**		Analysis Date: **7/11/2016**	SeqNo: **2368316**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium	0.351	1.0									

Sample ID **ICSAB2**	SampType: **ICSAB**	TestCode: **6020DIS_CrP**	Units: **µg/L**	Prep Date:	RunNo: **109348**
Client ID: **ICSAB**	Batch ID: **R109348**	TestNo: **EPA 6020**		Analysis Date: **7/11/2016**	SeqNo: **2368317**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium	19.358	1.0	20.00	0	96.8	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

INTERNAL STANDARD SUMMARY

INTERNAL STANDARD: 160711A

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	12545513	12545513	100	PASS	70-125	164766.5	164766.5	100	PASS	70-125
Std1-0.1/1 ppb	ICAL	1	12545313	12545513	100	PASS	70-125	165675.4	164766.5	100.55	PASS	70-125
Std2-0.5/5 ppb	ICAL	1	12549717.6	12545513	100.03	PASS	70-125	166221.9	164766.5	100.88	PASS	70-125
Std3-5/50 ppb	ICAL	1	12460738.6	12545513	99.32	PASS	70-125	166361.2	164766.5	100.97	PASS	70-125
Std4-10/100 ppb	ICAL	1	12455768.3	12545513	99.28	PASS	70-125	166339.7	164766.5	100.95	PASS	70-125
Std5-20/200 ppb	ICAL	1	12442295.2	12545513	99.18	PASS	70-125	167150.7	164766.5	101.45	PASS	70-125
Std6-40/400 ppb	ICAL	1	12277877.3	12545513	97.87	PASS	70-125	169567.4	164766.5	102.91	PASS	70-125
Std7-100/1000 ppb	ICAL	1	12223803.4	12545513	97.44	PASS	70-125	154617.6	164766.5	93.84	PASS	70-125
Std8-200/2000 ppb	ICAL	1	12309386.6	12545513	98.12	PASS	70-125	163914.9	164766.5	99.48	PASS	70-125
ICV	ICV	1	14121464.9	12545513	112.56	PASS	70-125	185806.8	164766.5	112.77	PASS	70-125
ICB	ICB	1	12735267.7	12545513	101.51	PASS	70-125	168258.6	164766.5	102.12	PASS	70-125
LLICV	CCV1	1	12569994.1	12545513	100.2	PASS	70-125	169215.9	164766.5	102.7	PASS	70-125
ICSA1	ICSA	1	12152602.6	12545513	96.87	PASS	70-125	180070.5	164766.5	109.29	PASS	70-125
ICSAB1	ICSAB	1	12520923.3	12545513	99.8	PASS	70-125	203396.1	164766.5	123.45	PASS	70-125
MB-58959	MBLK	1	13278663	12545513	105.84	PASS	70-125	207664.5	164766.5	126.04	NR!	70-125
LCS-58959	LCS	1	12360741.8	12545513	98.53	PASS	70-125	196625	164766.5	119.34	PASS	70-125
N020245-001B	SAMP	1	12832173.8	12545513	102.28	PASS	70-125	196513.7	164766.5	119.27	PASS	70-125
N020245-001B	SAMP	5	13009523.4	12545513	103.7	PASS	70-125	191521.4	164766.5	116.24	PASS	70-125
N020245-001B-PS	PS	1	13192577.7	12545513	105.16	PASS	70-125	195521	164766.5	118.67	PASS	70-125
N020245-001B-MS	MS	1	13546449	12545513	107.98	PASS	70-125	205371.2	164766.5	124.64	PASS	70-125
N020245-001B-MSD	MSD	1	13710138.8	12545513	109.28	PASS	70-125	206677.3	164766.5	125.44	NR!	70-125
N020245-002B	SAMP	1	13288399.9	12545513	105.92	PASS	70-125	201302.1	164766.5	122.17	PASS	70-125
N020252-001B	SAMP	1	13008829.3	12545513	103.69	PASS	70-125	194187.3	164766.5	117.86	PASS	70-125
N020252-002B	SAMP	1	12882328.7	12545513	102.68	PASS	70-125	186634.3	164766.5	113.27	PASS	70-125
CCV1	CCV	1	13319301.7	12545513	106.17	PASS	70-125	185807.9	164766.5	112.77	PASS	70-125
CCB1	CCB	1	13084331.3	12545513	104.29	PASS	70-125	178852.2	164766.5	108.55	PASS	70-125
N020252-003B	SAMP	1	12976795.2	12545513	103.44	PASS	70-125	184904.1	164766.5	112.22	PASS	70-125
N020252-005B	SAMP	1	13130489.1	12545513	104.66	PASS	70-125	197250.7	164766.5	119.72	PASS	70-125
N020253-001B	SAMP	1	13421985.1	12545513	106.99	PASS	70-125	201363.2	164766.5	122.21	PASS	70-125
N020253-002B	SAMP	1	14011986.2	12545513	111.69	PASS	70-125	211862.5	164766.5	128.58	NR!	70-125
N020253-003B	SAMP	1	13814342.4	12545513	110.11	PASS	70-125	201932.2	164766.5	122.56	PASS	70-125
N020253-004B	SAMP	1	13927514	12545513	111.02	PASS	70-125	202166.2	164766.5	122.7	PASS	70-125
N020253-005B	SAMP	1	13750085.3	12545513	109.6	PASS	70-125	194948.3	164766.5	118.32	PASS	70-125
N020253-005B-MS	MS	1	13893321	12545513	110.74	PASS	70-125	198307.5	164766.5	120.36	PASS	70-125
N020253-006B	SAMP	1	13353599.8	12545513	106.44	PASS	70-125	184914.6	164766.5	112.23	PASS	70-125
N020253-008B	SAMP	1	12961683.3	12545513	103.32	PASS	70-125	175649.8	164766.5	106.61	PASS	70-125
CCV2	CCV	1	13366091.9	12545513	106.54	PASS	70-125	174339.1	164766.5	105.81	PASS	70-125
CCB2	CCB	1	13166051.8	12545513	104.95	PASS	70-125	169013.8	164766.5	102.58	PASS	70-125
N020253-009B	SAMP	1	12694874.1	12545513	101.19	PASS	70-125	171932.8	164766.5	104.35	PASS	70-125
N020253-010B	SAMP	1	13139406.9	12545513	104.73	PASS	70-125	180817	164766.5	109.74	PASS	70-125
N020253-011B	SAMP	1	13380911.3	12545513	106.66	PASS	70-125	182792.5	164766.5	110.94	PASS	70-125

INTERNAL STANDARD: 160711A

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
N020253-012B	SAMP	1	13374087.2	12545513	106.6	PASS	70-125	183750	164766.5	111.52	PASS	70-125
N020253-013B	SAMP	1	13444415.8	12545513	107.17	PASS	70-125	182050.4	164766.5	110.49	PASS	70-125
N020245-001B	SAMP	25	13429214.4	12545513	107.04	PASS	70-125	171037.5	164766.5	103.81	PASS	70-125
N020245-001B-PS	PS	5	12940827.3	12545513	103.15	PASS	70-125	150955.4	164766.5	91.62	PASS	70-125
N020245-001B-MS	MS	5	13215925.5	12545513	105.34	PASS	70-125	164246.6	164766.5	99.68	PASS	70-125
N020245-001B-MSD	MSD	5	13252909	12545513	105.64	PASS	70-125	166729.8	164766.5	101.19	PASS	70-125
N020253-002B	SAMP	1	14114326.3	12545513	112.5	PASS	70-125	196329.3	164766.5	119.16	PASS	70-125
CCV3	CCV	1	14105372.8	12545513	112.43	PASS	70-125	188624.5	164766.5	114.48	PASS	70-125
CCB3	CCB	1	13503405.8	12545513	107.64	PASS	70-125	172618.9	164766.5	104.77	PASS	70-125
MB-58959	MBLK	1	12971206.5	12545513	103.39	PASS	70-125	165117	164766.5	100.21	PASS	70-125
N020245-001B-MS	MS	1	13262947.9	12545513	105.72	PASS	70-125	177984.3	164766.5	108.02	PASS	70-125
N020245-001B-MSD	MSD	1	13579958.7	12545513	108.25	PASS	70-125	191924.4	164766.5	116.48	PASS	70-125
CCV4	CCV	1	13138300.5	12545513	104.73	PASS	70-125	169931.5	164766.5	103.13	PASS	70-125
CCB4	CCB	1	13022380.2	12545513	103.8	PASS	70-125	167481.9	164766.5	101.65	PASS	70-125
LLCCV1	CCV2	1	12898675.4	12545513	102.82	PASS	70-125	165937.2	164766.5	100.71	PASS	70-125
ICSA2	ICSA	1	12905070.2	12545513	102.87	PASS	70-125	183077.4	164766.5	111.11	PASS	70-125
ICSAB2	ICSAB	1	13206340.5	12545513	105.27	PASS	70-125	201282.2	164766.5	122.16	PASS	70-125

INTERNAL STANDARD: 160711A

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	139525.1	139525.1	100	PASS	70-125	167118.4	167118.4	100	PASS	70-125
Std1-0.1/1 ppb	ICAL	1	141286.1	139525.1	101.26	PASS	70-125	168500.7	167118.4	100.83	PASS	70-125
Std2-0.5/5 ppb	ICAL	1	142116.4	139525.1	101.86	PASS	70-125	166264	167118.4	99.49	PASS	70-125
Std3-5/50 ppb	ICAL	1	141594.2	139525.1	101.48	PASS	70-125	167903	167118.4	100.47	PASS	70-125
Std4-10/100 ppb	ICAL	1	140714.2	139525.1	100.85	PASS	70-125	166088.8	167118.4	99.38	PASS	70-125
Std5-20/200 ppb	ICAL	1	140700.7	139525.1	100.84	PASS	70-125	167691.6	167118.4	100.34	PASS	70-125
Std6-40/400 ppb	ICAL	1	139981.9	139525.1	100.33	PASS	70-125	167114	167118.4	100	PASS	70-125
Std7-100/1000 ppb	ICAL	1	129051	139525.1	92.49	PASS	70-125	147632	167118.4	88.34	PASS	70-125
Std8-200/2000 ppb	ICAL	1	134050.6	139525.1	96.076	PASS	70-125	159248.4	167118.4	95.29	PASS	70-125
ICV	ICV	1	154735.2	139525.1	110.9	PASS	70-125	181667.5	167118.4	108.71	PASS	70-125
ICB	ICB	1	143061.1	139525.1	102.53	PASS	70-125	168453.6	167118.4	100.8	PASS	70-125
LLICV	CCV1	1	144407.3	139525.1	103.5	PASS	70-125	172513.2	167118.4	103.23	PASS	70-125
ICSA1	ICSA	1	141167.3	139525.1	101.18	PASS	70-125	157723.6	167118.4	94.38	PASS	70-125
ICSAB1	ICSAB	1	152869.4	139525.1	109.56	PASS	70-125	176880.8	167118.4	105.84	PASS	70-125
MB-58959	MBLK	1	170353.1	139525.1	122.1	PASS	70-125	209324.3	167118.4	125.26	NR!	70-125
LCS-58959	LCS	1	157010.9	139525.1	112.53	PASS	70-125	196119.2	167118.4	117.35	PASS	70-125
N020245-001B	SAMP	1	153570.9	139525.1	110.07	PASS	70-125	182183.1	167118.4	109.01	PASS	70-125
N020245-001B	SAMP	5	157386	139525.1	112.8	PASS	70-125	190090.2	167118.4	113.75	PASS	70-125
N020245-001B-PS	PS	1	151328.7	139525.1	108.46	PASS	70-125	174483.9	167118.4	104.41	PASS	70-125
N020245-001B-MS	MS	1	159208.9	139525.1	114.11	PASS	70-125	183055.1	167118.4	109.54	PASS	70-125
N020245-001B-MSD	MSD	1	159310	139525.1	114.18	PASS	70-125	182820.7	167118.4	109.4	PASS	70-125
N020245-002B	SAMP	1	156822.4	139525.1	112.4	PASS	70-125	178840.7	167118.4	107.01	PASS	70-125
N020252-001B	SAMP	1	154581.5	139525.1	110.79	PASS	70-125	176921.8	167118.4	105.87	PASS	70-125
N020252-002B	SAMP	1	147971.8	139525.1	106.05	PASS	70-125	169480.2	167118.4	101.41	PASS	70-125
CCV1	CCV	1	153507.1	139525.1	110.02	PASS	70-125	178237.3	167118.4	106.65	PASS	70-125
CCB1	CCB	1	149588.5	139525.1	107.21	PASS	70-125	174641.7	167118.4	104.5	PASS	70-125
N020252-003B	SAMP	1	146639	139525.1	105.1	PASS	70-125	163419.3	167118.4	97.79	PASS	70-125
N020252-005B	SAMP	1	154382.2	139525.1	110.65	PASS	70-125	171235.2	167118.4	102.46	PASS	70-125
N020253-001B	SAMP	1	171764.6	139525.1	123.11	PASS	70-125	192396.9	167118.4	115.13	PASS	70-125
N020253-002B	SAMP	1	161954.6	139525.1	116.08	PASS	70-125	179999	167118.4	107.71	PASS	70-125
N020253-003B	SAMP	1	160094.2	139525.1	114.74	PASS	70-125	180249.1	167118.4	107.86	PASS	70-125
N020253-004B	SAMP	1	159786.6	139525.1	114.52	PASS	70-125	179961.6	167118.4	107.69	PASS	70-125
N020253-005B	SAMP	1	157331.3	139525.1	112.76	PASS	70-125	172932.6	167118.4	103.48	PASS	70-125
N020253-005B-MS	MS	1	156290.1	139525.1	112.02	PASS	70-125	173846.6	167118.4	104.03	PASS	70-125
N020253-006B	SAMP	1	149598.5	139525.1	107.22	PASS	70-125	168063.7	167118.4	100.57	PASS	70-125
N020253-008B	SAMP	1	142941.6	139525.1	102.45	PASS	70-125	162742.4	167118.4	97.38	PASS	70-125
CCV2	CCV	1	147545	139525.1	105.75	PASS	70-125	169306.6	167118.4	101.31	PASS	70-125
CCB2	CCB	1	143935.5	139525.1	103.16	PASS	70-125	164551.5	167118.4	98.46	PASS	70-125
N020253-009B	SAMP	1	139960.9	139525.1	100.31	PASS	70-125	155332.4	167118.4	92.95	PASS	70-125
N020253-010B	SAMP	1	145215.9	139525.1	104.08	PASS	70-125	164299.8	167118.4	98.31	PASS	70-125
N020253-011B	SAMP	1	149179.3	139525.1	106.92	PASS	70-125	166516.4	167118.4	99.64	PASS	70-125

INTERNAL STANDARD: 160711A

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
N020253-012B	SAMP	1	149752.3	139525.1	107.33	PASS	70-125	168647.3	167118.4	100.91	PASS	70-125
N020253-013B	SAMP	1	146304.8	139525.1	104.86	PASS	70-125	167568.1	167118.4	100.27	PASS	70-125
N020245-001B	SAMP	25	146872.7	139525.1	105.27	PASS	70-125	167997.1	167118.4	100.53	PASS	70-125
N020245-001B-PS	PS	5	128773.9	139525.1	92.29	PASS	70-125	139825.5	167118.4	83.67	PASS	70-125
N020245-001B-MS	MS	5	140087.1	139525.1	100.4	PASS	70-125	157392	167118.4	94.18	PASS	70-125
N020245-001B-MSD	MSD	5	141007.4	139525.1	101.06	PASS	70-125	159336	167118.4	95.34	PASS	70-125
N020253-002B	SAMP	1	153537.5	139525.1	110.04	PASS	70-125	158472.6	167118.4	94.83	PASS	70-125
CCV3	CCV	1	159460.5	139525.1	114.29	PASS	70-125	179742.6	167118.4	107.55	PASS	70-125
CCB3	CCB	1	147678.5	139525.1	105.84	PASS	70-125	167715.3	167118.4	100.36	PASS	70-125
MB-58959	MBLK	1	142885.9	139525.1	102.41	PASS	70-125	162715.8	167118.4	97.37	PASS	70-125
N020245-001B-MS	MS	1	141765.4	139525.1	101.61	PASS	70-125	153479.8	167118.4	91.84	PASS	70-125
N020245-001B-MSD	MSD	1	150967.1	139525.1	108.2	PASS	70-125	165306.7	167118.4	98.92	PASS	70-125
CCV4	CCV	1	143912.7	139525.1	103.14	PASS	70-125	165354.6	167118.4	98.94	PASS	70-125
CCB4	CCB	1	144687.6	139525.1	103.7	PASS	70-125	165060.7	167118.4	98.77	PASS	70-125
LLCCV1	CCV2	1	142387.4	139525.1	102.05	PASS	70-125	163622.5	167118.4	97.91	PASS	70-125
ICSA2	ICSA	1	141734.6	139525.1	101.58	PASS	70-125	154777.8	167118.4	92.62	PASS	70-125
ICSAB2	ICSAB	1	154063.2	139525.1	110.42	PASS	70-125	167428.8	167118.4	100.19	PASS	70-125

INTERNAL STANDARD: 160711A

Instrument ID: ICPMS-02

Sample Name	Type	DF	103 Rh (ISTD) [2]				
			CPS	REF	%REC	Comment	Criteria
Cal Blank	IBLK	1	3783096.4	3783096.4	100	PASS	70-125
Std1-0.1/1 ppb	ICAL	1	3799926.4	3783096.4	100.44	PASS	70-125
Std2-0.5/5 ppb	ICAL	1	3829457.9	3783096.4	101.23	PASS	70-125
Std3-5/50 ppb	ICAL	1	3777557.8	3783096.4	99.85	PASS	70-125
Std4-10/100 ppb	ICAL	1	3763725.7	3783096.4	99.49	PASS	70-125
Std5-20/200 ppb	ICAL	1	3767509	3783096.4	99.59	PASS	70-125
Std6-40/400 ppb	ICAL	1	3743311.3	3783096.4	98.95	PASS	70-125
Std7-100/1000 ppb	ICAL	1	3526402	3783096.4	93.21	PASS	70-125
Std8-200/2000 ppb	ICAL	1	3635163.2	3783096.4	96.09	PASS	70-125
ICV	ICV	1	4203045.7	3783096.4	111.1	PASS	70-125
ICB	ICB	1	3842070.5	3783096.4	101.56	PASS	70-125
LLICV	CCV1	1	3853640.7	3783096.4	101.86	PASS	70-125
ICSA1	ICSA	1	3447987.3	3783096.4	91.14	PASS	70-125
ICSAB1	ICSAB	1	3655169.7	3783096.4	96.62	PASS	70-125
MB-58959	MBLK	1	4383592.9	3783096.4	115.87	PASS	70-125
LCS-58959	LCS	1	4035384.1	3783096.4	106.67	PASS	70-125
N020245-001B	SAMP	1	3658476.1	3783096.4	96.71	PASS	70-125
N020245-001B	SAMP	5	3952680.7	3783096.4	104.48	PASS	70-125
N020245-001B-PS	PS	1	3665625.4	3783096.4	96.89	PASS	70-125
N020245-001B-MS	MS	1	3838042.7	3783096.4	101.45	PASS	70-125
N020245-001B-MSD	MSD	1	3868048.6	3783096.4	102.25	PASS	70-125
N020245-002B	SAMP	1	3775615.2	3783096.4	99.8	PASS	70-125
N020252-001B	SAMP	1	3758428.6	3783096.4	99.35	PASS	70-125
N020252-002B	SAMP	1	3589701.7	3783096.4	94.89	PASS	70-125
CCV1	CCV	1	4043708.3	3783096.4	106.89	PASS	70-125
CCB1	CCB	1	3966297.1	3783096.4	104.84	PASS	70-125
N020252-003B	SAMP	1	3553363.9	3783096.4	93.93	PASS	70-125
N020252-005B	SAMP	1	3718482.2	3783096.4	98.29	PASS	70-125
N020253-001B	SAMP	1	3779621.1	3783096.4	99.91	PASS	70-125
N020253-002B	SAMP	1	3872860	3783096.4	102.37	PASS	70-125
N020253-003B	SAMP	1	3918861.7	3783096.4	103.59	PASS	70-125
N020253-004B	SAMP	1	3932879.1	3783096.4	103.96	PASS	70-125
N020253-005B	SAMP	1	3849062.5	3783096.4	101.74	PASS	70-125
N020253-005B-MS	MS	1	3869021.7	3783096.4	102.27	PASS	70-125
N020253-006B	SAMP	1	3756687.4	3783096.4	99.3	PASS	70-125
N020253-008B	SAMP	1	3596292.7	3783096.4	95.062	PASS	70-125
CCV2	CCV	1	3954050.6	3783096.4	104.52	PASS	70-125
CCB2	CCB	1	3888669.9	3783096.4	102.79	PASS	70-125
N020253-009B	SAMP	1	3460255.2	3783096.4	91.47	PASS	70-125
N020253-010B	SAMP	1	3631864	3783096.4	96.002	PASS	70-125
N020253-011B	SAMP	1	3703994.9	3783096.4	97.91	PASS	70-125

INTERNAL STANDARD: 160711A

Instrument ID: ICPMS-02

Sample Name	Type	DF	103 Rh (ISTD) [2]				
			CPS	REF	%REC	Comment	Criteria
N020253-012B	SAMP	1	3713052.5	3783096.4	98.15	PASS	70-125
N020253-013B	SAMP	1	3650085.2	3783096.4	96.48	PASS	70-125
N020245-001B	SAMP	25	3900098.7	3783096.4	103.09	PASS	70-125
N020245-001B-PS	PS	5	3428635.1	3783096.4	90.63	PASS	70-125
N020245-001B-MS	MS	5	3668912.1	3783096.4	96.98	PASS	70-125
N020245-001B-MSD	MSD	5	3707174.2	3783096.4	97.99	PASS	70-125
N020253-002B	SAMP	1	3734609.7	3783096.4	98.72	PASS	70-125
CCV3	CCV	1	4271956.9	3783096.4	112.92	PASS	70-125
CCB3	CCB	1	4004177	3783096.4	105.84	PASS	70-125
MB-58959	MBLK	1	3837858.7	3783096.4	101.45	PASS	70-125
N020245-001B-MS	MS	1	3528131.7	3783096.4	93.26	PASS	70-125
N020245-001B-MSD	MSD	1	3707550	3783096.4	98.003	PASS	70-125
CCV4	CCV	1	3900274.4	3783096.4	103.1	PASS	70-125
CCB4	CCB	1	3849236.5	3783096.4	101.75	PASS	70-125
LLCCV1	CCV2	1	3808688.3	3783096.4	100.68	PASS	70-125
ICSA2	ICSA	1	3494062.5	3783096.4	92.36	PASS	70-125
ICSAB2	ICSAB	1	3738249.1	3783096.4	98.81	PASS	70-125

SERIAL DILUTION/
POST DIGESTION SPIKE

ASSET Laboratories

ICP-MS-Metals in Water

Dilution Test Summary

Work Order No.: N020253
Test Method: EPA 6020
Analysis Date: 7/11/2016

Matrix: Groundwater
Batch No.: 58959

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

Comments:

Analyzed By: Mary Claire Ignacio

Dilution test is not applicable to As, Cr, Mn, Mo & Se. The calculated concentration is <25RL.

Sample ID	Analyte	Units	Calc Val	OQual	SAMPRefVal	%DIFF	%DIFFlimit
N020245-001B DT 5X	Arsenic	ug/L	2.393672	NA	2.32586	2.92%	10
N020245-001B DT 25X	Barium	ug/L	140.5064	PASS	138.502	1.45%	10
N020245-001B DT 5X	Chromium	ug/L	0	NA	0.04968	100.00%	10
N020245-001B DT 5X	Manganese	ug/L	1.999127	NA	1.812147	10.32%	10
N020245-001B DT 5X	Molybdenum	ug/L	5.106148	NA	5.432765	6.01%	10
N020245-001B DT 5X	Selenium	ug/L	1.930122	NA	1.596871	20.87%	10

Note: NA - Not applicable

CLIENT: ARCADIS U.S., Inc. - California
Work Order: N020245
Project: PG&E Topock - RMP, RC000753.0801

ANALYTICAL QC SUMMARY REPORT

TestCode: 6020_DIS

Sample ID	**N020245-001B-PS**	SampType: **PS**	TestCode: **6020_DIS**	Units: **µg/L**	Prep Date:	RunNo: **109348**
Client ID:	**ZZZZZZ**	Batch ID: **58959**	TestNo: **EPA 6020**	**EPA 3010A**	Analysis Date: **7/11/2016**	SeqNo: **2368343**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	12.043	0.10	10.00	2.326	97.2	80	120				
Manganese	92.826	0.50	100.0	1.812	91.0	80	120				
Molybdenum	16.525	0.50	10.00	5.433	111	80	120				
Selenium	10.431	0.50	10.00	1.597	88.3	80	120				

Sample ID	**N020245-001B-PS**	SampType: **PS**	TestCode: **6020_DIS**	Units: **µg/L**	Prep Date:	RunNo: **109348**
Client ID:	**ZZZZZZ**	Batch ID: **58959**	TestNo: **EPA 6020**	**EPA 3010A**	Analysis Date: **7/11/2016**	SeqNo: **2368369**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Barium	242.160	5.0	100.0	138.5	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
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: ARCADIS U.S., Inc. - California
Work Order: N020245
Project: PG&E Topock - RMP, RC000753.0801

ANALYTICAL QC SUMMARY REPORT

TestCode: 6020DIS_CrPGE

Sample ID	**N020245-001B-PS**	SampType: **PS**	TestCode: **6020DIS_CrP**	Units: **µg/L**	Prep Date:	RunNo: **109348**
Client ID:	**ZZZZZZ**	Batch ID: **58959**	TestNo: **EPA 6020**	**EPA 3010A**	Analysis Date: **7/11/2016**	SeqNo: **2368276**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium	9.285	1.0	10.00	0.04968	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
DO	Surrogate Diluted Out		Calculations are based on raw values		

MDL STUDY

METHOD DETECTION LIMIT 2016

Method Detection Limit
Analytical Method: EPA 6020 / 200.8
Digestion Method: EPA 3010A
Date of Analysis: 4/5/2016,4/6/2016
Digestion Date: 4/1/2016
Instrument Name: ICPMS2
Analysts: MEI

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

ACCEPTANCE CRITERIA: MDL<SPIKE<10XMDL

Analyte	AMT SPIKED, ppb	1	2	3	4	5	6	7	SD	MDL	MDL*10	LOD	ACTUAL LOD	PQL	ACTUAL PQL	% REC
ANTIMONY	0.100	0.091	0.078	0.067	0.089	0.069	0.088	0.087	0.0100	0.0313	0.3133	0.3000	0.187	0.50	0.515	103
ARSENIC	0.050	0.054	0.045	0.064	0.053	0.047	0.051	0.039	0.0079	0.0248	0.2485	0.3000	0.049	0.10	0.103	103
BARIUM	0.100	0.199	0.158	0.159	0.206	0.167	0.196	0.207	0.0222	0.0699	0.6986	0.3000	0.403	1.00	1.245	125
BERYLLIUM	0.100	0.090	0.089	0.072	0.104	0.077	0.103	0.107	0.0137	0.0430	0.4304	0.3000	0.185	0.50	0.524	105
CADMIUM	0.100	0.105	0.093	0.089	0.122	0.093	0.121	0.122	0.0151	0.0473	0.4734	0.3000	0.174	0.50	0.501	100
CHROMIUM	0.100	0.088	0.096	0.092	0.093	0.085	0.100	0.102	0.0061	0.0192	0.1925	0.3000	0.321	1.00	0.973	97
COBALT	0.100	0.102	0.088	0.084	0.096	0.085	0.104	0.100	0.0084	0.0263	0.2630	0.3000	0.163	0.50	0.475	95
COPPER	0.500	0.789	0.565	0.564	0.559	0.574	0.563	0.596	0.0836	0.2626	2.6262	0.3000	0.328	1.00	1.062	106
IRON	1.000	0.685	0.581	0.566	1.123	0.578	0.843	1.075	0.2394	0.7517	7.5170	0.3000	0.605	10.00	11.338	113
LEAD	0.100	0.108	0.098	0.088	0.116	0.089	0.113	0.112	0.0117	0.0367	0.3670	0.3000	0.343	1.00	1.018	102
MANGANESE	0.100	0.162	0.122	0.123	0.160	0.133	0.156	0.154	0.0177	0.0554	0.5543	0.3000	0.193	0.50	0.605	121
MOLYBDENUM	0.100	0.100	0.095	0.079	0.109	0.080	0.098	0.109	0.0123	0.0385	0.3853	0.3000	0.247	0.50	0.660	132
NICKEL	0.100	0.126	0.095	0.090	0.119	0.105	0.110	0.106	0.0126	0.0395	0.3954	0.3000	0.341	1.00	1.002	100
SELENIUM	0.100	0.113	0.104	0.091	0.104	0.092	0.110	0.110	0.0088	0.0276	0.2760	0.3000	0.170	0.50	0.502	100
SILVER	0.100	0.028	0.065	0.071	0.079	0.076	0.079	0.082	0.0188	0.0590	0.5899	0.3000	0.247	1.00	1.029	103
THALLIUM	0.100	0.084	0.076	0.067	0.091	0.070	0.088	0.087	0.0094	0.0296	0.2961	0.3000	0.186	0.50	0.549	110
URANIUM	0.100	0.099	0.090	0.082	0.104	0.083	0.105	0.106	0.0104	0.0327	0.3272	0.3000	0.181	0.50	0.533	107
VANADIUM	0.100	0.126	0.111	0.110	0.126	0.116	0.123	0.122	0.0068	0.0213	0.2133	0.3000	0.221	1.00	0.873	87
ZINC	0.500	0.930	0.695	0.905	0.781	0.765	0.744	0.810	0.0853	0.2678	2.6780	0.3000	3.286	10.00	10.085	101

ARCADIS

Project: PG&E Topock – PMP
Project No.: RC000753.801A

ASSET Laboratories Work Order:
N020532

ANALYTICAL and QC RESULTS
SAMPLE RECEIVING ITEMS

PRIVILEGED AND CONFIDENTIAL

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August 18, 2016

Dan Bush
ARCADIS U.S., Inc. - California
1410 Rocky Ridge Dr #330
Roseville, CA 95661

TEL: (916) 786-3302
FAX:

CA-ELAP No.: 2676
NV Cert. No.: NV-00922

Workorder No.: N020532

RE: PG&E Topock - PMP, RC000753.801A

Attention: Dan Bush

Enclosed are the results for sample(s) received on August 03, 2016 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 Sibucao for

Puri Romualdo
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.

CLIENT: ARCADIS U.S., Inc. - California
Project: PG&E Topock - PMP, RC000753.801A
Lab Order: N020532

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 some analytes on QC samples N020533-001B-MS1, N020533-001B-MSD1 and N020533-002B-MSD2 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: *18-Aug-16*

CLIENT: ARCADIS U.S., Inc. - California
Project: PG&E Topock - PMP, RC000753.801A
Lab Order: N020532
Contract No:

Work Order Sample Summary

Lab Sample ID	Client Sample ID	Matrix	Collection Date	Date Received	Date Reported
N020532-001A	PE-01-0816	Groundwater	8/3/2016 7:11:00 AM	8/3/2016	8/18/2016
N020532-001B	PE-01-0816	Groundwater	8/3/2016 7:11:00 AM	8/3/2016	8/18/2016
N020532-001C	PE-01-0816	Groundwater	8/3/2016 7:11:00 AM	8/3/2016	8/18/2016
N020532-001D	PE-01-0816	Groundwater	8/3/2016 7:11:00 AM	8/3/2016	8/18/2016
N020532-002A	TW-03D-0816	Groundwater	8/3/2016 7:31:00 AM	8/3/2016	8/18/2016
N020532-002B	TW-03D-0816	Groundwater	8/3/2016 7:31:00 AM	8/3/2016	8/18/2016
N020532-002C	TW-03D-0816	Groundwater	8/3/2016 7:31:00 AM	8/3/2016	8/18/2016
N020532-002D	TW-03D-0816	Groundwater	8/3/2016 7:31:00 AM	8/3/2016	8/18/2016

ASSET LABORATORIES
ANALYTICAL SUPPORT SERVICES FOR ENVIRONMENTAL TECHNOLOGIES
CALIFORNIA
11060 Artesia Blvd., Ste C, Cerritos, CA 90703
P: 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
Lab Order: N020532
Project: PG&E Topock - PMP, RC000753.801A
Lab ID: N020532-001

Client Sample ID: PE-01-0816
Collection Date: 8/3/2016 7:11:00 AM
Matrix: GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
SPECIFIC CONDUCTANCE							
			EPA 120.1				
RunID: **WETCHEM_160804B**	QC Batch: **R109817**			PrepDate			Analyst: **LR**
Specific Conductance	4000	0.10	0.10		umhos/cm	1	8/4/2016 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

CLIENT:	ARCADIS U.S., Inc. - California	**Client Sample ID:**	TW-03D-0816
Lab Order:	N020532	**Collection Date:**	8/3/2016 7:31:00 AM
Project:	PG&E Topock - PMP, RC000753.801A	**Matrix:**	GROUNDWATER
Lab ID:	N020532-002		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
SPECIFIC CONDUCTANCE							
			EPA 120.1				
RunID: **WETCHEM_160804B**	QC Batch: **R109817**			PrepDate			Analyst: **LR**
Specific Conductance	7300	0.10	0.10		umhos/cm	1	8/4/2016 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

CLIENT: ARCADIS U.S., Inc. - California
Work Order: N020532
Project: PG&E Topock - PMP, RC000753.801A

ANALYTICAL QC SUMMARY REPORT

TestCode: 120.1_WPGE

Sample ID **N020534-002BDUP** SampType: **DUP** TestCode: **120.1_WPGE** Units: **umhos/cm** Prep Date: RunNo: **109817**
Client ID: **ZZZZZZ** Batch ID: **R109817** TestNo: **EPA 120.1** Analysis Date: **8/4/2016** SeqNo: **2392745**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Specific Conductance	6950.000	0.10						6960	0.144	10	

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis 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
Lab Order: N020532
Project: PG&E Topock - PMP, RC000753.801A
Lab ID: N020532-001

Client Sample ID: PE-01-0816
Collection Date: 8/3/2016 7:11:00 AM
Matrix: GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
PH							
			SM4500-H+B				
RunID: **WETCHEM_160804A**	QC Batch: **R109816**			PrepDate			Analyst: **LR**
pH	7.5	0.10	0.10	H	pH Units	1	8/4/2016 08:50 AM
Temp. at time of pH Analysis	20	0.10	0.10	H	°C	1	8/4/2016 08:50 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

CLIENT: ARCADIS U.S., Inc. - California
Lab Order: N020532
Project: PG&E Topock - PMP, RC000753.801A
Lab ID: N020532-002

Client Sample ID: TW-03D-0816
Collection Date: 8/3/2016 7:31:00 AM
Matrix: GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
PH							
			SM4500-H+B				
RunID: **WETCHEM_160804A**	QC Batch: **R109816**			PrepDate			Analyst: **LR**
pH	7.3	0.10	0.10	H	pH Units	1	8/4/2016 08:50 AM
Temp. at time of pH Analysis	21	0.10	0.10	H	°C	1	8/4/2016 08:50 AM

CLIENT: ARCADIS U.S., Inc. - California
Work Order: N020532
Project: PG&E Topock - PMP, RC000753.801A

ANALYTICAL QC SUMMARY REPORT

TestCode: 150.1_4500H+B_W

Sample ID **N020532-002CDUP** SampType: **DUP** TestCode: **150.1_4500H** Units: **pH Units** Prep Date: RunNo: **109816**
Client ID: **ZZZZZZ** Batch ID: **R109816** TestNo: **SM4500-H+B** Analysis Date: **8/4/2016** SeqNo: **2392730**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
pH	7.320	0.10						7.340	0.273	10	H
Temp. at time of pH Analysis	20.400	0.10						20.70	1.46	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
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT:	ARCADIS U.S., Inc. - California	**Client Sample ID:**	PE-01-0816
Lab Order:	N020532	**Collection Date:**	8/3/2016 7:11:00 AM
Project:	PG&E Topock - PMP, RC000753.801A	**Matrix:**	GROUNDWATER
Lab ID:	N020532-001		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
TOTAL FILTERABLE RESIDUE							
			SM2540C				
RunID: **WETCHEM_160804H**	QC Batch: **59293**				PrepDate	**8/4/2016**	Analyst: **LR**
Total Dissolved Solids (Residue, Filterable)	2400	33	33		mg/L	1	8/4/2016 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

CLIENT:	ARCADIS U.S., Inc. - California	**Client Sample ID:**	TW-03D-0816
Lab Order:	N020532	**Collection Date:**	8/3/2016 7:31:00 AM
Project:	PG&E Topock - PMP, RC000753.801A	**Matrix:**	GROUNDWATER
Lab ID:	N020532-002		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
TOTAL FILTERABLE RESIDUE							
			SM2540C				
RunID: **WETCHEM_160804H**	QC Batch: **59293**				PrepDate	**8/4/2016**	Analyst: **LR**
Total Dissolved Solids (Residue, Filterable)	4500	50	50		mg/L	1	8/4/2016 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

CLIENT: ARCADIS U.S., Inc. - California
Work Order: N020532
Project: PG&E Topock - PMP, RC000753.801A

ANALYTICAL QC SUMMARY REPORT

TestCode: 160.1_2540C_W

Sample ID **LCS-59293**	SampType: **LCS**	TestCode: **160.1_2540C**	Units: **mg/L**	Prep Date: **8/4/2016**	RunNo: **109849**
Client ID: **LCSW**	Batch ID: **59293**	TestNo: **SM2540C**		Analysis Date: **8/4/2016**	SeqNo: **2394000**

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 **MB-59293**	SampType: **MBLK**	TestCode: **160.1_2540C**	Units: **mg/L**	Prep Date: **8/4/2016**	RunNo: **109849**
Client ID: **PBW**	Batch ID: **59293**	TestNo: **SM2540C**		Analysis Date: **8/4/2016**	SeqNo: **2394001**

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 **N020533-002ADUP**	SampType: **DUP**	TestCode: **160.1_2540C**	Units: **mg/L**	Prep Date: **8/4/2016**	RunNo: **109849**
Client ID: **ZZZZZZ**	Batch ID: **59293**	TestNo: **SM2540C**		Analysis Date: **8/4/2016**	SeqNo: **2394006**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	4455.000	50						4480	0.560	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
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: ARCADIS U.S., Inc. - California
Lab Order: N020532
Project: PG&E Topock - PMP, RC000753.801A
Lab ID: N020532-001

Client Sample ID: PE-01-0816
Collection Date: 8/3/2016 7:11:00 AM
Matrix: GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
DISSOLVED METALS BY ICP							
			EPA 200.7				
RunID: **ICP2_160810A**	QC Batch: **59301**				PrepDate	**8/6/2016**	Analyst: **CEI**
Calcium	140000	28	500		µg/L	1	8/10/2016 04:03 PM
Iron	77	1.8	20		µg/L	1	8/10/2016 04:03 PM
Magnesium	32000	4.4	100		µg/L	1	8/10/2016 04:03 PM
Sodium	720000	580	25000		µg/L	50	8/11/2016 07:30 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

CLIENT: ARCADIS U.S., Inc. - California
Lab Order: N020532
Project: PG&E Topock - PMP, RC000753.801A
Lab ID: N020532-002

Client Sample ID: TW-03D-0816
Collection Date: 8/3/2016 7:31:00 AM
Matrix: GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
DISSOLVED METALS BY ICP							
			EPA 200.7				
RunID: **ICP2_160810A**	QC Batch: **59301**				PrepDate	**8/6/2016**	Analyst: **CEI**
Calcium	200000	28	500		µg/L	1	8/10/2016 04:09 PM
Iron	ND	1.8	20		µg/L	1	8/10/2016 04:09 PM
Magnesium	25000	4.4	100		µg/L	1	8/10/2016 04:09 PM
Sodium	1500000	580	25000		µg/L	50	8/11/2016 07:34 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

CLIENT: ARCADIS U.S., Inc. - California
Work Order: N020532
Project: PG&E Topock - PMP, RC000753.801A

ANALYTICAL QC SUMMARY REPORT

TestCode: 200.7_WDPGEPPB

Sample ID **MB-59301**	SampType: **MBLK**	TestCode: **200.7_WDPG**	Units: **µg/L**	Prep Date: **8/6/2016**	RunNo: **109957**
Client ID: **PBW**	Batch ID: **59301**	TestNo: **EPA 200.7**		Analysis Date: **8/10/2016**	SeqNo: **2399875**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Calcium	40.487	500									
Iron	ND	20									
Magnesium	ND	100									

Sample ID **LCS1-59301**	SampType: **LCS**	TestCode: **200.7_WDPG**	Units: **µg/L**	Prep Date: **8/6/2016**	RunNo: **109957**
Client ID: **LCSW**	Batch ID: **59301**	TestNo: **EPA 200.7**		Analysis Date: **8/10/2016**	SeqNo: **2399876**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Calcium	9814.906	500	10000	0	98.1	85	115				
Iron	92.401	20	100.0	0	92.4	85	115				
Magnesium	10875.196	100	10000	0	109	85	115				

Sample ID **N020533-001B-MS1**	SampType: **MS**	TestCode: **200.7_WDPG**	Units: **µg/L**	Prep Date: **8/6/2016**	RunNo: **109957**
Client ID: **ZZZZZZ**	Batch ID: **59301**	TestNo: **EPA 200.7**		Analysis Date: **8/10/2016**	SeqNo: **2399882**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Calcium	169485.971	500	10000	154600	149	75	125				S
Iron	90.377	20	100.0	3.468	86.9	75	125				
Magnesium	44385.058	100	10000	32820	116	75	125				

Sample ID **N020533-001B-MSD**	SampType: **MSD**	TestCode: **200.7_WDPG**	Units: **µg/L**	Prep Date: **8/6/2016**	RunNo: **109957**
Client ID: **ZZZZZZ**	Batch ID: **59301**	TestNo: **EPA 200.7**		Analysis Date: **8/10/2016**	SeqNo: **2399883**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Calcium	168274.779	500	10000	154600	137	75	125	169500	0.717	20	S
Iron	87.518	20	100.0	3.468	84.1	75	125	90.38	3.21	20	
Magnesium	44512.643	100	10000	32820	117	75	125	44390	0.287	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
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: ARCADIS U.S., Inc. - California
Work Order: N020532
Project: PG&E Topock - PMP, RC000753.801A

ANALYTICAL QC SUMMARY REPORT

TestCode: 200.7_WDPGEPPB

Sample ID	MB-59301	SampType:	MBLK	TestCode:	200.7_WDPG	Units:	µg/L	Prep Date:	8/6/2016	RunNo:	109961
Client ID:	PBW	Batch ID:	59301	TestNo:	EPA 200.7			Analysis Date:	8/11/2016	SeqNo:	2400179

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Sodium	17.560	500									

Sample ID	LCS2-59301	SampType:	LCS	TestCode:	200.7_WDPG	Units:	µg/L	Prep Date:	8/6/2016	RunNo:	109961
Client ID:	LCSW	Batch ID:	59301	TestNo:	EPA 200.7			Analysis Date:	8/11/2016	SeqNo:	2400180

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Sodium	20097.526	500	20000	0	100	85	115				

Sample ID	N020533-002B-MS2	SampType:	MS	TestCode:	200.7_WDPG	Units:	µg/L	Prep Date:	8/6/2016	RunNo:	109961
Client ID:	ZZZZZZ	Batch ID:	59301	TestNo:	EPA 200.7			Analysis Date:	8/11/2016	SeqNo:	2400195

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Sodium	1469359.028	25000	20000	1453000	79.5	75	125				

Sample ID	N020533-002B-MSD	SampType:	MSD	TestCode:	200.7_WDPG	Units:	µg/L	Prep Date:	8/6/2016	RunNo:	109961
Client ID:	ZZZZZZ	Batch ID:	59301	TestNo:	EPA 200.7			Analysis Date:	8/11/2016	SeqNo:	2400196

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Sodium	1468354.451	25000	20000	1453000	74.4	75	125	1469000	0.0684	20	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

CLIENT:	ARCADIS U.S., Inc. - California	**Client Sample ID:**	PE-01-0816
Lab Order:	N020532	**Collection Date:**	8/3/2016 7:11:00 AM
Project:	PG&E Topock - PMP, RC000753.801A	**Matrix:**	GROUNDWATER
Lab ID:	N020532-001		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
DISSOLVED METALS BY ICPMS							
			EPA 200.8				
RunID: **ICP7_160808B**	QC Batch: **59299**			PrepDate	**8/6/2016**		Analyst: **CEI**
Manganese	160	0.056	0.50		µg/L	1	8/8/2016 02:01 PM

Qualifiers:

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

CLIENT: ARCADIS U.S., Inc. - California
Lab Order: N020532
Project: PG&E Topock - PMP, RC000753.801A
Lab ID: N020532-002

Client Sample ID: TW-03D-0816
Collection Date: 8/3/2016 7:31:00 AM
Matrix: GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
DISSOLVED METALS BY ICPMS							
EPA 200.8							
RunID: **ICP7_160808B**	QC Batch: **59299**				PrepDate	**8/6/2016**	Analyst: **CEI**
Manganese	11	0.056	0.50		µg/L	1	8/8/2016 02:23 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

CLIENT: ARCADIS U.S., Inc. - California
Work Order: N020532
Project: PG&E Topock - PMP, RC000753.801A

ANALYTICAL QC SUMMARY REPORT

TestCode: 200.8_WDISS

Sample ID **MB-59299**	SampType: **MBLK**	TestCode: **200.8_WDISS**	Units: **µg/L**	Prep Date: **8/6/2016**	RunNo: **109917**
Client ID: **PBW**	Batch ID: **59299**	TestNo: **EPA 200.8**		Analysis Date: **8/8/2016**	SeqNo: **2397960**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Manganese	ND	0.50									

Sample ID **LCS-59299**	SampType: **LCS**	TestCode: **200.8_WDISS**	Units: **µg/L**	Prep Date: **8/6/2016**	RunNo: **109917**
Client ID: **LCSW**	Batch ID: **59299**	TestNo: **EPA 200.8**		Analysis Date: **8/8/2016**	SeqNo: **2397961**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Manganese	99.289	0.50	100.0	0	99.3	85	115				

Sample ID **N020534-002E-MS**	SampType: **MS**	TestCode: **200.8_WDISS**	Units: **µg/L**	Prep Date: **8/6/2016**	RunNo: **109917**
Client ID: **ZZZZZZ**	Batch ID: **59299**	TestNo: **EPA 200.8**		Analysis Date: **8/8/2016**	SeqNo: **2397985**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Manganese	96.490	0.50	100.0	10.08	86.4	75	125				

Sample ID **N020534-002E-MSD**	SampType: **MSD**	TestCode: **200.8_WDISS**	Units: **µg/L**	Prep Date: **8/6/2016**	RunNo: **109917**
Client ID: **ZZZZZZ**	Batch ID: **59299**	TestNo: **EPA 200.8**		Analysis Date: **8/8/2016**	SeqNo: **2397987**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Manganese	96.867	0.50	100.0	10.08	86.8	75	125	96.49	0.390	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
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: ARCADIS U.S., Inc. - California
Lab Order: N020532
Project: PG&E Topock - PMP, RC000753.801A
Lab ID: N020532-001

Client Sample ID: PE-01-0816
Collection Date: 8/3/2016 7:11:00 AM
Matrix: GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
HEXAVALENT CHROMIUM BY IC							
			EPA 218.6				
RunID: **IC7_160808A**	QC Batch: **R109919**			PrepDate			Analyst: **QBM**
Hexavalent Chromium	0.80	0.066	0.20		µg/L	1	8/8/2016 12:22 PM
DISSOLVED METALS BY ICP-MS							
			EPA 200.8				
RunID: **ICP7_160808B**	QC Batch: **59299**			PrepDate	**8/6/2016**		Analyst: **CEI**
Chromium	ND	0.019	1.0		µg/L	1	8/8/2016 02:01 PM

Qualifiers:

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

CLIENT: ARCADIS U.S., Inc. - California
Lab Order: N020532
Project: PG&E Topock - PMP, RC000753.801A
Lab ID: N020532-002

Client Sample ID: TW-03D-0816
Collection Date: 8/3/2016 7:31:00 AM
Matrix: GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
HEXAVALENT CHROMIUM							
			SM 3500-CR B				
RunID: **WETCHEM_160815A**	QC Batch: **R110021**			PrepDate			Analyst: **CEI**
Chromium, Hexavalent	530	6.9	50		µg/L	5	8/15/2016
DISSOLVED METALS BY ICP-MS							
			EPA 200.8				
RunID: **ICP7_160808B**	QC Batch: **59299**			PrepDate	**8/6/2016**		Analyst: **CEI**
Chromium	630	0.096	5.0		µg/L	5	8/8/2016 02:29 PM

Qualifiers:

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

CLIENT: ARCADIS U.S., Inc. - California
Work Order: N020532
Project: PG&E Topock - PMP, RC000753.801A

ANALYTICAL QC SUMMARY REPORT

TestCode: 200.8DIS_CrPGE

Sample ID	MB-59299	SampType:	MBLK	TestCode:	200.8DIS_Cr	Units:	µg/L	Prep Date:	8/6/2016	RunNo:	109917
Client ID:	PBW	Batch ID:	59299	TestNo:	EPA 200.8			Analysis Date:	8/8/2016	SeqNo:	2397883

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium	ND	1.0									

Sample ID	LCS-59299	SampType:	LCS	TestCode:	200.8DIS_Cr	Units:	µg/L	Prep Date:	8/6/2016	RunNo:	109917
Client ID:	LCSW	Batch ID:	59299	TestNo:	EPA 200.8			Analysis Date:	8/8/2016	SeqNo:	2397884

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium	9.784	1.0	10.00	0	97.8	85	115				

Sample ID	N020534-002E-MS	SampType:	MS	TestCode:	200.8DIS_Cr	Units:	µg/L	Prep Date:	8/6/2016	RunNo:	109917
Client ID:	ZZZZZZ	Batch ID:	59299	TestNo:	EPA 200.8			Analysis Date:	8/8/2016	SeqNo:	2397908

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium	9.807	1.0	10.00	0.4500	93.6	75	125				

Sample ID	N020534-002E-MS	SampType:	MS	TestCode:	200.8DIS_Cr	Units:	µg/L	Prep Date:	8/6/2016	RunNo:	109917
Client ID:	ZZZZZZ	Batch ID:	59299	TestNo:	EPA 200.8			Analysis Date:	8/8/2016	SeqNo:	2397909

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium	10.162	5.0	10.00	0.5207	96.4	75	125				

Sample ID	N020534-002E-MSD	SampType:	MSD	TestCode:	200.8DIS_Cr	Units:	µg/L	Prep Date:	8/6/2016	RunNo:	109917
Client ID:	ZZZZZZ	Batch ID:	59299	TestNo:	EPA 200.8			Analysis Date:	8/8/2016	SeqNo:	2397910

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium	9.841	1.0	10.00	0.4500	93.9	75	125	9.807	0.350	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
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: ARCADIS U.S., Inc. - California
Work Order: N020532
Project: PG&E Topock - PMP, RC000753.801A

ANALYTICAL QC SUMMARY REPORT

TestCode: 218.6_WPGE

Sample ID	MB-R109919	SampType:	MBLK	TestCode:	218.6_WPGE	Units:	µg/L	Prep Date:		RunNo:	109919	
Client ID:	PBW	Batch ID:	R109919	TestNo:	EPA 218.6			Analysis Date:	8/8/2016	SeqNo:	2398113	
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium		ND	0.20									

Sample ID	LCS-R109919	SampType:	LCS	TestCode:	218.6_WPGE	Units:	µg/L	Prep Date:		RunNo:	109919	
Client ID:	LCSW	Batch ID:	R109919	TestNo:	EPA 218.6			Analysis Date:	8/8/2016	SeqNo:	2398114	
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium		4.965	0.20	5.000	0	99.3	90	110				

Sample ID	N020532-001AMS	SampType:	MS	TestCode:	218.6_WPGE	Units:	µg/L	Prep Date:		RunNo:	109919	
Client ID:	ZZZZZZ	Batch ID:	R109919	TestNo:	EPA 218.6			Analysis Date:	8/8/2016	SeqNo:	2398116	
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium		1.799	0.20	1.000	0.8047	99.4	90	110				

Sample ID	N020534-001BMS	SampType:	MS	TestCode:	218.6_WPGE	Units:	µg/L	Prep Date:		RunNo:	109919	
Client ID:	ZZZZZZ	Batch ID:	R109919	TestNo:	EPA 218.6			Analysis Date:	8/8/2016	SeqNo:	2398118	
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium		976.870	20	500.0	470.5	101	90	110				

Sample ID	N020534-002CMS	SampType:	MS	TestCode:	218.6_WPGE	Units:	µg/L	Prep Date:		RunNo:	109919	
Client ID:	ZZZZZZ	Batch ID:	R109919	TestNo:	EPA 218.6			Analysis Date:	8/8/2016	SeqNo:	2398120	
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium		1.188	0.20	1.000	0.1375	105	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: N020532
Project: PG&E Topock - PMP, RC000753.801A

ANALYTICAL QC SUMMARY REPORT

TestCode: 218.6_WPGE

Sample ID	N020532-001ADUP	SampType:	DUP	TestCode:	218.6_WPGE	Units:	µg/L	Prep Date:		RunNo:	109919
Client ID:	ZZZZZZ	Batch ID:	R109919	TestNo:	EPA 218.6			Analysis Date:	8/8/2016	SeqNo:	2398125

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	0.814	0.20						0.8047	1.11	20	

Sample ID	N020534-001BMSD	SampType:	MSD	TestCode:	218.6_WPGE	Units:	µg/L	Prep Date:		RunNo:	109919
Client ID:	ZZZZZZ	Batch ID:	R109919	TestNo:	EPA 218.6			Analysis Date:	8/8/2016	SeqNo:	2398147

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	982.070	20	500.0	470.5	102	90	110	976.9	0.531	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
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: ARCADIS U.S., Inc. - California
Work Order: N020532
Project: PG&E Topock - PMP, RC000753.801A

ANALYTICAL QC SUMMARY REPORT

TestCode: 3500_CrBPGE

Sample ID	LCS-R110021	SampType:	LCS	TestCode:	3500_CrBPG	Units:	µg/L	Prep Date:		RunNo:	110021		
Client ID:	LCSW	Batch ID:	R110021	TestNo:	SM 3500-Cr B			Analysis Date:	8/15/2016	SeqNo:	2403488		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual		
Chromium, Hexavalent	98.716	10	100.0	0	98.7	85	115						

Sample ID	MB-R110021	SampType:	MBLK	TestCode:	3500_CrBPG	Units:	µg/L	Prep Date:		RunNo:	110021		
Client ID:	PBW	Batch ID:	R110021	TestNo:	SM 3500-Cr B			Analysis Date:	8/15/2016	SeqNo:	2403489		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual		
Chromium, Hexavalent	ND	10											

Sample ID	N020533-002D-MS	SampType:	MS	TestCode:	3500_CrBPG	Units:	µg/L	Prep Date:		RunNo:	110021		
Client ID:	ZZZZZZ	Batch ID:	R110021	TestNo:	SM 3500-Cr B			Analysis Date:	8/15/2016	SeqNo:	2403495		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual		
Chromium, Hexavalent	1122.775	50	500.0	548.3	115	85	115						

Sample ID	N020533-002D-MSD	SampType:	MSD	TestCode:	3500_CrBPG	Units:	µg/L	Prep Date:		RunNo:	110021		
Client ID:	ZZZZZZ	Batch ID:	R110021	TestNo:	SM 3500-Cr B			Analysis Date:	8/15/2016	SeqNo:	2403496		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual		
Chromium, Hexavalent	1095.625	50	500.0	548.3	109	85	115	1123	2.45	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
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: ARCADIS U.S., Inc. - California
Lab Order: N020532
Project: PG&E Topock - PMP, RC000753.801A
Lab ID: N020532-001

Client Sample ID: PE-01-0816
Collection Date: 8/3/2016 7:11:00 AM
Matrix: GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
ALKALINITY, SPECIATED							
			SM 2320 B				
RunID: **WETCHEM_160804D**	QC Batch: **R109819**			PrepDate			Analyst: **LR**
Alkalinity, Total (As CaCO3)	230	1.2	5.0		mg/L	1	8/4/2016 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

CLIENT: ARCADIS U.S., Inc. - California
Lab Order: N020532
Project: PG&E Topock - PMP, RC000753.801A
Lab ID: N020532-002

Client Sample ID: TW-03D-0816
Collection Date: 8/3/2016 7:31:00 AM
Matrix: GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
ALKALINITY, SPECIATED							
			SM 2320 B				
RunID: **WETCHEM_160804D**	QC Batch: **R109819**			PrepDate			Analyst: **LR**
Alkalinity, Total (As CaCO3)	140	1.2	5.0		mg/L	1	8/4/2016 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

CLIENT: ARCADIS U.S., Inc. - California
Work Order: N020532
Project: PG&E Topock - PMP, RC000753.801A

ANALYTICAL QC SUMMARY REPORT

TestCode: 2320_W_SP

Sample ID **LCS-R109819**	SampType: **LCS**	TestCode: **2320_W_SP**	Units: **mg/L**	Prep Date:			RunNo: **109819**			
Client ID: **LCSW**	Batch ID: **R109819**	TestNo: **SM 2320 B**		Analysis Date: **8/4/2016**			SeqNo: **2392751**			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Alkalinity, Total (As CaCO3)	97.639	5.0	100.0	0	97.6	85	115				

Sample ID **MB-R109819**	SampType: **MBLK**	TestCode: **2320_W_SP**	Units: **mg/L**	Prep Date:			RunNo: **109819**			
Client ID: **PBW**	Batch ID: **R109819**	TestNo: **SM 2320 B**		Analysis Date: **8/4/2016**			SeqNo: **2392752**			
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 **N020532-002CDUP**	SampType: **DUP**	TestCode: **2320_W_SP**	Units: **mg/L**	Prep Date:			RunNo: **109819**			
Client ID: **ZZZZZZ**	Batch ID: **R109819**	TestNo: **SM 2320 B**		Analysis Date: **8/4/2016**			SeqNo: **2392755**			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Alkalinity, Total (As CaCO3)	139.485	5.0						139.5	0	30	

Sample ID **N020533-002AMS**	SampType: **MS**	TestCode: **2320_W_SP**	Units: **mg/L**	Prep Date:			RunNo: **109819**			
Client ID: **ZZZZZZ**	Batch ID: **R109819**	TestNo: **SM 2320 B**		Analysis Date: **8/4/2016**			SeqNo: **2392758**			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Alkalinity, Total (As CaCO3)	236.052	5.0	100.0	141.6	94.4	75	125				

Sample ID **N020533-002AMSD**	SampType: **MSD**	TestCode: **2320_W_SP**	Units: **mg/L**	Prep Date:			RunNo: **109819**			
Client ID: **ZZZZZZ**	Batch ID: **R109819**	TestNo: **SM 2320 B**		Analysis Date: **8/4/2016**			SeqNo: **2392759**			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Alkalinity, Total (As CaCO3)	233.906	5.0	100.0	141.6	92.3	75	125	236.1	0.913	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

CLIENT: ARCADIS U.S., Inc. - California
Lab Order: N020532
Project: PG&E Topock - PMP, RC000753.801A
Lab ID: N020532-001

Client Sample ID: PE-01-0816
Collection Date: 8/3/2016 7:11:00 AM
Matrix: GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
ANIONS BY ION CHROMATOGRAPHY							
			EPA 300.0				
RunID: **IC2_160808A**	QC Batch: **R109912**			PrepDate			Analyst: **QBM**
Chloride	1000	3.9	100		mg/L	200	8/8/2016 03:57 PM
ANIONS BY ION CHROMATOGRAPHY							
			EPA 300.0				
RunID: **IC2_160808A**	QC Batch: **R109912**			PrepDate			Analyst: **QBM**
Sulfate	350	3.3	25		mg/L	50	8/8/2016 01:39 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

CLIENT: ARCADIS U.S., Inc. - California
Lab Order: N020532
Project: PG&E Topock - PMP, RC000753.801A
Lab ID: N020532-002

Client Sample ID: TW-03D-0816
Collection Date: 8/3/2016 7:31:00 AM
Matrix: GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
ANIONS BY ION CHROMATOGRAPHY							
			EPA 300.0				
RunID: **IC2_160808A**	QC Batch: **R109912**			PrepDate			Analyst: **QBM**
Chloride	2000	9.7	250		mg/L	500	8/8/2016 05:00 PM
ANIONS BY ION CHROMATOGRAPHY							
			EPA 300.0				
RunID: **IC2_160808A**	QC Batch: **R109912**			PrepDate			Analyst: **QBM**
Sulfate	470	6.6	50		mg/L	100	8/8/2016 02:10 PM

Qualifiers:

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

CLIENT: ARCADIS U.S., Inc. - California
Work Order: N020532
Project: PG&E Topock - PMP, RC000753.801A

ANALYTICAL QC SUMMARY REPORT

TestCode: 300_W_CLPGE

Sample ID	MB-R109912_CL	SampType:	MBLK	TestCode:	300_W_CLP	Units:	mg/L	Prep Date:		RunNo:	109912
Client ID:	PBW	Batch ID:	R109912	TestNo:	EPA 300.0			Analysis Date:	8/8/2016	SeqNo:	2397560

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride	ND	0.50									

Sample ID	LCS-R109912_CL	SampType:	LCS	TestCode:	300_W_CLP	Units:	mg/L	Prep Date:		RunNo:	109912
Client ID:	LCSW	Batch ID:	R109912	TestNo:	EPA 300.0			Analysis Date:	8/8/2016	SeqNo:	2397561

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride	2.368	0.50	2.500	0	94.7	90	110				

Sample ID	N020578-001BMS	SampType:	MS	TestCode:	300_W_CLP	Units:	mg/L	Prep Date:		RunNo:	109912
Client ID:	ZZZZZZ	Batch ID:	R109912	TestNo:	EPA 300.0			Analysis Date:	8/8/2016	SeqNo:	2397572

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride	111.500	10	50.00	62.74	97.5	80	120				

Sample ID	N020532-001CDUP	SampType:	DUP	TestCode:	300_W_CLP	Units:	mg/L	Prep Date:		RunNo:	109912
Client ID:	ZZZZZZ	Batch ID:	R109912	TestNo:	EPA 300.0			Analysis Date:	8/8/2016	SeqNo:	2397574

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride	994.200	100						1007	1.28	20	

Sample ID	N020532-002CMS	SampType:	MS	TestCode:	300_W_CLP	Units:	mg/L	Prep Date:		RunNo:	109912
Client ID:	ZZZZZZ	Batch ID:	R109912	TestNo:	EPA 300.0			Analysis Date:	8/8/2016	SeqNo:	2397578

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride	3383.000	250	1250	2038	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: N020532
Project: PG&E Topock - PMP, RC000753.801A

ANALYTICAL QC SUMMARY REPORT

TestCode: 300_W_CLPGE

Sample ID	N020532-002CMSD	SampType:	MSD	TestCode:	300_W_CLP	Units:	mg/L	Prep Date:		RunNo:	109912
Client ID:	ZZZZZZ	Batch ID:	R109912	TestNo:	EPA 300.0			Analysis Date:	8/8/2016	SeqNo:	2397579

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride	3341.500	250	1250	2038	104	80	120	3383	1.23	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
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: ARCADIS U.S., Inc. - California
Work Order: N020532
Project: PG&E Topock - PMP, RC000753.801A

ANALYTICAL QC SUMMARY REPORT

TestCode: 300_W_SO4PGE

Sample ID	MB-R109912_SO4	SampType:	MBLK	TestCode:	300_W_SO4P	Units:	mg/L	Prep Date:		RunNo:	109912
Client ID:	PBW	Batch ID:	R109912	TestNo:	EPA 300.0			Analysis Date:	8/8/2016	SeqNo:	2397588

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Sulfate	ND	0.50									

Sample ID	LCS-R109912_SO4	SampType:	LCS	TestCode:	300_W_SO4P	Units:	mg/L	Prep Date:		RunNo:	109912
Client ID:	LCSW	Batch ID:	R109912	TestNo:	EPA 300.0			Analysis Date:	8/8/2016	SeqNo:	2397589

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Sulfate	4.672	0.50	5.000	0	93.4	90	110				

Sample ID	N020578-001BMS	SampType:	MS	TestCode:	300_W_SO4P	Units:	mg/L	Prep Date:		RunNo:	109912
Client ID:	ZZZZZZ	Batch ID:	R109912	TestNo:	EPA 300.0			Analysis Date:	8/8/2016	SeqNo:	2397600

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Sulfate	292.280	10	100.0	191.8	100	80	120				

Sample ID	N020532-001CDUP	SampType:	DUP	TestCode:	300_W_SO4P	Units:	mg/L	Prep Date:		RunNo:	109912
Client ID:	ZZZZZZ	Batch ID:	R109912	TestNo:	EPA 300.0			Analysis Date:	8/8/2016	SeqNo:	2397602

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Sulfate	334.250	25						349.8	4.56	20	

Sample ID	N020532-002CMS	SampType:	MS	TestCode:	300_W_SO4P	Units:	mg/L	Prep Date:		RunNo:	109912
Client ID:	ZZZZZZ	Batch ID:	R109912	TestNo:	EPA 300.0			Analysis Date:	8/8/2016	SeqNo:	2397604

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Sulfate	975.500	50	500.0	473.0	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: N020532
Project: PG&E Topock - PMP, RC000753.801A

ANALYTICAL QC SUMMARY REPORT

TestCode: 300_W_SO4PGE

Sample ID	N020532-002CMSD	SampType:	MSD	TestCode:	300_W_SO4P	Units:	mg/L	Prep Date:		RunNo:	109912
Client ID:	ZZZZZZ	Batch ID:	R109912	TestNo:	EPA 300.0			Analysis Date:	8/8/2016	SeqNo:	2397605

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Sulfate	977.700	50	500.0	473.0	101	80	120	975.5	0.225	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
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT:	ARCADIS U.S., Inc. - California	**Client Sample ID:**	PE-01-0816
Lab Order:	N020532	**Collection Date:**	8/3/2016 7:11:00 AM
Project:	PG&E Topock - PMP, RC000753.801A	**Matrix:**	GROUNDWATER
Lab ID:	N020532-001		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
NITRATE/NITRITE-N BY CADMIUM REDUCTION			**SM4500-NO3F**				
RunID: **WETCHEM_160815G**	QC Batch: **R110062**		PrepDate				Analyst: **RB**
Nitrate/Nitrite as N	ND	0.022	0.050		mg/L	1	8/15/2016

Qualifiers:

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

CLIENT:	ARCADIS U.S., Inc. - California	**Client Sample ID:**	TW-03D-0816
Lab Order:	N020532	**Collection Date:**	8/3/2016 7:31:00 AM
Project:	PG&E Topock - PMP, RC000753.801A	**Matrix:**	GROUNDWATER
Lab ID:	N020532-002		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
NITRATE/NITRITE-N BY CADMIUM REDUCTION							
			SM4500-NO3F				
RunID: **WETCHEM_160815G**	QC Batch: **R110062**		PrepDate				Analyst: **RB**
Nitrate/Nitrite as N	3.1	0.11	0.25		mg/L	5	8/15/2016

Qualifiers:

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

CLIENT: ARCADIS U.S., Inc. - California
Work Order: N020532
Project: PG&E Topock - PMP, RC000753.801A

ANALYTICAL QC SUMMARY REPORT

TestCode: 4500N03F_W

Sample ID	SampType	TestCode	Units	Prep Date	RunNo
MB-R110062	**MBLK**	**4500N03F_W**	**mg/L**		**110062**
Client ID: **PBW**	Batch ID: **R110062**	TestNo: **SM4500-NO3**		Analysis Date: **8/15/2016**	SeqNo: **2405909**

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	SampType	TestCode	Units	Prep Date	RunNo
LCS-R110062	**LCS**	**4500N03F_W**	**mg/L**		**110062**
Client ID: **LCSW**	Batch ID: **R110062**	TestNo: **SM4500-NO3**		Analysis Date: **8/15/2016**	SeqNo: **2405910**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrate/Nitrite as N	0.511	0.050	0.5000	0	102	85	115				

Sample ID	SampType	TestCode	Units	Prep Date	RunNo
N020532-001DDUP	**DUP**	**4500N03F_W**	**mg/L**		**110062**
Client ID: **ZZZZZZ**	Batch ID: **R110062**	TestNo: **SM4500-NO3**		Analysis Date: **8/15/2016**	SeqNo: **2405912**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrate/Nitrite as N	0.044	0.050						0.03350	0	20	

Sample ID	SampType	TestCode	Units	Prep Date	RunNo
N020532-001DMS	**MS**	**4500N03F_W**	**mg/L**		**110062**
Client ID: **ZZZZZZ**	Batch ID: **R110062**	TestNo: **SM4500-NO3**		Analysis Date: **8/15/2016**	SeqNo: **2405913**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrate/Nitrite as N	0.541	0.050	0.5000	0.03350	102	75	125				

Sample ID	SampType	TestCode	Units	Prep Date	RunNo
N020532-001DMSD	**MSD**	**4500N03F_W**	**mg/L**		**110062**
Client ID: **ZZZZZZ**	Batch ID: **R110062**	TestNo: **SM4500-NO3**		Analysis Date: **8/15/2016**	SeqNo: **2405915**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrate/Nitrite as N	0.528	0.050	0.5000	0.03350	98.9	75	125	0.5410	2.47	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
DO	Surrogate Diluted Out		Calculations are based on raw values		

SAMPLE RECEIVING ITEMS

ASSET LABORATORIES
ANALYTICAL SUPPORT SERVICES FOR ENVIRONMENTAL TECHNOLOGIES

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

CHAIN OF CUSTODY RECORD

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@arcadis.com	Address:	Geotracker	RWQCB ✓	1. Chilled ✓
Phone: 916-786-3302 Fax:	Address: 1410 Rocky Ridge Dr # 330 Roseville, CA 95661	Email to: mbloes@pivox.com	Labspec	CalTrans	2. Headspace
Submitted By:		P.O.#	Others ✓	LEVEL III	3. Container Intact
Title:	Phone: 916-786-3302 Fax:	Phone: 949-727-1400, ext 200	Specify: RWQCB	LEVEL IV	4. Seal Present
Signature: Date:	Sampled By:	Fax:	Global ID:	Regulatory	5. IR number
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*			Specify State:	6. Method of Cooling: Ice
Project Name: PG&E Topock - PMP	Signature: Date:				Sample Temp: 2.7°C
Project Number: RC000753.801A					Courier: Tracking No.:

Matrix: Ground x | Sediment | Potable | Soil | 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 250 mL poly	Cr(VI) FF (SM3500-CrB) (NH4)2, SO4, NH4, OH 250 mL poly	Dissolved metals (SW6020A) FF; HNO3, 500 mL poly Cr	Dissolved metals (SW6010B/SW6020Adis) FF; HNO3 Ca, Mg, Mn, Fe, Na 1 L poly	Dissolved metals (SW6010B/SW6020Adis) FF; HNO3 As, Mn, Fe, Se, Mo, Ba 1 L poly	Total metals (SW6010B); HNO3 Fe 500 mL poly	Anions (E300.0); 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) Nitrate; H2SO4 125 mL poly	Turn Around Time	No. of Container	Container Type	PRESERVATION	Remarks
1	N020532 - 01	PE-01-0716- 0816 JD	8316	0711		X		X	X			X	X	X	X	X		X		10	4	P	BN	
2	- 02	TW-03D-0716- 0816 JD	8316	0731			X	X	X			X	X	X	X	X		X		10	4	P	BN	
3																								
4																								
5																								
6																								
7																								
8																								
9																								
10																								

Relinquished by (Signature and Printed Name)	Date/Time	Relinquished by (Signature and Printed Name)	Date/Time
Jill Pulcinello	8-3-16 1245	Dung Dang	8/3/16 1245
Dung Dang	8/3/16 2240	Dung Dang	8/3/16 2240

Turn Around Time (TAT)

	A	= 24 Hrs or Same Day TAT
	B	= Next Workday
	C	= 2 Workdays
	D	= 3 Workdays
X	E	= Routine 5-7 Workdays

TAT Starts at 8 AM the following day if samples received after 3:00PM.

Special Instruction:
Tittle 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 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:				Container Type:		
H=HCL	N=HNO_3	S=H_2SO_4	C=4°C	T=Tube	V=VOA	P=Pint
Z=Zn(AC)$_2$	O=NaOH	T=$Na_2S_2O_3$		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

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:	8/3/2016	Workorder:	N020532
Rep sample Temp (Deg C):	2.2	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 ☑	No ☐	Not Present ☐
2. Custody seals intact, signed, dated on shippping container/cooler?	Yes ☐	No ☐	Not Present ☑
3. Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
4. Chain of custody present?	Yes ☑	No ☐	
5. Sampler's name present in COC?	Yes ☐	No ☑	
6. Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
7. Chain of custody agrees with sample labels?	Yes ☑	No ☐	
8. Samples in proper container/bottle?	Yes ☑	No ☐	
9. Sample containers intact?	Yes ☑	No ☐	
10. Sufficient sample volume for indicated test?	Yes ☑	No ☐	
11. All samples received within holding time?	Yes ☐	No ☑	
12. Temperature of rep sample or Temp Blank within acceptable limit?	Yes ☑	No ☐	NA ☐
13. Water - VOA vials have zero headspace?	Yes ☐	No ☐	NA ☑
14. Water - pH acceptable upon receipt? Example: pH > 12 for (CN,S); pH<2 for Metals	Yes ☑	No ☐	NA ☐
15. Did the bottle labels indicate correct preservatives used?	Yes ☑	No ☐	NA ☐
16. Were there Non-Conformance issues at login?	Yes ☑	No ☐	NA ☐
Was Client notified?	Yes ☑	No ☐	NA ☐

Comments: Samples for pH were past holding time upon receipt.

For:

Checklist Completed By: HG 8/4/2016

Reviewed By: 8/7/2016

Hanah Glodoviza

From: Marlon B. Cartin [marlon@assetlaboratories.com]
Sent: Monday, August 08, 2016 10:41 AM
To: 'Sample Control LV'
Cc: 'Yoandra Rodriguez'; 'Hanah Glodoviza'
Subject: FW: PG&E Topock - PMP, RC000753.801A (Asset Labs No. N020532)

Please see answer below.

Thanks,

Marlon B. Cartin
Project Manager
Nevada: 3151 W. Post Road, Las Vegas, NV 89118
P: 702.307.2659 Ext. 410 | F: 702.307.2691 | M: 702.439.0421

From: Maurel, Sean [mailto:Sean.Maurel@arcadis.com]
Sent: Monday, August 08, 2016 10:29 AM
To: Marlon B. Cartin
Subject: Re: PG&E Topock - PMP, RC000753.801A (Asset Labs No. N020532)

Hi Marlon,

The sampler was Jed DiCamillo. Let me know if there are any other questions.

Thanks!

Sean Maurel, EIT | Environmental Engineer 1 | sean.maurel@arcadis.com
Arcadis | Arcadis U.S., Inc.
2999 Oak Road, Suite 300
Walnut Creek, CA | 94597 | USA
M. + 1 925 330 8741

On Aug 8, 2016, at 10:26 AM, Marlon B. Cartin <marlon@assetlaboratories.com> wrote:

> Hi Sean,
>
> Please provide samplers name for the attached COC.
>
> Thanks,
>
> Marlon B. Cartin
>
> Project Manager
>
> Nevada: 3151 W. Post Road, Las Vegas, NV 89118
>
> P: 702.307.2659 Ext. 410 | F: 702.307.2691 | M: 702.439.0421

_____
From: Sonny Lorenzo [mailto:sonny.lorenzo@assetlaboratories.com]
Sent: Sunday, August 07, 2016 6:21 PM
To: 'Marlon B. Cartin'
Cc: 'Nancy'; 'Andreafe. Gallardo'; 'Hanah Glodoviza'; yoandra@assetlaboratories.com
Subject: RE: PG&E Topock - PMP, RC000753.801A (Asset Labs No. N020532)

Hi Sir,

For follow up concern below.

Thanks,

Sonny

<<...>> _____
From: Yoandra Rodriguez [mailto:yoandra@assetlaboratories.com]
Sent: Thursday, August 04, 2016 12:19 PM
To: 'Marlon B. Cartin'
Cc: Nancy; Sonny. Lorenzo; Andreafe. Gallardo; Hanah Glodoviza
Subject: PG&E Topock - PMP, RC000753.801A (Asset Labs No. N020532)

Hi Marlon,

Please, kindly inform sampler's name for this project.

COC is attached for reference.

Thanks,

Yoandra Rodriguez

Sample Control Officer

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

Nevada: 3151 W. Post Road, Las Vegas, NV 89118 I P: 702.307.2659 Ext. 411 I F: 702.307.2691 I

www.assetlaboratories.com

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<< File: N020532_COC.pdf >>

<N020532_COC.pdf>

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ASSET Laboratories

WORK ORDER Summary

07-Aug-16

WorkOrder: N020532

Client ID: ARCUS02

Project: PG&E Topock - PMP, RC000753.801A **QC Level:** Level IV **Date Received:** 8/3/2016

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
N020532-001A	PE-01-0816	8/3/2016 7:11:00 AM	8/17/2016	Groundwater	EPA 218.6	Hexavalent Chromium by IC	☐	☐	☐	WW
N020532-001B			8/17/2016			AQPREP TOTAL METALS: ICP, FLAA	☐	☐	☐	WW
			8/17/2016		EPA 200.7	DISSOLVED METALS BY ICP	☐	☐	☐	WW
			8/17/2016			AQPREP TOTAL METALS: ICP, FLAA	☐	☐	☐	WW
			8/17/2016		EPA 200.8	DISSOLVED METALS BY ICPMS	☐	☐	☐	WW
			8/17/2016		EPA 200.8	DISSOLVED METALS BY ICP-MS	☐	☐	☐	WW
N020532-001C			8/17/2016		EPA 120.1	SPECIFIC CONDUCTANCE	☐	☐	☐	WW
			8/17/2016		SM4500-H+B	pH	☐	☐	☐	WW
			8/17/2016		SM2540C	TOTAL FILTERABLE RESIDUE	☐	☐	☐	WW
			8/17/2016			Total Dissolved Solids Prep	☐	☐	☐	WW
			8/17/2016		SM 2320 B	ALKALINITY, SPECIATED	☐	☐	☐	WW
			8/17/2016		EPA 300.0	ANIONS BY ION CHROMATOGRAPHY	☐	☐	☐	WW
			8/17/2016		EPA 300.0	ANIONS BY ION CHROMATOGRAPHY	☐	☐	☐	WW
			8/17/2016		SM 1030F1	Cation-Anion Balance Calculation	☐	☐	☐	WW
N020532-001D			8/17/2016		SM4500-NO3F	NITRATE/NITRITE-N BY CADMIUM REDUCTION	☐	☐	☐	WW
N020532-002A	TW-03D-0816	8/3/2016 7:31:00 AM	8/17/2016		SM 3500-Cr B	HEXAVALENT CHROMIUM	☐	☐	☐	WW
N020532-002B			8/17/2016			AQPREP TOTAL METALS: ICP, FLAA	☐	☐	☐	WW
			8/17/2016		EPA 200.7	DISSOLVED METALS BY ICP	☐	☐	☐	WW
			8/17/2016			AQPREP TOTAL METALS: ICP, FLAA	☐	☐	☐	WW
			8/17/2016		EPA 200.8	DISSOLVED METALS BY ICPMS	☐	☐	☐	WW
			8/17/2016		EPA 200.8	DISSOLVED METALS BY ICP-MS	☐	☐	☐	WW
N020532-002C			8/17/2016		EPA 120.1	SPECIFIC CONDUCTANCE	☐	☐	☐	WW

ASSET Laboratories

WORK ORDER Summary

07-Aug-16

WorkOrder: N020532

Client ID: ARCUS02

Project: PG&E Topock - PMP, RC000753.801A **QC Level:** Level IV **Date Received:** 8/3/2016

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
N020532-002C	TW-03D-0816	8/3/2016 7:31:00 AM	8/17/2016	Groundwater	SM4500-H+B	pH	☐	☐	☐	WW
			8/17/2016		SM2540C	TOTAL FILTERABLE RESIDUE	☐	☐	☐	WW
			8/17/2016			Total Dissolved Solids Prep	☐	☐	☐	WW
			8/17/2016		SM 2320 B	ALKALINITY, SPECIATED	☐	☐	☐	WW
			8/17/2016		EPA 300.0	ANIONS BY ION CHROMATOGRAPHY	☐	☐	☐	WW
			8/17/2016		EPA 300.0	ANIONS BY ION CHROMATOGRAPHY	☐	☐	☐	WW
			8/17/2016		SM 1030F1	Cation-Anion Balance Calculation	☐	☐	☐	WW
N020532-002D			8/17/2016		SM4500-NO3F	NITRATE/NITRITE-N BY CADMIUM REDUCTION	☐	☐	☐	WW
N020532-003A	FOLDER		8/17/2016		EDD	RWQCB	☐	☐	☐	LAB
			8/17/2016		Folder	Folder	☐	☐	☐	LAB

List of Analysts

ASSET Laboratories Work Order: **N020532**

NAME	TEST METHOD
Claire Ignacio	EPA 200.7, EPA 200.8, SM 3500-Cr B
Quennie Manimtim	EPA 300.0, EPA 218.6
Ryan Balilu	SM 4500-NO3F
Lilia Ramit	EPA 120.1, SM 2540C, SM 2320B, SM 4500-H+B

EPA 120.1

Wet Chemistry Technical Batch Review Checklist (ARCUS02)

ASSET LABORATORIES - LAS VEGAS

FIRST LEVEL REVIEW:

QC Batch Number: R109817 **Analyst:** LSR

ASSET #: N020532 **Date Analyzed:** 8/4/2016

Method: EPA 120.1

Initial Calibration	1st Level Review Y	1st Level Review N	1st Level Review N/A	2nd Level Review Y	2nd Level Review N	2nd Level Review 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:

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: 8/8/2016

2nd Level Reviewer: 8/18/2016 Date: —

LOGBOOK DATA, QUANTITATION REPORT and/or SPECTRA

Conductivity Logbook

Date: 8/2/16 14a

Analyst: LSR

Standard	Std ID	Reading	Comments
931 µS/cm	CINV - 160111A	9.42 mS/cm @ 27.9°C	% Rec: (90-110%)
1411	160425A	1418 @ 27.9°C	
9985	160425B	10020 @ 27.9°C	
100001	160322B	98,300 @ 27.9°C	

	Sample ID	Matrix	Reading	Comments
1	NO18427-009A	H2O	1072 @ 25.5°C	
2	NO18478-006A		450 @ 25.7°C	
3	NO20530-001A		~~329~~ 793 @ 26.4°C	793
4	9A DUP		789 @ 25.9°C	
5	NO20420-006A		329 @ 26.4°C	
6	6A DUP		377 @ 26.7°C	
7	NO20465-001A		3960 @ 29.8°C	
8				
9				
10	1413 µS/cm	CINV - 160111E	1422 @ 29.5°C	
Dup	10000	160425C	10520 @ 29.7°C	Accept: 10% water, 20% soil
	Std Chk ~~94263~~ 99663	160623A	101300 @ 29.7°C	% Rec: (90-110%)

LSR

Date: 8/4/16 915

Analyst: LSR

Standard	Std ID	Reading	Comments
931 µS/cm	CINV - 160111A	9.29 mS/cm @ 25.5°C	% Rec: (90-110%)
1411	160425A	1412 @ 25.3°C	
9985	160425B	10052 @ 25.3°C	
99663	160623A	102900 @ 25.4°C	

	Sample ID	Matrix	Reading	Comments
1	NO20532-001C	H2O	4030 @ 22.4°C	
2	2C		7330 @ 22.8°C	
3	NO20533-001A		4300 @ 24.0°C	
4	2A		7430 @ 24.1°C	
5	NO20534-001A		6850 @ 24.1°C	
6	2B		6960 @ 24.1°C	
7	2B DUP		6950 @ 24.1°C	
8				
9	1413 µS/cm	CINV - 160111E	1426 @ 24.6°C	
10	10000	160425C	10530 @ 24.9°C	
Dup	100001	160322B	104800 @ 24.8°C	Accept: 10% water, 20% soil
	Std Chk:			% Rec: (90-110%)

Logbook # 5 Silvia Ramit 8/8/2016

SM 4500-H+B

pH Technical Batch Review Checklist (ARCUS02)

ASSET LABORATORIES - LAS VEGAS

FIRST LEVEL REVIEW:

QC Batch Number: R109816 **Instrument ID:** pH meter

ASSET #: N020532 **Analyst:** LSR

Date Analyzed: 8/4/2016

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			
Sample Information						
4. Are all samples analyzed within hold time.		X				
QC Items						
5. Was a duplicate sample analyzed?	X					
Raw Data and Miscellaneous Information						
6. Are Non-Conformances documented			X			
7. Runlog complete and included in package.	X					
Preliminary Report						
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:

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: 8/4/2016

2nd Level Reviewer: 8/18/2016 Date: —

LOGBOOK DATA, QUANTITATION REPORT and/or SPECTRA

pH Logbook

Date: 8/4/16 850

Analyst: WSR

Standard	Std ID	pH	Comments
Buffer 4	GNW - 160322A	4.02 @ 24.8°C	SLOPE : 95.0%
Buffer 7	160309A	6.97 @ 24.7°C	
Buffer 10	160609C	10.03 @ 24.7°C	

	Sample ID	Matrix	pH	Comments
1	M020532-001C	H_2O	7.53 @ 19.8°C	
2	2C		7.34 @ 20.7°C	
3	2C DUP		7.32 @ 20.4°C	
4	M020535-001A		8.37 @ 21.8°C	
5	1A-DUP		8.40 @ 21.8°C	
6				
7				
8				
9				
10				
Dup				Accept: 10% water, 20% soil
	Buffer 4, (7) 10	GNW - 160111C	7.03 @ 24.7°C	Accept: +/-0.1 pH units from expected value

(Circle one)

Date:

Analyst:

Silvia Ramit 8/4/2016

Standard	Std ID	pH	Comments
Buffer 4			
Buffer 7			
Buffer 10			

	Sample ID	Matrix	pH	Comments
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				
Dup				Accept: 10% water, 20% soil
	Buffer 4, 7, 10			Accept: +/-0.1 pH units from expected value

(Circle one)

SM 2540C

Wet Chemistry Technical Batch Review Checklist (ARCUS02)

ASSET LABORATORIES - LAS VEGAS

FIRST LEVEL REVIEW:

QC Batch Number: 59293 **Analyst:** LSR

ASSET #: N020532 **Date Analyzed:** 8/4/2016

Method: EPA 160.1

Initial Calibration	1st Level Review Y	1st Level Review N	1st Level Review N/A	2nd Level Review Y	2nd Level Review N	2nd Level Review 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:

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: 8/8/2016

2nd Level Reviewer: Nancy 8/18/2016 Date:

SAMPLE CALCULATION

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 **N020532-001C,** TDS concentration in mg/L is calculated as follows:

$$\text{TDS, mg/L} = \frac{(76.9186–76.8451)*1000000}{30}$$

= 2450 mg/L

Reporting result in two significant figures,

TDS = 2400 mg/L

Julia Ramit 8/8/2016

SAMPLE PREPARATION LOG

ASSET Laboratories

PREP BATCH REPORT

Prep Start Date: **8/4/2016 1:07:03 P**
Prep End Date: **8/5/2016 11:10:00 A**
Reviewed/ Date: _____
Initials/ Date: Lilia Ramit 8/8/2016
Prep Batch **59293** Prep Code: **160.1_W_PRE** Technician: **Lilia Ramit**
Prep Factor Units: **mL / mL** Temp. (°C): **180**

Sample ID	Matrix	pH	SampAmt	3 Replicates	Sol Added	Sol Recov	Fin Vol	factor	Clean Up Code	TURB Check
LCS-59293	Water		100	☐	0	0	100	1.000		
MB-59293	Water		100	☐	0	0	100	1.000		
N020532-001C	Groundwater		30	☐	0	0	100	3.333		
N020532-002C	Groundwater		20	☐	0	0	100	5.000		
N020533-001A	Water		30	☐	0	0	100	3.333		
N020533-002A	Water		20	☐	0	0	100	5.000		
N020533-002A-DU	Water		20	☐	0	0	100	5.000		
N020534-001A	Water		20	☐	0	0	100	5.000		
N020534-002B	Water		20	☐	0	0	100	5.000		
N020544-001B	Groundwater		100	☐	0	0	100	1.000		
N020544-002B	Groundwater		100	☐	0	0	100	1.000		
N020544-003B	Groundwater		100	☐	0	0	100	1.000		
N020544-004B	Groundwater		100	☐	0	0	100	1.000		

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

Number	Reagent Name
8461	Glass Fiber Filter, 47mm
8462	Glass Fiber Filter, 47mm

Spk ID	Spike Name	SampType	AmtAdd
IWST160714A	1000 ppm NaCl	LCS	100

ASSET Laboratories

PREP BATCH REPORT

Prep Start Date: **8/4/2016 1:07:03 P**
Prep End Date:

Reviewed/ Date:
Initials/ Date: Lilia Ramit 8/8/2016

Prep Batch **59293** 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-59293	Water	1WST160714A	100	☐	0	0	100	1.000		
MB-59293	Water		100	☐	0	0	100	1.000		
N020532-001C	Groundwater	4030	100 /30	☐	0	0	100	1.000		
N020532-002C	Groundwater	7330	100 /20	☐	0	0	100	1.000		
N020533-001A	Water	4300	100 /30	☐	0	0	100	1.000		
N020533-002A	Water	7430	100 /20	☐	0	0	100	1.000		
N020533-002A-DU	Water	↓	100 /20	☐	0	0	100	1.000		
N020534-001A	Water	6850	100 /20	☐	0	0	100	1.000		
N020534-002B	Water	6960	100 /20	☐	0	0	100	1.000		
N020544-001B	Groundwater	957	100	☐	0	0	100	1.000		
N020544-002B	Groundwater	725	100	☐	0	0	100	1.000		
N020544-003B	Groundwater	852	100	☐	0	0	100	1.000		
N020544-004B	Groundwater	938	100	☐	0	0	100	1.000		

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

#8461
#8462

LOGBOOK DATA, QUANTITATION REPORT and/or SPECTRA

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
8/4/16 1307 L4	MB 59293	100	77.0773 77.0775	77.0778 77.0777	
L7	LCS 59293	100	77.1651 77.1653	77.2620 77.2624	
1A	N020532-001C	30	76.8448 76.8451	76.9183 76.9186	
1	2C	20	55.4609 55.4613	55.5512 55.5514	
L5	N020533-001A	30	74.6996 74.6999	74.7780 74.7778	
2	2A	20	54.9949 54.9953	55.0846 55.0849	
H	2A DVP	20	61.1408 61.1412	61.2302 61.2303	
B	N020534-001A	20	53.7959 53.7962	53.8790 53.8794	
F	2B	20	54.8038 54.8041	54.8871 54.8873	
L3	N020544-001B	100	75.6749 75.6754	75.7360 75.7362	

Julia Ramit 8/8/2016

ASSET LABORATORIES
ANALYTICAL SUPPORT SERVICES FOR ENVIRONMENTAL TECHNOLOGIES
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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
8/4/16 LG	NOV0814-0028	100	76.1827 76.1830	76.2287 76.2291	
LG	3B	100	76.5779 76.5781	76.6472 76.6468	
LH	4B	100	76.7490 76.7502	76.8063 76.8059	
				Julia Ramit 8/8/2016	

ASSET LABORATORIES

TOTAL DISSOLVED SOLIDS, TDS

TDS, mg/L = (A-B) X 10000*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

Date Finished:	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
8/5/2016									
MBLK-59293	100	77.0775	77.0777	2	1	2			MBLK
LCS-59293	100	77.1653	77.2624	971	1	971			LCS
N020532-001C	30	76.8451	76.9186	735	3.33333333	2450	4030	0.608	SAMP
N020532-002C	20	55.4613	55.5514	901	5	4505	7330	0.615	SAMP
N020533-001A	30	74.6999	74.7778	779	3.33333333	2596.66667	4300	0.604	SAMP
N020533-002A	20	54.9953	55.0849	896	5	4480	7430	0.603	SAMP
N020533-002ADUP	20	61.1412	61.2303	891	5	4455	7430	0.600	DUP
N020534-001A	20	53.7962	53.8794	832	5	4160	6850	0.607	SAMP
N020534-002B	20	54.8041	54.8873	832	5	4160	6960	0.598	SAMP
N020544-001B	100	75.6754	75.7362	608	1	608	957	0.635	SAMP
N020544-002B	100	76.183	76.2291	461	1	461	725	0.636	SAMP
N020544-003B	100	76.5781	76.6468	687	1	687	852	0.806	SAMP
N020544-004B	100	76.7502	76.8059	557	1	557	938	0.594	SAMP

Silvia Ramit 8/8/2016

EPA 200.7
Dissolved

Metals Technical Batch Review Checklist (ARCUS02)

ASSET LABORATORIES - LAS VEGAS

FIRST LEVEL REVIEW:

QC Batch Number: 59301
ASSET #: N020532
Instrument ID: ICP-02
Analyst: CEI
Date Analyzed: 8/10/2016

Method:

[X] EPA 6010B / 200.7
[ ] EPA 6020 / 200.8
[ ] EPA 7470A / 7471A/245.1
[ ] 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					
Interference Check						
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					
Continuing Calibration						
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 ICVand CCV analysis.	X					
11. Do all calibration blanks (ICB and CCBs) meet criteria? (< PQL)	X					
12 Is low level check twice during 8 hr period or at end within ± 30% of expected value? (ICP/ICPMS only)	X					
Sample Information						
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			
QC Items						
22. IS are within control limits (70-125% for ICPMS).	X					
23. Method blank values are below the PQL .	X					
24. LCS compounds within control limits.	X					
25. MS/MSD, RPD's are within control limits		X				
Raw Data and Miscellaneous Information						
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					
Preliminary Report						
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 N020533-001B PS/MS/MSD failed. However LCS & DT 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 8/17/2016 Date: —

2nd Level Reviewer 8/18/2016 Date: —

Metals Technical Batch Review Checklist (ARCUS02)

ASSET LABORATORIES - LAS VEGAS

FIRST LEVEL REVIEW:

QC Batch Number: 59301
ASSET #: N020532

Instrument ID: ICP-02
Analyst: CEI
Date Analyzed: 8/11/2016

Method:

[X] EPA 6010B / 200.7
[ ] EPA 6020 / 200.8
[ ] EPA 7470A / 7471A/245.1
[ ] 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			
Interference Check						
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					
Continuing Calibration						
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 ICVand CCV analysis.	X					
11. Do all calibration blanks (ICB and CCBs) meet criteria? (< PQL)	X					
12 Is low level check twice during 8 hr period or at end within ± 30% of expected value? (ICP/ICPMS only)			X			
Sample Information						
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			
QC Items						
22. IS are within control limits (70-125% for ICPMS).	X					
23. Method blank values are below the PQL .	X					
24. LCS compounds within control limits.	X					
25. MS/MSD, RPD's are within control limits		X				
Raw Data and Miscellaneous Information						
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					
Preliminary Report						
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 N020533-002B PS/MSD failed. However LCS & DT 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 8/17/2016 Date: _____

2nd Level Reviewer 8/18/2016 Date: _____

SAMPLE CALCULATION

SAMPLE CALCULATION

METHOD: EPA 200.7
TEST NAME: Heavy Metals by ICP
MATRIX: Groundwater

FORMULA:

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

Sodium , 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 **N020532-001B** , the concentration ir ug/L is calculated as follows:

Sodium , ug/L = 14.3862 * 50 * (25/25) * 1000

Sodium , ug/L = 719310

Reporting results in two significant figures,

Sodium , ug/L = 720000

% RSD SUMMARY

RSD SUMMARY: 160810A

Instrument ID: ICP-02

Sample Name	Type	DF	Analyte	Reported Conc	RSD	Criteria	Comment
CalBlk	IBLK	1	Ca	0	4.4	15	PASS
Standard1	ICAL	1	Ca	0.2	12.9	15	PASS
Standard2	ICAL	1	Ca	1	2.58	15	PASS
Standard3	ICAL	1	Ca	2	0.93	15	PASS
Standard4	ICAL	1	Ca	5	0.65	15	PASS
Standard5	ICAL	1	Ca	7.5	0.14	15	PASS
Standard6	ICAL	1	Ca	10	0.26	15	PASS
Standard7	ICAL	1	Ca	20	0.51	15	PASS
ICV	ICV	1	Ca	9.95	0.61	15	PASS
ICB	ICB	1	Ca	-0.0077	78.68	15	<PQL
ICB	ICB	1	Ca	-0.02	44.5	15	<PQL
LLICV	CCV1	1	Ca	0.19	7.14	20	PASS
LLICV	CCV1	1	Ca	0.19	8.38	20	PASS
ICSA1	ICSA	1	Ca	556.23	0.18	15	PASS
ICSAB1	ICSAB	1	Ca	567.55	0.065	15	PASS
CCV1	CCV	1	Ca	9.88	0.5	15	PASS
CCB1	CCB	1	Ca	-0.028	54.41	15	<PQL
MB-59301	MBLK	1	Ca	0.04	42.21	15	<PQL
LCS1-59301	LCS	1	Ca	9.81	1.015	15	PASS
N020533-001B	SAMP	1	Ca	154.61	0.29	15	PASS
N020533-001B	SAMP	5	Ca	31.96	0.19	15	PASS
N020533-001B-PS	PS	1	Ca	157.57	0.083	15	PASS
CCV2	CCV	1	Ca	9.91	0.47	15	PASS
CCB2	CCB	1	Ca	-0.046	54.91	15	<PQL
N020533-001B-MS1	MS	1	Ca	169.49	0.89	15	PASS
N020533-001B-MSD1	MSD	1	Ca	168.27	0.86	15	PASS
N020533-002B	SAMP	1	Ca	217.2	0.074	15	PASS
N020534-002E	SAMP	1	Ca	156.86	0.91	15	PASS
N020532-001B	SAMP	1	Ca	143.7	0.08	15	PASS
N020532-002B	SAMP	1	Ca	202.07	0.44	15	PASS
CCV3	CCV	1	Ca	9.74	0.6	15	PASS
CCB3	CCB	1	Ca	-0.06	45.9	15	<PQL
LLCCV1	CCV2	1	Ca	0.13	13.99	20	PASS
LLCC1	CCV2	1	Ca	0.15	12.44	20	PASS
LLCCV1	CCV2	1	Ca	0.13	22	20	<PQL
ICSA2	ICSA	1	Ca	546.72	0.093	15	PASS
ICSAB2	ICSAB	1	Ca	560.22	0.024	15	PASS
CalBlk	IBLK	1	Fe	0	1.59	15	PASS
Standard1	ICAL	1	Fe	0.02	2.57	15	PASS
Standard2	ICAL	1	Fe	0.05	2.82	15	PASS
Standard3	ICAL	1	Fe	2	0.81	15	PASS
Standard4	ICAL	1	Fe	5	0.57	15	PASS

RSD SUMMARY: 160810A

Instrument ID: ICP-02

Sample Name	Type	DF	Analyte	Reported Conc	RSD	Criteria	Comment
Standard5	ICAL	1	Fe	7.5	0.025	15	PASS
Standard6	ICAL	1	Fe	10	0.029	15	PASS
Standard7	ICAL	1	Fe	20	0.13	15	PASS
ICV	ICV	1	Fe	10.061	0.037	15	PASS
ICB	ICB	1	Fe	-0.0044	21.014	15	<PQL
ICB	ICB	1	Fe	-0.008	4.56	15	PASS
LLICV	CCV1	1	Fe	0.013	2.76	20	PASS
LLICV	CCV1	1	Fe	0.017	4.12	20	PASS
ICSA1	ICSA	1	Fe	190.45	0.76	15	PASS
ICSAB1	ICSAB	1	Fe	181	0.69	15	PASS
CCV1	CCV	1	Fe	10.1	0.055	15	PASS
CCB1	CCB	1	Fe	-0.0075	14.95	15	PASS
MB-59301	MBLK	1	Fe	-0.00065	9.54	15	PASS
LCS1-59301	LCS	1	Fe	0.092	1.74	15	PASS
N020533-001B	SAMP	1	Fe	0.0035	32.25	15	<PQL
N020533-001B	SAMP	5	Fe	-0.01	2.79	15	PASS
N020533-001B-PS	PS	1	Fe	0.088	1.81	15	PASS
CCV2	CCV	1	Fe	10.21	0.11	15	PASS
CCB2	CCB	1	Fe	-0.011	2.67	15	PASS
N020533-001B-MS1	MS	1	Fe	0.09	1.16	15	PASS
N020533-001B-MSD1	MSD	1	Fe	0.088	2.36	15	PASS
N020533-002B	SAMP	1	Fe	-0.00006	851.11	15	<PQL
N020534-002E	SAMP	1	Fe	0.0033	10.6	15	PASS
N020532-001B	SAMP	1	Fe	0.077	1.44	15	PASS
N020532-002B	SAMP	1	Fe	-0.016	4.68	15	PASS
CCV3	CCV	1	Fe	10.29	0.018	15	PASS
CCB3	CCB	1	Fe	-0.01	6.018	15	PASS
LLCCV1	CCV2	1	Fe	0.011	4.22	20	PASS
LLCC1	CCV2	1	Fe	0.011	4.13	20	PASS
LLCCV1	CCV2	1	Fe	0.016	1.64	20	PASS
ICSA2	ICSA	1	Fe	191.6	0.31	15	PASS
ICSAB2	ICSAB	1	Fe	187.27	0.45	15	PASS
CalBlk	IBLK	1	Mg	0	1.04	15	PASS
Standard1	ICAL	1	Mg	0.1	0.69	15	PASS
Standard2	ICAL	1	Mg	1	1.22	15	PASS
Standard3	ICAL	1	Mg	2	0.8	15	PASS
Standard4	ICAL	1	Mg	5	0.53	15	PASS
Standard5	ICAL	1	Mg	7.5	0.14	15	PASS
Standard6	ICAL	1	Mg	10	0.064	15	PASS
Standard7	ICAL	1	Mg	20	0.15	15	PASS
ICV	ICV	1	Mg	10.036	0.13	15	PASS
ICB	ICB	1	Mg	-0.032	5.053	15	PASS

RSD SUMMARY: 160810A

Instrument ID: ICP-02

Sample Name	Type	DF	Analyte	Reported Conc	RSD	Criteria	Comment
ICB	ICB	1	Mg	-0.017	2.4	15	PASS
LLICV	CCV1	1	Mg	0.085	1.76	20	PASS
LLICV	CCV1	1	Mg	0.095	1.25	20	PASS
ICSA1	ICSA	1	Mg	511.39	0.71	15	PASS
ICSAB1	ICSAB	1	Mg	514.22	0.69	15	PASS
CCV1	CCV	1	Mg	9.99	0.022	15	PASS
CCB1	CCB	1	Mg	-0.0062	36.12	15	<PQL
MB-59301	MBLK	1	Mg	-0.022	2.27	15	PASS
LCS1-59301	LCS	1	Mg	10.88	0.78	15	PASS
N020533-001B	SAMP	1	Mg	32.82	0.21	15	PASS
N020533-001B	SAMP	5	Mg	7.28	0.42	15	PASS
N020533-001B-PS	PS	1	Mg	42.2	0.095	15	PASS
CCV2	CCV	1	Mg	10.28	0.12	15	PASS
CCB2	CCB	1	Mg	0.024	4.72	15	PASS
N020533-001B-MS1	MS	1	Mg	44.38	0.066	15	PASS
N020533-001B-MSD1	MSD	1	Mg	44.51	0.28	15	PASS
N020533-002B	SAMP	1	Mg	27.57	0.098	15	PASS
N020534-002E	SAMP	1	Mg	25.83	0.22	15	PASS
N020532-001B	SAMP	1	Mg	31.94	0.065	15	PASS
N020532-002B	SAMP	1	Mg	25.46	0.27	15	PASS
CCV3	CCV	1	Mg	10.25	0.024	15	PASS
CCB3	CCB	1	Mg	0.022	26.033	15	<PQL
LLCCV1	CCV2	1	Mg	0.13	1.49	20	PASS
LLCC1	CCV2	1	Mg	0.13	1.35	20	PASS
LLCCV1	CCV2	1	Mg	0.12	3.58	20	PASS
ICSA2	ICSA	1	Mg	513.71	0.26	15	PASS
ICSAB2	ICSAB	1	Mg	531.94	0.41	15	PASS

RSD SUMMARY: 160811A

Instrument ID: ICP-02

Sample Name	Type	DF	Analyte	Reported Conc	RSD	Criteria	Comment
CalBlk	IBLK	1	Na	0	35.79	15	<PQL
Standard1	ICAL	1	Na	0.1	8.88	15	PASS
Standard2	ICAL	1	Na	1	0.67	15	PASS
Standard3	ICAL	1	Na	5	0.6	15	PASS
Standard4	ICAL	1	Na	10	0.095	15	PASS
Standard5	ICAL	1	Na	20	0.25	15	PASS
Standard6	ICAL	1	Na	40	0.25	15	PASS
ICV	ICV	1	Na	10.052	0.095	15	PASS
ICB	ICB	1	Na	0.022	16.062	15	<PQL
ICSA1	ICSA	1	Na	0.017	28.65	15	<PQL
ICSAB1	ICSAB	1	Na	10.024	0.19	15	PASS
CCV1	CCV	1	Na	9.96	0.11	15	PASS
CCB1	CCB	1	Na	0.022	3.65	15	PASS
MB-59301	MBLK	1	Na	0.018	8.38	15	PASS
LCS2-59301	LCS	1	Na	20.098	1.15	15	PASS
N020533-001B	SAMP	5	Na	144.91	0.8	15	PASS
N020533-002B	SAMP	5	Na	274.09	0.92	15	PASS
N020532-001B	SAMP	5	Na	139.64	0.57	15	PASS
N020532-002B	SAMP	5	Na	278.15	1.36	15	PASS
CCV2	CCV	1	Na	9.78	0.072	15	PASS
CCB2	CCB	1	Na	0.03	4.44	15	PASS
N020533-001B	SAMP	50	Na	14.92	0.16	15	PASS
N020533-002B	SAMP	50	Na	29.069	0.25	15	PASS
N020533-002B	SAMP	250	Na	5.87	0.31	15	PASS
N020533-002B-PS	PS	50	Na	29.26	0.15	15	PASS
N020533-002B-MS2	MS	50	Na	29.39	0.21	15	PASS
N020533-002B-MSD2	MSD	50	Na	29.37	0.1	15	PASS
N020532-001B	SAMP	50	Na	14.39	0.25	15	PASS
N020532-002B	SAMP	50	Na	30.041	0.24	15	PASS
CCV3	CCV	1	Na	9.67	0.17	15	PASS
CCB3	CCB	1	Na	0.019	16.17	15	<PQL
CCV4	CCV	1	Na	10.44	13.63	15	PASS
CCV4	CCV	1	Na	9.64	0.099	15	PASS
CCB4	CCB	1	Na	0.018	15.29	15	<PQL
ICSA2	ICSA	1	Na	0.012	2.16	15	PASS
ICSAB2	ICSAB	1	Na	9.54	0.24	15	PASS

ANALYSIS RUN LOG

INJECTION LOG: 160810A

Instrument ID: ICP-02

STANDARD CODE	
Standard1	MWST-160608A,0.5<50mL
Standard2	MWST-160608F
Standard3	MWST-160608J,5<50mL
Standard4	MWST-160608J,12.5<50mL
Standard5	MWST-160608J,15<40mL
Standard6	MWST-160608J,25<50mL
Standard7	MWST-160608J
ICV	MWST-160701B
CCV	MWST-160608J,25<50mL
ICSA/ICSAB	MWST-160523A/MWST-160608K
Int. Std. (Y)	MSST-160323C
PS Spike	MWST-160801C/-160801D;MWST-160531G

A/S Loc	Sample Name	Type	DF	Acq Date	Acq Time
1	CalBlk	IBLK	1	08/10/2016	11:28:01 AM
2	Standard1	ICAL	1	08/10/2016	11:32:24 AM
3	Standard2	ICAL	1	08/10/2016	11:37:13 AM
4	Standard3	ICAL	1	08/10/2016	11:42:02 AM
5	Standard4	ICAL	1	08/10/2016	11:46:54 AM
6	Standard5	ICAL	1	08/10/2016	11:52:46 AM
7	Standard6	ICAL	1	08/10/2016	11:58:09 AM
8	Standard7	ICAL	1	08/10/2016	12:03:33 PM
9	ICV	ICV	1	08/10/2016	12:09:43 PM
1	ICB	ICB	1	08/10/2016	12:15:09 PM
1	ICB	ICB	1	08/10/2016	12:26:12 PM
2	LLICV	CCV1	1	08/10/2016	12:30:31 PM
2	LLICV	CCV1	1	08/10/2016	01:01:18 PM
4	ICSA1	ICSA	1	08/10/2016	01:06:07 PM
5	ICSAB1	ICSAB	1	08/10/2016	01:12:10 PM
38	MB-59328	MBLK	1	08/10/2016	01:17:46 PM
38	MB-59328	MBLK	1	08/10/2016	01:37:47 PM
39	LCS1-59328	LCS	1	08/10/2016	01:42:07 PM
40	N020544-001C	SAMP	1	08/10/2016	01:47:58 PM
45	N020544-002C	SAMP	1	08/10/2016	01:52:48 PM
46	N020544-003C	SAMP	1	08/10/2016	01:57:38 PM
47	N020544-004C	SAMP	1	08/10/2016	02:03:38 PM
48	N020544-005C	SAMP	1	08/10/2016	02:09:30 PM
49	N020544-006C	SAMP	1	08/10/2016	02:15:23 PM
50	N020566-001C	SAMP	1	08/10/2016	02:21:16 PM
7	CCV1	CCV	1	08/10/2016	02:26:09 PM
1	CCB1	CCB	1	08/10/2016	02:31:35 PM
51	N020566-002C	SAMP	1	08/10/2016	02:36:24 PM

A/S Loc	Sample Name	Type	DF	Acq Date	Acq Time
41	N020544-001C	SAMP	5	08/10/2016	02:41:16 PM
42	N020544-001C-PS	PS	1	08/10/2016	02:46:06 PM
43	N020544-001C-MS1	MS	1	08/10/2016	02:51:59 PM
44	N020544-001C-MSD1	MSD	1	08/10/2016	02:57:51 PM
26	MB-59301	MBLK	1	08/10/2016	03:03:43 PM
27	LCS1-59301	LCS	1	08/10/2016	03:08:31 PM
28	N020533-001B	SAMP	1	08/10/2016	03:14:22 PM
29	N020533-001B	SAMP	5	08/10/2016	03:20:12 PM
30	N020533-001B-PS	PS	1	08/10/2016	03:25:01 PM
7	CCV2	CCV	1	08/10/2016	03:30:24 PM
1	CCB2	CCB	1	08/10/2016	03:35:50 PM
31	N020533-001B-MS1	MS	1	08/10/2016	03:40:39 PM
32	N020533-001B-MSD1	MSD	1	08/10/2016	03:46:30 PM
33	N020533-002B	SAMP	1	08/10/2016	03:52:22 PM
34	N020534-002E	SAMP	1	08/10/2016	03:57:47 PM
35	N020532-001B	SAMP	1	08/10/2016	04:03:39 PM
36	N020532-002B	SAMP	1	08/10/2016	04:09:31 PM
7	CCV3	CCV	1	08/10/2016	04:15:23 PM
1	CCB3	CCB	1	08/10/2016	04:20:47 PM
2	LLCCV1	CCV2	1	08/10/2016	04:25:35 PM
2	LLCC1	CCV2	1	08/10/2016	04:41:04 PM
2	LLCCV1	CCV2	1	08/10/2016	04:47:58 PM
4	ICSA2	ICSA	1	08/10/2016	04:57:21 PM
5	ICSAB2	ICSAB	1	08/10/2016	05:03:27 PM

INJECTION LOG: 160811A

Instrument ID: ICP-02

STANDARD CODE	
Standard1	MWST-160608L,0.025<50mL
Standard2	MWST-160608L,0.25<50mL
Standard3	MWST-160608L,1.25<50mL
Standard4	MWST-160608L,2.5<50mL
Standard5	MWST-160608L,5<50mL
Standard6	MWST-160608L,10<50mL
ICV	MWST-160608M
CCV	MWST-160608L,2.5<50mL
ICSA/ICSAB	MWST-160523A/MWST-160608N
Int. Std. (Sc):	MSST-160323B
PS Spike	MSST-130329D/-111006A/-150717A

A/S Loc	Sample Name	Type	DF	Acq Date	Acq Time
1	CalBlk	IBLK	1	08/11/2016	05:01:20 AM
14	Standard1	ICAL	1	08/11/2016	05:04:38 AM
15	Standard2	ICAL	1	08/11/2016	05:07:56 AM
16	Standard3	ICAL	1	08/11/2016	05:11:13 AM
17	Standard4	ICAL	1	08/11/2016	05:15:02 AM
18	Standard5	ICAL	1	08/11/2016	05:18:51 AM
19	Standard6	ICAL	1	08/11/2016	05:22:42 AM
20	ICV	ICV	1	08/11/2016	05:26:37 AM
1	ICB	ICB	1	08/11/2016	05:30:28 AM
21	ICSA1	ICSA	1	08/11/2016	05:33:45 AM
22	ICSAB1	ICSAB	1	08/11/2016	05:37:02 AM
98	MB-59328	MBLK	1	08/11/2016	05:40:54 AM
99	LCS2-59328	LCS	1	08/11/2016	05:44:13 AM
100	N020544-001C	SAMP	5	08/11/2016	05:47:33 AM
101	N020544-002C	SAMP	5	08/11/2016	05:50:53 AM
102	N020544-003C	SAMP	5	08/11/2016	05:54:13 AM
103	N020544-004C	SAMP	5	08/11/2016	05:57:35 AM
104	N020544-005C	SAMP	5	08/11/2016	06:00:55 AM
105	N020544-006C	SAMP	5	08/11/2016	06:04:15 AM
106	N020566-001C	SAMP	5	08/11/2016	06:07:35 AM
107	N020566-002C	SAMP	5	08/11/2016	06:10:56 AM
23	CCV1	CCV	1	08/11/2016	06:14:16 AM
1	CCB1	CCB	1	08/11/2016	06:18:09 AM
108	MB-59301	MBLK	1	08/11/2016	06:21:26 AM
109	LCS2-59301	LCS	1	08/11/2016	06:24:46 AM
110	N020533-001B	SAMP	5	08/11/2016	06:28:35 AM
111	N020533-002B	SAMP	5	08/11/2016	06:33:25 AM
112	N020532-001B	SAMP	5	08/11/2016	06:38:17 AM
113	N020532-002B	SAMP	5	08/11/2016	06:43:08 AM

A/S Loc	Sample Name	Type	DF	Acq Date	Acq Time
114	N020566-001C	SAMP	25	08/11/2016	06:48:00 AM
115	N020566-001C-PS	PS	5	08/11/2016	06:51:21 AM
116	N020566-001C-MS2	MS	5	08/11/2016	06:54:41 AM
117	N020566-001C-MSD2	MSD	5	08/11/2016	06:58:03 AM
23	CCV2	CCV	1	08/11/2016	07:01:23 AM
1	CCB2	CCB	1	08/11/2016	07:05:15 AM
118	N020533-001B	SAMP	50	08/11/2016	07:10:27 AM
119	N020533-002B	SAMP	50	08/11/2016	07:13:48 AM
120	N020533-002B	SAMP	250	08/11/2016	07:17:09 AM
121	N020533-002B-PS	PS	50	08/11/2016	07:20:29 AM
122	N020533-002B-MS2	MS	50	08/11/2016	07:23:50 AM
123	N020533-002B-MSD2	MSD	50	08/11/2016	07:27:12 AM
124	N020532-001B	SAMP	50	08/11/2016	07:30:59 AM
125	N020532-002B	SAMP	50	08/11/2016	07:34:20 AM
126	MB-59341	MBLK	1	08/11/2016	07:37:41 AM
127	LCS2-59341	LCS	1	08/11/2016	07:43:28 AM
23	CCV3	CCV	1	08/11/2016	07:47:27 AM
1	CCB3	CCB	1	08/11/2016	07:51:20 AM
128	N020552-001A	SAMP	10	08/11/2016	07:54:37 AM
129	N020553-001A	SAMP	10	08/11/2016	07:57:58 AM
130	N020553-001A	SAMP	50	08/11/2016	08:01:19 AM
131	N020553-001A-PS	PS	10	08/11/2016	08:04:41 AM
132	N020553-001A-MS2	MS	10	08/11/2016	08:08:32 AM
133	N020553-001A-MSD2	MSD	10	08/11/2016	08:12:24 AM
134	N020554-001A	SAMP	10	08/11/2016	08:16:16 AM
135	N020555-001A	SAMP	10	08/11/2016	08:19:37 AM
136	N020556-001A	SAMP	10	08/11/2016	08:22:59 AM
137	N020576-001A	SAMP	10	08/11/2016	08:26:21 AM
23	CCV4	CCV	1	08/11/2016	08:29:42 AM
23	CCV4	CCV	1	08/11/2016	08:35:48 AM
1	CCB4	CCB	1	08/11/2016	08:39:41 AM
21	ICSA2	ICSA	1	08/11/2016	08:42:58 AM
22	ICSAB2	ICSAB	1	08/11/2016	08:46:16 AM
138	N020577-001A	SAMP	10	08/11/2016	08:50:09 AM
139	N020578-001A	SAMP	10	08/11/2016	08:53:30 AM
140	N020330-005A	SAMP	1	08/11/2016	08:56:51 AM
141	N020330-005A	SAMP	5	08/11/2016	09:00:12 AM
142	N020330-005A	SAMP	25	08/11/2016	09:03:48 AM
143	N020330-009A	SAMP	1	08/11/2016	09:07:09 AM
144	N020330-009A	SAMP	5	08/11/2016	09:12:01 AM
145	N020330-009A	SAMP	25	08/11/2016	09:15:52 AM
146	N020420-006A	SAMP	1	08/11/2016	09:19:15 AM
147	N020420-006A	SAMP	5	08/11/2016	09:23:06 AM
23	CCV5	CCV	1	08/11/2016	09:26:27 AM
1	CCB5	CCB	1	08/11/2016	09:30:21 AM
148	N020420-006A	SAMP	25	08/11/2016	09:33:37 AM

A/S Loc	Sample Name	Type	DF	Acq Date	Acq Time
149	N020420-009A	SAMP	1	08/11/2016	09:36:59 AM
150	N020420-009A	SAMP	5	08/11/2016	09:40:51 AM
151	N020484-003A	SAMP	1	08/11/2016	09:44:12 AM
152	N020484-004A	SAMP	1	08/11/2016	09:47:33 AM
153	N018478-009A	SAMP	1	08/11/2016	09:50:55 AM
154	N018478-006A	SAMP	1	08/11/2016	09:54:46 AM
155	N018478-006A	SAMP	5	08/11/2016	09:58:39 AM
156	N018478-006A	SAMP	25	08/11/2016	10:02:31 AM
23	CCV6	CCV	1	08/11/2016	10:05:53 AM
23	CCV6	CCV	1	08/11/2016	10:11:29 AM
1	CCB6	CCB	1	08/11/2016	10:15:22 AM
21	ICSA3	ICSA	1	08/11/2016	10:18:39 AM
22	ICSAB3	ICSAB	1	08/11/2016	10:21:56 AM

SAMPLE PREPARATION LOG

ASSET Laboratories

PREP BATCH REPORT

Prep Start Date: **8/6/2016 7:51:41 A**
Prep End Date: **8/6/2016 12:30:00 P**
Prep Batch **59301** Prep Code: **200.7_PR**

Reviewed/ Date: _____
Initials/ Date: _____ 8/17/2016
Technician: **Amy Mata**

Prep Factor Units: **mL / mL**

Sample ID	Matrix	pH	SampAmt	3 Replicates	Sol Added	Sol Recov	Fin Vol	factor	Clean Up Code	TURB Check
LCS1-59301	Aqueous		25	☐	0	0	25	1.000		
LCS2-59301	Aqueous		25	☐	0	0	25	1.000		
MB-59301	Aqueous		25	☐	0	0	25	1.000		
N020532-001B	Groundwater	<2	25	☐	0	0	25	1.000		
N020532-002B	Groundwater	<2	25	☐	0	0	25	1.000		
N020533-001B	Water	<2	25	☐	0	0	25	1.000		
N020533-001B-MS	Water	<2	25	☐	0	0	25	1.000		
N020533-001B-MS	Water	<2	25	☐	0	0	25	1.000		
N020533-002B	Water	<2	25	☐	0	0	25	1.000		
N020533-002B-MS	Water	<2	25	☐	0	0	25	1.000		
N020533-002B-MS	Water	<2	25	☐	0	0	25	1.000		
N020534-002E	Water	<2	25	☐	0	0	25	1.000		

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

Number	Reagent Name
8496	HYDROCHLORIC ACID
8528	NITRIC ACID

Spk ID	Spike Name	SampType	AmtAdd
MSST-111006A	Potassium		0.05
MSST-130329D	Sodium		0.05
MWST-160531G	ICP Solution C		0.5
MWST-160801C	ICP Solution A		0.5
MWST-160801D	ICP Solution B		0.5

INITIAL CALIBRATION DATA SUMMARY

INITIAL CALIBRATION SUMMARY: 160810A

Instrument ID: ICP-02

Sample ID	Date	Time	Elem	Wavelength	Corrected Intensity	Concentration	Units	R
Magnesium								
CalBlk	08/10/2016	11:28:01 AM	Mg	279.079	973	0.00	mg/L	
Standard1	08/10/2016	11:32:24 AM	Mg	279.079	1287	0.1000	mg/L	
Standard2	08/10/2016	11:37:13 AM	Mg	279.079	13700	1.000	mg/L	
Standard3	08/10/2016	11:42:02 AM	Mg	279.079	27608	2.000	mg/L	
Standard4	08/10/2016	11:46:54 AM	Mg	279.079	69376	5.000	mg/L	
Standard5	08/10/2016	11:52:46 AM	Mg	279.079	102627	7.500	mg/L	
Standard6	08/10/2016	11:58:09 AM	Mg	279.079	139031	10.000	mg/L	
Standard7	08/10/2016	12:03:33 PM	Mg	279.079	274411	20.000	mg/L	1.0000
Calcium								
CalBlk	08/10/2016	11:28:01 AM	Ca	227.546	-177	0.00	mg/L	
Standard1	08/10/2016	11:32:24 AM	Ca	227.546	74	0.2000	mg/L	
Standard2	08/10/2016	11:37:13 AM	Ca	227.546	365	1.000	mg/L	
Standard3	08/10/2016	11:42:02 AM	Ca	227.546	773	2.000	mg/L	
Standard4	08/10/2016	11:46:54 AM	Ca	227.546	1941	5.000	mg/L	
Standard5	08/10/2016	11:52:46 AM	Ca	227.546	2881	7.500	mg/L	
Standard6	08/10/2016	11:58:09 AM	Ca	227.546	3895	10.000	mg/L	
Standard7	08/10/2016	12:03:33 PM	Ca	227.546	7888	20.000	mg/L	1.0000
Iron								
CalBlk	08/10/2016	11:28:01 AM	Fe	273.953	694	0.00	mg/L	
Standard1	08/10/2016	11:32:24 AM	Fe	273.953	668	0.0200	mg/L	
Standard2	08/10/2016	11:37:13 AM	Fe	273.953	1986	0.050	mg/L	
Standard3	08/10/2016	11:42:02 AM	Fe	273.953	66368	2.000	mg/L	
Standard4	08/10/2016	11:46:54 AM	Fe	273.953	165402	5.000	mg/L	
Standard5	08/10/2016	11:52:46 AM	Fe	273.953	242541	7.500	mg/L	
Standard6	08/10/2016	11:58:09 AM	Fe	273.953	327168	10.000	mg/L	
Standard7	08/10/2016	12:03:33 PM	Fe	273.953	640151	20.000	mg/L	0.9999

INITIAL CALIBRATION SUMMARY: 160811A

Instrument ID: ICP-02

Sample ID	Date	Time	Elem	Wavelength	Corrected Intensity	Concentration	Units	R
Sodium								
CalBlk	08/11/2016	05:01:20 AM	Na	589.594	24	0.00	mg/L	
Standard1	08/11/2016	05:04:38 AM	Na	589.594	111	0.1000	mg/L	
Standard2	08/11/2016	05:07:56 AM	Na	589.594	3193	1.000	mg/L	
Standard3	08/11/2016	05:11:13 AM	Na	589.594	16987	5.000	mg/L	
Standard4	08/11/2016	05:15:02 AM	Na	589.594	35469	10.000	mg/L	
Standard5	08/11/2016	05:18:51 AM	Na	589.594	71640	20.000	mg/L	
Standard6	08/11/2016	05:22:42 AM	Na	589.594	143034	40.000	mg/L	1.0000

INITIAL CALIBRATION AND CONTINUING CALIBRATION VERIFICATION SUMMARY

CLIENT: ARCADIS U.S., Inc. - California
Work Order: N020532
Project: PG&E Topock - PMP, RC000753.801A

ANALYTICAL QC SUMMARY REPORT

TestCode: 200.7_WDPGEPPB

Sample ID **ICV** SampType: **ICV** TestCode: **200.7_WDPG** Units: **µg/L** Prep Date: RunNo: **109957**
Client ID: **ICV** Batch ID: **R109957** TestNo: **EPA 200.7** Analysis Date: **8/10/2016** SeqNo: **2399851**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Calcium	9948.250	500	10000	0	99.5	90	110				
Iron	10060.860	20	10000	0	101	90	110				
Magnesium	10035.836	100	10000	0	100	90	110				

Sample ID **LLICV** SampType: **CCV1** TestCode: **200.7_WDPG** Units: **µg/L** Prep Date: RunNo: **109957**
Client ID: **ZZZZZZ** Batch ID: **R109957** TestNo: **EPA 200.7** Analysis Date: **8/10/2016** SeqNo: **2399855**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Calcium	191.005	500	200.0	0	95.5	80	120				
Iron	16.564	20	20.00	0	82.8	80	120				
Magnesium	95.396	100	100.0	0	95.4	80	120				

Sample ID **CCV1** SampType: **CCV** TestCode: **200.7_WDPG** Units: **µg/L** Prep Date: RunNo: **109957**
Client ID: **CCV** Batch ID: **R109957** TestNo: **EPA 200.7** Analysis Date: **8/10/2016** SeqNo: **2399868**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Calcium	9878.399	500	10000	0	98.8	90	110				
Iron	10103.536	20	10000	0	101	90	110				
Magnesium	9992.000	100	10000	0	99.9	90	110				

Sample ID **CCV2** SampType: **CCV** TestCode: **200.7_WDPG** Units: **µg/L** Prep Date: RunNo: **109957**
Client ID: **CCV** Batch ID: **R109957** TestNo: **EPA 200.7** Analysis Date: **8/10/2016** SeqNo: **2399880**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Calcium	9914.668	500	10000	0	99.1	90	110				
Iron	10208.719	20	10000	0	102	90	110				
Magnesium	10282.464	100	10000	0	103	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: N020532
Project: PG&E Topock - PMP, RC000753.801A

ANALYTICAL QC SUMMARY REPORT

TestCode: 200.7_WDPGEPPB

Sample ID **CCV3**	SampType: **CCV**	TestCode: **200.7_WDPG**	Units: **µg/L**	Prep Date:	RunNo: **109957**
Client ID: **CCV**	Batch ID: **R109957**	TestNo: **EPA 200.7**		Analysis Date: **8/10/2016**	SeqNo: **2399888**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Calcium	9739.068	500	10000	0	97.4	90	110				
Iron	10286.823	20	10000	0	103	90	110				
Magnesium	10248.538	100	10000	0	102	90	110				

Sample ID **LLCCV1**	SampType: **CCV2**	TestCode: **200.7_WDPG**	Units: **µg/L**	Prep Date:	RunNo: **109957**
Client ID: **ZZZZZZ**	Batch ID: **R109957**	TestNo: **EPA 200.7**		Analysis Date: **8/10/2016**	SeqNo: **2399891**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Calcium	154.078	500	200.0	0	77.0	70	130				

Sample ID **LLCCV1**	SampType: **CCV2**	TestCode: **200.7_WDPG**	Units: **µg/L**	Prep Date:	RunNo: **109957**
Client ID: **ZZZZZZ**	Batch ID: **R109957**	TestNo: **EPA 200.7**		Analysis Date: **8/10/2016**	SeqNo: **2399892**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Iron	16.388	20	20.00	0	81.9	70	130				
Magnesium	122.502	100	100.0	0	123	70	130				

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: N020532
Project: PG&E Topock - PMP, RC000753.801A

ANALYTICAL QC SUMMARY REPORT

TestCode: 200.7_WDPGEPPB

Sample ID **ICV**	SampType: **ICV**	TestCode: **200.7_WDPG**	Units: **µg/L**	Prep Date:	RunNo: **109961**
Client ID: **ICV**	Batch ID: **R109961**	TestNo: **EPA 200.7**		Analysis Date: **8/11/2016**	SeqNo: **2400163**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Sodium	10051.652	500	10000	0	101	90	110				

Sample ID **CCV1**	SampType: **CCV**	TestCode: **200.7_WDPG**	Units: **µg/L**	Prep Date:	RunNo: **109961**
Client ID: **CCV**	Batch ID: **R109961**	TestNo: **EPA 200.7**		Analysis Date: **8/11/2016**	SeqNo: **2400177**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Sodium	9960.454	500	10000	0	99.6	90	110				

Sample ID **CCV2**	SampType: **CCV**	TestCode: **200.7_WDPG**	Units: **µg/L**	Prep Date:	RunNo: **109961**
Client ID: **CCV**	Batch ID: **R109961**	TestNo: **EPA 200.7**		Analysis Date: **8/11/2016**	SeqNo: **2400189**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Sodium	9777.217	500	10000	0	97.8	90	110				

Sample ID **CCV3**	SampType: **CCV**	TestCode: **200.7_WDPG**	Units: **µg/L**	Prep Date:	RunNo: **109961**
Client ID: **CCV**	Batch ID: **R109961**	TestNo: **EPA 200.7**		Analysis Date: **8/11/2016**	SeqNo: **2400201**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Sodium	9666.537	500	10000	0	96.7	90	110				

Sample ID **CCV4**	SampType: **CCV**	TestCode: **200.7_WDPG**	Units: **µg/L**	Prep Date:	RunNo: **109961**
Client ID: **CCV**	Batch ID: **R109961**	TestNo: **EPA 200.7**		Analysis Date: **8/11/2016**	SeqNo: **2400214**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Sodium	9642.332	500	10000	0	96.4	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

CLIENT: ARCADIS U.S., Inc. - California
Work Order: N020532
Project: PG&E Topock - PMP, RC000753.801A

ANALYTICAL QC SUMMARY REPORT

TestCode: 200.7_WDPGEPPB

Sample ID **ICB**	SampType: **ICB**	TestCode: **200.7_WDPG**	Units: **µg/L**	Prep Date:	RunNo: **109957**
Client ID: **ICB**	Batch ID: **R109957**	TestNo: **EPA 200.7**		Analysis Date: **8/10/2016**	SeqNo: **2399853**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Calcium	-20.264597	500									
Iron	-7.993749	20									
Magnesium	-17.467992	100									

Sample ID **CCB1**	SampType: **CCB**	TestCode: **200.7_WDPG**	Units: **µg/L**	Prep Date:	RunNo: **109957**
Client ID: **CCB**	Batch ID: **R109957**	TestNo: **EPA 200.7**		Analysis Date: **8/10/2016**	SeqNo: **2399869**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Calcium	-28.027608	500									
Iron	-7.469646	20									
Magnesium	-6.224808	100									

Sample ID **CCB2**	SampType: **CCB**	TestCode: **200.7_WDPG**	Units: **µg/L**	Prep Date:	RunNo: **109957**
Client ID: **CCB**	Batch ID: **R109957**	TestNo: **EPA 200.7**		Analysis Date: **8/10/2016**	SeqNo: **2399881**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Calcium	-46.388455	500									
Iron	-11.042513	20									
Magnesium	24.082	100									

Sample ID **CCB3**	SampType: **CCB**	TestCode: **200.7_WDPG**	Units: **µg/L**	Prep Date:	RunNo: **109957**
Client ID: **CCB**	Batch ID: **R109957**	TestNo: **EPA 200.7**		Analysis Date: **8/10/2016**	SeqNo: **2399889**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Calcium	-59.90796	500									
Iron	-10.247361	20									
Magnesium	21.923	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
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: ARCADIS U.S., Inc. - California
Work Order: N020532
Project: PG&E Topock - PMP, RC000753.801A

ANALYTICAL QC SUMMARY REPORT

TestCode: 200.7_WDPGEPPB

Sample ID **ICB**	SampType: **ICB**	TestCode: **200.7_WDPG**	Units: **µg/L**	Prep Date:	RunNo: **109961**
Client ID: **ICB**	Batch ID: **R109961**	TestNo: **EPA 200.7**		Analysis Date: **8/11/2016**	SeqNo: **2400164**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Sodium	21.772	500									

Sample ID **CCB1**	SampType: **CCB**	TestCode: **200.7_WDPG**	Units: **µg/L**	Prep Date:	RunNo: **109961**
Client ID: **CCB**	Batch ID: **R109961**	TestNo: **EPA 200.7**		Analysis Date: **8/11/2016**	SeqNo: **2400178**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Sodium	22.244	500									

Sample ID **CCB2**	SampType: **CCB**	TestCode: **200.7_WDPG**	Units: **µg/L**	Prep Date:	RunNo: **109961**
Client ID: **CCB**	Batch ID: **R109961**	TestNo: **EPA 200.7**		Analysis Date: **8/11/2016**	SeqNo: **2400190**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Sodium	29.787	500									

Sample ID **CCB3**	SampType: **CCB**	TestCode: **200.7_WDPG**	Units: **µg/L**	Prep Date:	RunNo: **109961**
Client ID: **CCB**	Batch ID: **R109961**	TestNo: **EPA 200.7**		Analysis Date: **8/11/2016**	SeqNo: **2400202**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Sodium	18.547	500									

Sample ID **CCB4**	SampType: **CCB**	TestCode: **200.7_WDPG**	Units: **µg/L**	Prep Date:	RunNo: **109961**
Client ID: **CCB**	Batch ID: **R109961**	TestNo: **EPA 200.7**		Analysis Date: **8/11/2016**	SeqNo: **2400215**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Sodium	17.767	500									

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 CHECK (ICSA & ICSAB)

CLIENT: ARCADIS U.S., Inc. - California
Work Order: N020532
Project: PG&E Topock - PMP, RC000753.801A

ANALYTICAL QC SUMMARY REPORT

TestCode: 200.7_WDPGEPPB

Sample ID **ICSA1**	SampType: **ICSA**	TestCode: **200.7_WDPG**	Units: **µg/L**	Prep Date:	RunNo: **109957**
Client ID: **ICSA**	Batch ID: **R109957**	TestNo: **EPA 200.7**		Analysis Date: **8/10/2016**	SeqNo: **2399856**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aluminum	559582.572	50	500000	0	112	80	120				
Calcium	556232.077	500	500000	0	111	80	120				
Iron	190453.805	20	200000	0	95.2	80	120				
Magnesium	511389.376	100	500000	0	102	80	120				

Sample ID **ICSAB1**	SampType: **ICSAB**	TestCode: **200.7_WDPG**	Units: **µg/L**	Prep Date:	RunNo: **109957**
Client ID: **ICSAB**	Batch ID: **R109957**	TestNo: **EPA 200.7**		Analysis Date: **8/10/2016**	SeqNo: **2399857**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aluminum	555247.473	50	500000	0	111	80	120				
Calcium	567549.742	500	500000	0	114	80	120				
Iron	180997.199	20	200000	0	90.5	80	120				
Magnesium	514218.577	100	500000	0	103	80	120				

Sample ID **ICSA2**	SampType: **ICSA**	TestCode: **200.7_WDPG**	Units: **µg/L**	Prep Date:	RunNo: **109957**
Client ID: **ICSA**	Batch ID: **R109957**	TestNo: **EPA 200.7**		Analysis Date: **8/10/2016**	SeqNo: **2399893**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aluminum	538074.752	50	500000	0	108	80	120				
Calcium	546720.625	500	500000	0	109	80	120				
Iron	191597.633	20	200000	0	95.8	80	120				
Magnesium	513714.152	100	500000	0	103	80	120				

Sample ID **ICSAB2**	SampType: **ICSAB**	TestCode: **200.7_WDPG**	Units: **µg/L**	Prep Date:	RunNo: **109957**
Client ID: **ICSAB**	Batch ID: **R109957**	TestNo: **EPA 200.7**		Analysis Date: **8/10/2016**	SeqNo: **2399894**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aluminum	576120.878	50	500000	0	115	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: N020532
Project: PG&E Topock - PMP, RC000753.801A

ANALYTICAL QC SUMMARY REPORT

TestCode: 200.7_WDPGEPPB

Sample ID **ICSAB2**	SampType: **ICSAB**	TestCode: **200.7_WDPG**	Units: **µg/L**	Prep Date:	RunNo: **109957**
Client ID: **ICSAB**	Batch ID: **R109957**	TestNo: **EPA 200.7**		Analysis Date: **8/10/2016**	SeqNo: **2399894**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Calcium	560218.351	500	500000	0	112	80	120				
Iron	187273.553	20	200000	0	93.6	80	120				
Magnesium	531935.013	100	500000	0	106	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: N020532
Project: PG&E Topock - PMP, RC000753.801A

ANALYTICAL QC SUMMARY REPORT

TestCode: 200.7_WDPGEPPB

Sample ID **ICSA1**	SampType: **ICSA**	TestCode: **200.7_WDPG**	Units: **µg/L**	Prep Date:	RunNo: **109961**
Client ID: **ICSA**	Batch ID: **R109961**	TestNo: **EPA 200.7**		Analysis Date: **8/11/2016**	SeqNo: **2400165**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Sodium	16.958	500									

Sample ID **ICSAB1**	SampType: **ICSAB**	TestCode: **200.7_WDPG**	Units: **µg/L**	Prep Date:	RunNo: **109961**
Client ID: **ICSAB**	Batch ID: **R109961**	TestNo: **EPA 200.7**		Analysis Date: **8/11/2016**	SeqNo: **2400166**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Sodium	10024.026	500	10000	0	100	80	120				

Sample ID **ICSA2**	SampType: **ICSA**	TestCode: **200.7_WDPG**	Units: **µg/L**	Prep Date:	RunNo: **109961**
Client ID: **ICSA**	Batch ID: **R109961**	TestNo: **EPA 200.7**		Analysis Date: **8/11/2016**	SeqNo: **2400216**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Sodium	11.868	500									

Sample ID **ICSAB2**	SampType: **ICSAB**	TestCode: **200.7_WDPG**	Units: **µg/L**	Prep Date:	RunNo: **109961**
Client ID: **ICSAB**	Batch ID: **R109961**	TestNo: **EPA 200.7**		Analysis Date: **8/11/2016**	SeqNo: **2400217**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Sodium	9538.680	500	10000	0	95.4	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		

INTERNAL STANDARD SUMMARY

INTERNAL STANDARD: 160810A

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	1.0038	100.38	65-125	PASS
Standard2	ICAL	1	0.98	97.84	65-125	PASS
Standard3	ICAL	1	1.077	107.75	65-125	PASS
Standard4	ICAL	1	1.049	104.88	65-125	PASS
Standard5	ICAL	1	1.052	105.23	65-125	PASS
Standard6	ICAL	1	1.019	101.86	65-125	PASS
Standard7	ICAL	1	1.0072	100.72	65-125	PASS
ICV	ICV	1	1.0076	100.76	65-125	PASS
ICB	ICB	1	1.0074	100.74	65-125	PASS
ICB	ICB	1	1.0063	100.63	65-125	PASS
LLICV	CCV1	1	1.011	101.12	65-125	PASS
LLICV	CCV1	1	1.0079	100.79	65-125	PASS
ICSA1	ICSA	1	0.86	85.78	65-125	PASS
ICSAB1	ICSAB	1	0.87	86.91	65-125	PASS
CCV1	CCV	1	1.013	101.31	65-125	PASS
CCB1	CCB	1	1.0025	100.25	65-125	PASS
MB-59301	MBLK	1	1.15	115.38	65-125	PASS
LCS1-59301	LCS	1	0.93	93.26	65-125	PASS
N020533-001B	SAMP	1	1.028	102.81	65-125	PASS
N020533-001B	SAMP	5	1.11	111.08	65-125	PASS
N020533-001B-PS	PS	1	1.056	105.59	65-125	PASS
CCV2	CCV	1	1.047	104.74	65-125	PASS
CCB2	CCB	1	1.023	102.27	65-125	PASS
N020533-001B-MS1	MS	1	1.061	106.1	65-125	PASS
N020533-001B-MSD1	MSD	1	1.068	106.83	65-125	PASS
N020533-002B	SAMP	1	1.012	101.18	65-125	PASS
N020534-002E	SAMP	1	1.042	104.15	65-125	PASS
N020532-001B	SAMP	1	1.044	104.36	65-125	PASS
N020532-002B	SAMP	1	1.027	102.7	65-125	PASS
CCV3	CCV	1	1.059	105.87	65-125	PASS
CCB3	CCB	1	1.0088	100.88	65-125	PASS
LLCCV1	CCV2	1	1.034	103.44	65-125	PASS
LLCC1	CCV2	1	1.014	101.42	65-125	PASS
LLCCV1	CCV2	1	1.018	101.81	65-125	PASS
ICSA2	ICSA	1	0.89	88.84	65-125	PASS
ICSAB2	ICSAB	1	0.89	89.034	65-125	PASS

INTERNAL STANDARD: 160811A

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	1.022	102.18	65-125	PASS
Standard2	ICAL	1	1.028	102.75	65-125	PASS
Standard3	ICAL	1	1	99.62	65-125	PASS
Standard4	ICAL	1	1.01	101.01	65-125	PASS
Standard5	ICAL	1	1.0015	100.15	65-125	PASS
Standard6	ICAL	1	1.0072	100.72	65-125	PASS
ICV	ICV	1	1.022	102.22	65-125	PASS
ICB	ICB	1	1.022	102.18	65-125	PASS
ICSA1	ICSA	1	1.019	101.86	65-125	PASS
ICSAB1	ICSAB	1	1.025	102.5	65-125	PASS
CCV1	CCV	1	1.04	104.02	65-125	PASS
CCB1	CCB	1	1.025	102.53	65-125	PASS
MB-59301	MBLK	1	1.029	102.94	65-125	PASS
LCS2-59301	LCS	1	1.1	110.27	65-125	PASS
N020533-001B	SAMP	5	1.015	101.51	65-125	PASS
N020533-002B	SAMP	5	1.019	101.94	65-125	PASS
N020532-001B	SAMP	5	1.049	104.87	65-125	PASS
N020532-002B	SAMP	5	1.045	104.46	65-125	PASS
CCV2	CCV	1	1.057	105.73	65-125	PASS
CCB2	CCB	1	1.042	104.21	65-125	PASS
N020533-001B	SAMP	50	1.009	100.9	65-125	PASS
N020533-002B	SAMP	50	1.015	101.49	65-125	PASS
N020533-002B	SAMP	250	1.012	101.23	65-125	PASS
N020533-002B-PS	PS	50	1.0057	100.57	65-125	PASS
N020533-002B-MS2	MS	50	1.01	101.02	65-125	PASS
N020533-002B-MSD2	MSD	50	1.011	101.06	65-125	PASS
N020532-001B	SAMP	50	1.016	101.56	65-125	PASS
N020532-002B	SAMP	50	1.021	102.12	65-125	PASS
CCV3	CCV	1	1.053	105.3	65-125	PASS
CCB3	CCB	1	1.028	102.85	65-125	PASS
CCV4	CCV	1	0.71	71.18	65-125	PASS
CCV4	CCV	1	1.062	106.16	65-125	PASS
CCB4	CCB	1	1.03	102.98	65-125	PASS
ICSA2	ICSA	1	1.043	104.3	65-125	PASS
ICSAB2	ICSAB	1	1.061	106.12	65-125	PASS

SERIAL DILUTION/
POST DIGESTION SPIKE

ASSET Laboratories

ICP-Metals in Water

Dilution Test Summary

Work Order No.: N020532
Test Method: EPA 200.7
Analysis Date: 8/10/2016

Matrix: Groundwater
Batch No.: 59301

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
N020533-001B DT 5X	Calcium	ug/L	159819.3	PASS	154612.3	3.37%	10
N020533-001B DT 5X	Iron	ug/L	0	NA	3.468006	100.00%	10
N020533-001B DT 5X	Magnesium	ug/L	36375.34	FAIL	32824.11	10.82%	10

Note: NA - Not applicable

ASSET Laboratories

ICP-Metals in Water

Dilution Test Summary

Work Order No.: N020532
Test Method: EPA 200.7
Analysis Date: 8/11/2016

Matrix: Groundwater
Batch No.: 59301

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

Comments:

Analyzed By: Mary Claire Ignacio

Sample ID	Analyte	Units	Calc Val	OQual	SAMPRefVal	%DIFF	%DIFFlimit
N020533-002B DT 250X	Sodium	ug/L	1466583	PASS	1453467	0.90%	10

Note: NA - Not applicable

CLIENT: ARCADIS U.S., Inc. - California
Work Order: N020532
Project: PG&E Topock - PMP, RC000753.801A

ANALYTICAL QC SUMMARY REPORT

TestCode: 200.7_WDPGEPPB

Sample ID **N020533-001B-PS**	SampType: **PS**	TestCode: **200.7_WDPG**	Units: **µg/L**	Prep Date:	RunNo: **109957**
Client ID: **ZZZZZZ**	Batch ID: **59301**	TestNo: **EPA 200.7**		Analysis Date: **8/10/2016**	SeqNo: **2399879**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Calcium	157571.417	500	10000	154600	29.6	80	120				S
Iron	87.586	20	100.0	3.468	84.1	80	120				
Magnesium	42197.364	100	10000	32820	93.7	80	120				

Sample ID **N020533-002B-PS**	SampType: **PS**	TestCode: **200.7_WDPG**	Units: **µg/L**	Prep Date:	RunNo: **109961**
Client ID: **ZZZZZZ**	Batch ID: **59301**	TestNo: **EPA 200.7**		Analysis Date: **8/11/2016**	SeqNo: **2400194**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Sodium	1462801.249	25000	20000	1453000	46.7	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
DO	Surrogate Diluted Out		Calculations are based on raw values		

MDL STUDY

METHOD DETECTION LIMIT 2016

Method Name: **Metals by ICP**
Method Number: EPA 200.7/ 6010
Analysis Date(s): 4/1/2016, 4/4/2016
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	0.0021	0.0020	0.0020	0.0020	0.0019	0.0020	0.0020	0.00125	0.00005062	**0.00016**	**0.0025**
Al	237.312	0.0272	0.0288	0.0288	0.0267	0.0269	0.0277	0.0276	0.025	0.00085451	**0.00269**	**0.050**
As	188.983	0.0054	0.0049	0.0037	0.0044	0.0060	0.0041	0.0048	0.005	0.00075065	**0.00236**	**0.010**
B	249.679	0.0735	0.0561	0.0463	0.0445	0.0396	0.0464	0.0398	0.05	0.01193786	**0.03752**	**0.10**
Ba	233.529	0.0007	0.0007	0.0006	0.0006	0.0006	0.0007	0.0007	0.000625	0.00003047	**0.00010**	**0.0025**
Be	313.104	0.0007	0.0006	0.0006	0.0006	0.0006	0.0006	0.0007	0.0005	0.00004386	**0.00014**	**0.0010**
Ca	227.546	0.0967	0.1086	0.0893	0.0864	0.0826	0.0978	0.0988	0.1	0.00880307	**0.02767**	**0.20**
Cd	214.437	0.0006	0.0006	0.0007	0.0006	0.0007	0.0006	0.0006	0.000313	0.00003910	**0.00012**	**0.0025**
Co	228.614	0.0011	0.0011	0.0010	0.0010	0.0009	0.0010	0.0011	0.00125	0.00005473	**0.00017**	**0.0025**
Cr	267.719	0.0004	0.0003	0.0004	0.0004	0.0004	0.0003	0.0004	0.0005	0.00004860	**0.00015**	**0.0010**
Cu	324.753	0.0013	0.0015	0.0015	0.0022	0.0022	0.0016	0.0015	0.0025	0.00034907	**0.00110**	**0.0050**
Fe	273.953	0.0115	0.0117	0.0112	0.0102	0.0105	0.0114	0.0114	0.01	0.00057502	**0.00181**	**0.020**
Mg	279.079	0.0227	0.0231	0.0204	0.0225	0.0221	0.0222	0.0250	0.025	0.00138863	**0.00436**	**0.10**
Mn	257.607	0.0013	0.0013	0.0013	0.0012	0.0012	0.0012	0.0012	0.00125	0.00004429	**0.00014**	**0.010**
Mo	202.03	0.0031	0.0032	0.0031	0.0030	0.0026	0.0029	0.0029	0.0025	0.00018274	**0.00057**	**0.0050**
Ni	231.604	0.0019	0.0020	0.0020	0.0022	0.0022	0.0021	0.0021	0.0025	0.00012429	**0.00039**	**0.0050**
Pb	220.351	0.0049	0.0049	0.0048	0.0044	0.0048	0.0048	0.0050	0.005	0.00018831	**0.00059**	**0.010**
Sb	206.836	0.0035	0.0038	0.0020	0.0034	0.0033	0.0032	0.0046	0.005	0.00076686	**0.00241**	**0.010**
Se	196.025	0.0017	0.0033	0.0025	0.0025	0.0015	0.0034	0.0025	0.005	0.00070697	**0.00222**	**0.010**
Sn	189.927	0.0051	0.0048	0.0052	0.0051	0.0044	0.0045	0.0050	0.005	0.00031282	**0.00098**	**0.010**
Ti	334.943	0.0011	0.0011	0.0011	0.0010	0.0011	0.0010	0.0010	0.00125	0.00005159	**0.00016**	**0.010**
Tl	190.794	0.0067	0.0060	0.0064	0.0047	0.0062	0.0067	0.0062	0.0075	0.00070505	**0.00222**	**0.015**
V	292.404	0.0007	0.0007	0.0007	0.0006	0.0006	0.0007	0.0007	0.00125	0.00006264	**0.00020**	**0.0025**
Zn	206.201	0.0024	0.0026	0.0024	0.0024	0.0024	0.0024	0.0033	0.0025	0.00034911	**0.00110**	**0.010**

LOD/PQL Verification 2016

Method Name: **Metals by ICP**
Method Number: EPA 200.7/ 6010
Analysis Date(s): 4/1/2016, 4/4/2016
Analyst: Mary Claire Ignacio

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

Instrument Name: **ICP-02**

Analyte	MDL	PQL	PQL VER	% REC	LOD	LOD VER
Ag	0.00016	0.0025	0.00223	89	0.0005	0.00080
Al	0.00269	0.050	0.05320	106	0.01	0.02090
As	0.00236	0.010	0.00834	83	0.0075	0.00617
B	0.03752	0.10	0.13977	140	0.05	0.05058
Ba	0.00010	0.0025	0.00265	106	0.00025	0.00104
Be	0.00014	0.0010	0.00106	106	0.0005	0.00046
Ca	0.02767	0.20	0.17684	88	0.1	0.08140
Cd	0.00012	0.0025	0.00262	105	0.00025	0.00104
Co	0.00017	0.0025	0.00263	105	0.0005	0.00101
Cr	0.00015	0.0010	0.00122	122	0.0005	0.00046
Cu	0.00110	0.0050	0.00436	87	0.0025	0.00144
Fe	0.00181	0.020	0.01970	99	0.005	0.00643
Mg	0.00436	0.10	0.09828	98	0.01	0.04118
Mn	0.00014	0.010	0.01016	102	0.0005	0.00426
Mo	0.00057	0.0050	0.00540	108	0.001	0.00241
Ni	0.00039	0.0050	0.00462	92	0.001	0.00156
Pb	0.00059	0.010	0.01026	103	0.001	0.00406
Sb	0.00241	0.010	0.00830	83	0.005	0.00305
Se	0.00222	0.010	0.01297	130	0.005	0.00721
Sn	0.00098	0.010	0.01092	109	0.0025	0.00442
Ti	0.00016	0.010	0.00996	100	0.0005	0.00384
Tl	0.00222	0.015	0.01485	99	0.005	0.00610
V	0.00020	0.0025	0.00246	98	0.0005	0.00089
Zn	0.00110	0.010	0.01092	109	0.0025	0.00412

EPA 200.8
Dissolved

Metals Technical Batch Review Checklist (ARCUS02)

ASSET LABORATORIES - LAS VEGAS

FIRST LEVEL REVIEW:

QC Batch Number: 59299
ASSET #: N020532

Instrument ID: ICPMS-02
Analyst: CEI
Date Analyzed: 8/8/2016

Method:

[ ] EPA 6010B / 200.7
[X] EPA 6020 / 200.8
[ ] EPA 7470A / 7471A/245.1
[ ] 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					
Interference Check						
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					
Continuing Calibration						
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 ICVand CCV analysis.	X					
11. Do all calibration blanks (ICB and CCBs) meet criteria? (< PQL)	X					
12 Is low level check twice during 8 hr period or at end within ± 30% of expected value? (ICP/ICPMS only)	X					
Sample Information						
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			
QC Items						
22. IS are within control limits (70-125% for ICPMS).	X					
23. Method blank values are below the PQL .	X					
24. LCS compounds within control limits.	X					
25. MS/MSD, RPD's are within control limits	X					
Raw Data and Miscellaneous Information						
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					
Preliminary Report						
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:

	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 8/17/2016 Date: —

2nd Level Reviewer 8/18/2016 Date: —

SAMPLE CALCULATION

SAMPLE CALCULATION

METHOD: EPA 200.8
TEST NAME: Heavy Metals by ICP-MS
MATRIX: Groundwater

FORMULA:

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

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 **N020532-002B** , the concentration in ug/L is calculated as follows:

Chromium , ug/L = 126.387 * 5 * (25/25)

Chromium , ug/L = 631.935

Reporting results in two significant figures,

Chromium , ug/L = 630

% RSD SUMMARY

PERCENT RSD SUMMARY: 160808A

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	0.087	11.14	15	PASS	0.058	58.64	15	<PQL
Std2-0.5/5 ppb	ICAL	1	0.48	1.35	15	PASS	0.44	5.11	15	PASS
Std3-5/50 ppb	ICAL	1	5.071	2.81	15	PASS	4.94	2.67	15	PASS
Std4-10/100 ppb	ICAL	1	10.086	0.73	15	PASS	9.93	1.16	15	PASS
Std5-20/200 ppb	ICAL	1	20.097	0.85	15	PASS	20.1	0.29	15	PASS
Std6-40/400 ppb	ICAL	1	40.62	0.061	15	PASS	40.36	0.35	15	PASS
Std7-100/1000 ppb	ICAL	1	101.54	0.53	15	PASS	101.22	0.32	15	PASS
Std8-200/2000 ppb	ICAL	1	199.093	0.95	15	PASS	199.31	0.46	15	PASS
ICV	ICV	1	10.45	1.05	15	PASS	103.76	0.79	15	PASS
ICB	ICB	1	<0.000	N/A	15	<PQL	<0.000	N/A	15	<PQL
LLICV	CCV1	1	1.023	1.56	20	PASS	0.51	3.83	20	PASS
ICSA1	ICSA	1	0.15	13.66	15	PASS	<0.000	N/A	15	<PQL
ICSAB1	ICSAB	1	20.48	1.27	15	PASS	17.045	0.9	15	PASS
MB-59299	MBLK	1	<0.000	N/A	15	<PQL	<0.000	N/A	15	<PQL
LCS-59299	LCS	1	9.78	0.67	15	PASS	99.29	1.075	15	PASS
N020505-008B	SAMP	5	0.2	3.77	15	PASS	1.042	4.49	15	PASS
N020505-009B	SAMP	5	0.19	3.59	15	PASS	1.13	5.99	15	PASS
N020519-009B	SAMP	5	26.091	1.69	15	PASS	<0.000	N/A	15	<PQL
N020545-001B	SAMP	5	16.077	2	15	PASS	<0.000	N/A	15	<PQL
N020532-001B	SAMP	1	0.42	5.18	15	PASS	162.093	1.23	15	PASS
N020532-001B	SAMP	5	0.081	0.95	15	PASS	35.48	1.029	15	PASS
CCV1	CCV	1	19.99	0.72	15	PASS	20.0023	0.27	15	PASS
CCB1	CCB	1	<0.000	N/A	15	<PQL	<0.000	N/A	15	<PQL
N020532-002B	SAMP	1	564.23	1.3	15	PASS	10.97	1.43	15	PASS
N020532-002B	SAMP	5	126.39	0.35	15	PASS	2.31	0.54	15	PASS
N020533-001B	SAMP	1	1.5	1.21	15	PASS	145.17	0.61	15	PASS
N020533-001B	SAMP	5	0.29	5.79	15	PASS	31.044	1.36	15	PASS
N020533-002B	SAMP	1	574.052	0.7	15	PASS	11.1	0.77	15	PASS
N020533-002B	SAMP	5	125.17	0.81	15	PASS	2.3	1.64	15	PASS
N020534-001C	SAMP	1	483.2	1	15	PASS	22.86	1.36	15	PASS
N020534-001C	SAMP	5	104.82	0.8	15	PASS	4.92	1.89	15	PASS
N020534-002E	SAMP	1	0.45	6.63	15	PASS	10.079	1.94	15	PASS
N020534-002E	SAMP	5	0.1	3.32	15	PASS	2.12	4.13	15	PASS
CCV2	CCV	1	20.23	0.8	15	PASS	19.37	2.27	15	PASS
CCB2	CCB	1	0.0051	140.96	15	<PQL	<0.000	N/A	15	<PQL
N020534-002E	SAMP	25	0.022	8.16	15	PASS	0.38	3.58	15	PASS
N020534-002E-PS	PS	1	9.92	1.52	15	PASS	97.88	0.73	15	PASS
N020534-002E-PS	PS	5	2.091	0.61	15	PASS	20.51	0.63	15	PASS
N020534-002E-MS	MS	1	9.81	0.63	15	PASS	96.49	1.081	15	PASS
N020534-002E-MS	MS	5	2.032	0.4	15	PASS	20.12	0.52	15	PASS

PERCENT RSD SUMMARY: 160808A

Instrument ID: ICPMS-02

Sample Name	Type	DF	52 Cr [2]				55 Mn [2]			
			Conc. [ppb]	RSD	Criteria	Comment	Conc. [ppb]	RSD	Criteria	Comment
N020534-002E-MSD	MSD	1	9.84	1.35	15	PASS	96.87	1.37	15	PASS
N020534-002E-MSD	MSD	5	2.033	1.35	15	PASS	20.051	0.68	15	PASS
CCV3	CCV	1	20.32	0.89	15	PASS	19.58	1.25	15	PASS
CCB3	CCB	1	0.025	13.8	15	PASS	<0.000	N/A	15	<PQL
LLCCV1	CCV2	1	1.081	2.93	20	PASS	0.45	4.14	20	PASS
ICSA2	ICSA	1	0.19	8.94	15	PASS	<0.000	N/A	15	<PQL
ICSAB2	ICSAB	1	20.74	1.31	15	PASS	16.62	1.29	15	PASS

ANALYSIS RUN LOG

INJECTION LOG: 160808A

Instrument ID: ICPMS-02

Data File	Sample Name	Type	DF	Acq. Date-Time
A0808001.D	RINSE	RINSE	1	08/08/16 11:54 AM
A0808002.D	Cal Blank	IBLK	1	08/08/16 12:00 PM
A0808003.D	Std1-0.1/1 ppb	ICAL	1	08/08/16 12:06 PM
A0808004.D	Std2-0.5/5 ppb	ICAL	1	08/08/16 12:11 PM
A0808005.D	Std3-5/50 ppb	ICAL	1	08/08/16 12:17 PM
A0808006.D	Std4-10/100 ppb	ICAL	1	08/08/16 12:22 PM
A0808007.D	Std5-20/200 ppb	ICAL	1	08/08/16 12:28 PM
A0808008.D	Std6-40/400 ppb	ICAL	1	08/08/16 12:33 PM
A0808009.D	Std7-100/1000 ppb	ICAL	1	08/08/16 12:39 PM
A0808010.D	Std8-200/2000 ppb	ICAL	1	08/08/16 12:44 PM
A0808011.D	ICV	ICV	1	08/08/16 12:50 PM
A0808012.D	ICB	ICB	1	08/08/16 12:55 PM
A0808013.D	LLICV	CCV1	1	08/08/16 1:01 PM
A0808014.D	ICSA1	ICSA	1	08/08/16 1:06 PM
A0808015.D	ICSAB1	ICSAB	1	08/08/16 1:12 PM
A0808016.D	N020568-013B	SAMP	25	08/08/16 1:17 PM
A0808017.D	N020569-007B	SAMP	5	08/08/16 1:23 PM
A0808018.D	MB-59299	MBLK	1	08/08/16 1:28 PM
A0808019.D	LCS-59299	LCS	1	08/08/16 1:34 PM
A0808020.D	N020505-008B	SAMP	5	08/08/16 1:39 PM
A0808021.D	N020505-009B	SAMP	5	08/08/16 1:45 PM
A0808022.D	N020519-009B	SAMP	5	08/08/16 1:50 PM
A0808023.D	N020545-001B	SAMP	5	08/08/16 1:56 PM
A0808024.D	N020532-001B	SAMP	1	08/08/16 2:01 PM
A0808025.D	N020532-001B	SAMP	5	08/08/16 2:07 PM
A0808026.D	CCV1	CCV	1	08/08/16 2:12 PM
A0808027.D	CCB1	CCB	1	08/08/16 2:18 PM
A0808028.D	N020532-002B	SAMP	1	08/08/16 2:23 PM
A0808029.D	N020532-002B	SAMP	5	08/08/16 2:29 PM
A0808030.D	N020533-001B	SAMP	1	08/08/16 2:34 PM
A0808031.D	N020533-001B	SAMP	5	08/08/16 2:40 PM
A0808032.D	N020533-002B	SAMP	1	08/08/16 2:45 PM
A0808033.D	N020533-002B	SAMP	5	08/08/16 2:51 PM
A0808034.D	N020534-001C	SAMP	1	08/08/16 2:56 PM
A0808035.D	N020534-001C	SAMP	5	08/08/16 3:02 PM
A0808036.D	N020534-002E	SAMP	1	08/08/16 3:08 PM
A0808037.D	N020534-002E	SAMP	5	08/08/16 3:13 PM
A0808038.D	CCV2	CCV	1	08/08/16 3:19 PM
A0808039.D	CCB2	CCB	1	08/08/16 3:24 PM
A0808040.D	N020534-002E	SAMP	25	08/08/16 3:30 PM
A0808041.D	N020534-002E-PS	PS	1	08/08/16 3:35 PM
A0808042.D	N020534-002E-PS	PS	5	08/08/16 3:41 PM

INJECTION LOG: 160808A

Instrument ID: ICPMS-02

Data File	Sample Name	Type	DF	Acq. Date-Time
A0808043.D	N020534-002E-MS	MS	1	08/08/16 3:46 PM
A0808044.D	N020534-002E-MS	MS	5	08/08/16 3:52 PM
A0808045.D	N020534-002E-MSD	MSD	1	08/08/16 3:57 PM
A0808046.D	N020534-002E-MSD	MSD	5	08/08/16 4:03 PM
A0808047.D	MB-59319	MBLK	1	08/08/16 4:08 PM
A0808048.D	LCS-59319	LCS	1	08/08/16 4:14 PM
A0808049.D	N020569-012B	SAMP	1	08/08/16 4:19 PM
A0808050.D	CCV3	CCV	1	08/08/16 4:25 PM
A0808051.D	CCB3	CCB	1	08/08/16 4:30 PM
A0808052.D	LLCCV1	CCV2	1	08/08/16 4:36 PM
A0808053.D	ICSA2	ICSA	1	08/08/16 4:41 PM
A0808054.D	ICSAB2	ICSAB	1	08/08/16 4:47 PM
A0808055.D	N020569-012B	SAMP	5	08/08/16 4:52 PM
A0808056.D	N020569-012B-PS	PS	1	08/08/16 4:58 PM
A0808057.D	N020569-012B-MS	MS	1	08/08/16 5:03 PM
A0808058.D	N020569-012B-MSD	MSD	1	08/08/16 5:09 PM
A0808059.D	N020580-001B	SAMP	1	08/08/16 5:15 PM
A0808060.D	N020580-002B	SAMP	1	08/08/16 5:20 PM
A0808061.D	N020581-001B	SAMP	1	08/08/16 5:26 PM
A0808062.D	N020581-002B	SAMP	1	08/08/16 5:31 PM
A0808063.D	N020581-003B	SAMP	1	08/08/16 5:37 PM
A0808064.D	N020581-004B	SAMP	1	08/08/16 5:42 PM
A0808065.D	CCV4	CCV	1	08/08/16 5:48 PM
A0808066.D	CCB4	CCB	1	08/08/16 5:53 PM
A0808067.D	N020581-005B	SAMP	1	08/08/16 5:59 PM
A0808068.D	N020581-006B	SAMP	1	08/08/16 6:04 PM
A0808069.D	N020581-007B	SAMP	1	08/08/16 6:10 PM
A0808070.D	N020581-008B	SAMP	1	08/08/16 6:16 PM
A0808071.D	N020581-008B-MS	MS	1	08/08/16 6:21 PM
A0808072.D	N020581-009B	SAMP	1	08/08/16 6:27 PM
A0808073.D	N020581-010B	SAMP	1	08/08/16 6:32 PM
A0808074.D	N020581-011B	SAMP	1	08/08/16 6:38 PM
A0808075.D	N020581-012B	SAMP	1	08/08/16 6:43 PM
A0808076.D	N020581-013B	SAMP	1	08/08/16 6:49 PM
A0808077.D	CCV5	CCV	1	08/08/16 6:55 PM
A0808078.D	CCB5	CCB	1	08/08/16 7:00 PM
A0808079.D	N020581-014B	SAMP	1	08/08/16 7:06 PM
A0808080.D	N020581-015B	SAMP	1	08/08/16 7:11 PM
A0808081.D	N020581-016B	SAMP	1	08/08/16 7:17 PM
A0808082.D	N020581-017B	SAMP	1	08/08/16 7:22 PM
A0808083.D	CCV6	CCV	1	08/08/16 7:28 PM
A0808084.D	CCB6	CCB	1	08/08/16 7:33 PM

INJECTION LOG: 160808A

Instrument ID: ICPMS-02

Data File	Sample Name	Type	DF	Acq. Date-Time
A0808085.D	LLCCV2	CCV2	1	08/08/16 7:39 PM
A0808086.D	ICSA3	ICSA	1	08/08/16 7:44 PM
A0808087.D	ICSAB3	ICSAB	1	08/08/16 7:50 PM
A0808088.D	RINSE	RINSE	1	08/08/16 7:55 PM
A0808089.D	RINSE	RINSE	1	08/08/16 8:01 PM

SAMPLE PREPARATION LOG

ASSET Laboratories

PREP BATCH REPORT

Prep Start Date: **8/6/2016 7:08:23 A**
Prep End Date: **8/6/2016 11:45:00 A**
Prep Batch **59299** Prep Code: **200.8_PR**

Reviewed/ Date: _____
Initials/ Date: 8/12/2016
Technician: **Claire Ignacio**

Prep Factor Units:	Temp. (°C):	Location:
mL / mL	**94.5**	**02-11**

Sample ID	Matrix	pH	SampAmt	3 Replicates	Sol Added	Sol Recov	Fin Vol	factor	Clean Up Code	TURB Check
LCS-59299	Aqueous		25	☐	0	0	25	1.000		
MB-59299	Aqueous		25	☐	0	0	25	1.000		
N020505-008B	Groundwater	<2	25	☐	0	0	25	1.000		
N020505-009B	Groundwater	<2	25	☐	0	0	25	1.000		
N020519-009B	Groundwater	<2	25	☐	0	0	25	1.000		
N020532-001B	Groundwater	<2	25	☐	0	0	25	1.000		
N020532-002B	Groundwater	<2	25	☐	0	0	25	1.000		
N020533-001B	Water	<2	25	☐	0	0	25	1.000		
N020533-002B	Water	<2	25	☐	0	0	25	1.000		
N020534-001C	Water	<2	25	☐	0	0	25	1.000		
N020534-002E	Water	<2	25	☐	0	0	25	1.000		
N020534-002E-MS	Water	<2	25	☐	0	0	25	1.000		
N020534-002E-MS	Water	<2	25	☐	0	0	25	1.000		
N020545-001B	Groundwater	<2	25	☐	0	0	25	1.000		

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

Number	Reagent Name
8441	HYDROCHLORIC ACID
8442	NITRIC ACID

Spk ID	Spike Name	SampType	AmtAdd
2MWST-160606	ICV/MS/MSD/LCS/LCSD Solution A		0.25
2MWST-160606	ICV/MS/MSD/LCS/LCSD Solution C		0.25
2MWST-160606	ICV/MS/MSD/LCS/LCSD Solution D		0.25
2MWST-160801	ICV/MS/MSD/LCS/LCSD Solution B		0.25

INSTRUMENT TUNING CHECK

QC Tune Report

Data File: C:\ICPMH\1\7500\QCTUNE.D
Date Acquired: 8 Aug 2016 08:30:17 am
Operator:
Misc Info:
Vial Number: 0
Current Method: C:\ICPMH\1\METHODS\TuneCHK.m

Minimum Response(CPS)

Element	Actual	Required	Flag
9 Be	79916.50	0.00	
24 Mg	324263.00	0.00	
25 Mg	43385.60	0.00	
26 Mg	51015.50	0.00	
59 Co	507195.00	0.00	
115 In	1009710.00	0.00	
206 Pb	253556.00	0.00	
207 Pb	219386.00	0.00	
208 Pb	541627.00	0.00	

RSD (%)

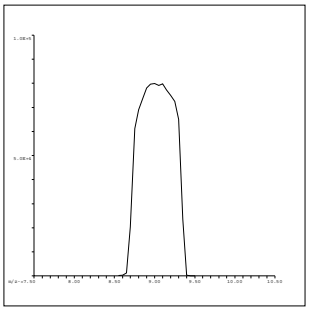
Element	Actual	Required	Flag
9 Be	0.83	5.00	
24 Mg	0.38	5.00	
25 Mg	1.12	5.00	
26 Mg	0.90	5.00	
59 Co	0.38	5.00	
115 In	0.49	5.00	
206 Pb	0.94	5.00	
207 Pb	0.80	5.00	
208 Pb	0.75	5.00	

Ion Ratio

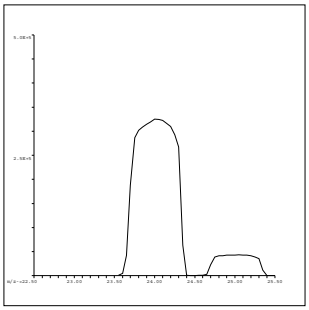
Element	Actual	Required	Flag
9 Be			
24 Mg			
25 Mg			
26 Mg			
59 Co			
115 In			
206 Pb			
207 Pb			
208 Pb			

Maximum Bkg. Count(CPS)

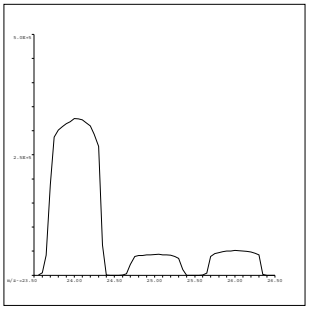
Element	Actual	Required	Flag



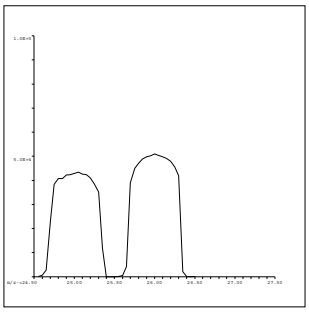
9 Be
Mass Calib.
Actual: 9.00
Required: 8.90-9.10
Flag:
Peak Width
Actual: 0.65
Required: 0.75
Flag:



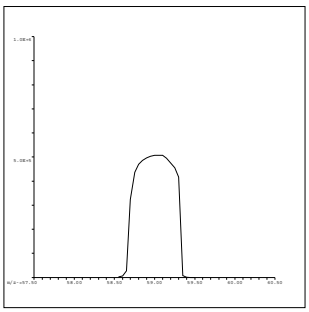
24 Mg
Mass Calib.
Actual: 24.05
Required: 23.90-24.10
Flag:
Peak Width
Actual: 0.70
Required: 0.75
Flag:



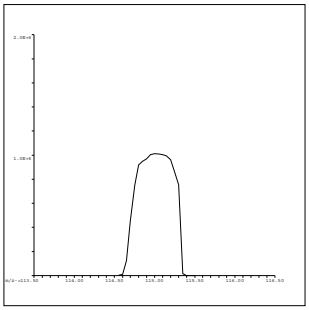
25 Mg
Mass Calib.
Actual: 25.05
Required: 24.90-25.10
Flag:
Peak Width
Actual: 0.70
Required: 0.75
Flag:



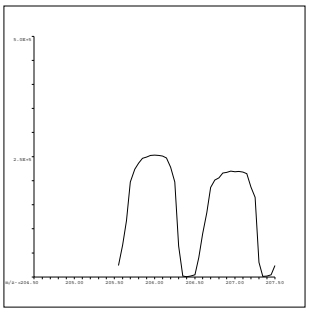
26 Mg
Mass Calib.
Actual: 26.00
Required: 25.90-26.10
Flag:
Peak Width
Actual: 0.65
Required: 0.75
Flag:



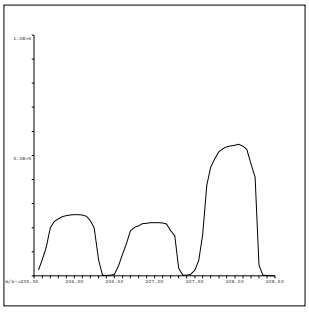
59 Co
Mass Calib.
Actual: 59.00
Required: 58.90-59.10
Flag:
Peak Width
Actual: 0.65
Required: 0.75
Flag:



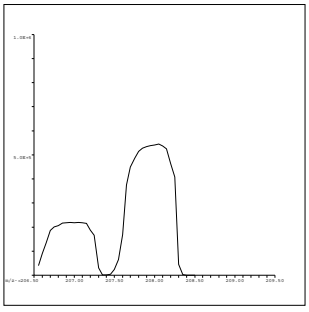
115 In
Mass Calib.
Actual: 115.05
Required: 114.90-115.10
Flag:
Peak Width
Actual: 0.65
Required: 0.75
Flag:



206 Pb
Mass Calib.
Actual: 206.00
Required: 205.90-206.10
Flag:
Peak Width
Actual: 0.70
Required: 0.75
Flag:



207 Pb
Mass Calib.
Actual: 207.00
Required: 206.90-207.10
Flag:
Peak Width
Actual: 0.70
Required: 0.75
Flag:



208 Pb
Mass Calib.
Actual: 208.00
Required: 207.90-208.10
Flag:
Peak Width
Actual: 0.70
Required: 0.75
Flag:

QC Tune Result:Pass

INITIAL CALIBRATION DATA SUMMARY

INITIAL CALIBRATION SUMMARY: 160808A

Instrument ID: ICPMS-02

Analyte	Data File	A0808002.D	A0808004.D	A0808005.D	A0808006.D	A0808007.D	A0808008.D	A0808009.D	A0808010.D	
	Acq. Date-Time	08/08/2016 12:00 PM	08/08/2016 12:11 PM	08/08/2016 12:17 PM	08/08/2016 12:22 PM	08/08/2016 12:28 PM	08/08/2016 12:33 PM	08/08/2016 12:39 PM	08/08/2016 12:44 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	116602.2	116471.2	113440.3	112081.7	109682.2	111388.1	105935.3	108781.2	
55 Mn [2]	CPS	713.3	2791.1	23342.5	45652.9	89794.5	182417.1	434079.8	877057.4	1.0000
52 Cr [2]	CPS	901	4776.3	40993.1	79714.3	154593.1	316428.5	751089.2	1511520.2	1.0000

Standard Code
ICAL: 2MSST-151207C
ICAL: 2MSST-151207D
ICAL: 2MWST-160606G
IS Mix: 2MWST-160606A

Calibration Acceptance Criteria: > 0.995 Correlation

INITIAL CALIBRATION AND CONTINUING CALIBRATION VERIFICATION SUMMARY

CLIENT: ARCADIS U.S., Inc. - California
Work Order: N020532
Project: PG&E Topock - PMP, RC000753.801A

ANALYTICAL QC SUMMARY REPORT

TestCode: 200.8_WDISS

Sample ID **ICV** SampType: **ICV** TestCode: **200.8_WDISS** Units: **µg/L** Prep Date: RunNo: **109917**
Client ID: **ICV** Batch ID: **R109917** TestNo: **EPA 200.8** Analysis Date: **8/8/2016** SeqNo: **2397953**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Manganese	103.760	0.50	100.0	0	104	90	110				

Sample ID **LLICV** SampType: **CCV1** TestCode: **200.8_WDISS** Units: **µg/L** Prep Date: RunNo: **109917**
Client ID: **ZZZZZZ** Batch ID: **R109917** TestNo: **EPA 200.8** Analysis Date: **8/8/2016** SeqNo: **2397955**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Manganese	0.507	0.50	0.5000	0	101	80	120				

Sample ID **CCV1** SampType: **CCV** TestCode: **200.8_WDISS** Units: **µg/L** Prep Date: RunNo: **109917**
Client ID: **CCV** Batch ID: **R109917** TestNo: **EPA 200.8** Analysis Date: **8/8/2016** SeqNo: **2397968**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Manganese	20.002	0.50	20.00	0	100	90	110				

Sample ID **CCV2** SampType: **CCV** TestCode: **200.8_WDISS** Units: **µg/L** Prep Date: RunNo: **109917**
Client ID: **CCV** Batch ID: **R109917** TestNo: **EPA 200.8** Analysis Date: **8/8/2016** SeqNo: **2397980**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Manganese	19.368	0.50	20.00	0	96.8	90	110				

Sample ID **CCV3** SampType: **CCV** TestCode: **200.8_WDISS** Units: **µg/L** Prep Date: RunNo: **109917**
Client ID: **CCV** Batch ID: **R109917** TestNo: **EPA 200.8** Analysis Date: **8/8/2016** SeqNo: **2397992**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Manganese	19.583	0.50	20.00	0	97.9	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: N020532
Project: PG&E Topock - PMP, RC000753.801A

ANALYTICAL QC SUMMARY REPORT

TestCode: 200.8_WDISS

Sample ID **LLCCV1**	SampType: **CCV2**	TestCode: **200.8_WDISS**	Units: **µg/L**	Prep Date:	RunNo: **109917**
Client ID: **ZZZZZZ**	Batch ID: **R109917**	TestNo: **EPA 200.8**		Analysis Date: **8/8/2016**	SeqNo: **2397994**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Manganese	0.452	0.50	0.5000	0	90.4	70	130				

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis 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: N020532
Project: PG&E Topock - PMP, RC000753.801A

ANALYTICAL QC SUMMARY REPORT

TestCode: 200.8DIS_CrPGE

Sample ID **ICV**	SampType: **ICV**	TestCode: **200.8DIS_Cr**	Units: **µg/L**	Prep Date:			RunNo: **109917**			
Client ID: **ICV**	Batch ID: **R109917**	TestNo: **EPA 200.8**		Analysis Date: **8/8/2016**			SeqNo: **2397876**			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium	10.453	1.0	10.00	0	105	90	110				

Sample ID **LLICV**	SampType: **CCV1**	TestCode: **200.8DIS_Cr**	Units: **µg/L**	Prep Date:			RunNo: **109917**			
Client ID: **ZZZZZZ**	Batch ID: **R109917**	TestNo: **EPA 200.8**		Analysis Date: **8/8/2016**			SeqNo: **2397878**			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium	1.023	1.0	1.000	0	102	80	120				

Sample ID **CCV1**	SampType: **CCV**	TestCode: **200.8DIS_Cr**	Units: **µg/L**	Prep Date:			RunNo: **109917**			
Client ID: **CCV**	Batch ID: **R109917**	TestNo: **EPA 200.8**		Analysis Date: **8/8/2016**			SeqNo: **2397891**			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium	19.990	1.0	20.00	0	99.9	90	110				

Sample ID **CCV2**	SampType: **CCV**	TestCode: **200.8DIS_Cr**	Units: **µg/L**	Prep Date:			RunNo: **109917**			
Client ID: **CCV**	Batch ID: **R109917**	TestNo: **EPA 200.8**		Analysis Date: **8/8/2016**			SeqNo: **2397903**			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium	20.229	1.0	20.00	0	101	90	110				

Sample ID **CCV3**	SampType: **CCV**	TestCode: **200.8DIS_Cr**	Units: **µg/L**	Prep Date:			RunNo: **109917**			
Client ID: **CCV**	Batch ID: **R109917**	TestNo: **EPA 200.8**		Analysis Date: **8/8/2016**			SeqNo: **2397915**			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium	20.319	1.0	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

CLIENT: ARCADIS U.S., Inc. - California
Work Order: N020532
Project: PG&E Topock - PMP, RC000753.801A

ANALYTICAL QC SUMMARY REPORT

TestCode: 200.8DIS_CrPGE

Sample ID **LLCCV1**	SampType: **CCV2**	TestCode: **200.8DIS_Cr**	Units: **µg/L**	Prep Date:	RunNo: **109917**
Client ID: **ZZZZZZ**	Batch ID: **R109917**	TestNo: **EPA 200.8**		Analysis Date: **8/8/2016**	SeqNo: **2397917**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium	1.081	1.0	1.000	0	108	70	130				

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis 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

CLIENT: ARCADIS U.S., Inc. - California
Work Order: N020532
Project: PG&E Topock - PMP, RC000753.801A

ANALYTICAL QC SUMMARY REPORT

TestCode: 200.8_WDISS

Sample ID **ICB**	SampType: **ICB**	TestCode: **200.8_WDISS**	Units: **µg/L**	Prep Date:	RunNo: **109917**
Client ID: **ICB**	Batch ID: **R109917**	TestNo: **EPA 200.8**		Analysis Date: **8/8/2016**	SeqNo: **2397954**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Manganese	ND	0.50									

Sample ID **CCB1**	SampType: **CCB**	TestCode: **200.8_WDISS**	Units: **µg/L**	Prep Date:	RunNo: **109917**
Client ID: **CCB**	Batch ID: **R109917**	TestNo: **EPA 200.8**		Analysis Date: **8/8/2016**	SeqNo: **2397969**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Manganese	ND	0.50									

Sample ID **CCB2**	SampType: **CCB**	TestCode: **200.8_WDISS**	Units: **µg/L**	Prep Date:	RunNo: **109917**
Client ID: **CCB**	Batch ID: **R109917**	TestNo: **EPA 200.8**		Analysis Date: **8/8/2016**	SeqNo: **2397981**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Manganese	ND	0.50									

Sample ID **CCB3**	SampType: **CCB**	TestCode: **200.8_WDISS**	Units: **µg/L**	Prep Date:	RunNo: **109917**
Client ID: **CCB**	Batch ID: **R109917**	TestNo: **EPA 200.8**		Analysis Date: **8/8/2016**	SeqNo: **2397993**

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: N020532
Project: PG&E Topock - PMP, RC000753.801A

ANALYTICAL QC SUMMARY REPORT

TestCode: 200.8DIS_CrPGE

Sample ID **ICB**	SampType: **ICB**	TestCode: **200.8DIS_Cr**	Units: **µg/L**	Prep Date:	RunNo: **109917**
Client ID: **ICB**	Batch ID: **R109917**	TestNo: **EPA 200.8**		Analysis Date: **8/8/2016**	SeqNo: **2397877**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium	ND	1.0									

Sample ID **CCB1**	SampType: **CCB**	TestCode: **200.8DIS_Cr**	Units: **µg/L**	Prep Date:	RunNo: **109917**
Client ID: **CCB**	Batch ID: **R109917**	TestNo: **EPA 200.8**		Analysis Date: **8/8/2016**	SeqNo: **2397892**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium	ND	1.0									

Sample ID **CCB2**	SampType: **CCB**	TestCode: **200.8DIS_Cr**	Units: **µg/L**	Prep Date:	RunNo: **109917**
Client ID: **CCB**	Batch ID: **R109917**	TestNo: **EPA 200.8**		Analysis Date: **8/8/2016**	SeqNo: **2397904**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium	ND	1.0									

Sample ID **CCB3**	SampType: **CCB**	TestCode: **200.8DIS_Cr**	Units: **µg/L**	Prep Date:	RunNo: **109917**
Client ID: **CCB**	Batch ID: **R109917**	TestNo: **EPA 200.8**		Analysis Date: **8/8/2016**	SeqNo: **2397916**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium	0.025	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)

CLIENT: ARCADIS U.S., Inc. - California
Work Order: N020532
Project: PG&E Topock - PMP, RC000753.801A

ANALYTICAL QC SUMMARY REPORT

TestCode: 200.8_WDISS

Sample ID	ICSA1	SampType:	ICSA	TestCode:	200.8_WDISS	Units:	µg/L	Prep Date:		RunNo:	109917
Client ID:	ICSA	Batch ID:	R109917	TestNo:	EPA 200.8			Analysis Date:	8/8/2016	SeqNo:	2397956

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Manganese	ND	0.50									

Sample ID	ICSAB1	SampType:	ICSAB	TestCode:	200.8_WDISS	Units:	µg/L	Prep Date:		RunNo:	109917
Client ID:	ICSAB	Batch ID:	R109917	TestNo:	EPA 200.8			Analysis Date:	8/8/2016	SeqNo:	2397957

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Manganese	17.045	0.50	20.00	0	85.2	80	120				

Sample ID	ICSA2	SampType:	ICSA	TestCode:	200.8_WDISS	Units:	µg/L	Prep Date:		RunNo:	109917
Client ID:	ICSA	Batch ID:	R109917	TestNo:	EPA 200.8			Analysis Date:	8/8/2016	SeqNo:	2397995

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Manganese	ND	0.50									

Sample ID	ICSAB2	SampType:	ICSAB	TestCode:	200.8_WDISS	Units:	µg/L	Prep Date:		RunNo:	109917
Client ID:	ICSAB	Batch ID:	R109917	TestNo:	EPA 200.8			Analysis Date:	8/8/2016	SeqNo:	2397996

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Manganese	16.625	0.50	20.00	0	83.1	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: N020532
Project: PG&E Topock - PMP, RC000753.801A

ANALYTICAL QC SUMMARY REPORT

TestCode: 200.8DIS_CrPGE

Sample ID **ICSA1**	SampType: **ICSA**	TestCode: **200.8DIS_Cr**	Units: **µg/L**	Prep Date:	RunNo: **109917**
Client ID: **ICSA**	Batch ID: **R109917**	TestNo: **EPA 200.8**		Analysis Date: **8/8/2016**	SeqNo: **2397879**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium	0.154	1.0									

Sample ID **ICSAB1**	SampType: **ICSAB**	TestCode: **200.8DIS_Cr**	Units: **µg/L**	Prep Date:	RunNo: **109917**
Client ID: **ICSAB**	Batch ID: **R109917**	TestNo: **EPA 200.8**		Analysis Date: **8/8/2016**	SeqNo: **2397880**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium	20.480	1.0	20.00	0	102	80	120				

Sample ID **ICSA2**	SampType: **ICSA**	TestCode: **200.8DIS_Cr**	Units: **µg/L**	Prep Date:	RunNo: **109917**
Client ID: **ICSA**	Batch ID: **R109917**	TestNo: **EPA 200.8**		Analysis Date: **8/8/2016**	SeqNo: **2397918**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium	0.190	1.0									

Sample ID **ICSAB2**	SampType: **ICSAB**	TestCode: **200.8DIS_Cr**	Units: **µg/L**	Prep Date:	RunNo: **109917**
Client ID: **ICSAB**	Batch ID: **R109917**	TestNo: **EPA 200.8**		Analysis Date: **8/8/2016**	SeqNo: **2397919**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium	20.735	1.0	20.00	0	104	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

INTERNAL STANDARD SUMMARY

INTERNAL STANDARD: 160808A

Instrument ID: ICPMS-02

Sample Name	Type	DF	45 Sc (ISTD) [2]				
			CPS	REF	%REC	Comment	Criteria
Cal Blank	IBLK	1	116602.2	116602.2	100	PASS	70-125
Std1-0.1/1 ppb	ICAL	1	120630	116602.2	103.45	PASS	70-125
Std2-0.5/5 ppb	ICAL	1	116471.2	116602.2	99.89	PASS	70-125
Std3-5/50 ppb	ICAL	1	113440.3	116602.2	97.29	PASS	70-125
Std4-10/100 ppb	ICAL	1	112081.7	116602.2	96.12	PASS	70-125
Std5-20/200 ppb	ICAL	1	109682.2	116602.2	94.065	PASS	70-125
Std6-40/400 ppb	ICAL	1	111388.1	116602.2	95.53	PASS	70-125
Std7-100/1000 ppb	ICAL	1	105935.3	116602.2	90.85	PASS	70-125
Std8-200/2000 ppb	ICAL	1	108781.2	116602.2	93.29	PASS	70-125
ICV	ICV	1	115883.2	116602.2	99.38	PASS	70-125
ICB	ICB	1	114280.4	116602.2	98.009	PASS	70-125
LLICV	CCV1	1	111428.1	116602.2	95.56	PASS	70-125
ICSA1	ICSA	1	110819.2	116602.2	95.04	PASS	70-125
ICSAB1	ICSAB	1	117573.4	116602.2	100.83	PASS	70-125
MB-59299	MBLK	1	105815.5	116602.2	90.75	PASS	70-125
LCS-59299	LCS	1	98871.6	116602.2	84.79	PASS	70-125
N020505-008B	SAMP	5	98152.8	116602.2	84.18	PASS	70-125
N020505-009B	SAMP	5	98699	116602.2	84.65	PASS	70-125
N020519-009B	SAMP	5	97128.8	116602.2	83.3	PASS	70-125
N020545-001B	SAMP	5	95776.8	116602.2	82.14	PASS	70-125
N020532-001B	SAMP	1	99166.8	116602.2	85.047	PASS	70-125
N020532-001B	SAMP	5	107733.3	116602.2	92.39	PASS	70-125
CCV1	CCV	1	119049.1	116602.2	102.1	PASS	70-125
CCB1	CCB	1	110460.1	116602.2	94.73	PASS	70-125
N020532-002B	SAMP	1	101783.4	116602.2	87.29	PASS	70-125
N020532-002B	SAMP	5	111751.6	116602.2	95.84	PASS	70-125
N020533-001B	SAMP	1	109102	116602.2	93.57	PASS	70-125
N020533-001B	SAMP	5	114364.5	116602.2	98.081	PASS	70-125
N020533-002B	SAMP	1	103901.7	116602.2	89.11	PASS	70-125
N020533-002B	SAMP	5	115624.5	116602.2	99.16	PASS	70-125
N020534-001C	SAMP	1	105033.2	116602.2	90.078	PASS	70-125
N020534-001C	SAMP	5	117664.1	116602.2	100.91	PASS	70-125
N020534-002E	SAMP	1	111508.7	116602.2	95.63	PASS	70-125
N020534-002E	SAMP	5	121783.5	116602.2	104.44	PASS	70-125
CCV2	CCV	1	140448.7	116602.2	120.45	PASS	70-125
CCB2	CCB	1	128848	116602.2	110.5	PASS	70-125
N020534-002E	SAMP	25	117699.9	116602.2	100.94	PASS	70-125
N020534-002E-PS	PS	1	103870	116602.2	89.081	PASS	70-125
N020534-002E-PS	PS	5	118189.1	116602.2	101.36	PASS	70-125
N020534-002E-MS	MS	1	108149.2	116602.2	92.75	PASS	70-125
N020534-002E-MS	MS	5	121758.8	116602.2	104.42	PASS	70-125

INTERNAL STANDARD: 160808A

Instrument ID: ICPMS-02

Sample Name	Type	DF	45 Sc (ISTD) [2]				
			CPS	REF	%REC	Comment	Criteria
N020534-002E-MSD	MSD	1	108211.8	116602.2	92.8	PASS	70-125
N020534-002E-MSD	MSD	5	123784.3	116602.2	106.16	PASS	70-125
CCV3	CCV	1	132386.1	116602.2	113.54	PASS	70-125
CCB3	CCB	1	127119	116602.2	109.02	PASS	70-125
LLCCV1	CCV2	1	115624.7	116602.2	99.16	PASS	70-125
ICSA2	ICSA	1	122601.5	116602.2	105.15	PASS	70-125
ICSAB2	ICSAB	1	123135.7	116602.2	105.6	PASS	70-125

SERIAL DILUTION/
POST DIGESTION SPIKE

ASSET Laboratories

ICP-MS-Metals in Water

Dilution Test Summary

Work Order No.: N020532
Test Method: EPA 200.8
Analysis Date: 8/8/2016

Matrix: Groundwater
Batch No.: 59299

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

Comments:

Analyzed By: Mary Claire Ignacio

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

Sample ID	Analyte	Units	Calc Val	OQual	SAMPRefVal	%DIFF	%DIFFlimit
N020534-002E DT 5X	Chromium	ug/L	0.52069	NA	0.450014	15.71%	10
N020534-002E DT 5X	Manganese	ug/L	10.59543	NA	10.07945	5.12%	10

Note: NA - Not applicable

CLIENT: ARCADIS U.S., Inc. - California
Work Order: N020532
Project: PG&E Topock - PMP, RC000753.801A

ANALYTICAL QC SUMMARY REPORT

TestCode: 200.8_WDISS

Sample ID	**N020534-002E-PS**	SampType: **PS**	TestCode: **200.8_WDISS**	Units: **µg/L**	Prep Date:	RunNo: **109917**
Client ID:	**ZZZZZZ**	Batch ID: **59299**	TestNo: **EPA 200.8**		Analysis Date: **8/8/2016**	SeqNo: **2397983**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Manganese	97.883	0.50	100.0	10.08	87.8	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		

CLIENT: ARCADIS U.S., Inc. - California
Work Order: N020532
Project: PG&E Topock - PMP, RC000753.801A

ANALYTICAL QC SUMMARY REPORT

TestCode: 200.8DIS_CrPGE

Sample ID	**N020534-002E-PS**	SampType:	**PS**	TestCode:	**200.8DIS_Cr**	Units:	**µg/L**	Prep Date:		RunNo:	**109917**
Client ID:	**ZZZZZZ**	Batch ID:	**59299**	TestNo:	**EPA 200.8**			Analysis Date:	**8/8/2016**	SeqNo:	**2397906**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium	9.918	1.0	10.00	0.4500	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
DO	Surrogate Diluted Out		Calculations are based on raw values		

MDL STUDY

METHOD DETECTION LIMIT 2016

Method Detection Limit
Analytical Method: EPA 6020 / 200.8
Digestion Method: EPA 3010A
Date of Analysis: 4/5/2016,4/6/2016
Digestion Date: 4/1/2016
Instrument Name: ICPMS2
Analysts: MEI

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

ACCEPTANCE CRITERIA: MDL<SPIKE<10XMDL

Analyte	AMT SPIKED, ppb	1	2	3	4	5	6	7	SD	MDL	MDL*10	LOD	ACTUAL LOD	PQL	ACTUAL PQL	% REC
ANTIMONY	0.100	0.091	0.078	0.067	0.089	0.069	0.088	0.087	0.0100	0.0313	0.3133	0.3000	0.187	0.50	0.515	103
ARSENIC	0.050	0.054	0.045	0.064	0.053	0.047	0.051	0.039	0.0079	0.0248	0.2485	0.3000	0.049	0.10	0.103	103
BARIUM	0.100	0.199	0.158	0.159	0.206	0.167	0.196	0.207	0.0222	0.0699	0.6986	0.3000	0.403	1.00	1.245	125
BERYLLIUM	0.100	0.090	0.089	0.072	0.104	0.077	0.103	0.107	0.0137	0.0430	0.4304	0.3000	0.185	0.50	0.524	105
CADMIUM	0.100	0.105	0.093	0.089	0.122	0.093	0.121	0.122	0.0151	0.0473	0.4734	0.3000	0.174	0.50	0.501	100
CHROMIUM	0.100	0.088	0.096	0.092	0.093	0.085	0.100	0.102	0.0061	0.0192	0.1925	0.3000	0.321	1.00	0.973	97
COBALT	0.100	0.102	0.088	0.084	0.096	0.085	0.104	0.100	0.0084	0.0263	0.2630	0.3000	0.163	0.50	0.475	95
COPPER	0.500	0.789	0.565	0.564	0.559	0.574	0.563	0.596	0.0836	0.2626	2.6262	0.3000	0.328	1.00	1.062	106
IRON	1.000	0.685	0.581	0.566	1.123	0.578	0.843	1.075	0.2394	0.7517	7.5170	0.3000	0.605	10.00	11.338	113
LEAD	0.100	0.108	0.098	0.088	0.116	0.089	0.113	0.112	0.0117	0.0367	0.3670	0.3000	0.343	1.00	1.018	102
MANGANESE	0.100	0.162	0.122	0.123	0.160	0.133	0.156	0.154	0.0177	0.0554	0.5543	0.3000	0.193	0.50	0.605	121
MOLYBDENUM	0.100	0.100	0.095	0.079	0.109	0.080	0.098	0.109	0.0123	0.0385	0.3853	0.3000	0.247	0.50	0.660	132
NICKEL	0.100	0.126	0.095	0.090	0.119	0.105	0.110	0.106	0.0126	0.0395	0.3954	0.3000	0.341	1.00	1.002	100
SELENIUM	0.100	0.113	0.104	0.091	0.104	0.092	0.110	0.110	0.0088	0.0276	0.2760	0.3000	0.170	0.50	0.502	100
SILVER	0.100	0.028	0.065	0.071	0.079	0.076	0.079	0.082	0.0188	0.0590	0.5899	0.3000	0.247	1.00	1.029	103
THALLIUM	0.100	0.084	0.076	0.067	0.091	0.070	0.088	0.087	0.0094	0.0296	0.2961	0.3000	0.186	0.50	0.549	110
URANIUM	0.100	0.099	0.090	0.082	0.104	0.083	0.105	0.106	0.0104	0.0327	0.3272	0.3000	0.181	0.50	0.533	107
VANADIUM	0.100	0.126	0.111	0.110	0.126	0.116	0.123	0.122	0.0068	0.0213	0.2133	0.3000	0.221	1.00	0.873	87
ZINC	0.500	0.930	0.695	0.905	0.781	0.765	0.744	0.810	0.0853	0.2678	2.6780	0.3000	3.286	10.00	10.085	101

Method Detection Limit 2016

Analytical Method: EPA 6020 / 200.8
Digestion Method: EPA 3010A
Date of Analysis: 4/5/2016,4/6/2016
Digestion Date: 4/1/2016
Instrument Name: ICPMS2
Analysts: MEI
Units: ug/L

Analyte	MDL	LOD	ACTUAL LOD	PQL	ACTUAL PQL	% REC
ANTIMONY	0.0314	0.100	0.187	0.50	0.515	103
ARSENIC	0.0249	0.050	0.049	0.10	0.103	103
BARIUM	0.0699	0.250	0.403	1.00	1.245	125
BERYLLIUM	0.0431	0.100	0.185	0.50	0.524	105
CADMIUM	0.0474	0.100	0.174	0.50	0.501	100
CHROMIUM	0.0193	0.075	0.321	1.00	0.973	97
COBALT	0.0263	0.100	0.163	0.50	0.475	95
COPPER	0.2629	0.500	0.328	1.00	1.062	106
IRON	0.7524	2.500	0.605	10.00	11.338	113
LEAD	0.0367	0.100	0.343	1.00	1.018	102
MANGANESE	0.0555	0.050	0.193	0.50	0.605	121
MOLYBDENUM	0.0386	0.050	0.247	0.50	0.660	132
NICKEL	0.0396	0.050	0.341	1.00	1.002	100
SELENIUM	0.0276	0.050	0.170	0.50	0.502	100
SILVER	0.0590	0.050	0.247	1.00	1.029	103
THALLIUM	0.0296	0.050	0.186	0.50	0.549	110
URANIUM	0.0328	0.050	0.181	0.50	0.533	107
VANADIUM	0.0213	0.050	0.221	1.00	0.873	87
ZINC	0.2681	0.500	3.286	10.00	10.085	101

EPA 218.6

IC Technical Batch Review Checklist (ARCUS02)

ASSET LABORATORIES - LAS VEGAS

IC ARCUS
REV 2.0
011416

QC Batch Number: R109919
ASSET #: N020532

Instrument ID: IC-07
Analyst: QBM
Date Analyzed: 8/8/2016

Method:

- [ ] EPA 300.0
- [ ] EPA 7199
- [X] 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					
Continuing Calibration						
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					
Sample Information						
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			
QC Items						
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			
Raw Data and Miscellaneous Information						
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					
Preliminary Report						
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 _____ Date: 8/16/2016

2nd Level Reviewer _____ 8/18/2016 Date: _____

SAMPLE CALCULATION

Sample Calculation

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

FORMULA:

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

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

where:

A = µg/L, IC Cr+6 calculated concentration
DF = dilution factor

For Sample **N020532-001A** , the concentration in µg/L is calculated as follows:

$$Cr^{+6}, \mu g/L = \overset{0.8047}{\cancel{0.0847}} * 1$$

$$Cr^{+6}, \mu g/L = \overset{0.8047}{\cancel{0.08}}$$

Reporting results in 2 significant figures,

~~Since PQL is 0.2 µg/L~~,

$$\mathbf{Cr^{+6}, \mu g/L = \overset{0.80}{\cancel{ND}}}$$

8/16/2016

ANALYSIS RUN LOG

INJECTION LOG: 160803H

Instrument ID: IC-07

Sample No	Sample Name	Type	DF	Peak Name	Injection Date/Time	Comments
1	BLANK	BLANK	1	Hexavalent Chromium	08/03/16 5:29 PM	Not Reported
2	BLANK	BLANK	1	Hexavalent Chromium	08/03/16 5:40 PM	Not Reported
3	BLANK	BLANK	1	Hexavalent Chromium	08/03/16 5:49 PM	Not Reported
4	iBLANK	iBLANK	1	Hexavalent Chromium	08/03/16 5:58 PM	Reported
5	STD-0.2 ppb	ICAL	1	Hexavalent Chromium	08/03/16 6:08 PM	Reported
6	STD-1.0 ppb	ICAL	1	Hexavalent Chromium	08/03/16 6:17 PM	Reported
7	STD-5.0 ppb	ICAL	1	Hexavalent Chromium	08/03/16 6:27 PM	Reported
8	STD-10.0 ppb	ICAL	1	Hexavalent Chromium	08/03/16 6:36 PM	Reported
9	STD-15.0 ppb	ICAL	1	Hexavalent Chromium	08/03/16 6:46 PM	Reported
10	STD-20.0 ppb	ICAL	1	Hexavalent Chromium	08/03/16 6:55 PM	Reported
11	ICV	ICV	1	Hexavalent Chromium	08/03/16 7:05 PM	Reported
12	PQL@0.2ppb	CCV2	1	Hexavalent Chromium	08/03/16 7:14 PM	Not Reported
13	ICB	ICB	1	Hexavalent Chromium	08/03/16 7:24 PM	Not Reported
14	PQL@0.2ppb	CCV2	1	Hexavalent Chromium	08/03/16 7:35 PM	Reported
15	ICB	ICB	1	Hexavalent Chromium	08/03/16 7:46 PM	Reported
16	MB-R109812	MBLK	1	Hexavalent Chromium	08/03/16 7:56 PM	Reported
17	LCS-R109812	LCS	1	Hexavalent Chromium	08/03/16 8:05 PM	Reported
18	N020521-001A	SAMP	1	Hexavalent Chromium	08/03/16 8:15 PM	Reported
19	N020521-001ADUP	DUP	1	Hexavalent Chromium	08/03/16 8:24 PM	Reported
20	N020521-001AMS	MS	1	Hexavalent Chromium	08/03/16 8:34 PM	Reported
21	N020521-002A	SAMP	1	Hexavalent Chromium	08/03/16 8:43 PM	Reported
22	N020521-002AMS	MS	1	Hexavalent Chromium	08/03/16 8:52 PM	Reported
23	N020521-002AMSD	MSD	1	Hexavalent Chromium	08/03/16 9:02 PM	Reported
24	N020522-001A	SAMP	1	Hexavalent Chromium	08/03/16 9:11 PM	Reported
25	N020522-002A	SAMP	1	Hexavalent Chromium	08/03/16 9:21 PM	Reported
26	CCV-1	CCV1	1	Hexavalent Chromium	08/03/16 9:30 PM	Reported
27	CCB-1	CCB	1	Hexavalent Chromium	08/03/16 9:40 PM	Reported
28	N020522-003A	SAMP	1	Hexavalent Chromium	08/03/16 9:49 PM	Reported
29	N020403-012A	SAMP	1	Hexavalent Chromium	08/03/16 9:59 PM	Not Reported
30	N020403-012AMS	MS	1	Hexavalent Chromium	08/03/16 10:08 PM	Not Reported
31	N020426-003A	SAMP	1	Hexavalent Chromium	08/03/16 10:18 PM	Not Reported
32	N020426-003MS	MS	1	Hexavalent Chromium	08/03/16 10:27 PM	Not Reported
33	N020504-001A	SAMP	20	Hexavalent Chromium	08/03/16 10:37 PM	Reported
34	N020504-002A	SAMP	20	Hexavalent Chromium	08/03/16 10:46 PM	Reported
35	N020504-003A	SAMP	1	Hexavalent Chromium	08/03/16 10:55 PM	Reported
36	N020504-004A	SAMP	10	Hexavalent Chromium	08/03/16 11:05 PM	Reported
37	N020504-005A	SAMP	1	Hexavalent Chromium	08/03/16 11:14 PM	Reported
38	CCV-2	CCV	1	Hexavalent Chromium	08/03/16 11:24 PM	Reported
39	CCB-2	CCB	1	Hexavalent Chromium	08/03/16 11:33 PM	Reported
40	N020504-006A	SAMP	1	Hexavalent Chromium	08/03/16 11:43 PM	Reported
41	N020504-007A	SAMP	1	Hexavalent Chromium	08/03/16 11:52 PM	Reported
42	N020504-008A	SAMP	1	Hexavalent Chromium	08/04/16 12:02 AM	Reported

8/16/2016

INJECTION LOG: 160803H

Instrument ID: IC-07

Sample No	Sample Name	Type	DF	Peak Name	Injection Date/Time	Comments
43	N020504-009A	SAMP	1	Hexavalent Chromium	08/04/16 12:11 AM	Reported
44	N020504-010A	SAMP	1	Hexavalent Chromium	08/04/16 12:21 AM	Reported
45	N020504-011A	SAMP	1	Hexavalent Chromium	08/04/16 12:30 AM	Reported
46	N020504-012A	SAMP	1	Hexavalent Chromium	08/04/16 12:40 AM	Reported
47	N020504-013A	SAMP	1	Hexavalent Chromium	08/04/16 12:49 AM	Reported
48	CCV-3	CCV1	1	Hexavalent Chromium	08/04/16 12:58 AM	Reported
49	CCB-3	CCB	1	Hexavalent Chromium	08/04/16 1:08 AM	Reported

8/16/2016

Injection Log Summary

Sequence Details

Name:	**IC-07_160803H**	*Created On:*	**24/Jul/12 17:17:21**
Directory:	**Instrument Data\IC-7\2016**	*Created By:*	**ics 5000**
Data Vault:	**ChromeleonLocal**	*Updated On:*	**04/Aug/16 09:11:35**
No. of Injections:	**52**	*Updated By:*	**ics 5000**

Injection Details

No.	Injection Name	Position	Volume µL	Type	Level	Inject Time	Status	Comment
1	BLANK	1	1000	Unknown		08/03/2016 17:29	Finished	
2	BLANK	2	1000	Unknown		08/03/2016 17:40	Finished	
3	BLANK	3	1000	Unknown		08/03/2016 17:49	Finished	
4	iBLANK	4	1000	Unknown		08/03/2016 17:58	Finished	INSTRUMENT BLANK
5	STD1-0.2 ppb	5	1000	Calibration Standard	01	08/03/2016 18:08	Finished	0.2 ppb, IWST160401A
6	STD2-1.0 ppb	6	1000	Calibration Standard	02	08/03/2016 18:17	Finished	1.0 ppb, IWST160401A
7	STD3-5.0 ppb	7	1000	Calibration Standard	03	08/03/2016 18:27	Finished	5.0 ppb, IWST160401A
8	STD4-10.0 ppb	8	1000	Calibration Standard	04	08/03/2016 18:36	Finished	10 ppb, IWST160401A
9	STD5-15.0 ppb	9	1000	Calibration Standard	05	08/03/2016 18:46	Finished	15 ppb, IWST160401A
10	STD6-20.0 ppb	10	1000	Calibration Standard	06	08/03/2016 18:55	Finished	20 ppb, IWST160401A
11	ICV,ICV,1,	11	1000	Unknown		08/03/2016 19:05	Finished	ICV @5ppb, IWST-160401B
12	PQL@0.2ppb,CCV2,1	12	1000	Unknown		08/03/2016 19:14	Finished	PQL @ 0.2ppb
13	ICB,ICB,1,	13	1000	Unknown		08/03/2016 19:24	Finished	ICB R160718D
14	PQL@0.2ppb,CCV2,1	1	1000	Unknown		08/03/2016 19:35	Finished	PQL @ 0.2ppb
15	ICB,ICB,1,	2	1000	Unknown		08/03/2016 19:46	Finished	ICB R160718D
16	MB-H2O,MBLK,1	3	1000	Unknown		08/03/2016 19:56	Finished	MB R160718D
17	LCS-H2O,LCS,1	4	1000	Unknown		08/03/2016 20:05	Finished	LCS, IWST-160401B
18	N020521-001A,SAMP	5	1000	Unknown		08/03/2016 20:15	Finished	SAMP, 10 mL
19	N020521-001ADUP,D	6	1000	Unknown		08/03/2016 20:24	Finished	DUP, 10 mL
20	N020521-001AMS,MS	7	1000	Unknown		08/03/2016 20:34	Finished	MS (5ppb), IWST-160401B, 10
21	N020521-002A,SAMP	8	1000	Unknown		08/03/2016 20:43	Finished	SAMP, 10 mL
22	N020521-002AMS,MS	9	1000	Unknown		08/03/2016 20:52	Finished	MS (5ppb), IWST-160401B, 10
23	N020521-002AMSD,M	10	1000	Unknown		08/03/2016 21:02	Finished	MSD (5ppb), IWST-160401B, 1
24	N020522-001A,SAMP	11	1000	Unknown		08/03/2016 21:11	Finished	SAMP, 10 mL
25	N020522-002A,SAMP	12	1000	Unknown		08/03/2016 21:21	Finished	SAMP, 10 mL
26	CCV-1,CCV1,1,	13	1000	Unknown		08/03/2016 21:30	Finished	CCV @10ppb, IWST-160401A
27	CCB-1,CCB,1,	14	1000	Unknown		08/03/2016 21:40	Finished	CCB, R160718D
28	N020522-003A,SAMP	15	1000	Unknown		08/03/2016 21:49	Finished	SAMP, 10 mL
29	N020403-012A,SAMP	16	1000	Unknown		08/03/2016 21:59	Finished	SAMP, 10 mL
30	N020403-012AMS,MS	17	1000	Unknown		08/03/2016 22:08	Finished	MS (1ppb), IWST-160401B, 10
31	N020426-003A,SAMP	18	1000	Unknown		08/03/2016 22:18	Finished	SAMP, 10 mL
32	N020426-003MS,MS,	19	1000	Unknown		08/03/2016 22:27	Finished	MS (1ppb), IWST-160401B, 10
33	N020504-001A,SAMP	20	1000	Unknown		08/03/2016 22:37	Finished	SAMP, 0.5>10 mL
34	N020504-002A,SAMP	21	1000	Unknown		08/03/2016 22:46	Finished	SAMP, 0.5>10 mL
35	N020504-003A,SAMP	22	1000	Unknown		08/03/2016 22:55	Finished	SAMP, 10 mL
36	N020504-004A,SAMP	23	1000	Unknown		08/03/2016 23:05	Finished	SAMP, 10>10 mL
37	N020504-005A,SAMP	24	1000	Unknown		08/03/2016 23:14	Finished	SAMP, 10 mL
38	CCV-2,CCV,1,	25	1000	Unknown		08/03/2016 23:24	Finished	CCV @5ppb, IWST-160401A
39	CCB-2,CCB,1,	26	1000	Unknown		08/03/2016 23:33	Finished	CCB R160718D
40	N020504-006A,SAMP	27	1000	Unknown		08/03/2016 23:43	Finished	SAMP, 10 mL
41	N020504-007A,SAMP	28	1000	Unknown		08/03/2016 23:52	Finished	SAMP, 10 mL
42	N020504-008A,SAMP	29	1000	Unknown		08/04/2016 00:02	Finished	SAMP, 10 mL
43	N020504-009A,SAMP	30	1000	Unknown		08/04/2016 00:11	Finished	SAMP, 10 mL
44	N020504-010A,SAMP	31	1000	Unknown		08/04/2016 00:21	Finished	SAMP, 10 mL
45	N020504-011A,SAMP	32	1000	Unknown		08/04/2016 00:30	Finished	SAMP, 10 mL
46	N020504-012A,SAMP	33	1000	Unknown		08/04/2016 00:40	Finished	SAMP, 10 mL
47	N020504-013A,SAMP	34	1000	Unknown		08/04/2016 00:49	Finished	SAMP, 10 mL
48	CCV-3,CCV1,1,	35	1000	Unknown		08/04/2016 00:58	Finished	CCV @10ppb, IWST-160401A
49	CCB-3,CCB,1,	36	1000	Unknown		08/04/2016 01:08	Finished	CCB, R160718D
50	SHUTDOWN	37	1000	Unknown		08/04/2016 01:17	Finished	
51	Eluent: R160802C	38	1000	Unknown		n.a.	Finished	Eluent
52	PCR: R160802D	39	1000	Unknown		n.a.	Finished	Post-Column Reagent

INJECTION LOG: 160808A

Instrument ID: IC-07

Sample No	Sample Name	Type	DF	Peak Name	Injection Date/Time	Comments
1	BLANK	BLANK	1	Hexavalent Chromium	08/03/16 5:29 PM	Not Reported
2	BLANK	BLANK	1	Hexavalent Chromium	08/03/16 5:40 PM	Not Reported
3	BLANK	BLANK	1	Hexavalent Chromium	08/03/16 5:49 PM	Not Reported
4	iBLANK	iBLANK	1	Hexavalent Chromium	08/03/16 5:58 PM	Reported
5	STD-0.2 ppb	ICAL	1	Hexavalent Chromium	08/03/16 6:08 PM	Reported
6	STD-1.0 ppb	ICAL	1	Hexavalent Chromium	08/03/16 6:17 PM	Reported
7	STD-5.0 ppb	ICAL	1	Hexavalent Chromium	08/03/16 6:27 PM	Reported
8	STD-10.0 ppb	ICAL	1	Hexavalent Chromium	08/03/16 6:36 PM	Reported
9	STD-15.0 ppb	ICAL	1	Hexavalent Chromium	08/03/16 6:46 PM	Reported
10	STD-20.0 ppb	ICAL	1	Hexavalent Chromium	08/03/16 6:55 PM	Reported
11	BLANK	BLANK	1	Hexavalent Chromium	08/08/16 11:14 AM	Not Reported
12	BLANK	BLANK	1	Hexavalent Chromium	08/08/16 11:25 AM	Not Reported
13	CCV-1	CCV	1	Hexavalent Chromium	08/08/16 11:34 AM	Reported
14	PQL@0.2ppb	CCV2	1	Hexavalent Chromium	08/08/16 11:44 AM	Reported
15	CCB-1	CCB	1	Hexavalent Chromium	08/08/16 11:53 AM	Reported
16	MB-109919	MBLK	1	Hexavalent Chromium	08/08/16 12:03 PM	Reported
17	LCS-109919	LCS	1	Hexavalent Chromium	08/08/16 12:12 PM	Reported
18	N020532-001A	SAMP	1	Hexavalent Chromium	08/08/16 12:22 PM	Reported
19	N020532-001AMS	MS	1	Hexavalent Chromium	08/08/16 12:31 PM	Reported
20	N020534-001B	SAMP	100	Hexavalent Chromium	08/08/16 12:41 PM	Reported
21	N020534-001BMS	MS	100	Hexavalent Chromium	08/08/16 12:50 PM	Reported
22	N020534-002C	SAMP	1	Hexavalent Chromium	08/08/16 1:00 PM	Reported
23	N020534-002CMS	MS	1	Hexavalent Chromium	08/08/16 1:09 PM	Reported
24	N020547-004A	SAMP	1	Hexavalent Chromium	08/08/16 1:19 PM	Reported
25	N020547-005A	SAMP	1	Hexavalent Chromium	08/08/16 1:28 PM	Reported
26	CCV-2	CCV1	1	Hexavalent Chromium	08/08/16 1:37 PM	Reported
27	CCB-2	CCB	1	Hexavalent Chromium	08/08/16 1:47 PM	Reported
28	N020534-001BMSD	MSD	100	Hexavalent Chromium	08/08/16 1:56 PM	Not Reported
29	N020532-001ADUP	DUP	1	Hexavalent Chromium	08/08/16 2:06 PM	Reported
30	N020547-006A	SAMP	1	Hexavalent Chromium	08/08/16 2:15 PM	Reported
31	N020547-007A	SAMP	1	Hexavalent Chromium	08/08/16 2:25 PM	Reported
32	N020547-008A	SAMP	1	Hexavalent Chromium	08/08/16 2:34 PM	Reported
33	N020547-009A	SAMP	1	Hexavalent Chromium	08/08/16 2:44 PM	Reported
34	N020547-010A	SAMP	1	Hexavalent Chromium	08/08/16 2:53 PM	Not Reported
35	N020547-011A	SAMP	1	Hexavalent Chromium	08/08/16 3:03 PM	Reported
36	N020547-012A	SAMP	1	Hexavalent Chromium	08/08/16 3:12 PM	Reported
37	N020548-001A	SAMP	1	Hexavalent Chromium	08/08/16 3:21 PM	Reported
38	CCV-3	CCV	1	Hexavalent Chromium	08/08/16 3:31 PM	Reported
39	CCB-3	CCB	1	Hexavalent Chromium	08/08/16 3:40 PM	Reported
40	N020548-002A	SAMP	1	Hexavalent Chromium	08/08/16 3:50 PM	Reported
41	N020548-003A	SAMP	1	Hexavalent Chromium	08/08/16 3:59 PM	Reported
42	N020548-004A	SAMP	1	Hexavalent Chromium	08/08/16 4:09 PM	Not Reported

INJECTION LOG: 160808A

Instrument ID: IC-07

Sample No	Sample Name	Type	DF	Peak Name	Injection Date/Time	Comments
43	N020548-005A	SAMP	1	Hexavalent Chromium	08/08/16 4:18 PM	Reported
44	N020548-006A	SAMP	1	Hexavalent Chromium	08/08/16 4:28 PM	Reported
45	N020548-007A	SAMP	1	Hexavalent Chromium	08/08/16 4:37 PM	Not Reported
46	N020548-008A	SAMP	1	Hexavalent Chromium	08/08/16 4:47 PM	Reported
47	CCV-4	CCV1	1	Hexavalent Chromium	08/08/16 4:56 PM	Reported
48	CCB-4	CCB	1	Hexavalent Chromium	08/08/16 5:06 PM	Reported
49	N020534-001BMSD	MSD	100	Hexavalent Chromium	08/08/16 6:07 PM	Not Reported
50	N020548-004A	SAMP	100	Hexavalent Chromium	08/08/16 6:18 PM	Not Reported
51	N020548-007A	SAMP	50	Hexavalent Chromium	08/08/16 6:28 PM	Reported
52	CCV-5	CCV	1	Hexavalent Chromium	08/08/16 6:37 PM	Reported
53	CCB-5	CCB	1	Hexavalent Chromium	08/08/16 6:47 PM	Reported
54	N020534-001BMSD	MSD	100	Hexavalent Chromium	08/08/16 6:56 PM	Reported
55	CCV-6	CCV1	1	Hexavalent Chromium	08/08/16 7:09 PM	Reported
56	CCB-6	CCB	1	Hexavalent Chromium	08/08/16 7:19 PM	Reported

8/16/2016

Injection Log Summary

Sequence Details

Name:	**IC-07_160808A**	*Created On:*	**24/Jul/12 17:17:21**
Directory:	**Instrument Data\IC-7\2016**	*Created By:*	**ics 5000**
Data Vault:	**ChromeleonLocal**	*Updated On:*	**09/Aug/16 08:43:54**
No. of Injections:	**59**	*Updated By:*	**ics 5000**

Injection Details

No.	Injection Name	Position	Volume µL	Type	Level	Inject Time	Status	Comment
1	BLANK	1	1000	Unknown		08/03/2016 17:29	Finished	
2	BLANK	2	1000	Unknown		08/03/2016 17:40	Finished	
3	BLANK	3	1000	Unknown		08/03/2016 17:49	Finished	
4	iBLANK	4	1000	Unknown		08/03/2016 17:58	Finished	INSTRUMENT BLANK
5	STD1-0.2 ppb	5	1000	Calibration Standard	01	08/03/2016 18:08	Finished	0.2 ppb, IWST160401A
6	STD2-1.0 ppb	6	1000	Calibration Standard	02	08/03/2016 18:17	Finished	1.0 ppb, IWST160401A
7	STD3-5.0 ppb	7	1000	Calibration Standard	03	08/03/2016 18:27	Finished	5.0 ppb, IWST160401A
8	STD4-10.0 ppb	8	1000	Calibration Standard	04	08/03/2016 18:36	Finished	10 ppb, IWST160401A
9	STD5-15.0 ppb	9	1000	Calibration Standard	05	08/03/2016 18:46	Finished	15 ppb, IWST160401A
10	STD6-20.0 ppb	10	1000	Calibration Standard	06	08/03/2016 18:55	Finished	20 ppb, IWST160401A
11	BLANK	1	1000	Unknown		08/08/2016 11:14	Finished	BLANK
12	BLANK	2	1000	Unknown		08/08/2016 11:25	Finished	BLANK
13	CCV-1,CCV,1,	3	1000	Unknown		08/08/2016 11:34	Finished	CCV @5ppb, IWST-160401A
14	PQL@0.2ppb,CCV2,1	4	1000	Unknown		08/08/2016 11:44	Finished	PQL @ 0.2ppb
15	CCB-1,CCB,1,	5	1000	Unknown		08/08/2016 11:53	Finished	CCB R160718D
16	MB-H2O,MBLK,1	6	1000	Unknown		08/08/2016 12:03	Finished	MB R160718D
17	LCS-H2O,LCS,1	7	1000	Unknown		08/08/2016 12:12	Finished	LCS, IWST-160401B
18	N020532-001A,SAMF	8	1000	Unknown		08/08/2016 12:22	Finished	SAMP, 10 mL
19	N020532-001AMS,MS	9	1000	Unknown		08/08/2016 12:31	Finished	MS (1ppb), IWST-160401B, 10
20	N020534-001B,SAMF	10	1000	Unknown		08/08/2016 12:41	Finished	SAMP, 0.1>10 mL
21	N020534-001BMS,MS	11	1000	Unknown		08/08/2016 12:50	Finished	MS (5ppb), IWST-160401B, 0.1
22	N020534-002C,SAMF	12	1000	Unknown		08/08/2016 13:00	Finished	SAMP, 10 mL
23	N020534-002CMS,MS	13	1000	Unknown		08/08/2016 13:09	Finished	MS (1ppb), IWST-160401B, 10
24	N020547-004A,SAMF	14	1000	Unknown		08/08/2016 13:19	Finished	SAMP, 10 mL
25	N020547-005A,SAMF	15	1000	Unknown		08/08/2016 13:28	Finished	SAMP, 10 mL
26	CCV-2,CCV1,1,	16	1000	Unknown		08/08/2016 13:37	Finished	CCV @10ppb, IWST-160401A
27	CCB-2,CCB,1,	17	1000	Unknown		08/08/2016 13:47	Finished	CCB, R160718D
28	N020534-001BMSD,M	18	1000	Unknown		08/08/2016 13:56	Finished	MSD (5ppb), IWST-160401B, 0
29	N020532-001ADUP,D	19	1000	Unknown		08/08/2016 14:06	Finished	DUP, 10 mL
30	N020547-006A,SAMF	20	1000	Unknown		08/08/2016 14:15	Finished	SAMP, 10 mL
31	N020547-007A,SAMF	21	1000	Unknown		08/08/2016 14:25	Finished	SAMP, 10 mL
32	N020547-008A,SAMF	22	1000	Unknown		08/08/2016 14:34	Finished	SAMP, 10 mL
33	N020547-009A,SAMF	23	1000	Unknown		08/08/2016 14:44	Finished	SAMP, 10 mL
34	N020547-010A,SAMF	24	1000	Unknown		08/08/2016 14:53	Finished	SAMP, 10 mL
35	N020547-011A,SAMF	25	1000	Unknown		08/08/2016 15:03	Finished	SAMP, 10 mL
36	N020547-012A,SAMF	26	1000	Unknown		08/08/2016 15:12	Finished	SAMP, 10 mL
37	N020548-001A,SAMF	27	1000	Unknown		08/08/2016 15:21	Finished	SAMP, 10 mL
38	CCV-3,CCV,1,	28	1000	Unknown		08/08/2016 15:31	Finished	CCV @5ppb, IWST-160401A
39	CCB-3,CCB,1,	29	1000	Unknown		08/08/2016 15:40	Finished	CCB R160718D
40	N020548-002A,SAMF	30	1000	Unknown		08/08/2016 15:50	Finished	SAMP, 10 mL
41	N020548-003A,SAMF	31	1000	Unknown		08/08/2016 15:59	Finished	SAMP, 10 mL
42	N020548-004A,SAMF	32	1000	Unknown		08/08/2016 16:09	Finished	SAMP, 10 mL
43	N020548-005A,SAMF	33	1000	Unknown		08/08/2016 16:18	Finished	SAMP, 10 mL
44	N020548-006A,SAMF	34	1000	Unknown		08/08/2016 16:28	Finished	SAMP, 10 mL
45	N020548-007A,SAMF	35	1000	Unknown		08/08/2016 16:37	Finished	SAMP, 10 mL
46	N020548-008A,SAMF	36	1000	Unknown		08/08/2016 16:47	Finished	SAMP, 10 mL
47	CCV-4,CCV1,1,	37	1000	Unknown		08/08/2016 16:56	Finished	CCV @10ppb, IWST-160401A
48	CCB-4,CCB,1,	38	1000	Unknown		08/08/2016 17:06	Finished	CCB, R160718D
49	N020534-001BMSD,M	41	1000	Unknown		08/08/2016 18:07	Finished	MSD (5ppb), IWST-160401B, 0
50	N020548-004A,SAMF	42	1000	Unknown		08/08/2016 18:18	Finished	SAMP, 0.1>10 mL
51	N020548-007A,SAMF	43	1000	Unknown		08/08/2016 18:28	Finished	SAMP, 0.2>10 mL
52	CCV-5,CCV,1,	44	1000	Unknown		08/08/2016 18:37	Finished	CCV @5ppb, IWST-160401A
53	CCB-5,CCB,1,	45	1000	Unknown		08/08/2016 18:47	Finished	CCB R160718D
54	N020534-001BMSD,M	46	1000	Unknown		08/08/2016 18:56	Finished	MSD (5ppb), IWST-160401B, 0
55	CCV-6,CCV1,1,	47	1000	Unknown		08/08/2016 19:09	Finished	CCV @10ppb, IWST-160401A
56	CCB-6,CCB,1,	48	1000	Unknown		08/08/2016 19:19	Finished	CCB, R160718D
57	SHUTDOWN	49	1000	Unknown		08/08/2016 19:29	Finished	
58	Eluent: R160808A	50	1000	Unknown		n.a.	Finished	Eluent
59	PCR: R160808B	51	1000	Unknown		n.a.	Finished	Post-Column Reagent

SAMPLE PREPARATION LOG

Hexavalent Chromium Preparation and Runlog

Sample Preparation

Date Prepared: 8/4/16
Time Prepared: 1200
Prepared By: Mark

Slope - 94.4%
pH4 - 4.01 @ 25.5°C
pH7 - 6.99 @ 26.0°C
pH10 - 10.01 @ 25.3°C
LCS - 7.13 @ 24.9°C

Reagent ID:
Sulfuric Acid: #8457
Diphenylcarbazide: CINV-160125H
NH4OH + NH4SO4 eluent: M60808A
NH4OH + NH4SO4 buffer: M60718D

6N NaOH: R160613B

	Sample ID.	pH of sample	pH after treatment	Initial Volume of sample	Final Volume after buffer add'n	Volume of buffer added	Comments
1)	N020548-1A	8.98	9.31	~250 ml	~250 ml	6 drops 6N NaOH	R160718D
2)	2A	8.98	9.32			6 drops "	
3)	3A	8.90	9.31			7 drops "	
4)	4A	9.27	9.31			1 drop "	
5)	5A	8.99	9.32			6 drops "	
6)	6A	9.22	9.33			2 drops "	
7)	7A	9.25	9.31			1 drop "	
8)	8A	9.43	–			–	
9)	9A	9.09	9.35			5 drops "	
10)	10A	9.20	9.34			2 drops "	
11)	11A	9.08	9.34			5 drops "	
12)	12A	9.14	9.31			3 drops "	
13)	13A	9.53	–			–	
14)	14A	9.53	–			–	
15)							

Sample Preparation

Date Prepared: 8/4/16
Time Prepared: 1200
Prepared By: Mark

slope - 94.4%
pH4 - 4.01 @ 25.5°C
pH7 - 6.99 @ 26.0°C
pH10 - 10.01 @ 25.3°C
LCS - 7.13 @ 24.9°C

Reagent ID:
Sulfuric Acid: #8457
Diphenylcarbazide: CINV-160125H
NH4OH + NH4SO4 eluent: M60808A / M60808A
NH4OH + NH4SO4 buffer: M60718D / M60613A

6N NaOH: R160613B

	Sample ID.	pH of sample	pH after treatment	Initial Volume of sample	Final Volume after buffer add'n	Volume of buffer added	Comments
1)	N020532-1A	9.31	–	~250 ml	~250 ml	–	R160718D
2)	2A	9.36	–			–	
3)	N020533-1D	9.42	–			–	
4)	2D	9.48	–			–	
5)	N020534-1B	9.47	–			–	
6)	2C	9.61	–			–	
7)	N020537-17B	9.22	9.30			2 drops 6N NaOH	R160613A
8)	N020538-17B	9.23	9.33			2 drops "	
9)	N020544-7A	9.43	–			–	R160718D
10)	8A	9.44	–			–	
11)	N020545-1A	9.33	–			–	
12)	2A	9.37	–			–	
13)							
14)							
15)							

Logbook No. 11

INITIAL CALIBRATION DATA SUMMARY

(EPA 218.6) - INITIAL CALIBRATION

Instrument ID: IC-07
Date Calibrated: 8/3/2016

Initial Calibration:

Hexavalent Chromium	STD1	STD2	STD3	STD4	STD5	STD6	
COMPOUND, in ug/L	0.2	1	5	10	15	20	R^2
Area,mAU*min	0.0488	0.2611	1.3339	2.6279	3.9666	5.2637	1.0000

	Stock	Working
Standard Concentration:	1,000,000 PPB	1,000 PPB
Standard ID:	ISST150306A	IWST160401A

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

CLIENT: ARCADIS U.S., Inc. - California
Work Order: N020532
Project: PG&E Topock - PMP, RC000753.801A

ANALYTICAL QC SUMMARY REPORT

TestCode: 218.6_WPGE

Sample ID: **ICV**	SampType: **ICV**	TestCode: **218.6_WPGE**	Units: **µg/L**	Prep Date:	RunNo: **109919**
Client ID: **ICV**	Batch ID: **R109919**	TestNo: **EPA 218.6**		Analysis Date: **8/3/2016**	SeqNo: **2398107**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	5.038	0.20	5.000	0	101	90	110				

Sample ID: **PQL@0.2ppb**	SampType: **CCV2**	TestCode: **218.6_WPGE**	Units: **µg/L**	Prep Date:	RunNo: **109919**
Client ID: **ZZZZZZ**	Batch ID: **R109919**	TestNo: **EPA 218.6**		Analysis Date: **8/3/2016**	SeqNo: **2398108**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	0.196	0.20	0.2000	0	97.9	80	120				

Sample ID: **CCV-1**	SampType: **CCV**	TestCode: **218.6_WPGE**	Units: **µg/L**	Prep Date:	RunNo: **109919**
Client ID: **CCV**	Batch ID: **R109919**	TestNo: **EPA 218.6**		Analysis Date: **8/8/2016**	SeqNo: **2398110**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	5.115	0.20	5.000	0	102	95	105				

Sample ID: **PQL@0.2ppb**	SampType: **CCV2**	TestCode: **218.6_WPGE**	Units: **µg/L**	Prep Date:	RunNo: **109919**
Client ID: **ZZZZZZ**	Batch ID: **R109919**	TestNo: **EPA 218.6**		Analysis Date: **8/8/2016**	SeqNo: **2398111**

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: **CCV-2**	SampType: **CCV1**	TestCode: **218.6_WPGE**	Units: **µg/L**	Prep Date:	RunNo: **109919**
Client ID: **ZZZZZZ**	Batch ID: **R109919**	TestNo: **EPA 218.6**		Analysis Date: **8/8/2016**	SeqNo: **2398123**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	10.040	0.20	10.00	0	100	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: N020532
Project: PG&E Topock - PMP, RC000753.801A

ANALYTICAL QC SUMMARY REPORT

TestCode: 218.6_WPGE

Sample ID: **CCV-3**	SampType: **CCV**	TestCode: **218.6_WPGE**	Units: **µg/L**	Prep Date:	RunNo: **109919**
Client ID: **CCV**	Batch ID: **R109919**	TestNo: **EPA 218.6**		Analysis Date: **8/8/2016**	SeqNo: **2398134**

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: **CCV-4**	SampType: **CCV1**	TestCode: **218.6_WPGE**	Units: **µg/L**	Prep Date:	RunNo: **109919**
Client ID: **ZZZZZZ**	Batch ID: **R109919**	TestNo: **EPA 218.6**		Analysis Date: **8/8/2016**	SeqNo: **2398141**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	10.048	0.20	10.00	0	100	95	105				

Sample ID: **CCV-5**	SampType: **CCV**	TestCode: **218.6_WPGE**	Units: **µg/L**	Prep Date:	RunNo: **109919**
Client ID: **CCV**	Batch ID: **R109919**	TestNo: **EPA 218.6**		Analysis Date: **8/8/2016**	SeqNo: **2398145**

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				

Sample ID: **CCV-6**	SampType: **CCV1**	TestCode: **218.6_WPGE**	Units: **µg/L**	Prep Date:	RunNo: **109919**
Client ID: **ZZZZZZ**	Batch ID: **R109919**	TestNo: **EPA 218.6**		Analysis Date: **8/8/2016**	SeqNo: **2398148**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	10.104	0.20	10.00	0	101	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

SUMMARY OF INSTRUMENT BLANKS

CLIENT: ARCADIS U.S., Inc. - California
Work Order: N020532
Project: PG&E Topock - PMP, RC000753.801A

ANALYTICAL QC SUMMARY REPORT

TestCode: 218.6_WPGE

Sample ID: **ICB**	SampType: **ICB**	TestCode: **218.6_WPGE**	Units: **µg/L**	Prep Date:	RunNo: **109919**
Client ID: **ICB**	Batch ID: **R109919**	TestNo: **EPA 218.6**		Analysis Date: **8/3/2016**	SeqNo: **2398109**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	ND	0.20									

Sample ID: **CCB-1**	SampType: **CCB**	TestCode: **218.6_WPGE**	Units: **µg/L**	Prep Date:	RunNo: **109919**
Client ID: **CCB**	Batch ID: **R109919**	TestNo: **EPA 218.6**		Analysis Date: **8/8/2016**	SeqNo: **2398112**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	ND	0.20									

Sample ID: **CCB-2**	SampType: **CCB**	TestCode: **218.6_WPGE**	Units: **µg/L**	Prep Date:	RunNo: **109919**
Client ID: **CCB**	Batch ID: **R109919**	TestNo: **EPA 218.6**		Analysis Date: **8/8/2016**	SeqNo: **2398124**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	ND	0.20									

Sample ID: **CCB-3**	SampType: **CCB**	TestCode: **218.6_WPGE**	Units: **µg/L**	Prep Date:	RunNo: **109919**
Client ID: **CCB**	Batch ID: **R109919**	TestNo: **EPA 218.6**		Analysis Date: **8/8/2016**	SeqNo: **2398135**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	ND	0.20									

Sample ID: **CCB-4**	SampType: **CCB**	TestCode: **218.6_WPGE**	Units: **µg/L**	Prep Date:	RunNo: **109919**
Client ID: **CCB**	Batch ID: **R109919**	TestNo: **EPA 218.6**		Analysis Date: **8/8/2016**	SeqNo: **2398142**

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
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: ARCADIS U.S., Inc. - California
Work Order: N020532
Project: PG&E Topock - PMP, RC000753.801A

ANALYTICAL QC SUMMARY REPORT

TestCode: 218.6_WPGE

Sample ID: **CCB-5**	SampType: **CCB**	TestCode: **218.6_WPGE**	Units: **µg/L**	Prep Date:	RunNo: **109919**
Client ID: **CCB**	Batch ID: **R109919**	TestNo: **EPA 218.6**		Analysis Date: **8/8/2016**	SeqNo: **2398146**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	ND	0.20									

Sample ID: **CCB-6**	SampType: **CCB**	TestCode: **218.6_WPGE**	Units: **µg/L**	Prep Date:	RunNo: **109919**
Client ID: **CCB**	Batch ID: **R109919**	TestNo: **EPA 218.6**		Analysis Date: **8/8/2016**	SeqNo: **2398149**

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
DO	Surrogate Diluted Out		Calculations are based on raw values		

RETENTION TIME SUMMARY

RETENTION TIME (RT) SUMMARY

Instrument ID: IC-07

Analytical Sequence

Date Analyzed: 8/8/2016

Sample Name	Retention Time	Evaluation
CCV-1	4.557	
CCV-2	4.557	
CCV-3	4.548	
CCV-4	4.557	
CCV-5	4.548	
CCV-6	4.557	
Average	4.554	
Actual RT Window	4.474 - 4.634	
Applied RT Window	4.354 - 4.754	
MB-109919	N.A.	N.A.
LCS-109919	4.565	PASS
N020532-001A	4.507	PASS
N020532-001AMS	4.507	PASS
N020534-001B	4.565	PASS
N020534-001BMS	4.565	PASS
N020534-002C	4.448	PASS
N020534-002CMS	4.448	PASS
N020547-004A	N.A.	N.A.
N020547-005A	4.557	PASS
N020534-001BMSD	4.398	PASS
N020532-001ADUP	4.515	PASS
N020547-006A	4.557	PASS
N020547-007A	N.A.	N.A.
N020547-008A	N.A.	N.A.
N020547-009A	4.540	PASS
N020547-010A	4.790	FAIL *
N020547-011A	4.548	PASS
N020547-012A	4.548	PASS
N020548-001A	4.548	PASS
N020548-002A	4.598	PASS
N020548-003A	4.548	PASS
N020548-004A	4.582	PASS

* Not Reported

RETENTION TIME (RT) SUMMARY

Instrument ID: IC-07

Analytical Sequence

Date Analyzed: 8/8/2016

Sample Name	Retention Time	Evaluation
CCV-1	4.557	
CCV-2	4.557	
CCV-3	4.548	
CCV-4	4.557	
CCV-5	4.548	
CCV-6	4.557	
Average	4.554	
Actual RT Window	4.474 - 4.634	
Applied RT Window	4.354 - 4.754	
N020548-005A	N.A.	N.A.
N020548-006A	4.548	PASS
N020548-007A	4.590	PASS
N020548-008A	4.565	PASS
N020534-001BMSD	N.A.	N.A.
N020548-004A	4.982	FAIL *
N020548-007A	4.548	PASS
N020534-001BMSD	4.548	PASS

* Not Reported

MDL STUDY

METHOD DETECTION LIMIT 2016

Method Name: **HEXAVALENT CHROMIUM by Ion Chromatography**
Method Number: EPA 218.6/EPA 7199
Analysis Date(s): 2/12/2016, 2/23/2016, 2/24/2016, 2/25/2016, 3/7/2016, 3/9/2016 & 3/11/2016
Analyst: Ryan Balilu, Jannette Soria

Matrix: **WATER**
Unit: ug/L

Instrument Name: **IC-06**

Acceptance Criteria: MDL < spike < 10X MDL

Datafile:	160212	160223	160224	160225	160307	160309	160311						
Analyte	**#1**	**#2**	**#3**	**#4**	**#5**	**#6**	**#7**	**Spike Conc., mg/L**	**SD**	**$t_{(n-1)}$ value**	**MDL**	**PQL**	**Remarks**
ICAL:													
Hexavalent Chromiu	0.2195	0.2048	0.2167	0.1675	0.2194	0.1811	0.1826	0.20	0.0215	3.143	**0.0675**	**0.20**	OK,meets criteria

04/11/16

Students' **t** Values at 99% CL

#	$t_{(n-1)}$
10	2.821
9	2.896
8	2.998
7	3.143

METHOD DETECTION LIMIT 2016

Method Name: **HEXAVALENT CHROMIUM by Ion Chromatography**
Method Number: EPA 218.6/EPA 7199
Analysis Date(s): 3/16/2016; 3/18/2016; 3/21/2016, 3/22/2016, 3/25/2016 & 3/30/2016
Analyst: Jannette Soria

Matrix: **WATER**
Unit: ug/L

Instrument Name: **IC-07**

Acceptance Criteria: MDL < spike < 10X MDL

Datafile:	160316	160318	160321	160322	160323	160325	160330						
Analyte	**#1**	**#2**	**#3**	**#4**	**#5**	**#6**	**#7**	**Spike Conc., mg/L**	**SD**	**$t_{(n-1)}$ value**	**MDL**	**PQL**	**Remarks**
ICAL:													
Hexavalent Chromiu	0.1906	0.2326	0.2339	0.2002	0.2394	0.2147	0.1920	0.20	0.0208	3.143	**0.0655**	**0.20**	OK,meets criteria

gsg 04/11/16

Students' **t** Values at 99% CL

#	$t_{(n-1)}$
10	2.821
9	2.896
8	2.998
7	3.143

LOD & PQL Verification 2016 (2nd Quarter)

Method Name:	**Hexavalent Chromium by IC**	Matrix:	**WATER**
Method Number:	EPA Method 218.6/7199	Unit:	µg/L
Analysis Date(s):	5/23/2016		
Analyst:	Jannette Soria		

Instrument Name: **IC-06**

Compound	MDL	LOD Spike Conc., µg/L	LOD actual Conc., µg/L
Hexavalent Chromium	0.068	0.15	0.157

Compound	PQL	PQL Spike Conc., µg/L	PQL actual Conc., µg/L	% Recovery
Hexavalent Chromium	0.20	0.20	0.211	**105**

LOD & PQL Verification 2016 (2nd Quarter)

Method Name:	**Hexavalent Chromium by IC**	Matrix:	**WATER**
Method Number:	EPA Method 218.6/7199	Unit:	µg/L
Analysis Date(s):	5/26/2016		
Analyst:	Jannette Soria		

Instrument Name: **IC-07**

Compound	MDL	LOD Spike Conc., µg/L	LOD actual Conc., µg/L
Hexavalent Chromium	0.066	0.15	0.171

Compound	PQL	PQL Spike Conc., µg/L	PQL actual Conc., µg/L	% Recovery
Hexavalent Chromium	0.20	0.20	0.214	**107**

RAW DATA



INITIAL CALIBRATION

INJECTION LOG: 160803H

Instrument ID: IC-07

Sample No	Sample Name	Type	DF	Peak Name	Injection Date/Time	Comments
1	BLANK	BLANK	1	Hexavalent Chromium	08/03/16 5:29 PM	Not Reported
2	BLANK	BLANK	1	Hexavalent Chromium	08/03/16 5:40 PM	Not Reported
3	BLANK	BLANK	1	Hexavalent Chromium	08/03/16 5:49 PM	Not Reported
4	iBLANK	iBLANK	1	Hexavalent Chromium	08/03/16 5:58 PM	Reported
5	STD-0.2 ppb	ICAL	1	Hexavalent Chromium	08/03/16 6:08 PM	Reported
6	STD-1.0 ppb	ICAL	1	Hexavalent Chromium	08/03/16 6:17 PM	Reported
7	STD-5.0 ppb	ICAL	1	Hexavalent Chromium	08/03/16 6:27 PM	Reported
8	STD-10.0 ppb	ICAL	1	Hexavalent Chromium	08/03/16 6:36 PM	Reported
9	STD-15.0 ppb	ICAL	1	Hexavalent Chromium	08/03/16 6:46 PM	Reported
10	STD-20.0 ppb	ICAL	1	Hexavalent Chromium	08/03/16 6:55 PM	Reported
11	ICV	ICV	1	Hexavalent Chromium	08/03/16 7:05 PM	Reported
12	PQL@0.2ppb	CCV2	1	Hexavalent Chromium	08/03/16 7:14 PM	Not Reported
13	ICB	ICB	1	Hexavalent Chromium	08/03/16 7:24 PM	Not Reported
14	PQL@0.2ppb	CCV2	1	Hexavalent Chromium	08/03/16 7:35 PM	Reported
15	ICB	ICB	1	Hexavalent Chromium	08/03/16 7:46 PM	Reported
16	MB-R109812	MBLK	1	Hexavalent Chromium	08/03/16 7:56 PM	Reported
17	LCS-R109812	LCS	1	Hexavalent Chromium	08/03/16 8:05 PM	Reported
18	N020521-001A	SAMP	1	Hexavalent Chromium	08/03/16 8:15 PM	Reported
19	N020521-001ADUP	DUP	1	Hexavalent Chromium	08/03/16 8:24 PM	Reported
20	N020521-001AMS	MS	1	Hexavalent Chromium	08/03/16 8:34 PM	Reported
21	N020521-002A	SAMP	1	Hexavalent Chromium	08/03/16 8:43 PM	Reported
22	N020521-002AMS	MS	1	Hexavalent Chromium	08/03/16 8:52 PM	Reported
23	N020521-002AMSD	MSD	1	Hexavalent Chromium	08/03/16 9:02 PM	Reported
24	N020522-001A	SAMP	1	Hexavalent Chromium	08/03/16 9:11 PM	Reported
25	N020522-002A	SAMP	1	Hexavalent Chromium	08/03/16 9:21 PM	Reported
26	CCV-1	CCV1	1	Hexavalent Chromium	08/03/16 9:30 PM	Reported
27	CCB-1	CCB	1	Hexavalent Chromium	08/03/16 9:40 PM	Reported
28	N020522-003A	SAMP	1	Hexavalent Chromium	08/03/16 9:49 PM	Reported
29	N020403-012A	SAMP	1	Hexavalent Chromium	08/03/16 9:59 PM	Not Reported
30	N020403-012AMS	MS	1	Hexavalent Chromium	08/03/16 10:08 PM	Not Reported
31	N020426-003A	SAMP	1	Hexavalent Chromium	08/03/16 10:18 PM	Not Reported
32	N020426-003MS	MS	1	Hexavalent Chromium	08/03/16 10:27 PM	Not Reported
33	N020504-001A	SAMP	20	Hexavalent Chromium	08/03/16 10:37 PM	Reported
34	N020504-002A	SAMP	20	Hexavalent Chromium	08/03/16 10:46 PM	Reported
35	N020504-003A	SAMP	1	Hexavalent Chromium	08/03/16 10:55 PM	Reported
36	N020504-004A	SAMP	10	Hexavalent Chromium	08/03/16 11:05 PM	Reported
37	N020504-005A	SAMP	1	Hexavalent Chromium	08/03/16 11:14 PM	Reported
38	CCV-2	CCV	1	Hexavalent Chromium	08/03/16 11:24 PM	Reported
39	CCB-2	CCB	1	Hexavalent Chromium	08/03/16 11:33 PM	Reported
40	N020504-006A	SAMP	1	Hexavalent Chromium	08/03/16 11:43 PM	Reported
41	N020504-007A	SAMP	1	Hexavalent Chromium	08/03/16 11:52 PM	Reported
42	N020504-008A	SAMP	1	Hexavalent Chromium	08/04/16 12:02 AM	Reported

8/9/2016

IC-07 QBM 8/4/2016 6:30 PM

8/10/2016

INJECTION LOG: 160803H

Instrument ID: IC-07

Sample No	Sample Name	Type	DF	Peak Name	Injection Date/Time	Comments
43	N020504-009A	SAMP	1	Hexavalent Chromium	08/04/16 12:11 AM	Reported
44	N020504-010A	SAMP	1	Hexavalent Chromium	08/04/16 12:21 AM	Reported
45	N020504-011A	SAMP	1	Hexavalent Chromium	08/04/16 12:30 AM	Reported
46	N020504-012A	SAMP	1	Hexavalent Chromium	08/04/16 12:40 AM	Reported
47	N020504-013A	SAMP	1	Hexavalent Chromium	08/04/16 12:49 AM	Reported
48	CCV-3	CCV1	1	Hexavalent Chromium	08/04/16 12:58 AM	Reported
49	CCB-3	CCB	1	Hexavalent Chromium	08/04/16 1:08 AM	Reported

8/9/2016

Injection Log Summary

Sequence Details

Name:	**IC-07_160803H**	*Created On:*	**24/Jul/12 17:17:21**
Directory:	**Instrument Data\IC-7\2016**	*Created By:*	**ics 5000**
Data Vault:	**ChromeleonLocal**	*Updated On:*	**04/Aug/16 09:11:35**
No. of Injections:	**52**	*Updated By:*	**ics 5000**

Injection Details

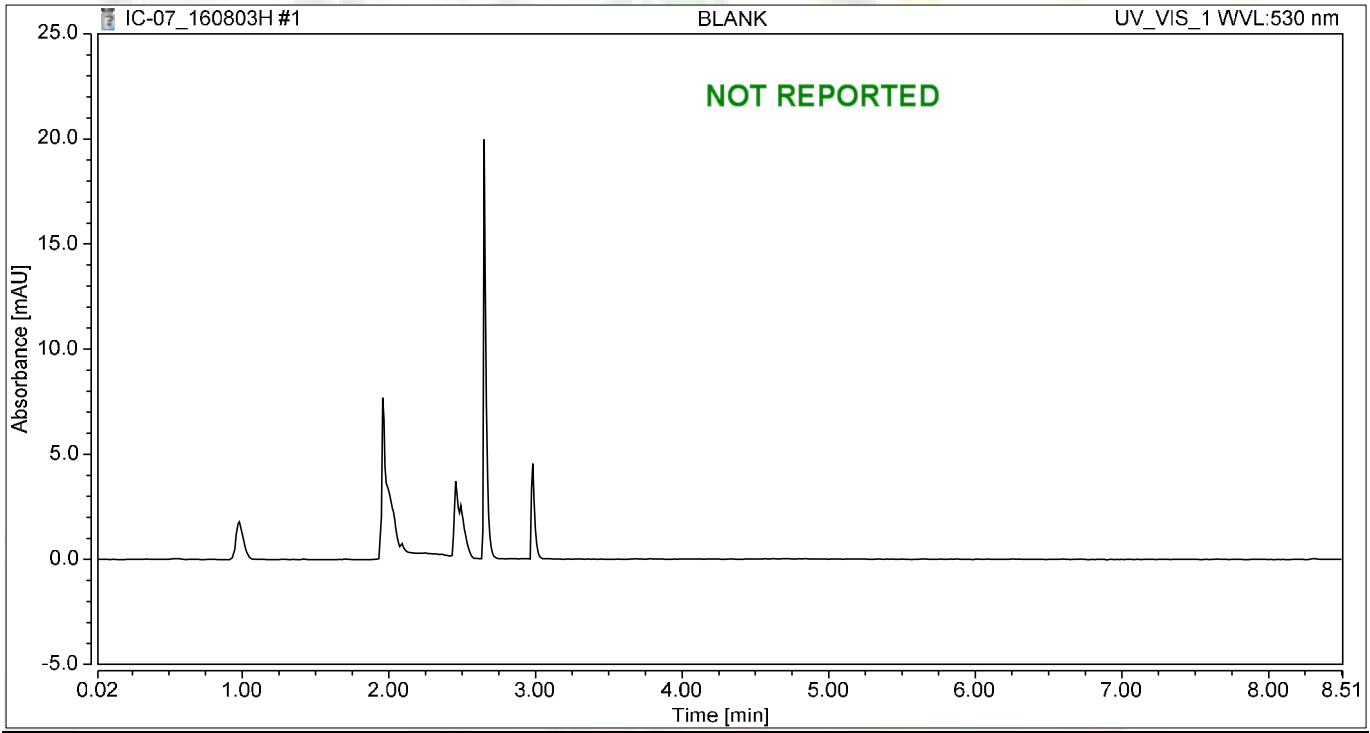
No.	Injection Name	Position	Volume µL	Type	Level	Inject Time	Status	Comment
1	BLANK	1	1000	Unknown		08/03/2016 17:29	Finished	
2	BLANK	2	1000	Unknown		08/03/2016 17:40	Finished	
3	BLANK	3	1000	Unknown		08/03/2016 17:49	Finished	
4	iBLANK	4	1000	Unknown		08/03/2016 17:58	Finished	INSTRUMENT BLANK
5	STD1-0.2 ppb	5	1000	Calibration Standard	01	08/03/2016 18:08	Finished	0.2 ppb, IWST160401A
6	STD2-1.0 ppb	6	1000	Calibration Standard	02	08/03/2016 18:17	Finished	1.0 ppb, IWST160401A
7	STD3-5.0 ppb	7	1000	Calibration Standard	03	08/03/2016 18:27	Finished	5.0 ppb, IWST160401A
8	STD4-10.0 ppb	8	1000	Calibration Standard	04	08/03/2016 18:36	Finished	10 ppb, IWST160401A
9	STD5-15.0 ppb	9	1000	Calibration Standard	05	08/03/2016 18:46	Finished	15 ppb, IWST160401A
10	STD6-20.0 ppb	10	1000	Calibration Standard	06	08/03/2016 18:55	Finished	20 ppb, IWST160401A
11	ICV,ICV,1,	11	1000	Unknown		08/03/2016 19:05	Finished	ICV @5ppb, IWST-160401B
12	PQL@0.2ppb,CCV2,1	12	1000	Unknown		08/03/2016 19:14	Finished	PQL @ 0.2ppb
13	ICB,ICB,1,	13	1000	Unknown		08/03/2016 19:24	Finished	ICB R160718D
14	PQL@0.2ppb,CCV2,1	1	1000	Unknown		08/03/2016 19:35	Finished	PQL @ 0.2ppb
15	ICB,ICB,1,	2	1000	Unknown		08/03/2016 19:46	Finished	ICB R160718D
16	MB-H2O,MBLK,1	3	1000	Unknown		08/03/2016 19:56	Finished	MB R160718D
17	LCS-H2O,LCS,1	4	1000	Unknown		08/03/2016 20:05	Finished	LCS, IWST-160401B
18	N020521-001A,SAMP	5	1000	Unknown		08/03/2016 20:15	Finished	SAMP, 10 mL
19	N020521-001ADUP,D	6	1000	Unknown		08/03/2016 20:24	Finished	DUP, 10 mL
20	N020521-001AMS,MS	7	1000	Unknown		08/03/2016 20:34	Finished	MS (5ppb), IWST-160401B, 10
21	N020521-002A,SAMP	8	1000	Unknown		08/03/2016 20:43	Finished	SAMP, 10 mL
22	N020521-002AMS,MS	9	1000	Unknown		08/03/2016 20:52	Finished	MS (5ppb), IWST-160401B, 10
23	N020521-002AMSD,M	10	1000	Unknown		08/03/2016 21:02	Finished	MSD (5ppb), IWST-160401B, 1
24	N020522-001A,SAMP	11	1000	Unknown		08/03/2016 21:11	Finished	SAMP, 10 mL
25	N020522-002A,SAMP	12	1000	Unknown		08/03/2016 21:21	Finished	SAMP, 10 mL
26	CCV-1,CCV1,1,	13	1000	Unknown		08/03/2016 21:30	Finished	CCV @10ppb, IWST-160401A
27	CCB-1,CCB,1,	14	1000	Unknown		08/03/2016 21:40	Finished	CCB, R160718D
28	N020522-003A,SAMP	15	1000	Unknown		08/03/2016 21:49	Finished	SAMP, 10 mL
29	N020403-012A,SAMP	16	1000	Unknown		08/03/2016 21:59	Finished	SAMP, 10 mL
30	N020403-012AMS,MS	17	1000	Unknown		08/03/2016 22:08	Finished	MS (1ppb), IWST-160401B, 10
31	N020426-003A,SAMP	18	1000	Unknown		08/03/2016 22:18	Finished	SAMP, 10 mL
32	N020426-003MS,MS,	19	1000	Unknown		08/03/2016 22:27	Finished	MS (1ppb), IWST-160401B, 10
33	N020504-001A,SAMP	20	1000	Unknown		08/03/2016 22:37	Finished	SAMP, 0.5>10 mL
34	N020504-002A,SAMP	21	1000	Unknown		08/03/2016 22:46	Finished	SAMP, 0.5>10 mL
35	N020504-003A,SAMP	22	1000	Unknown		08/03/2016 22:55	Finished	SAMP, 10 mL
36	N020504-004A,SAMP	23	1000	Unknown		08/03/2016 23:05	Finished	SAMP, 10>10 mL
37	N020504-005A,SAMP	24	1000	Unknown		08/03/2016 23:14	Finished	SAMP, 10 mL
38	CCV-2,CCV,1,	25	1000	Unknown		08/03/2016 23:24	Finished	CCV @5ppb, IWST-160401A
39	CCB-2,CCB,1,	26	1000	Unknown		08/03/2016 23:33	Finished	CCB R160718D
40	N020504-006A,SAMP	27	1000	Unknown		08/03/2016 23:43	Finished	SAMP, 10 mL
41	N020504-007A,SAMP	28	1000	Unknown		08/03/2016 23:52	Finished	SAMP, 10 mL
42	N020504-008A,SAMP	29	1000	Unknown		08/04/2016 00:02	Finished	SAMP, 10 mL
43	N020504-009A,SAMP	30	1000	Unknown		08/04/2016 00:11	Finished	SAMP, 10 mL
44	N020504-010A,SAMP	31	1000	Unknown		08/04/2016 00:21	Finished	SAMP, 10 mL
45	N020504-011A,SAMP	32	1000	Unknown		08/04/2016 00:30	Finished	SAMP, 10 mL
46	N020504-012A,SAMP	33	1000	Unknown		08/04/2016 00:40	Finished	SAMP, 10 mL
47	N020504-013A,SAMP	34	1000	Unknown		08/04/2016 00:49	Finished	SAMP, 10 mL
48	CCV-3,CCV1,1,	35	1000	Unknown		08/04/2016 00:58	Finished	CCV @10ppb, IWST-160401A
49	CCB-3,CCB,1,	36	1000	Unknown		08/04/2016 01:08	Finished	CCB, R160718D
50	SHUTDOWN	37	1000	Unknown		08/04/2016 01:17	Finished	
51	Eluent: R160802C	38	1000	Unknown		n.a.	Finished	Eluent
52	PCR: R160802D	39	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:	**160803_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**03/Aug/16 17:29**	*Sample Weight:*	**1.0000**

Chromatogram



Integration Results

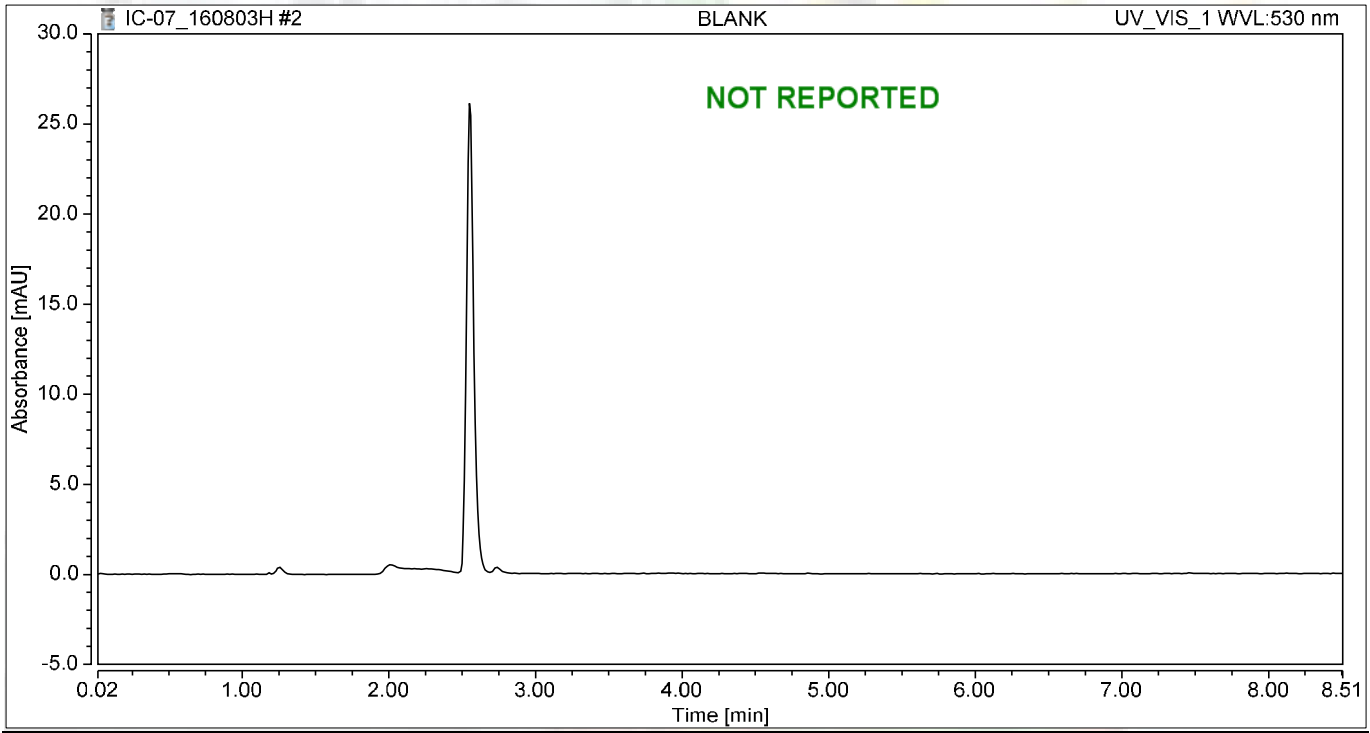
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
n.a.	Hexavalent Chromium	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Total:			**0.000**	**0.000**	**0.00**	**0.00**	

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:	**160803_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**03/Aug/16 17:40**	*Sample Weight:*	**1.0000**

Chromatogram



Integration Results

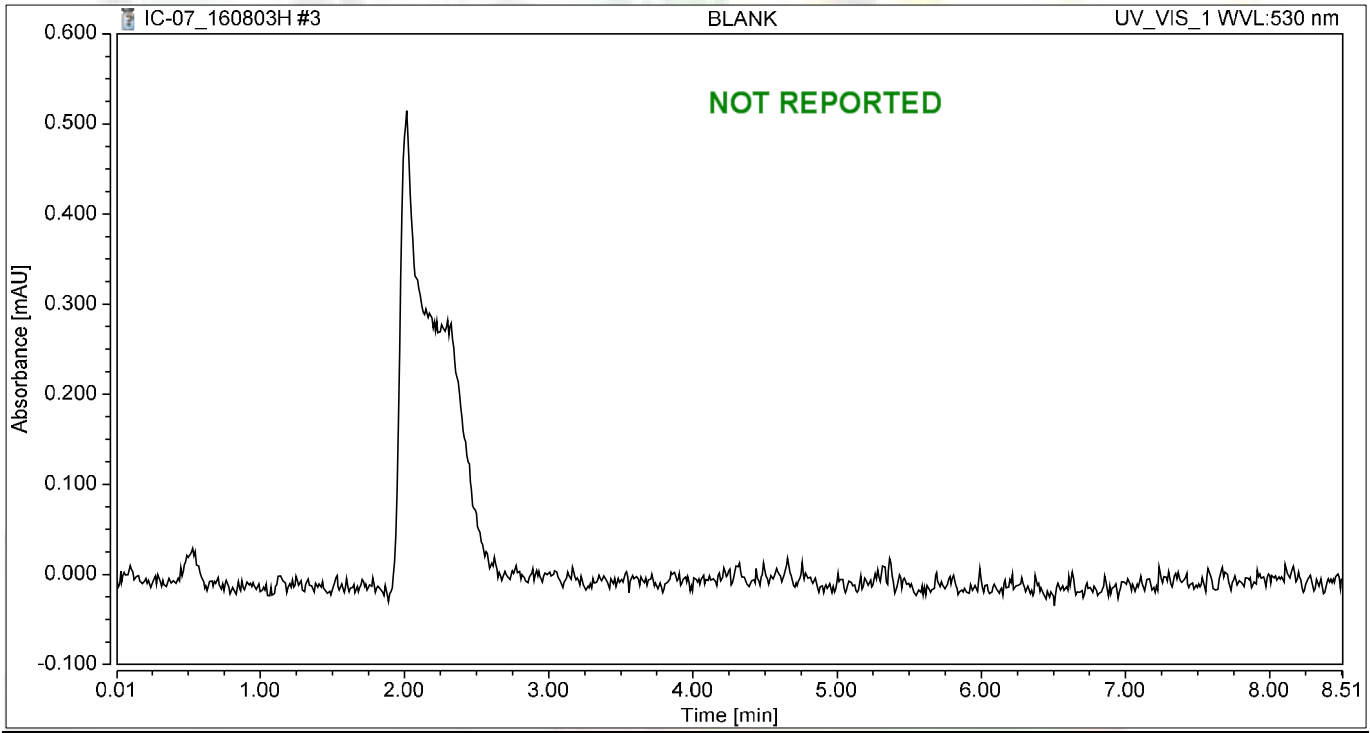
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
n.a.	Hexavalent Chromium	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Total:			**0.000**	**0.000**	**0.00**	**0.00**	

Chromatogram and Results

Injection Details

Injection Name:	**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:	**160803_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**03/Aug/16 17:49**	*Sample Weight:*	**1.0000**

Chromatogram



Integration Results

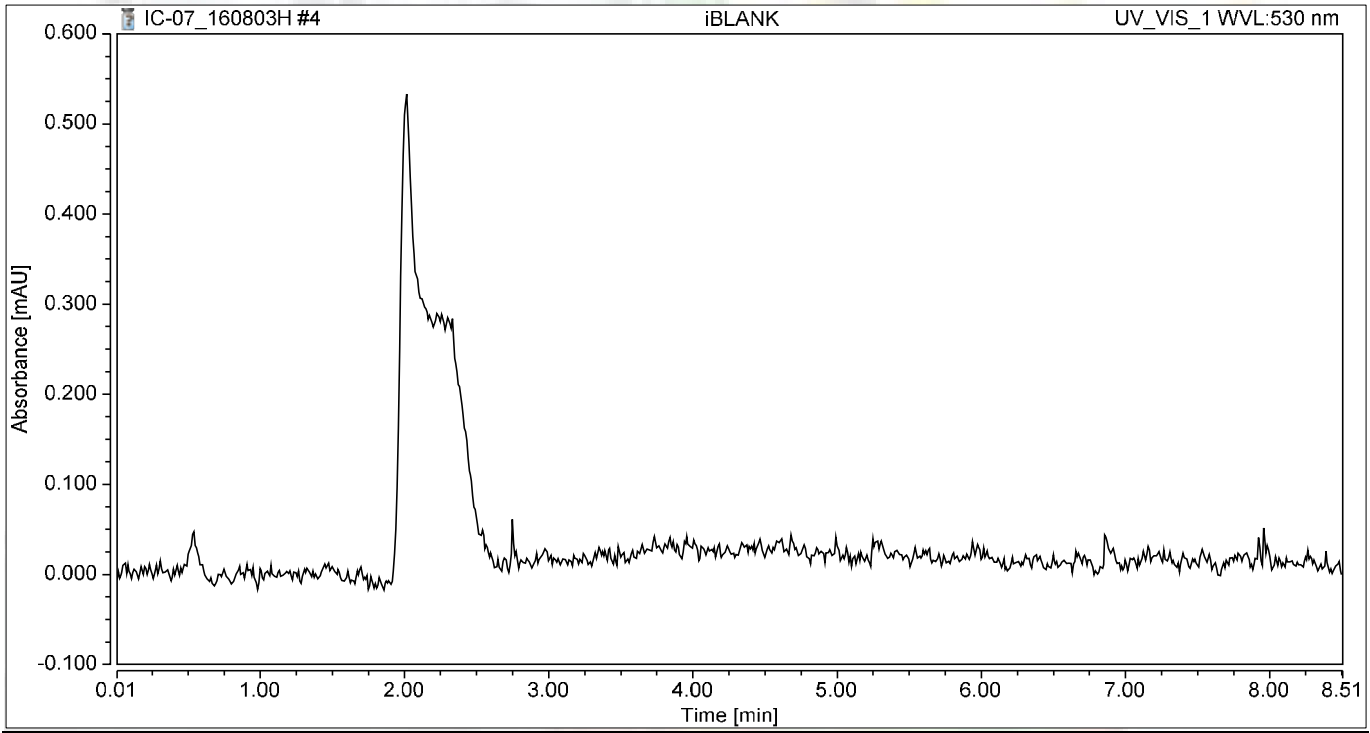
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
n.a.	Hexavalent Chromium	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Total:			**0.000**	**0.000**	**0.00**	**0.00**	

Chromatogram and Results

Injection Details

Injection Name:	**iBLANK**	*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:	**160803_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**03/Aug/16 17:58**	*Sample Weight:*	**1.0000**

Chromatogram



Integration Results

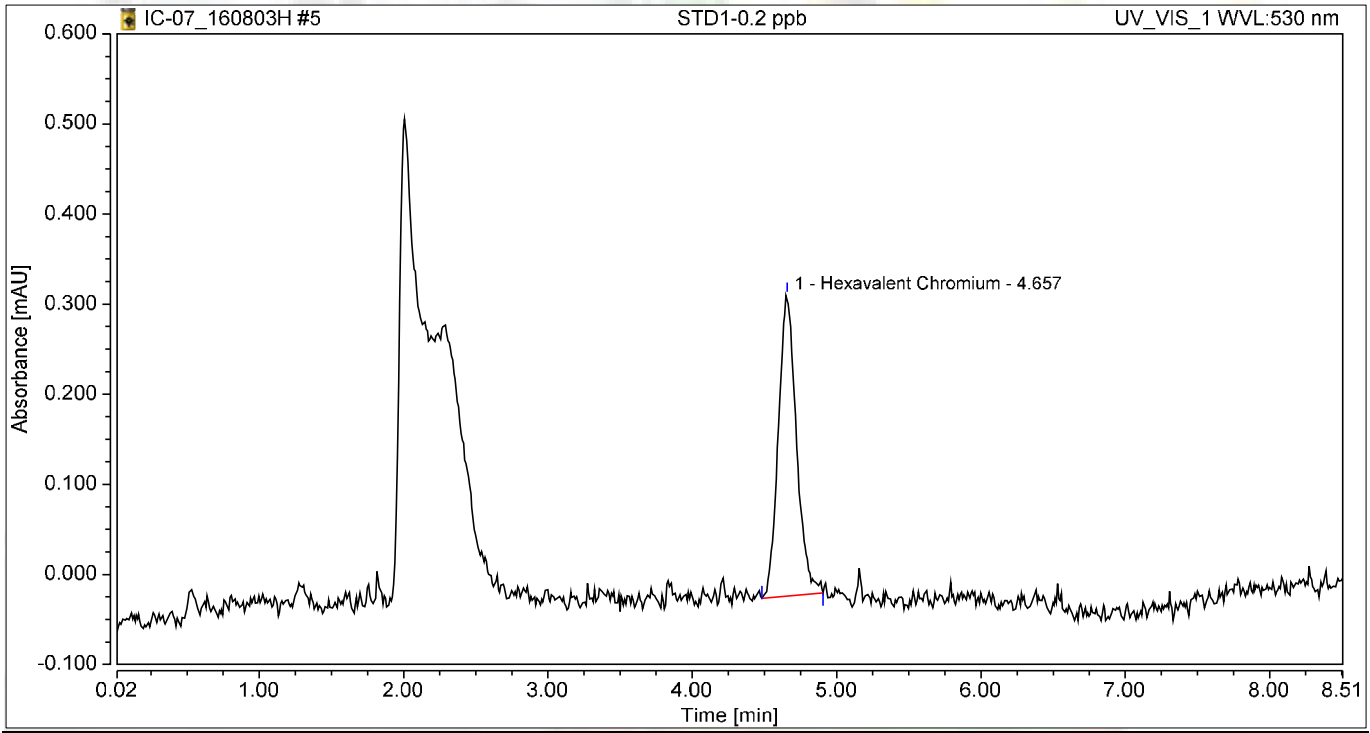
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
n.a.	Hexavalent Chromium	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Total:			**0.000**	**0.000**	**0.00**	**0.00**	

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:	**160803_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**03/Aug/16 18:08**	*Sample Weight:*	**1.0000**

Chromatogram



Integration Results

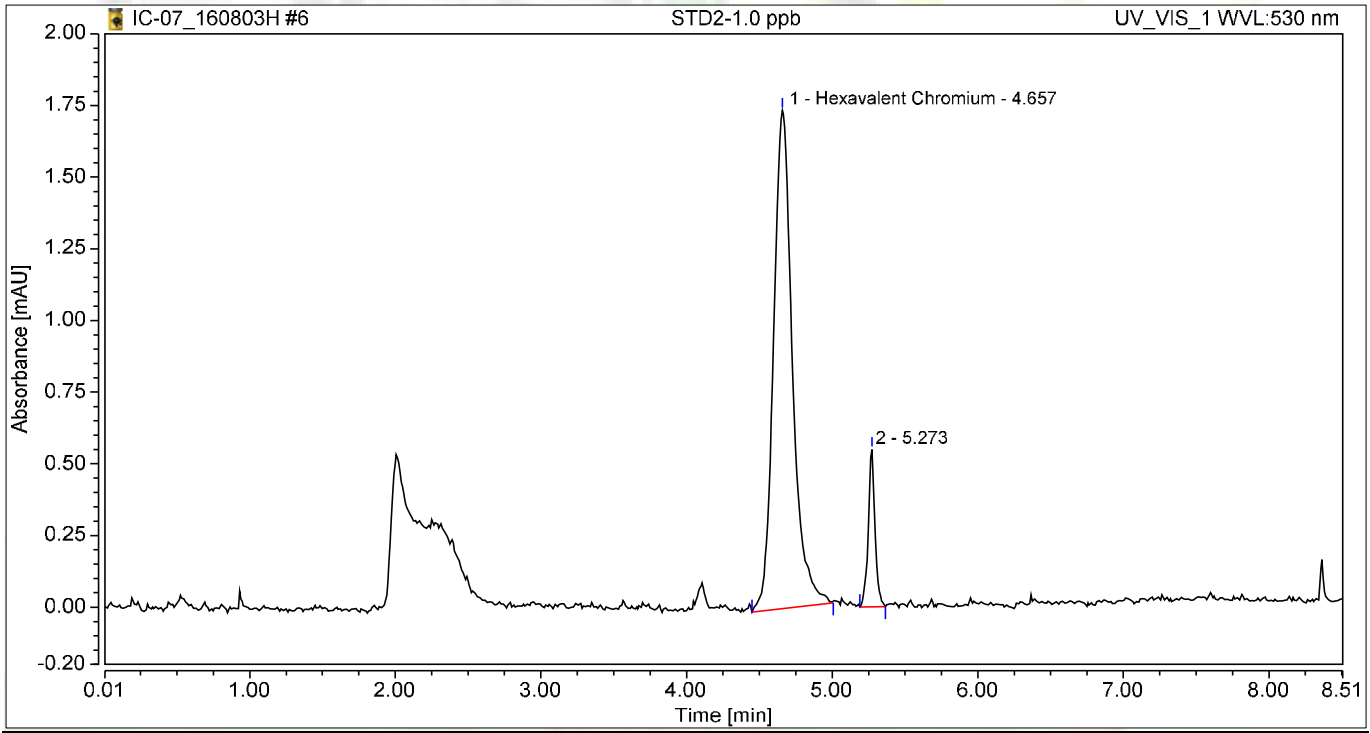
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.657	0.049	0.334	100.00	100.00	0.1853
Total:			**0.049**	**0.334**	**100.00**	**100.00**	

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:	**160803_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**03/Aug/16 18:17**	*Sample Weight:*	**1.0000**

Chromatogram



Integration Results

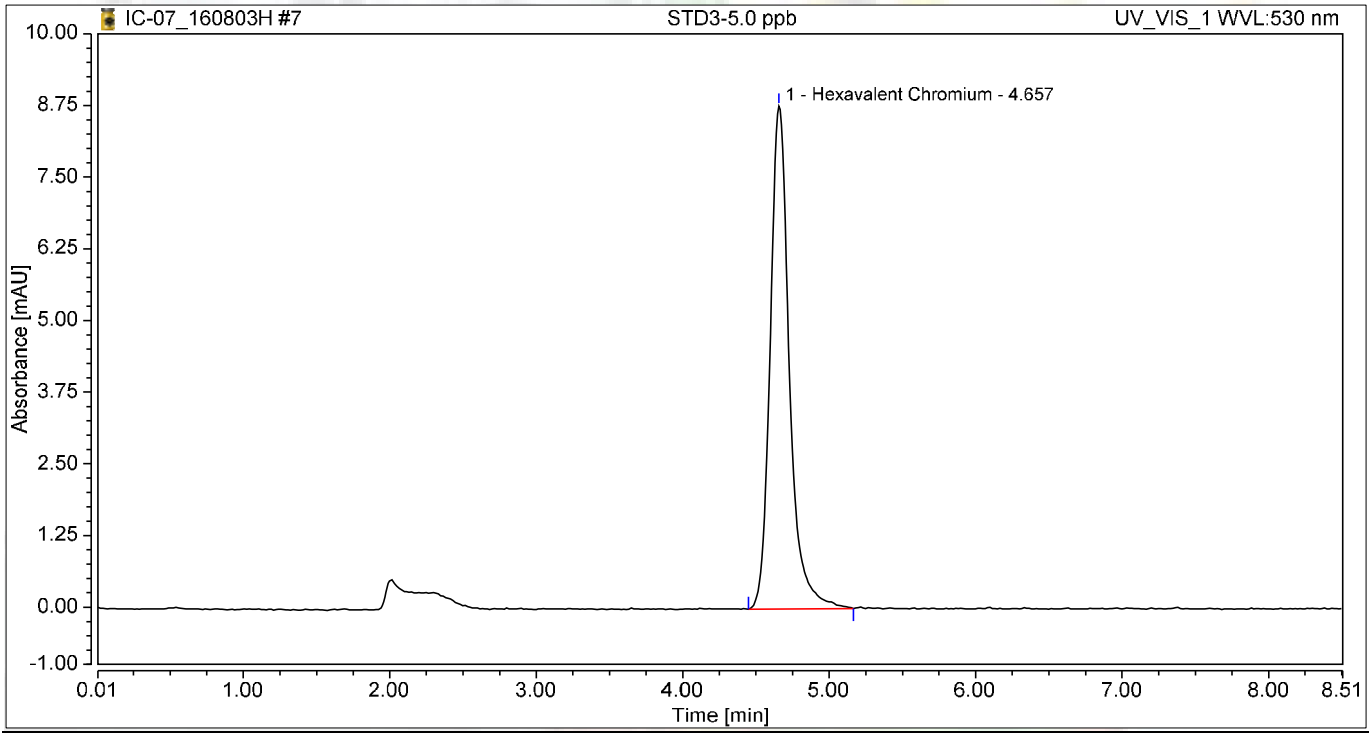
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.657	0.261	1.738	89.67	76.01	0.9905
2		5.273	0.030	0.549	10.33	23.99	n.a.
Total:			**0.291**	**2.287**	**100.00**	**100.00**	

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:	**160803_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**03/Aug/16 18:27**	*Sample Weight:*	**1.0000**

Chromatogram



Integration Results

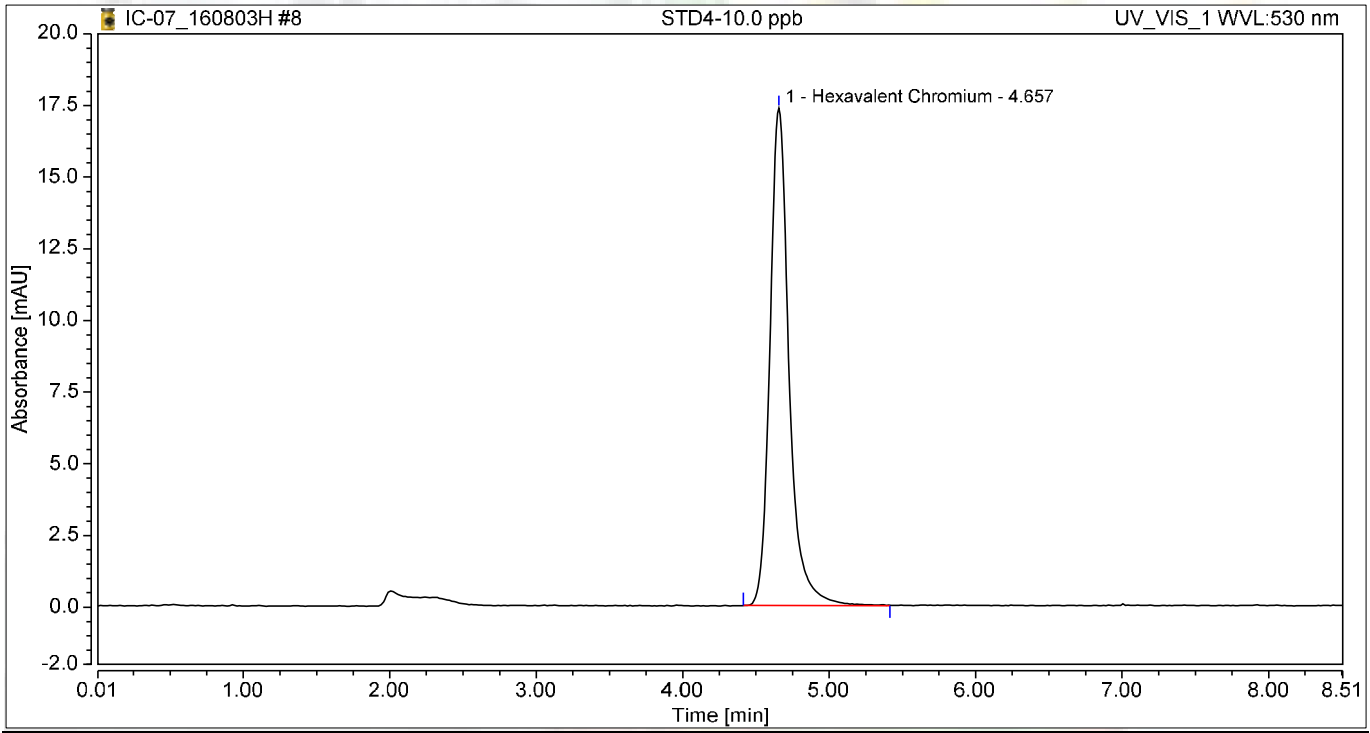
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.657	1.334	8.777	100.00	100.00	5.0598
Total:			**1.334**	**8.777**	**100.00**	**100.00**	

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:	**160803_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**03/Aug/16 18:36**	*Sample Weight:*	**1.0000**

Chromatogram



Integration Results

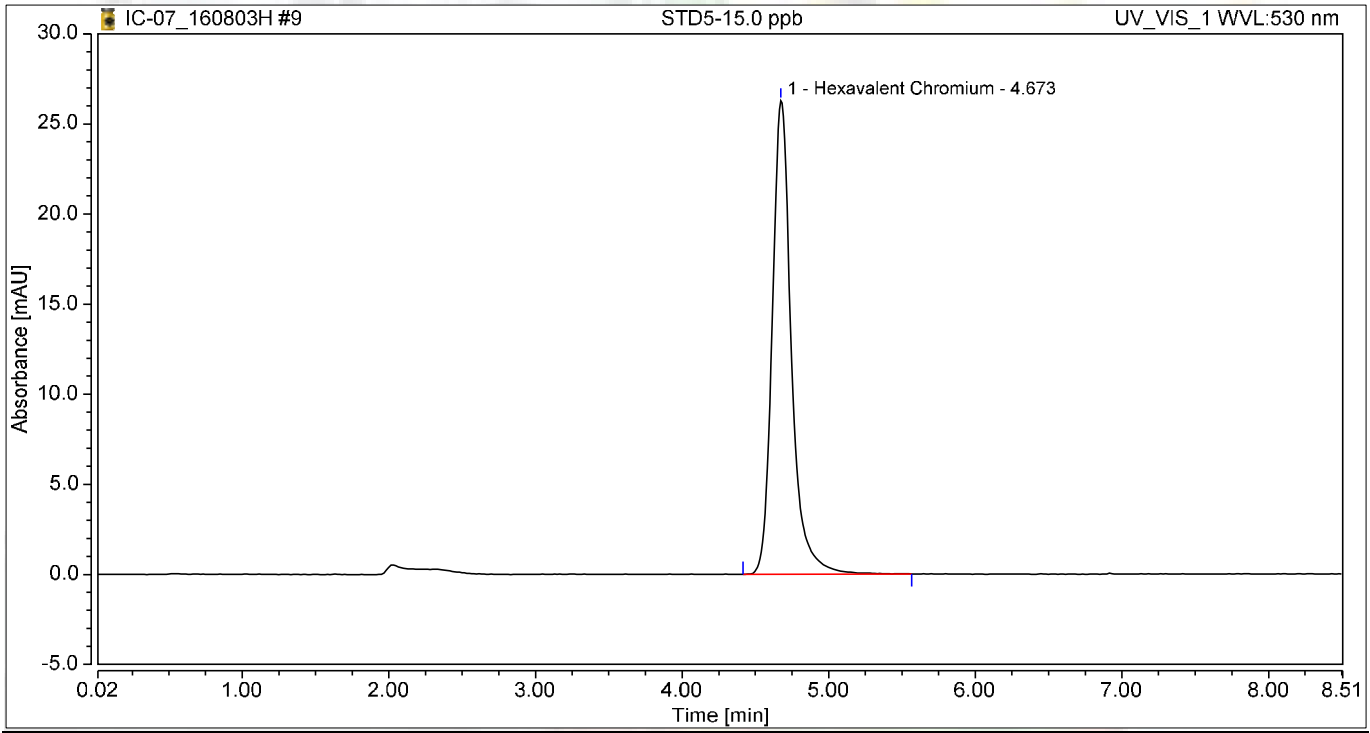
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.657	2.628	17.345	100.00	100.00	9.9683
Total:			**2.628**	**17.345**	**100.00**	**100.00**	

Chromatogram and Results

Injection Details

Injection Name:	**STD5-15.0 ppb**	*Run Time (min):*	**8.49**
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:	**160803_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**03/Aug/16 18:46**	*Sample Weight:*	**1.0000**

Chromatogram



Integration Results

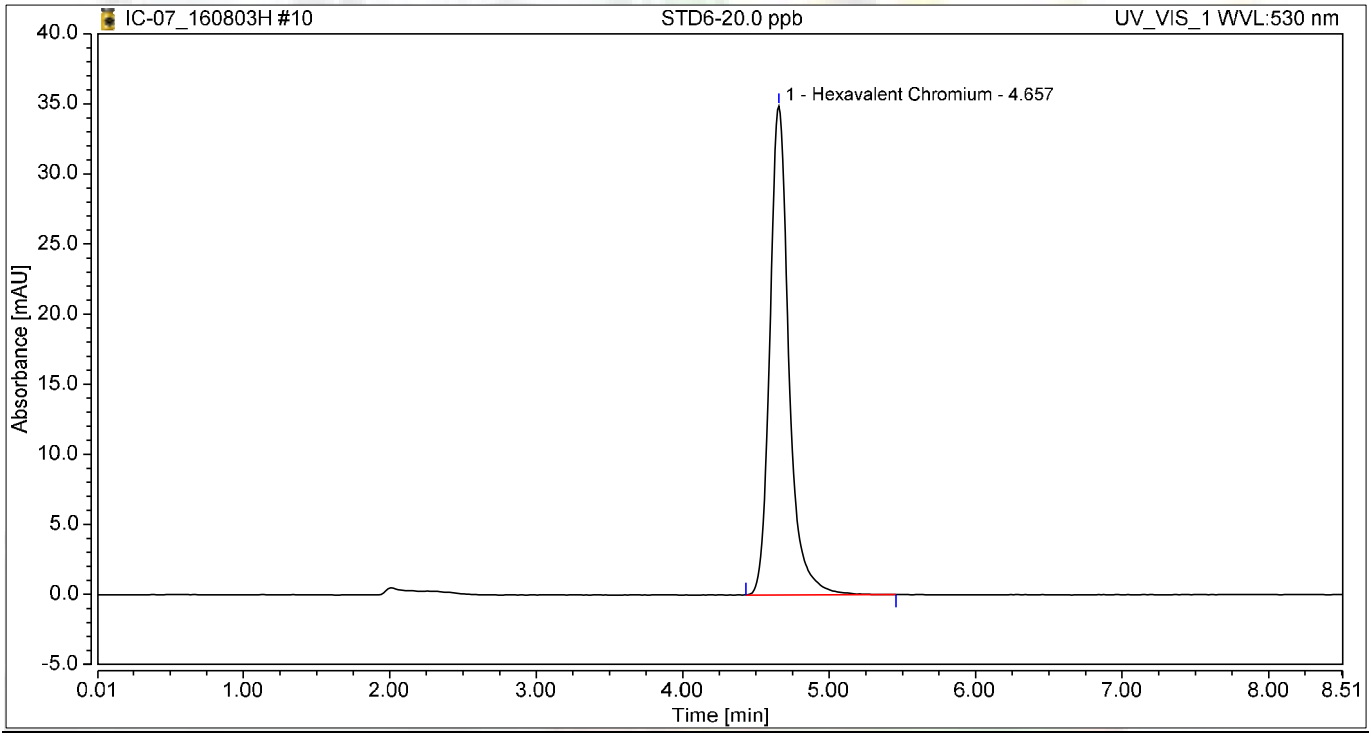
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.673	3.967	26.275	100.00	100.00	15.0466
Total:			**3.967**	**26.275**	**100.00**	**100.00**	

Chromatogram and Results

Injection Details

Injection Name:	**STD6-20.0 ppb**	*Run Time (min):*	**8.50**
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:	**160803_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**03/Aug/16 18:55**	*Sample Weight:*	**1.0000**

Chromatogram



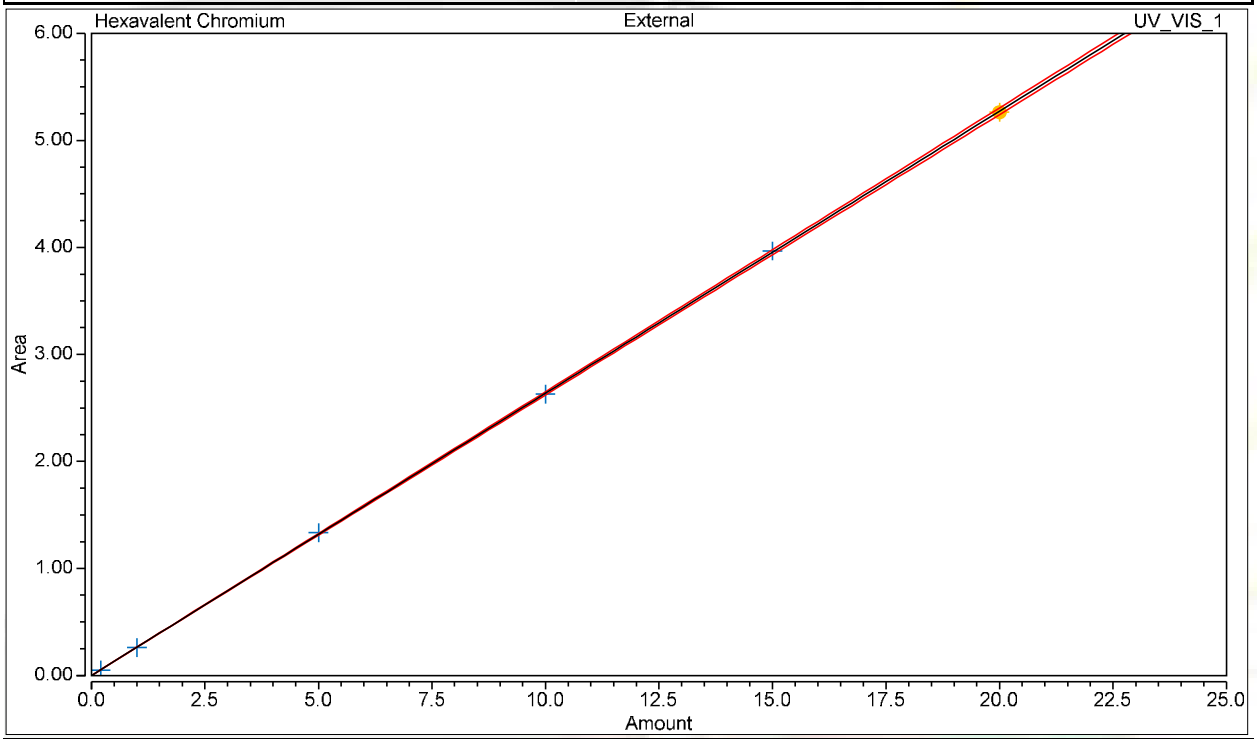
Integration Results

No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.657	5.264	34.899	100.00	100.00	19.9666
Total:			**5.264**	**34.899**	**100.00**	**100.00**	

Initial Calibration Summary

Calibration Details	Hexavalent Chromium		
Calibration Type	Lin	*Offset (C0)*	0.0000
Evaluation Type	Area	*Slope (C1)*	0.2636
Number of Calibration Points	6	*Curve (C2)*	0.0000
Number of disabled Calibration Points	0	*R-Square*	0.99997

Calibration Plot Hexavalent Chromium



Calibration Results Hexavalent Chromium

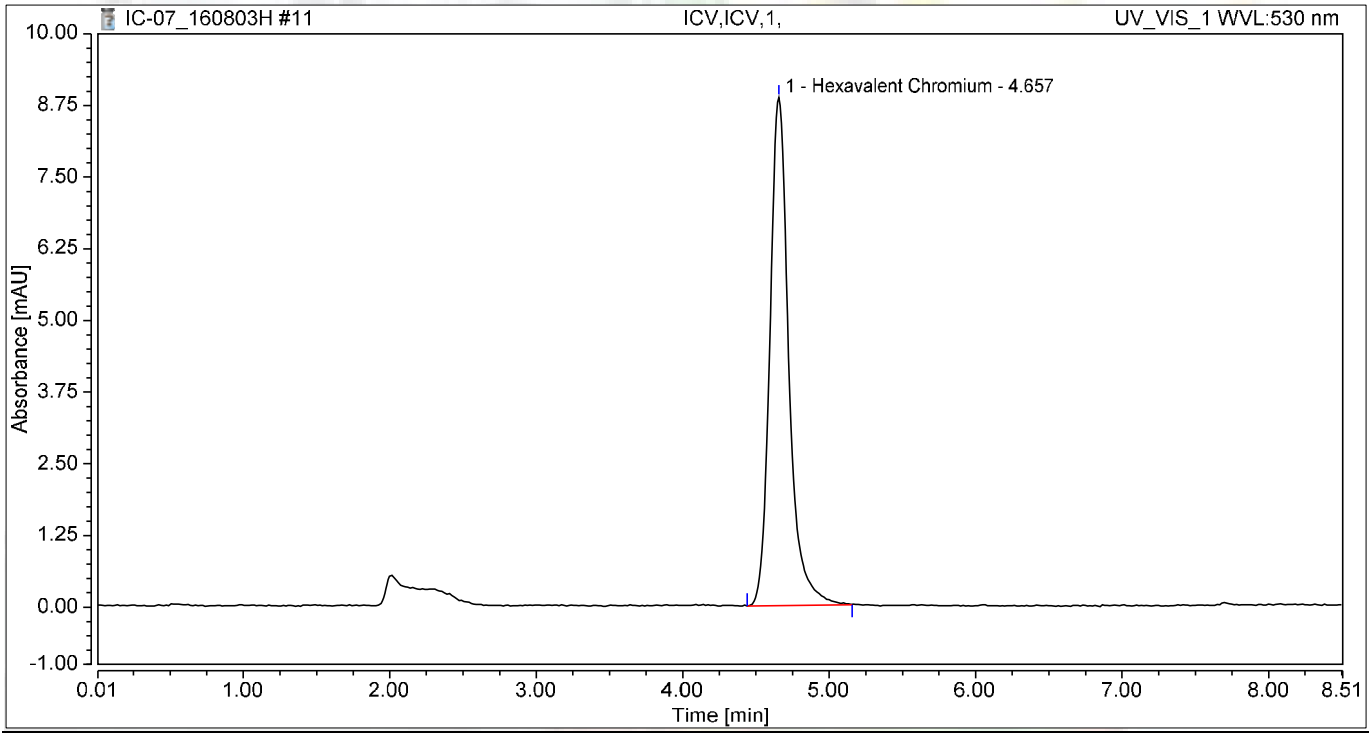
No.	Injection Name	Calibration Level	X Value	Y Value	Area mAU*min	Height mAU
5	STD1-0.2 ppb	01	0.2000	0.0488	0.049	0.334
6	STD2-1.0 ppb	02	1.0000	0.2611	0.261	1.738
7	STD3-5.0 ppb	03	5.0000	1.3339	1.334	8.777
8	STD4-10.0 ppb	04	10.0000	2.6279	2.628	17.345
9	STD5-15.0 ppb	05	15.0000	3.9666	3.967	26.275
10	STD6-20.0 ppb	06	20.0000	5.2637	5.264	34.899

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:	**160803_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**03/Aug/16 19:05**	*Sample Weight:*	**1.0000**

Chromatogram



Integration Results

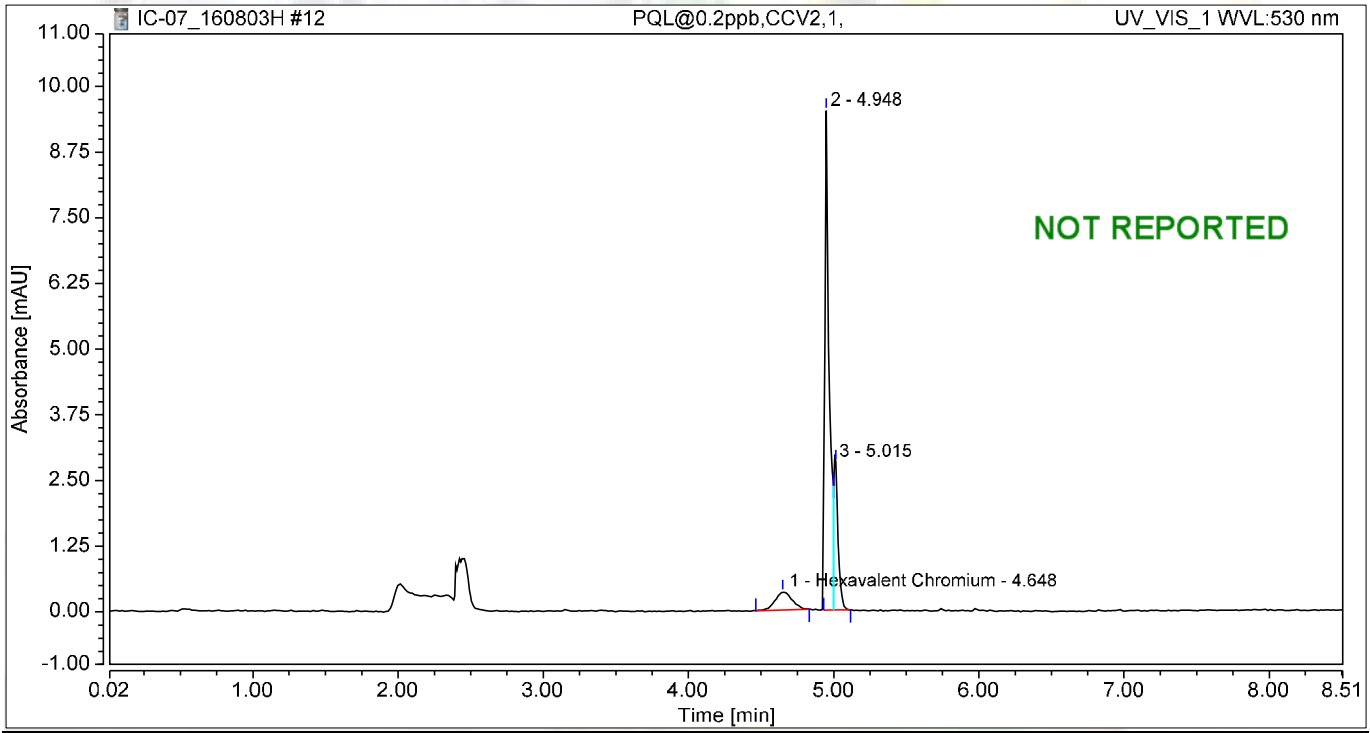
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.657	1.328	8.857	100.00	100.00	5.0376
Total:			**1.328**	**8.857**	**100.00**	**100.00**	

Chromatogram and Results

Injection Details

Injection Name:	**PQL@0.2ppb,CCV2,1,**	*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:	**160803_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**03/Aug/16 19:14**	*Sample Weight:*	**1.0000**

Chromatogram



Integration Results

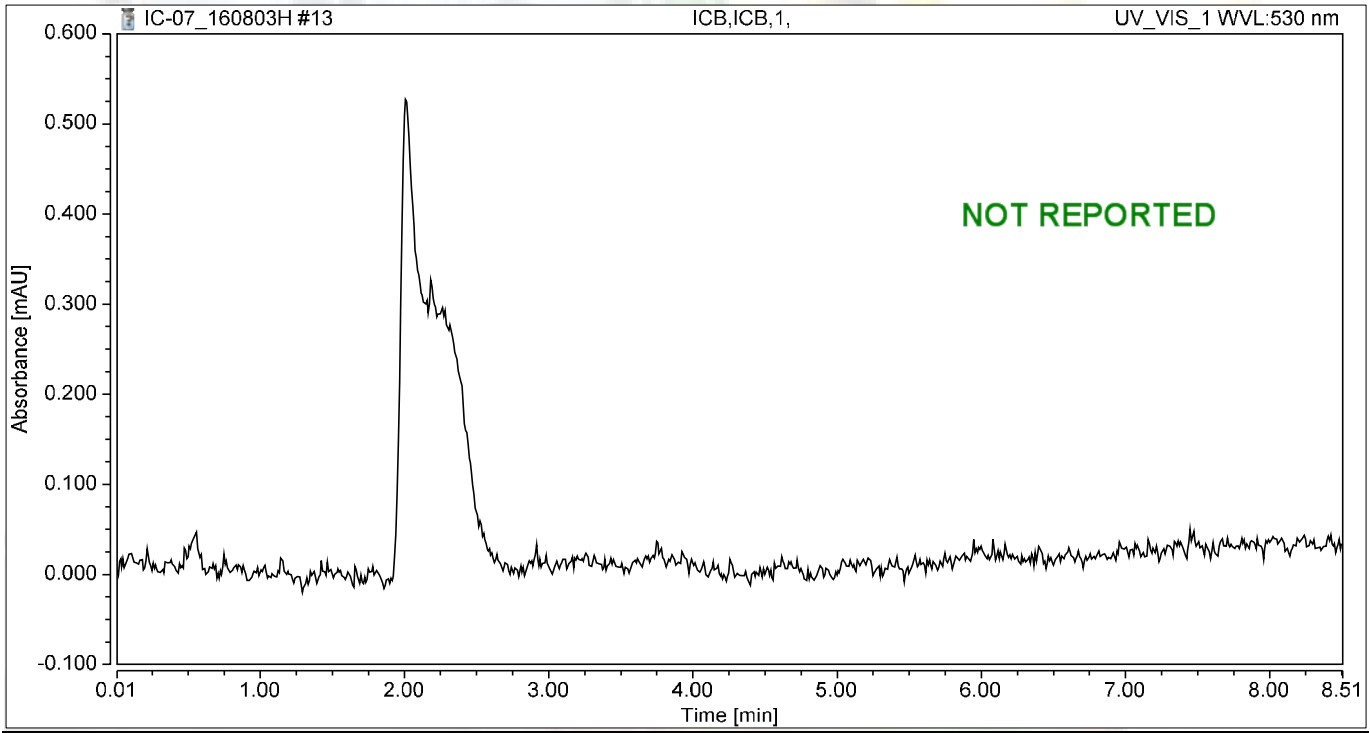
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.648	0.048	0.339	10.24	2.68	0.1810
2		4.948	0.317	9.501	67.97	75.10	n.a.
3		5.015	0.102	2.811	21.79	22.22	n.a.
Total:			**0.466**	**12.651**	**100.00**	**100.00**	

Chromatogram and Results

Injection Details

Injection Name:	**ICB,ICB,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:	**160803_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**03/Aug/16 19:24**	*Sample Weight:*	**1.0000**

Chromatogram



Integration Results

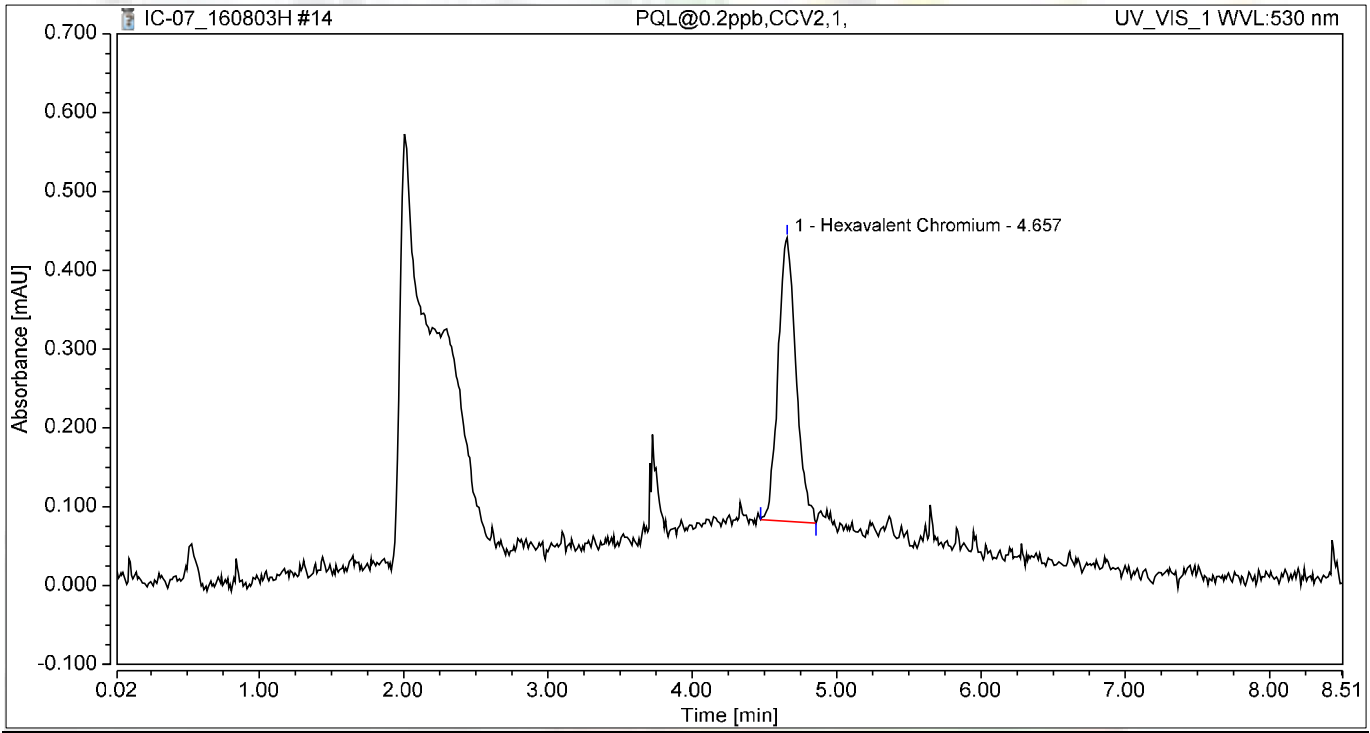
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
n.a.	Hexavalent Chromium	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Total:			**0.000**	**0.000**	**0.00**	**0.00**	

Chromatogram and Results

Injection Details

Injection Name:	**PQL@0.2ppb,CCV2,1,**	*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:	**160803_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**03/Aug/16 19:35**	*Sample Weight:*	**1.0000**

Chromatogram



Integration Results

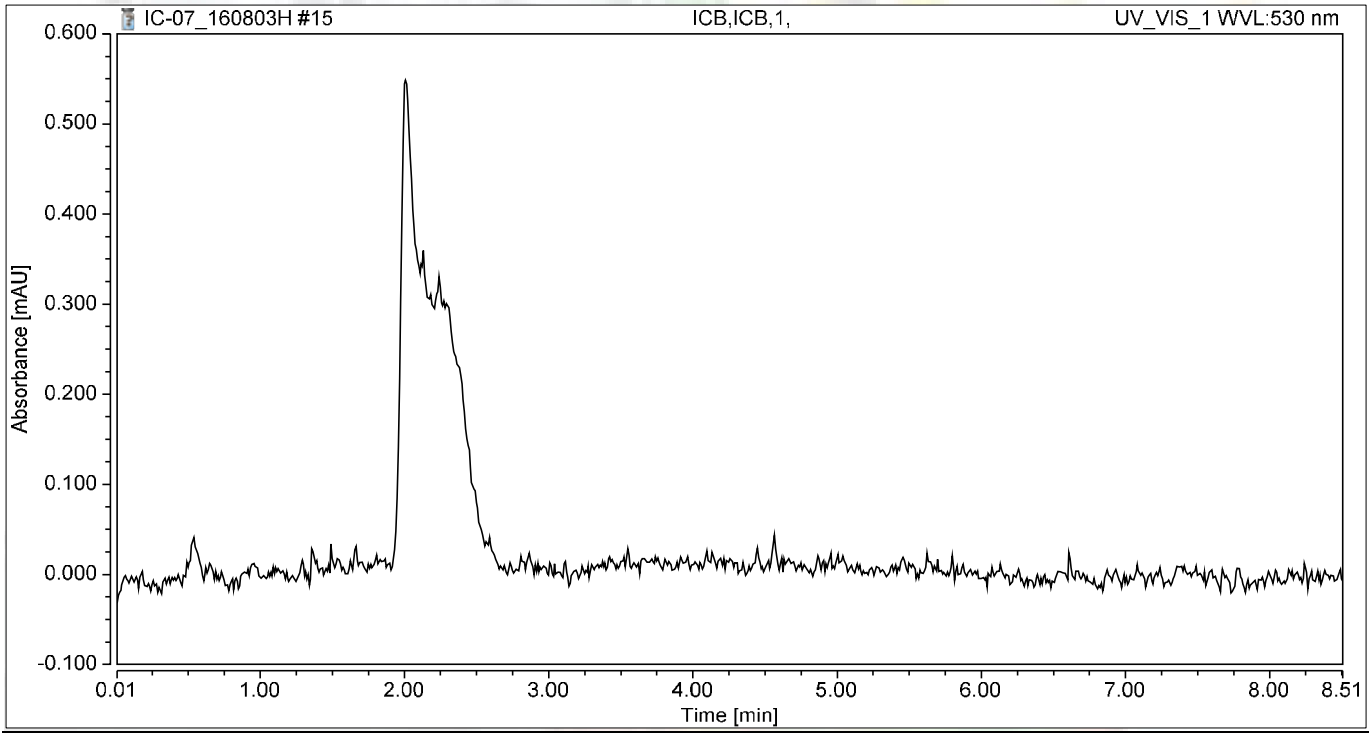
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.657	0.052	0.360	100.00	100.00	0.1958
Total:			**0.052**	**0.360**	**100.00**	**100.00**	

Chromatogram and Results

Injection Details

Injection Name:	**ICB,ICB,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:	**160803_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**03/Aug/16 19:46**	*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.
Total:			**0.000**	**0.000**	**0.00**	**0.00**	

RAW DATA

INJECTION LOG: 160808A

Instrument ID: IC-07

Sample No	Sample Name	Type	DF	Peak Name	Injection Date/Time	Comments
1	BLANK	BLANK	1	Hexavalent Chromium	08/03/16 5:29 PM	Not Reported
2	BLANK	BLANK	1	Hexavalent Chromium	08/03/16 5:40 PM	Not Reported
3	BLANK	BLANK	1	Hexavalent Chromium	08/03/16 5:49 PM	Not Reported
4	iBLANK	iBLANK	1	Hexavalent Chromium	08/03/16 5:58 PM	Reported
5	STD-0.2 ppb	ICAL	1	Hexavalent Chromium	08/03/16 6:08 PM	Reported
6	STD-1.0 ppb	ICAL	1	Hexavalent Chromium	08/03/16 6:17 PM	Reported
7	STD-5.0 ppb	ICAL	1	Hexavalent Chromium	08/03/16 6:27 PM	Reported
8	STD-10.0 ppb	ICAL	1	Hexavalent Chromium	08/03/16 6:36 PM	Reported
9	STD-15.0 ppb	ICAL	1	Hexavalent Chromium	08/03/16 6:46 PM	Reported
10	STD-20.0 ppb	ICAL	1	Hexavalent Chromium	08/03/16 6:55 PM	Reported
11	BLANK	BLANK	1	Hexavalent Chromium	08/08/16 11:14 AM	Not Reported
12	BLANK	BLANK	1	Hexavalent Chromium	08/08/16 11:25 AM	Not Reported
13	CCV-1	CCV	1	Hexavalent Chromium	08/08/16 11:34 AM	Reported
14	PQL@0.2ppb	CCV2	1	Hexavalent Chromium	08/08/16 11:44 AM	Reported
15	CCB-1	CCB	1	Hexavalent Chromium	08/08/16 11:53 AM	Reported
16	MB-109919	MBLK	1	Hexavalent Chromium	08/08/16 12:03 PM	Reported
17	LCS-109919	LCS	1	Hexavalent Chromium	08/08/16 12:12 PM	Reported
18	N020532-001A	SAMP	1	Hexavalent Chromium	08/08/16 12:22 PM	Reported
19	N020532-001AMS	MS	1	Hexavalent Chromium	08/08/16 12:31 PM	Reported
20	N020534-001B	SAMP	100	Hexavalent Chromium	08/08/16 12:41 PM	Reported
21	N020534-001BMS	MS	100	Hexavalent Chromium	08/08/16 12:50 PM	Reported
22	N020534-002C	SAMP	1	Hexavalent Chromium	08/08/16 1:00 PM	Reported
23	N020534-002CMS	MS	1	Hexavalent Chromium	08/08/16 1:09 PM	Reported
24	N020547-004A	SAMP	1	Hexavalent Chromium	08/08/16 1:19 PM	Reported
25	N020547-005A	SAMP	1	Hexavalent Chromium	08/08/16 1:28 PM	Reported
26	CCV-2	CCV1	1	Hexavalent Chromium	08/08/16 1:37 PM	Reported
27	CCB-2	CCB	1	Hexavalent Chromium	08/08/16 1:47 PM	Reported
28	N020534-001BMSD	MSD	100	Hexavalent Chromium	08/08/16 1:56 PM	Not Reported
29	N020532-001ADUP	DUP	1	Hexavalent Chromium	08/08/16 2:06 PM	Reported
30	N020547-006A	SAMP	1	Hexavalent Chromium	08/08/16 2:15 PM	Reported
31	N020547-007A	SAMP	1	Hexavalent Chromium	08/08/16 2:25 PM	Reported
32	N020547-008A	SAMP	1	Hexavalent Chromium	08/08/16 2:34 PM	Reported
33	N020547-009A	SAMP	1	Hexavalent Chromium	08/08/16 2:44 PM	Reported
34	N020547-010A	SAMP	1	Hexavalent Chromium	08/08/16 2:53 PM	Not Reported
35	N020547-011A	SAMP	1	Hexavalent Chromium	08/08/16 3:03 PM	Reported
36	N020547-012A	SAMP	1	Hexavalent Chromium	08/08/16 3:12 PM	Reported
37	N020548-001A	SAMP	1	Hexavalent Chromium	08/08/16 3:21 PM	Reported
38	CCV-3	CCV	1	Hexavalent Chromium	08/08/16 3:31 PM	Reported
39	CCB-3	CCB	1	Hexavalent Chromium	08/08/16 3:40 PM	Reported
40	N020548-002A	SAMP	1	Hexavalent Chromium	08/08/16 3:50 PM	Reported
41	N020548-003A	SAMP	1	Hexavalent Chromium	08/08/16 3:59 PM	Reported
42	N020548-004A	SAMP	1	Hexavalent Chromium	08/08/16 4:09 PM	Not Reported

INJECTION LOG: 160808A

Instrument ID: IC-07

Sample No	Sample Name	Type	DF	Peak Name	Injection Date/Time	Comments
43	N020548-005A	SAMP	1	Hexavalent Chromium	08/08/16 4:18 PM	Reported
44	N020548-006A	SAMP	1	Hexavalent Chromium	08/08/16 4:28 PM	Reported
45	N020548-007A	SAMP	1	Hexavalent Chromium	08/08/16 4:37 PM	Not Reported
46	N020548-008A	SAMP	1	Hexavalent Chromium	08/08/16 4:47 PM	Reported
47	CCV-4	CCV1	1	Hexavalent Chromium	08/08/16 4:56 PM	Reported
48	CCB-4	CCB	1	Hexavalent Chromium	08/08/16 5:06 PM	Reported
49	N020534-001BMSD	MSD	100	Hexavalent Chromium	08/08/16 6:07 PM	Not Reported
50	N020548-004A	SAMP	100	Hexavalent Chromium	08/08/16 6:18 PM	Not Reported
51	N020548-007A	SAMP	50	Hexavalent Chromium	08/08/16 6:28 PM	Reported
52	CCV-5	CCV	1	Hexavalent Chromium	08/08/16 6:37 PM	Reported
53	CCB-5	CCB	1	Hexavalent Chromium	08/08/16 6:47 PM	Reported
54	N020534-001BMSD	MSD	100	Hexavalent Chromium	08/08/16 6:56 PM	Reported
55	CCV-6	CCV1	1	Hexavalent Chromium	08/08/16 7:09 PM	Reported
56	CCB-6	CCB	1	Hexavalent Chromium	08/08/16 7:19 PM	Reported

8/16/2016

Injection Log Summary

Sequence Details

Name:	**IC-07_160808A**	*Created On:*	**24/Jul/12 17:17:21**
Directory:	**Instrument Data\IC-7\2016**	*Created By:*	**ics 5000**
Data Vault:	**ChromeleonLocal**	*Updated On:*	**09/Aug/16 08:43:54**
No. of Injections:	**59**	*Updated By:*	**ics 5000**

Injection Details

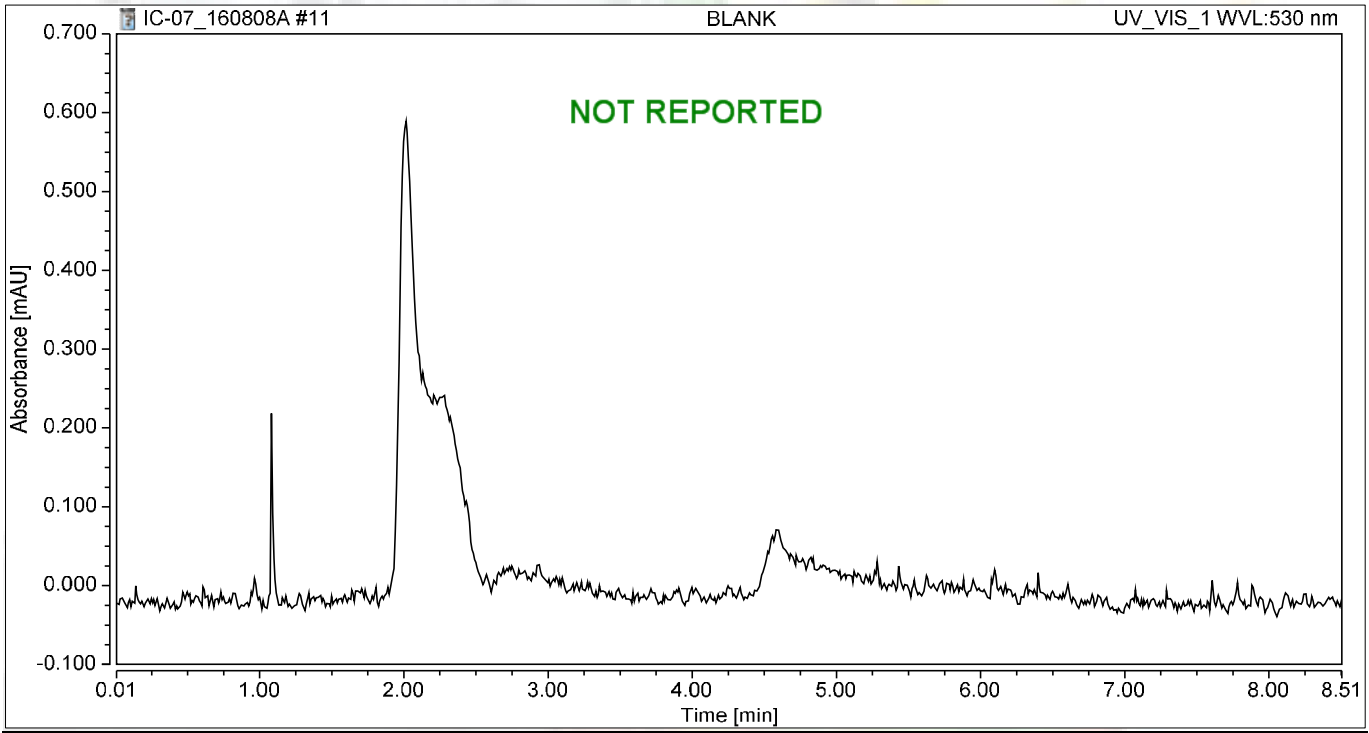
No.	Injection Name	Position	Volume µL	Type	Level	Inject Time	Status	Comment
1	BLANK	1	1000	Unknown		08/03/2016 17:29	Finished	
2	BLANK	2	1000	Unknown		08/03/2016 17:40	Finished	
3	BLANK	3	1000	Unknown		08/03/2016 17:49	Finished	
4	iBLANK	4	1000	Unknown		08/03/2016 17:58	Finished	INSTRUMENT BLANK
5	STD1-0.2 ppb	5	1000	Calibration Standard	01	08/03/2016 18:08	Finished	0.2 ppb, IWST160401A
6	STD2-1.0 ppb	6	1000	Calibration Standard	02	08/03/2016 18:17	Finished	1.0 ppb, IWST160401A
7	STD3-5.0 ppb	7	1000	Calibration Standard	03	08/03/2016 18:27	Finished	5.0 ppb, IWST160401A
8	STD4-10.0 ppb	8	1000	Calibration Standard	04	08/03/2016 18:36	Finished	10 ppb, IWST160401A
9	STD5-15.0 ppb	9	1000	Calibration Standard	05	08/03/2016 18:46	Finished	15 ppb, IWST160401A
10	STD6-20.0 ppb	10	1000	Calibration Standard	06	08/03/2016 18:55	Finished	20 ppb, IWST160401A
11	BLANK	1	1000	Unknown		08/08/2016 11:14	Finished	BLANK
12	BLANK	2	1000	Unknown		08/08/2016 11:25	Finished	BLANK
13	CCV-1,CCV,1,	3	1000	Unknown		08/08/2016 11:34	Finished	CCV @5ppb, IWST-160401A
14	PQL@0.2ppb,CCV2,1	4	1000	Unknown		08/08/2016 11:44	Finished	PQL @ 0.2ppb
15	CCB-1,CCB,1,	5	1000	Unknown		08/08/2016 11:53	Finished	CCB R160718D
16	MB-H2O,MBLK,1	6	1000	Unknown		08/08/2016 12:03	Finished	MB R160718D
17	LCS-H2O,LCS,1	7	1000	Unknown		08/08/2016 12:12	Finished	LCS, IWST-160401B
18	N020532-001A,SAMF	8	1000	Unknown		08/08/2016 12:22	Finished	SAMP, 10 mL
19	N020532-001AMS,MS	9	1000	Unknown		08/08/2016 12:31	Finished	MS (1ppb), IWST-160401B, 10
20	N020534-001B,SAMF	10	1000	Unknown		08/08/2016 12:41	Finished	SAMP, 0.1>10 mL
21	N020534-001BMS,MS	11	1000	Unknown		08/08/2016 12:50	Finished	MS (5ppb), IWST-160401B, 0.1
22	N020534-002C,SAMF	12	1000	Unknown		08/08/2016 13:00	Finished	SAMP, 10 mL
23	N020534-002CMS,MS	13	1000	Unknown		08/08/2016 13:09	Finished	MS (1ppb), IWST-160401B, 10
24	N020547-004A,SAMF	14	1000	Unknown		08/08/2016 13:19	Finished	SAMP, 10 mL
25	N020547-005A,SAMF	15	1000	Unknown		08/08/2016 13:28	Finished	SAMP, 10 mL
26	CCV-2,CCV1,1,	16	1000	Unknown		08/08/2016 13:37	Finished	CCV @10ppb, IWST-160401A
27	CCB-2,CCB,1,	17	1000	Unknown		08/08/2016 13:47	Finished	CCB, R160718D
28	N020534-001BMSD,M	18	1000	Unknown		08/08/2016 13:56	Finished	MSD (5ppb), IWST-160401B, 0
29	N020532-001ADUP,D	19	1000	Unknown		08/08/2016 14:06	Finished	DUP, 10 mL
30	N020547-006A,SAMF	20	1000	Unknown		08/08/2016 14:15	Finished	SAMP, 10 mL
31	N020547-007A,SAMF	21	1000	Unknown		08/08/2016 14:25	Finished	SAMP, 10 mL
32	N020547-008A,SAMF	22	1000	Unknown		08/08/2016 14:34	Finished	SAMP, 10 mL
33	N020547-009A,SAMF	23	1000	Unknown		08/08/2016 14:44	Finished	SAMP, 10 mL
34	N020547-010A,SAMF	24	1000	Unknown		08/08/2016 14:53	Finished	SAMP, 10 mL
35	N020547-011A,SAMF	25	1000	Unknown		08/08/2016 15:03	Finished	SAMP, 10 mL
36	N020547-012A,SAMF	26	1000	Unknown		08/08/2016 15:12	Finished	SAMP, 10 mL
37	N020548-001A,SAMF	27	1000	Unknown		08/08/2016 15:21	Finished	SAMP, 10 mL
38	CCV-3,CCV,1,	28	1000	Unknown		08/08/2016 15:31	Finished	CCV @5ppb, IWST-160401A
39	CCB-3,CCB,1,	29	1000	Unknown		08/08/2016 15:40	Finished	CCB R160718D
40	N020548-002A,SAMF	30	1000	Unknown		08/08/2016 15:50	Finished	SAMP, 10 mL
41	N020548-003A,SAMF	31	1000	Unknown		08/08/2016 15:59	Finished	SAMP, 10 mL
42	N020548-004A,SAMF	32	1000	Unknown		08/08/2016 16:09	Finished	SAMP, 10 mL
43	N020548-005A,SAMF	33	1000	Unknown		08/08/2016 16:18	Finished	SAMP, 10 mL
44	N020548-006A,SAMF	34	1000	Unknown		08/08/2016 16:28	Finished	SAMP, 10 mL
45	N020548-007A,SAMF	35	1000	Unknown		08/08/2016 16:37	Finished	SAMP, 10 mL
46	N020548-008A,SAMF	36	1000	Unknown		08/08/2016 16:47	Finished	SAMP, 10 mL
47	CCV-4,CCV1,1,	37	1000	Unknown		08/08/2016 16:56	Finished	CCV @10ppb, IWST-160401A
48	CCB-4,CCB,1,	38	1000	Unknown		08/08/2016 17:06	Finished	CCB, R160718D
49	N020534-001BMSD,M	41	1000	Unknown		08/08/2016 18:07	Finished	MSD (5ppb), IWST-160401B, 0
50	N020548-004A,SAMF	42	1000	Unknown		08/08/2016 18:18	Finished	SAMP, 0.1>10 mL
51	N020548-007A,SAMF	43	1000	Unknown		08/08/2016 18:28	Finished	SAMP, 0.2>10 mL
52	CCV-5,CCV,1,	44	1000	Unknown		08/08/2016 18:37	Finished	CCV @5ppb, IWST-160401A
53	CCB-5,CCB,1,	45	1000	Unknown		08/08/2016 18:47	Finished	CCB R160718D
54	N020534-001BMSD,M	46	1000	Unknown		08/08/2016 18:56	Finished	MSD (5ppb), IWST-160401B, 0
55	CCV-6,CCV1,1,	47	1000	Unknown		08/08/2016 19:09	Finished	CCV @10ppb, IWST-160401A
56	CCB-6,CCB,1,	48	1000	Unknown		08/08/2016 19:19	Finished	CCB, R160718D
57	SHUTDOWN	49	1000	Unknown		08/08/2016 19:29	Finished	
58	Eluent: R160808A	50	1000	Unknown		n.a.	Finished	Eluent
59	PCR: R160808B	51	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:	**160803_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**08/Aug/16 11:14**	*Sample Weight:*	**1.0000**

Chromatogram



Integration Results

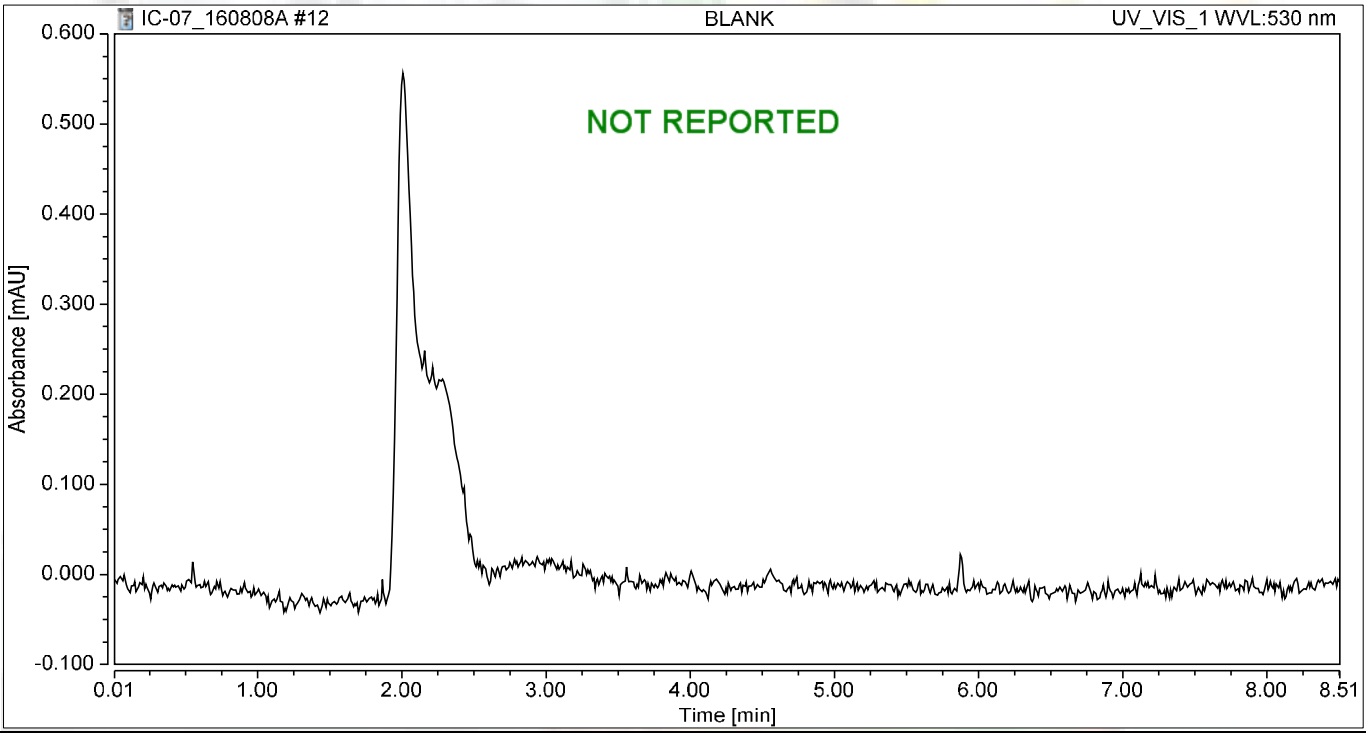
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
n.a.	Hexavalent Chromium	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Total:			**0.000**	**0.000**	**0.00**	**0.00**	

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:	**160803_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**08/Aug/16 11:25**	*Sample Weight:*	**1.0000**

Chromatogram



Integration Results

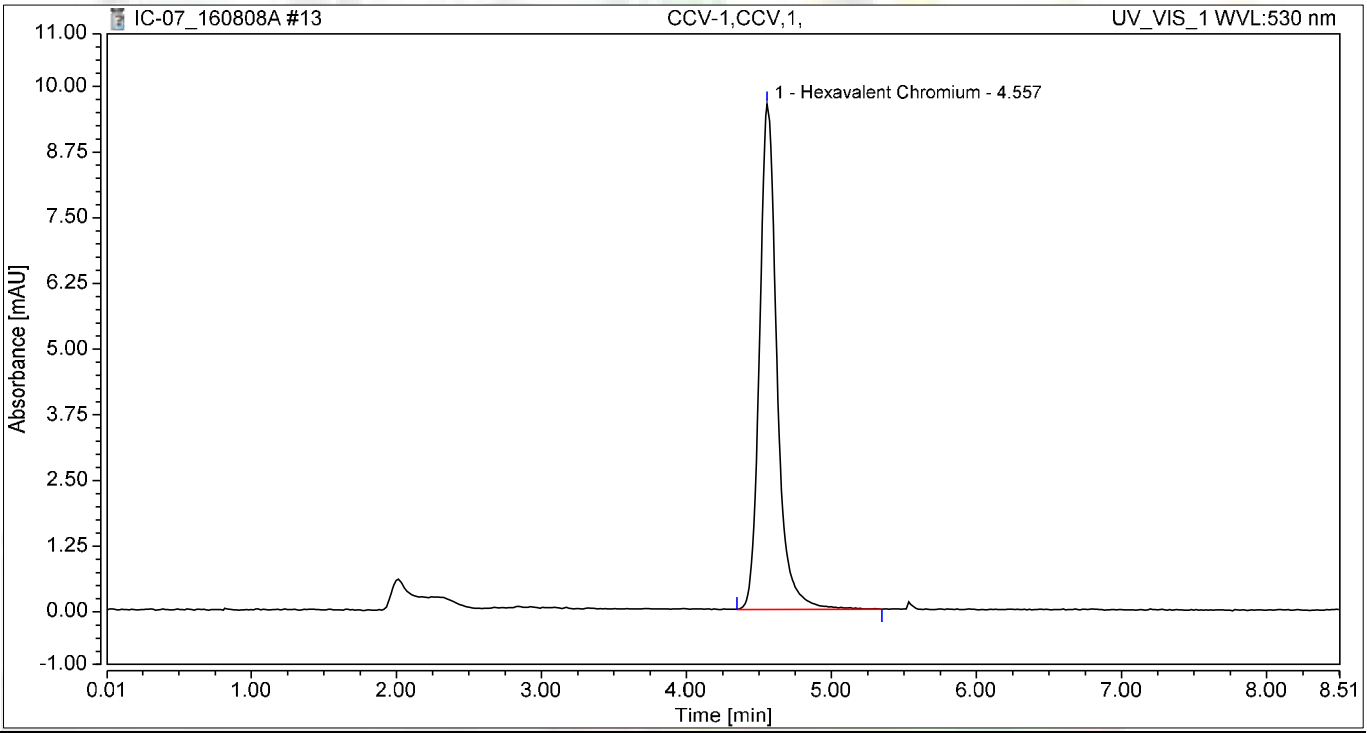
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
n.a.	Hexavalent Chromium	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Total:			**0.000**	**0.000**	**0.00**	**0.00**	

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:	**160803_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**08/Aug/16 11:34**	*Sample Weight:*	**1.0000**

Chromatogram



Integration Results

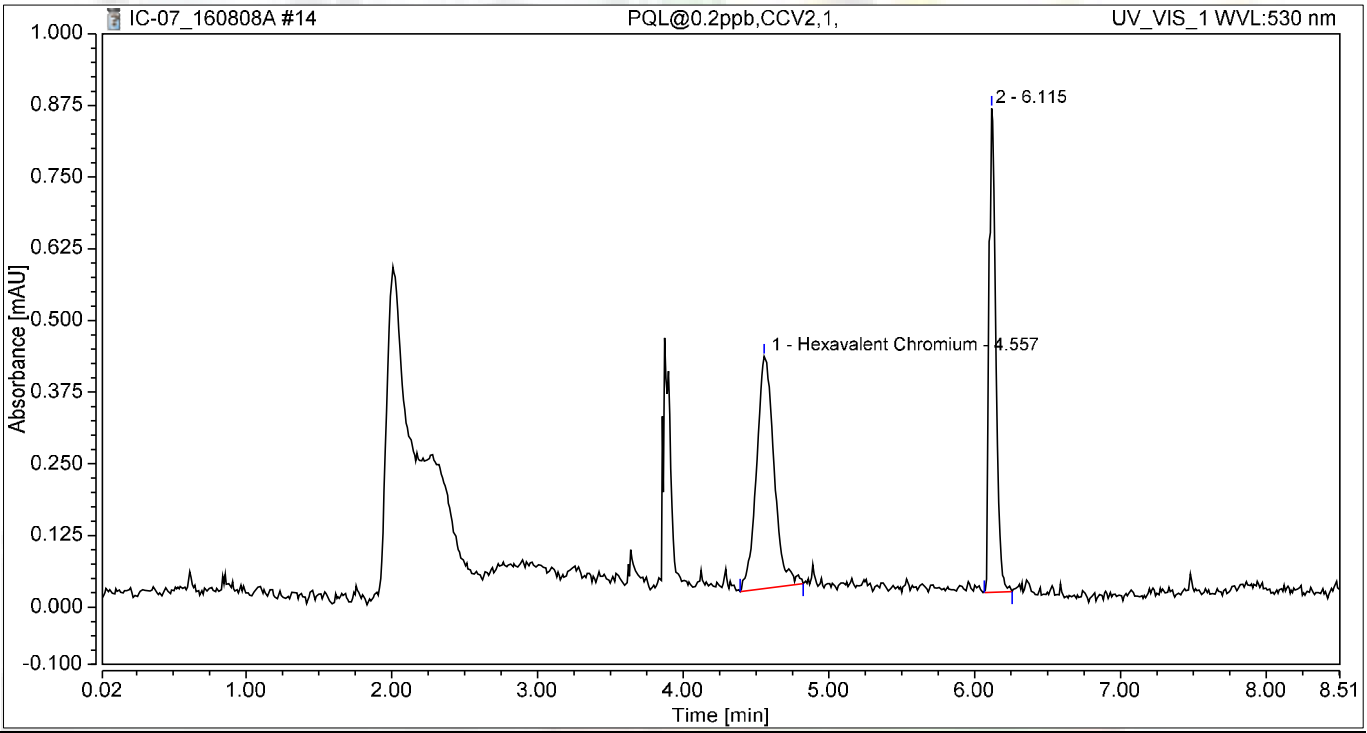
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.557	1.348	9.621	100.00	100.00	5.1148
Total:			**1.348**	**9.621**	**100.00**	**100.00**	

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:	**160803_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**08/Aug/16 11:44**	*Sample Weight:*	**1.0000**

Chromatogram



Integration Results

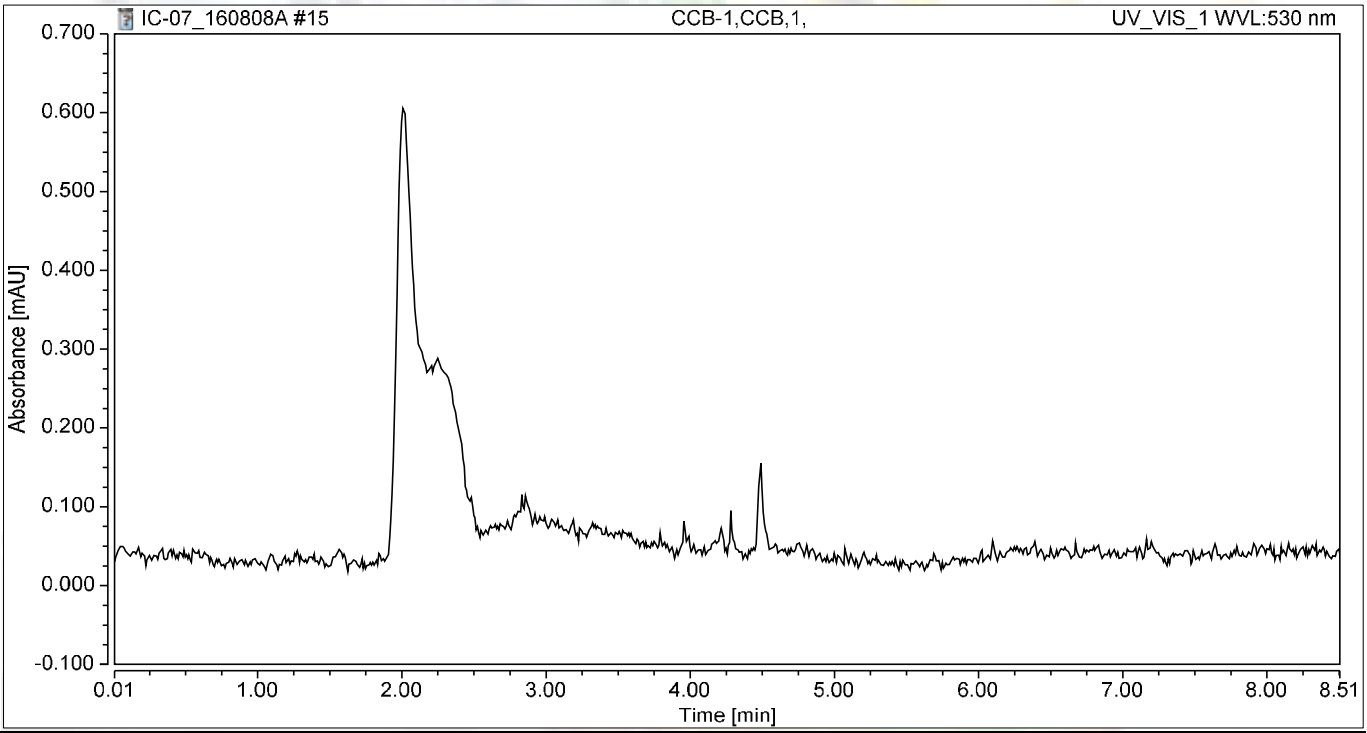
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.557	0.057	0.405	54.93	32.40	0.2148
2		6.115	0.046	0.844	45.07	67.60	n.a.
Total:			**0.103**	**1.249**	**100.00**	**100.00**	

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:	**160803_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**08/Aug/16 11:53**	*Sample Weight:*	**1.0000**

Chromatogram



Integration Results

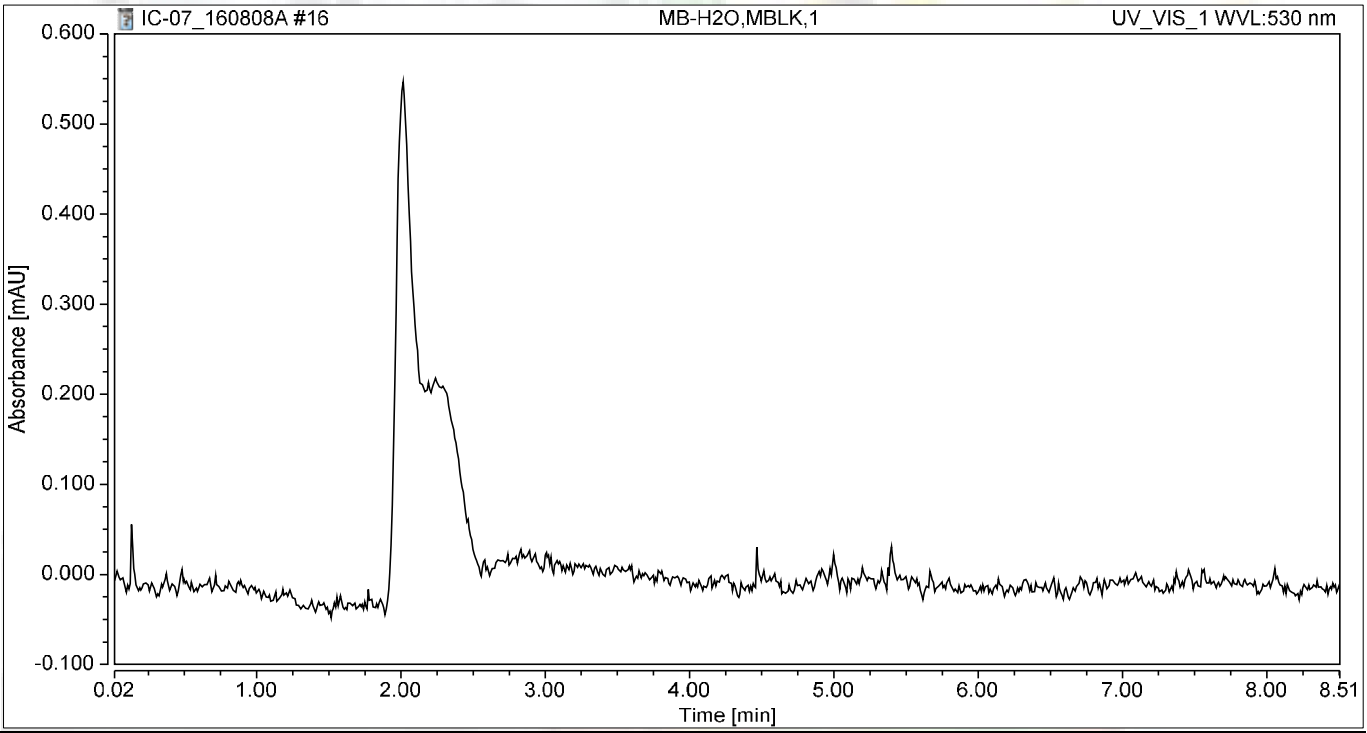
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
n.a.	Hexavalent Chromium	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Total:			**0.000**	**0.000**	**0.00**	**0.00**	

Chromatogram and Results

Injection Details

Injection Name:	**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:	**160803_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**08/Aug/16 12:03**	*Sample Weight:*	**1.0000**

Chromatogram



Integration Results

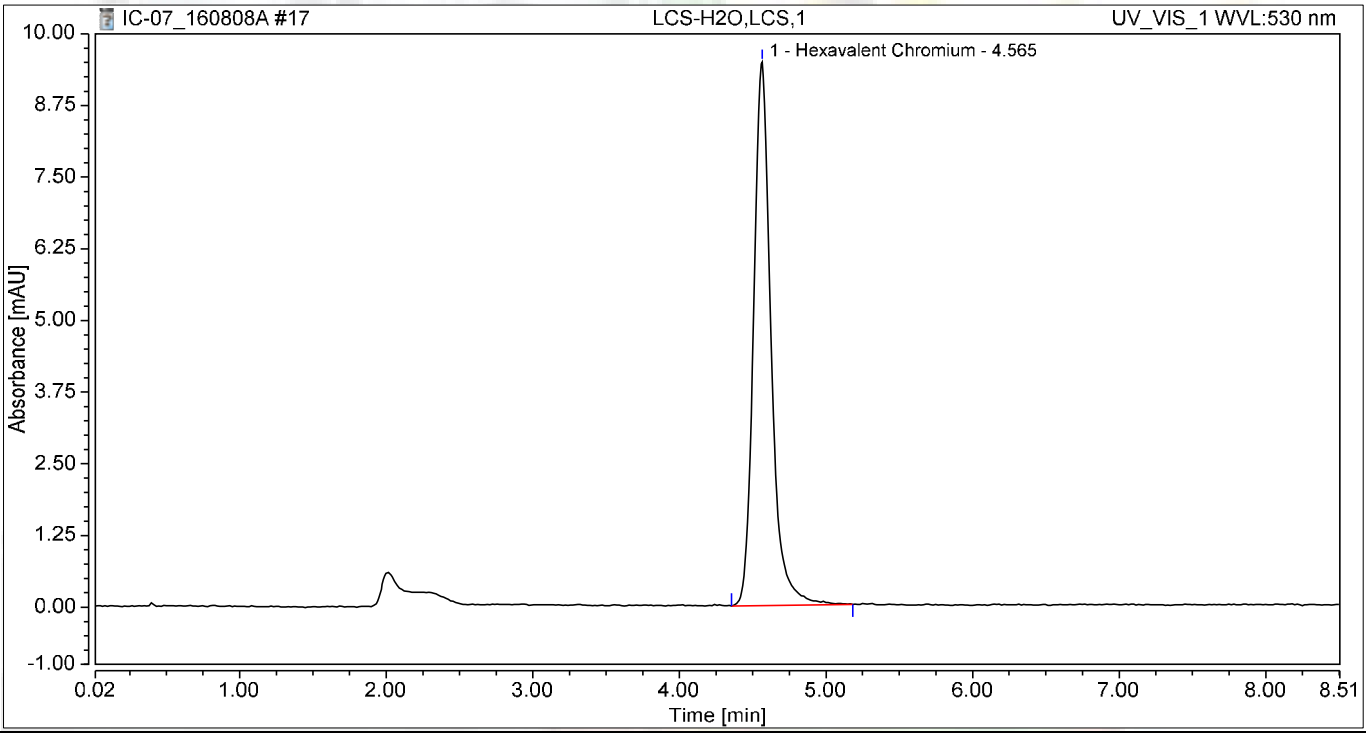
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
n.a.	Hexavalent Chromium	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Total:			**0.000**	**0.000**	**0.00**	**0.00**	

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:	**160803_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**08/Aug/16 12:12**	*Sample Weight:*	**1.0000**

Chromatogram



Integration Results

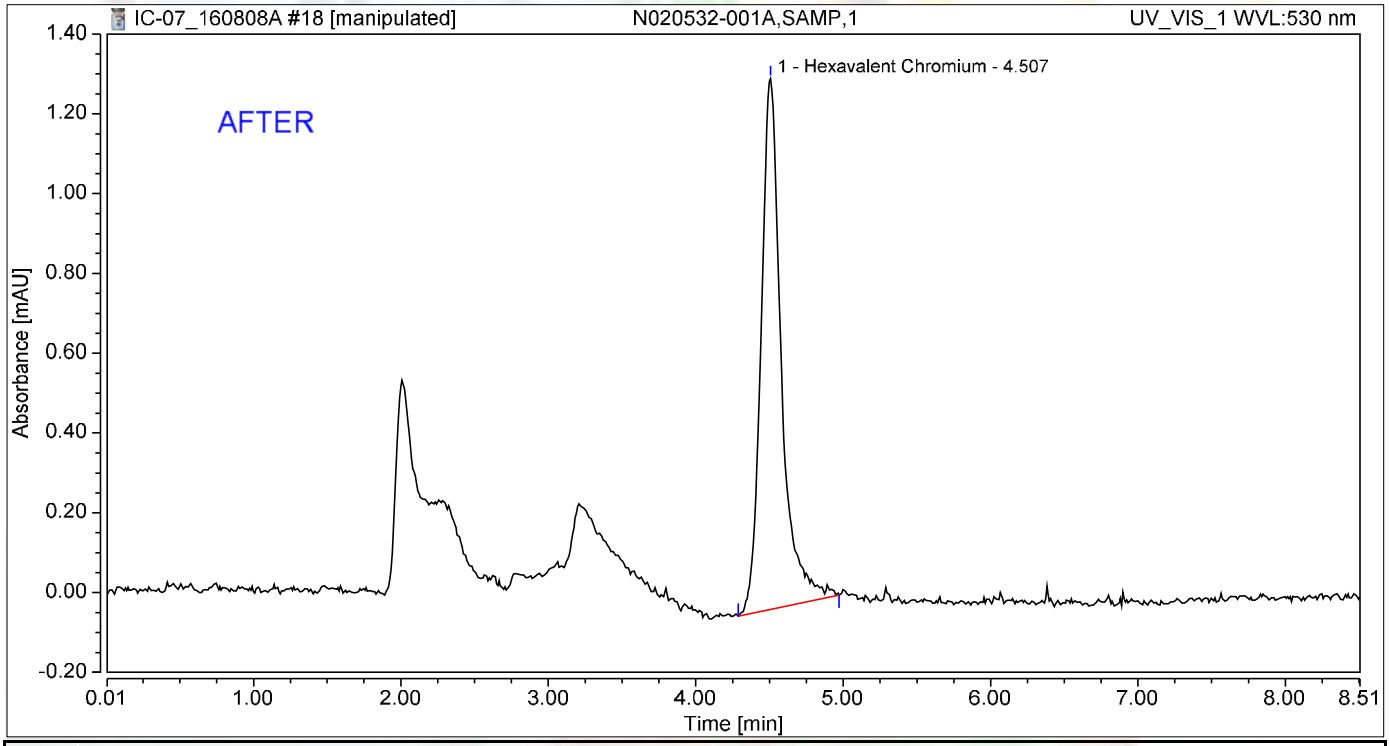
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.565	1.309	9.480	100.00	100.00	4.9646
Total:			**1.309**	**9.480**	**100.00**	**100.00**	

Chromatogram and Results

Injection Details

Injection Name:	**N020532-001A,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:	**160803_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**08/Aug/16 12:22**	*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	4.507	0.212	1.330	100.00	100.00	0.8047
Total:			**0.212**	**1.330**	**100.00**	**100.00**	

8/16/2016

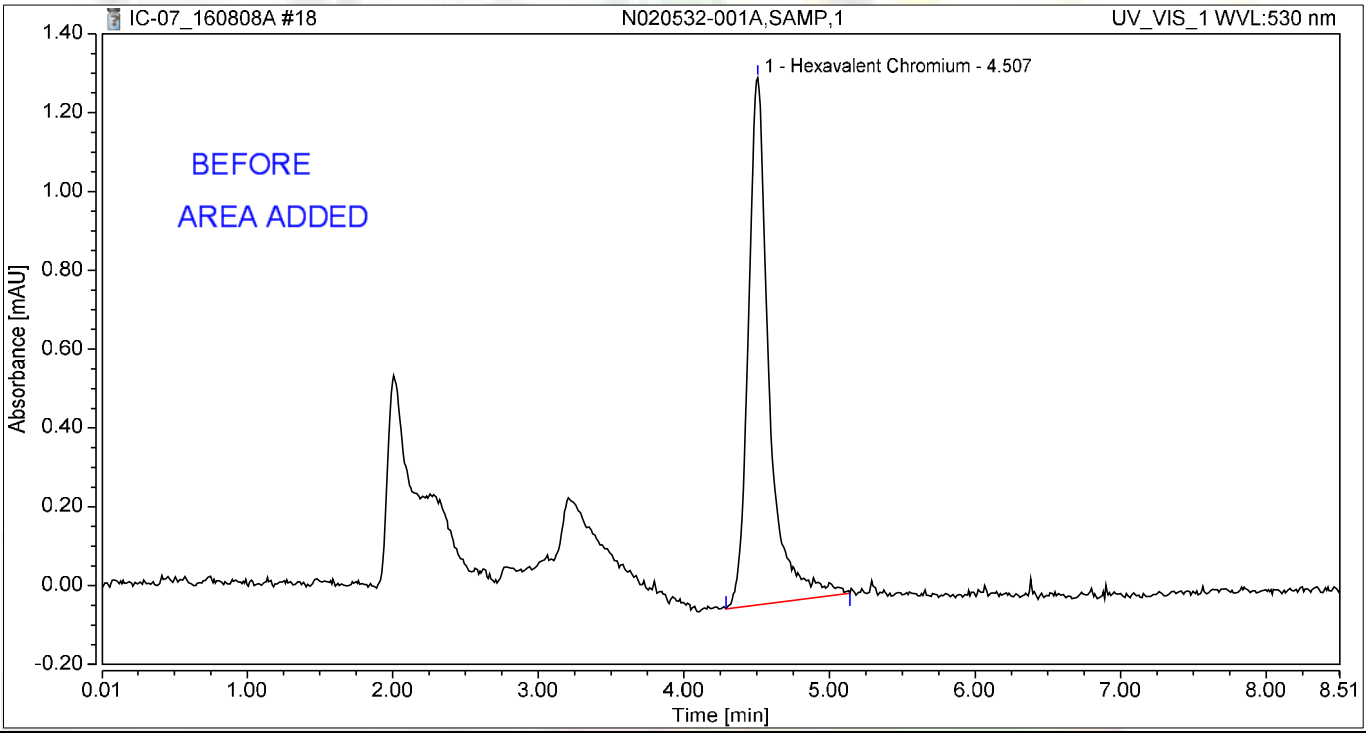
Reviewed by:
Nancy 8/17/2016

Chromatogram and Results

Injection Details

Injection Name:	**N020532-001A,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:	**160803_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**08/Aug/16 12:22**	*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	4.507	0.222	1.337	100.00	100.00	0.8435
Total:			**0.222**	**1.337**	**100.00**	**100.00**	

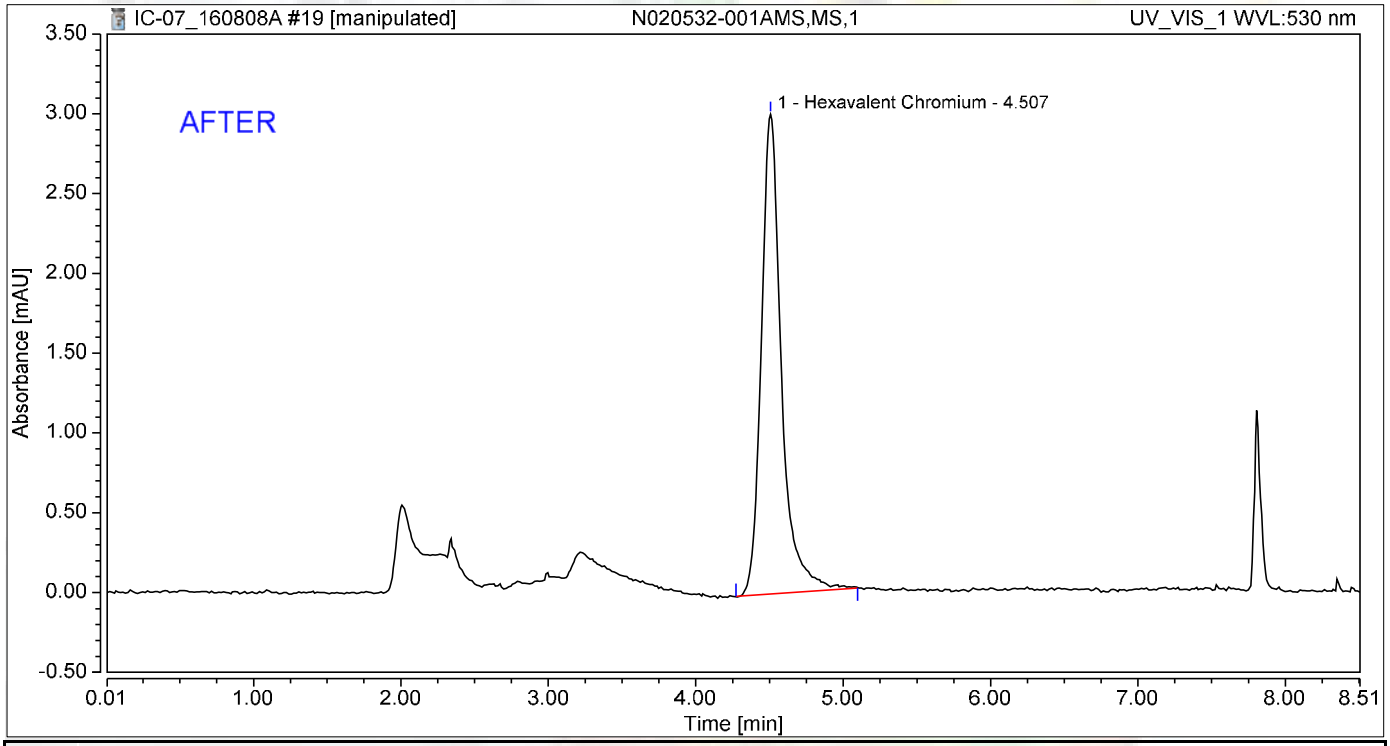
8/16/2016

Chromatogram and Results

Injection Details

Injection Name:	**N020532-001AMS,MS,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:	**160803_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**08/Aug/16 12:31**	*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	4.507	0.474	3.003	100.00	100.00	1.7986
Total:			**0.474**	**3.003**	**100.00**	**100.00**	

8/16/2016

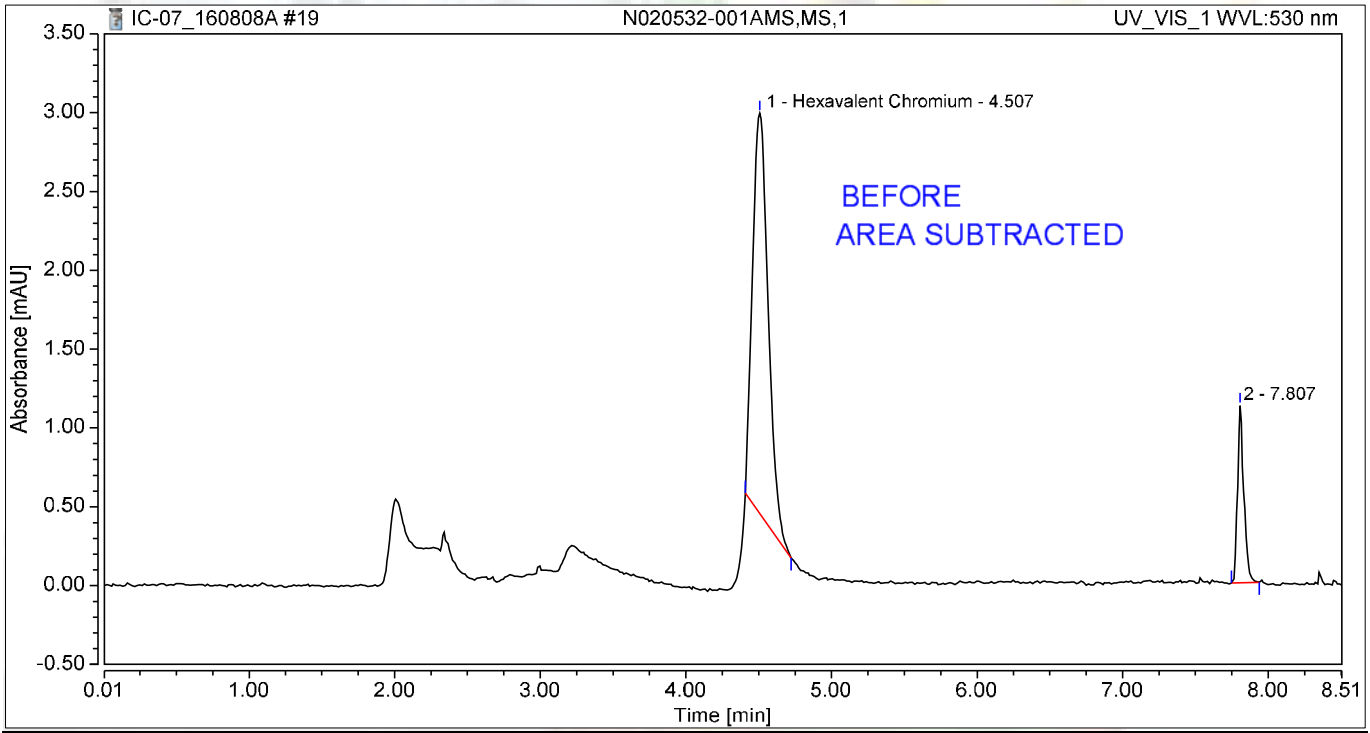
Reviewed by:
8/17/2016

Chromatogram and Results

Injection Details

Injection Name:	**N020532-001AMS,MS,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:	**160803_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**08/Aug/16 12:31**	*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	4.507	0.318	2.539	84.67	69.31	1.2049
2		7.807	0.058	1.124	15.33	30.69	n.a.
Total:			**0.375**	**3.663**	**100.00**	**100.00**	

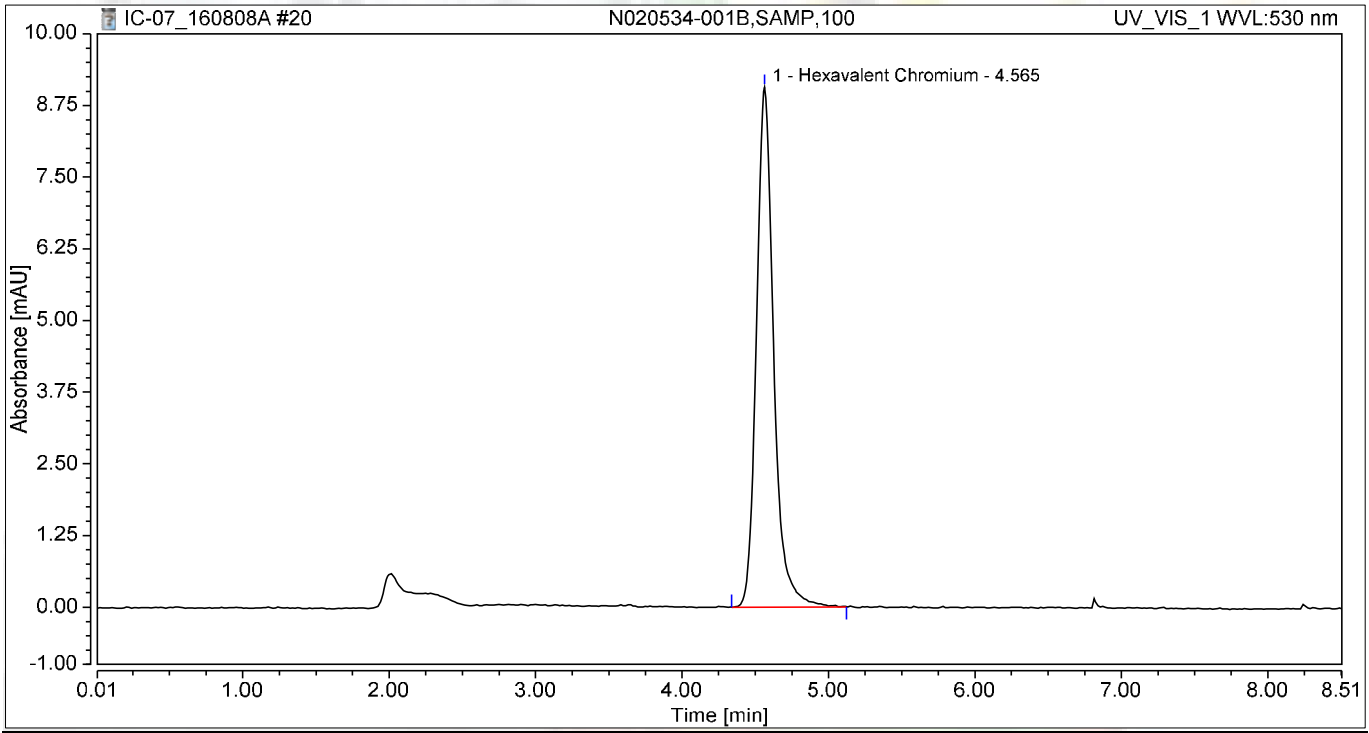
8/16/2016

Chromatogram and Results

Injection Details

Injection Name:	**N020534-001B,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:	**160803_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**08/Aug/16 12:41**	*Sample Weight:*	**1.0000**

Chromatogram



Integration Results

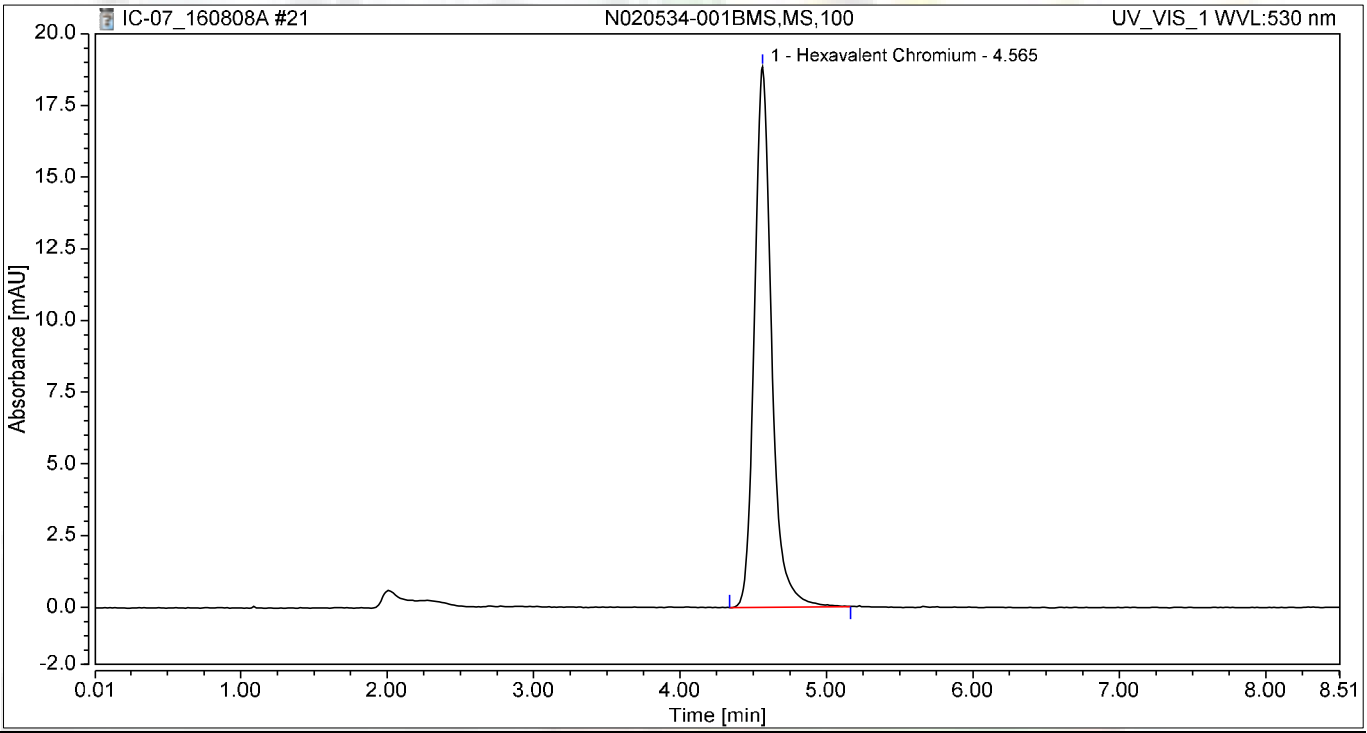
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.565	1.240	9.069	100.00	100.00	4.7047
Total:			**1.240**	**9.069**	**100.00**	**100.00**	

Chromatogram and Results

Injection Details

Injection Name:	**N020534-001BMS,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:	**160803_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**08/Aug/16 12:50**	*Sample Weight:*	**1.0000**

Chromatogram



Integration Results

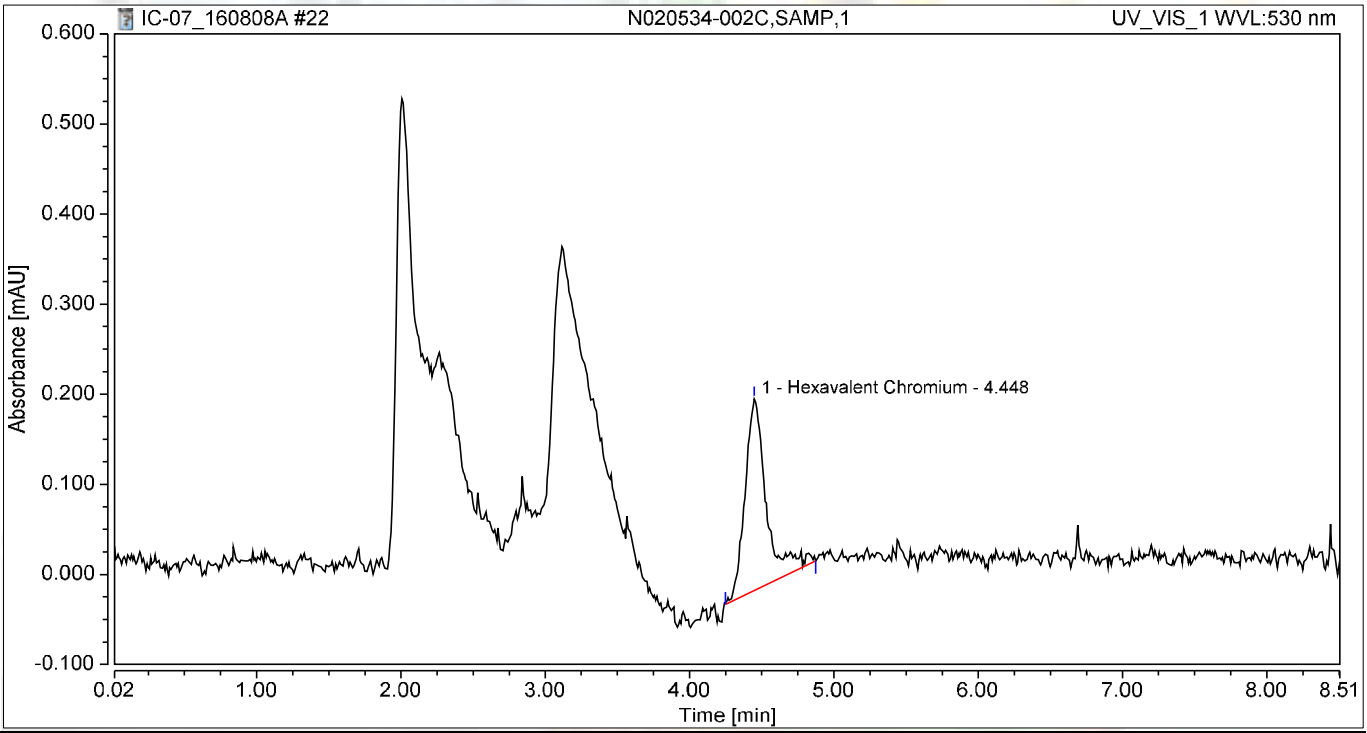
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.565	2.575	18.845	100.00	100.00	9.7687
Total:			**2.575**	**18.845**	**100.00**	**100.00**	

Chromatogram and Results

Injection Details

Injection Name:	**N020534-002C,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:	**160803_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**08/Aug/16 13:00**	*Sample Weight:*	**1.0000**

Chromatogram



Integration Results

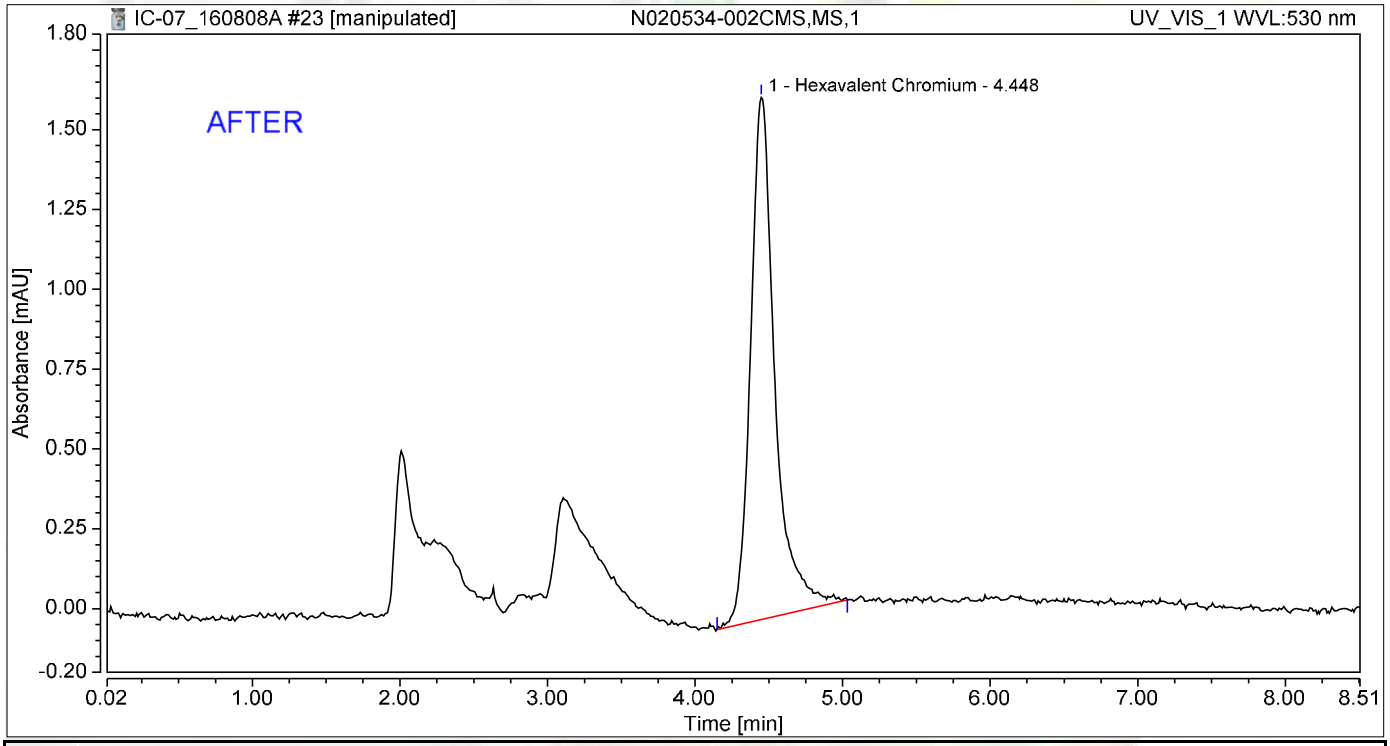
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.448	0.036	0.212	100.00	100.00	0.1375
Total:			**0.036**	**0.212**	**100.00**	**100.00**	

Chromatogram and Results

Injection Details

Injection Name:	**N020534-002CMS,MS,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:	**160803_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**08/Aug/16 13:09**	*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	4.448	0.313	1.636	100.00	100.00	1.1875
Total:			**0.313**	**1.636**	**100.00**	**100.00**	

8/16/2016

Reviewed by:

Nancy 8/17/2016

My first report/Integration

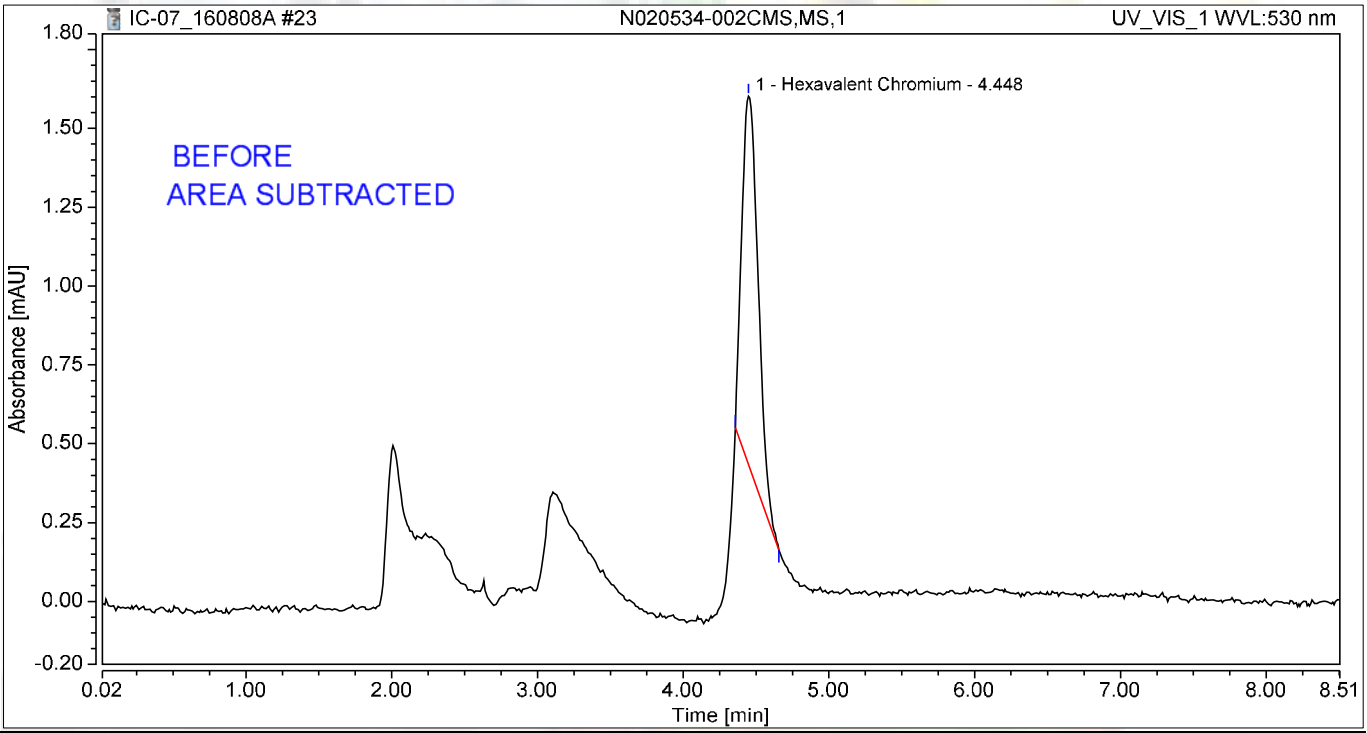
Chromeleon (c) Dionex
Version 7.1.1.1127

Chromatogram and Results

Injection Details

Injection Name:	**N020534-002CMS,MS,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:	**160803_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**08/Aug/16 13:09**	*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	4.448	0.153	1.169	100.00	100.00	0.5805
Total:			**0.153**	**1.169**	**100.00**	**100.00**	

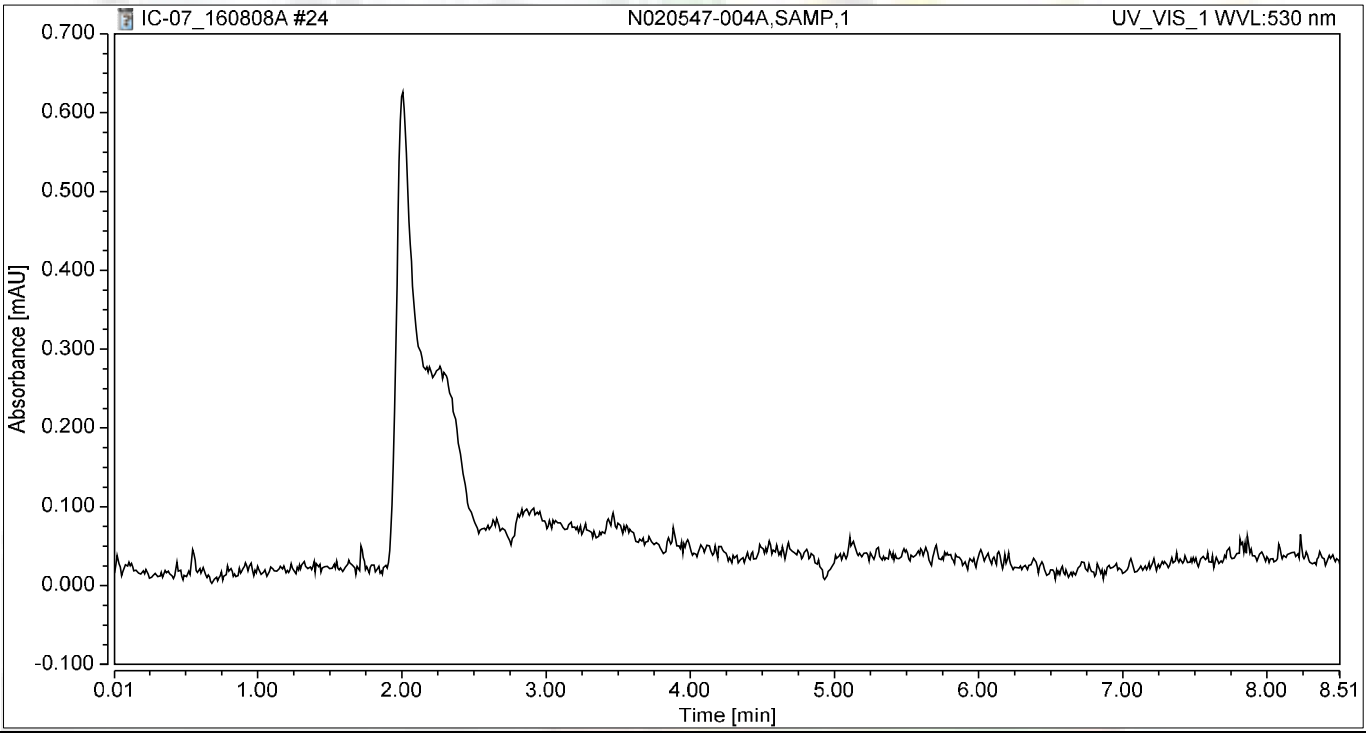
8/16/2016

Chromatogram and Results

Injection Details

Injection Name:	**N020547-004A,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:	**160803_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**08/Aug/16 13:19**	*Sample Weight:*	**1.0000**

Chromatogram



Integration Results

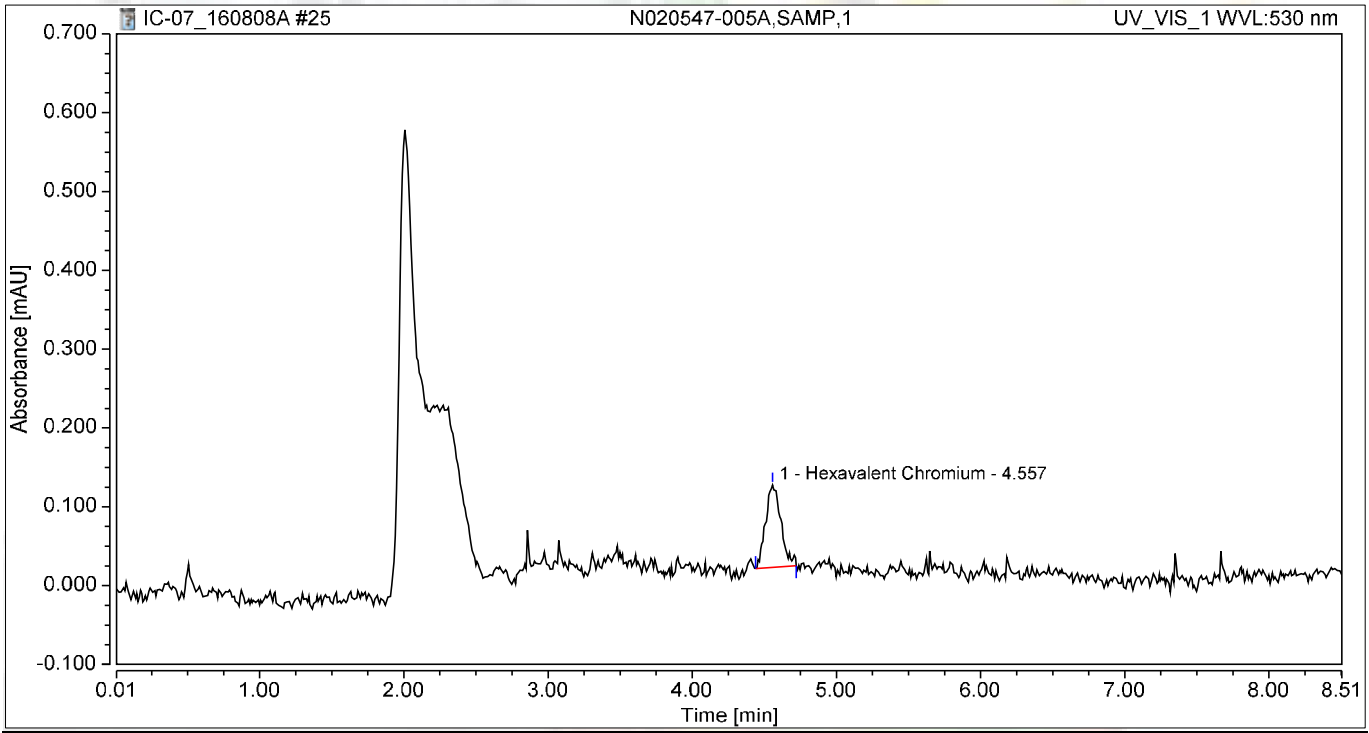
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
n.a.	Hexavalent Chromium	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Total:			**0.000**	**0.000**	**0.00**	**0.00**	

Chromatogram and Results

Injection Details

Injection Name:	**N020547-005A,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:	**160803_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**08/Aug/16 13:28**	*Sample Weight:*	**1.0000**

Chromatogram



Integration Results

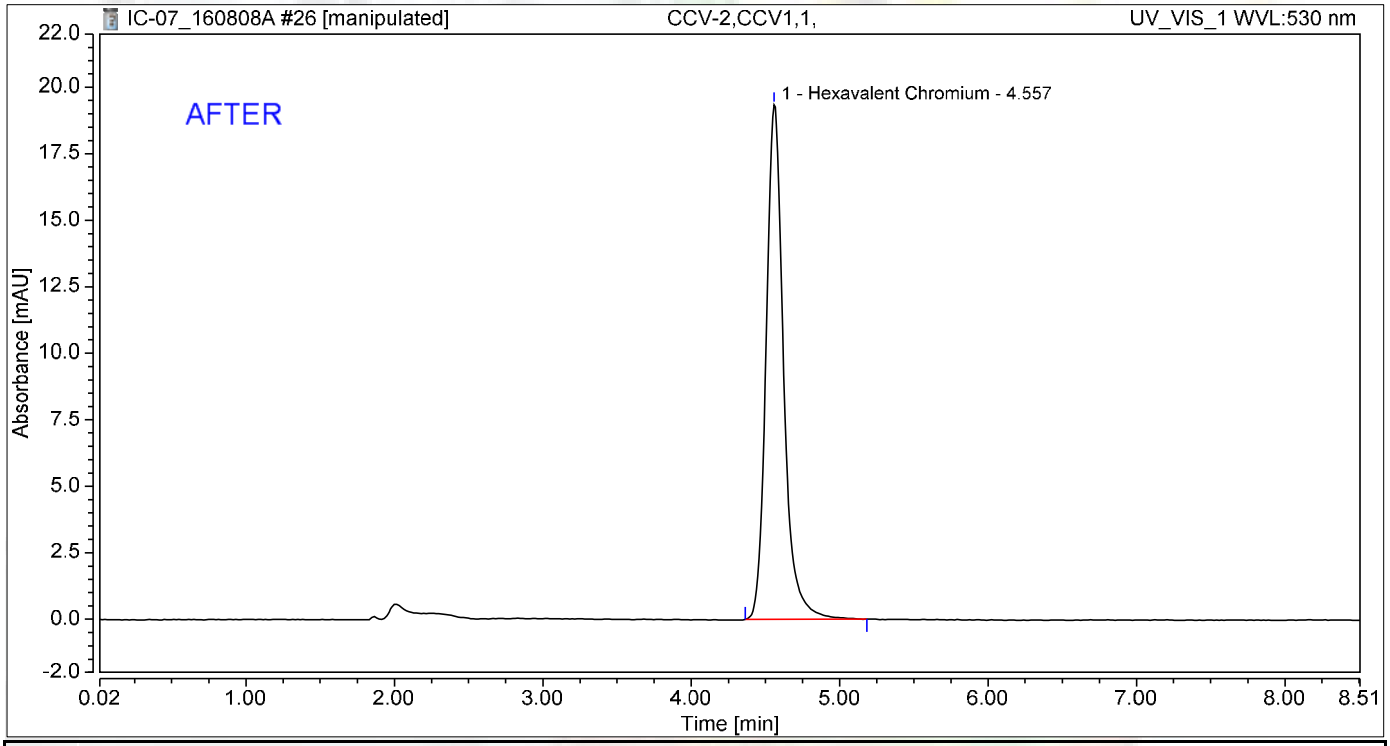
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.557	0.013	0.104	100.00	100.00	0.0489
Total:			**0.013**	**0.104**	**100.00**	**100.00**	

Chromatogram and Results

Injection Details

Injection Name:	**CCV-2,CCV1,1,**	*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:	**160803_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**08/Aug/16 13:37**	*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	4.557	2.647	19.341	100.00	100.00	10.0396
Total:			**2.647**	**19.341**	**100.00**	**100.00**	

8/16/2016

Reviewed by:

8/17/2016

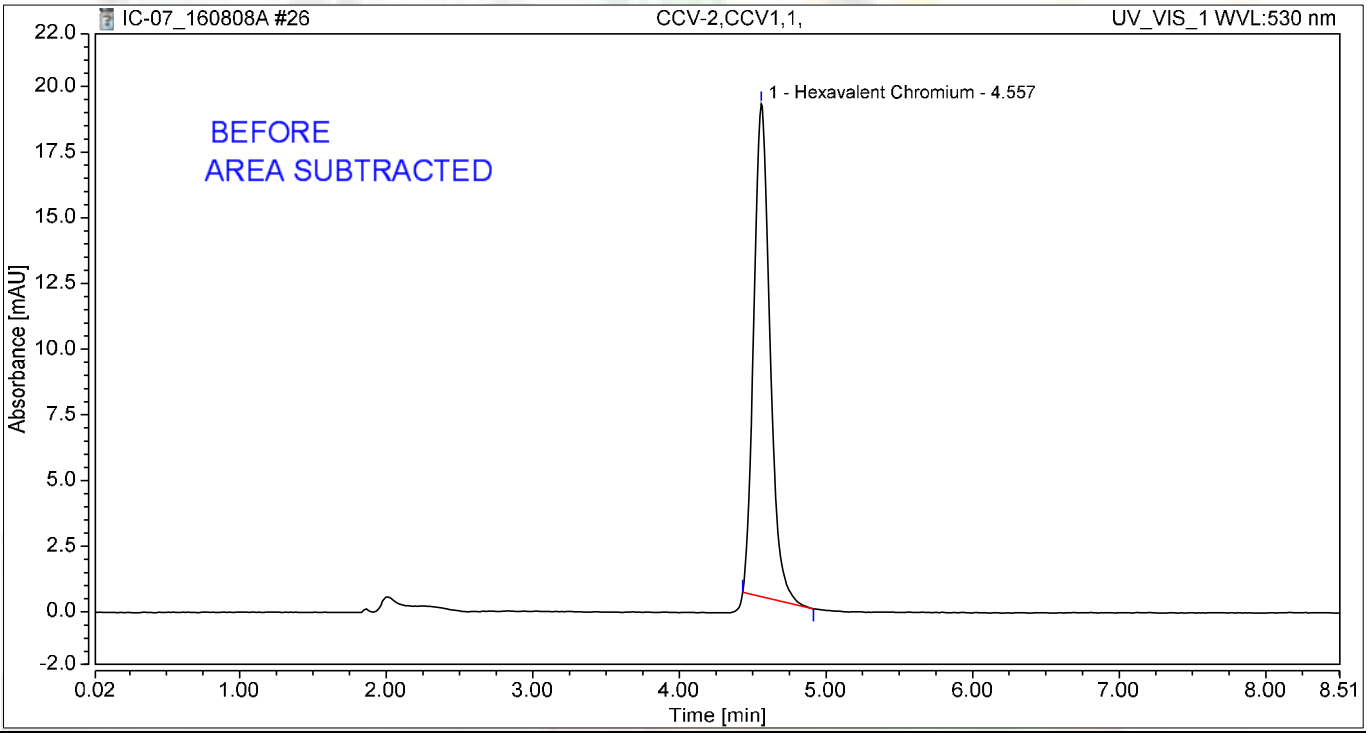
My first report integration

Chromatogram and Results

Injection Details

Injection Name:	**CCV-2,CCV1,1,**	*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:	**160803_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**08/Aug/16 13:37**	*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	4.557	2.411	18.753	100.00	100.00	9.1450
Total:			**2.411**	**18.753**	**100.00**	**100.00**	

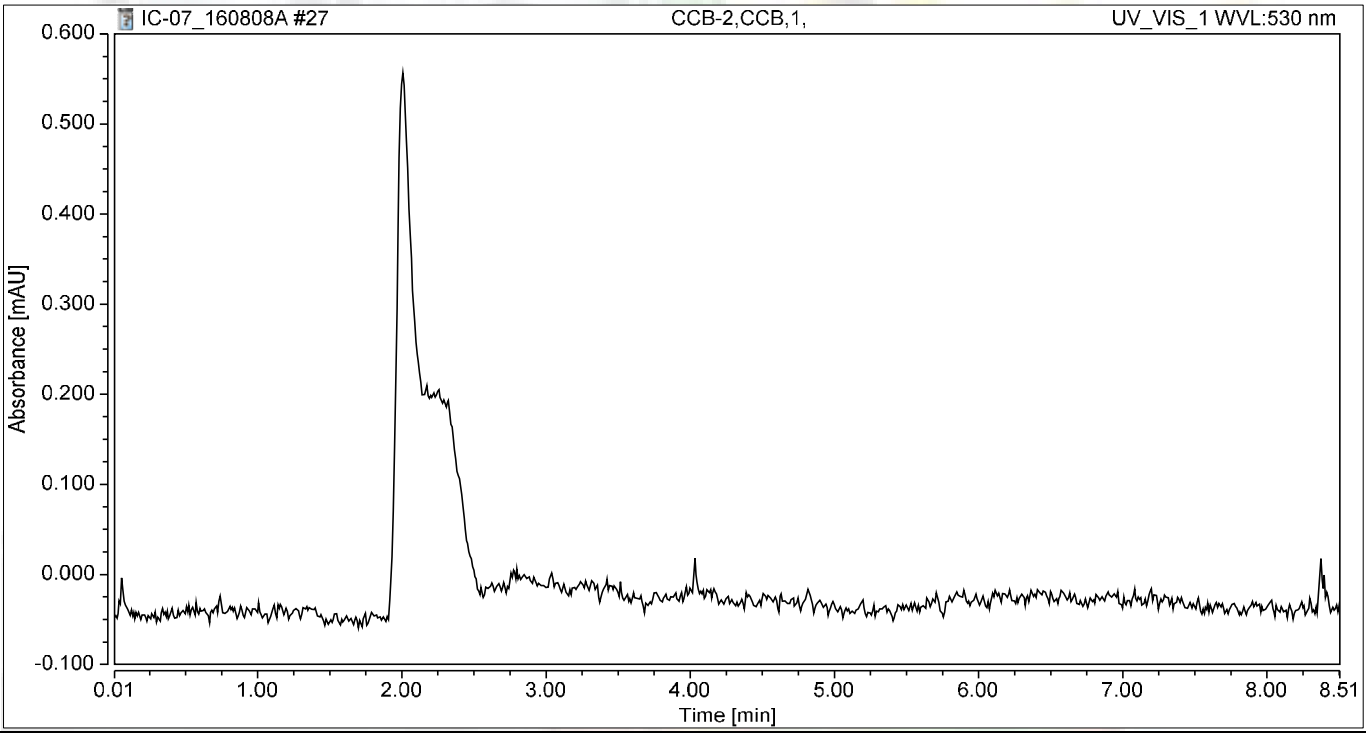
8/16/2016

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:	**160803_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**08/Aug/16 13:47**	*Sample Weight:*	**1.0000**

Chromatogram



Integration Results

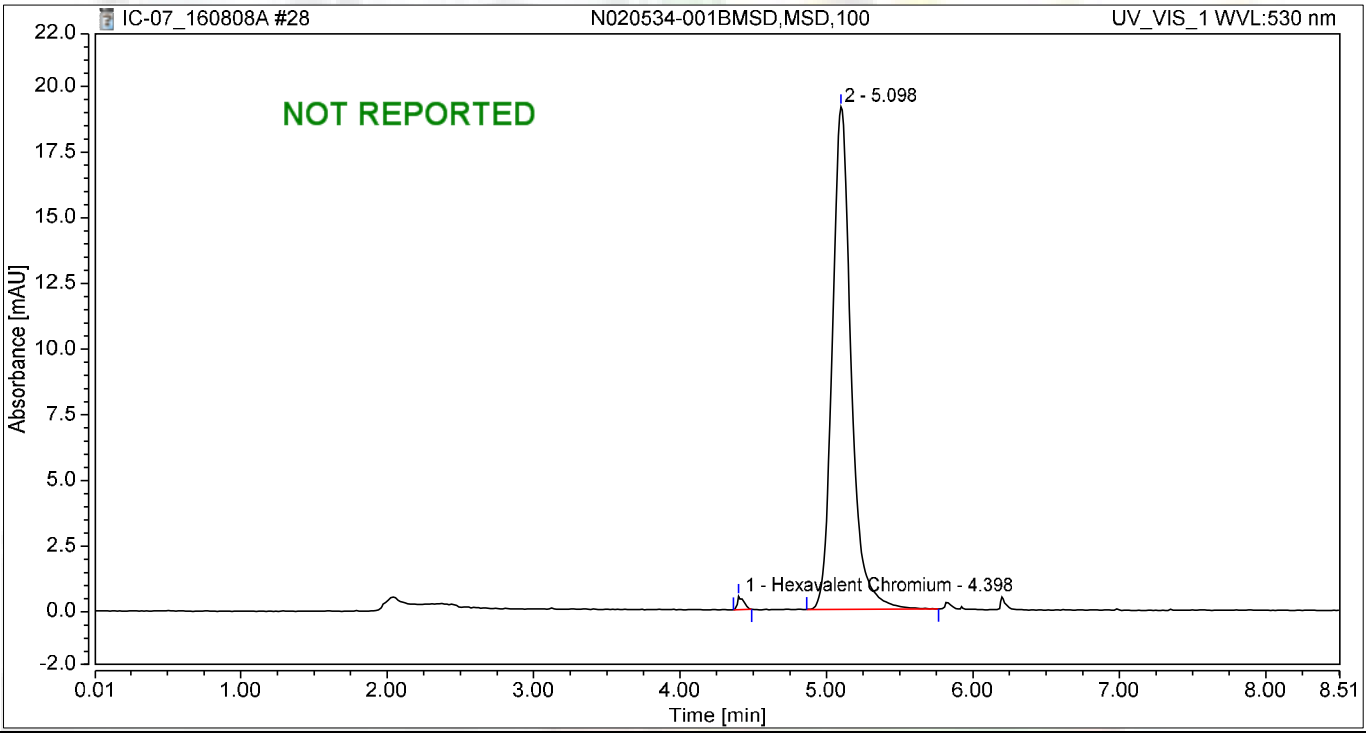
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
n.a.	Hexavalent Chromium	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Total:			**0.000**	**0.000**	**0.00**	**0.00**	

Chromatogram and Results

Injection Details

Injection Name:	**N020534-001BMSD,MSD,100**	*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:	**160803_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**08/Aug/16 13:56**	*Sample Weight:*	**1.0000**

Chromatogram



Integration Results

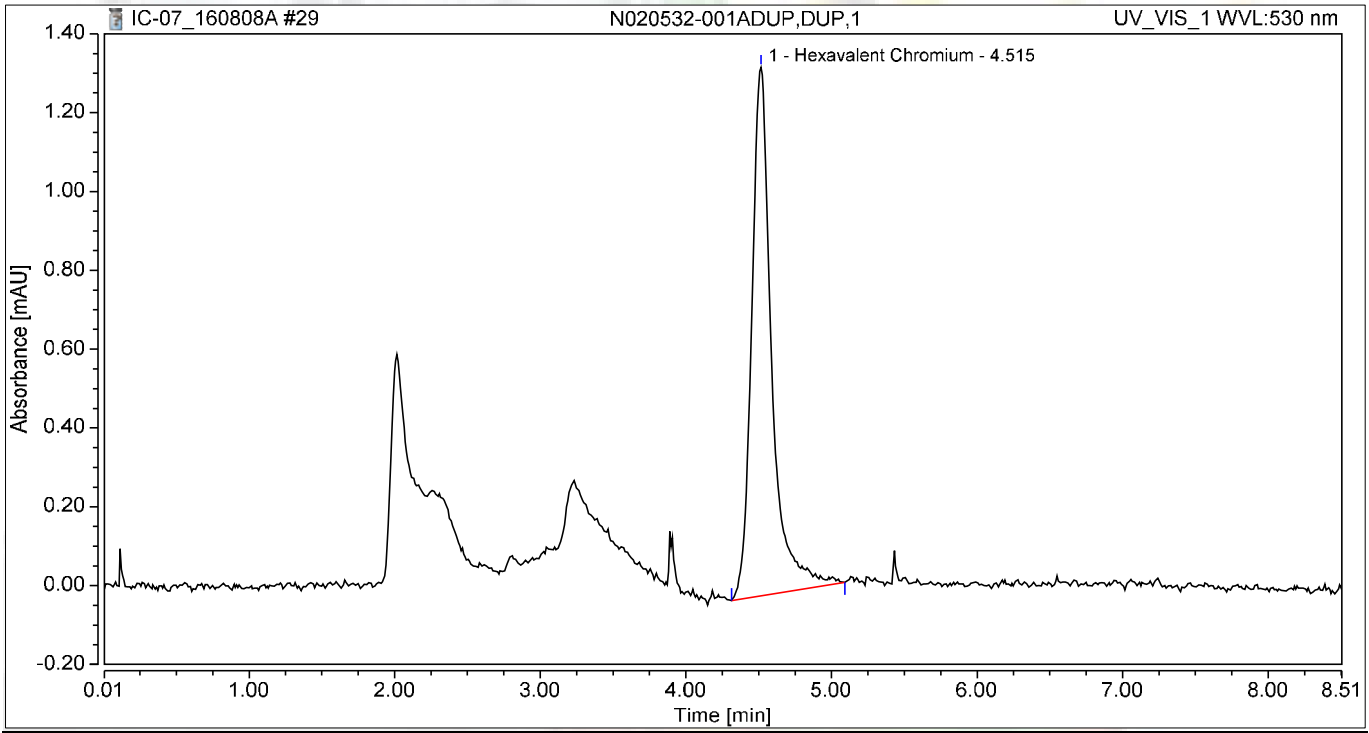
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.398	0.026	0.504	0.89	2.57	0.0976
2		5.098	2.864	19.134	99.11	97.43	n.a.
Total:			**2.889**	**19.638**	**100.00**	**100.00**	

Chromatogram and Results

Injection Details

Injection Name:	**N020532-001ADUP,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:	**160803_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**08/Aug/16 14:06**	*Sample Weight:*	**1.0000**

Chromatogram



Integration Results

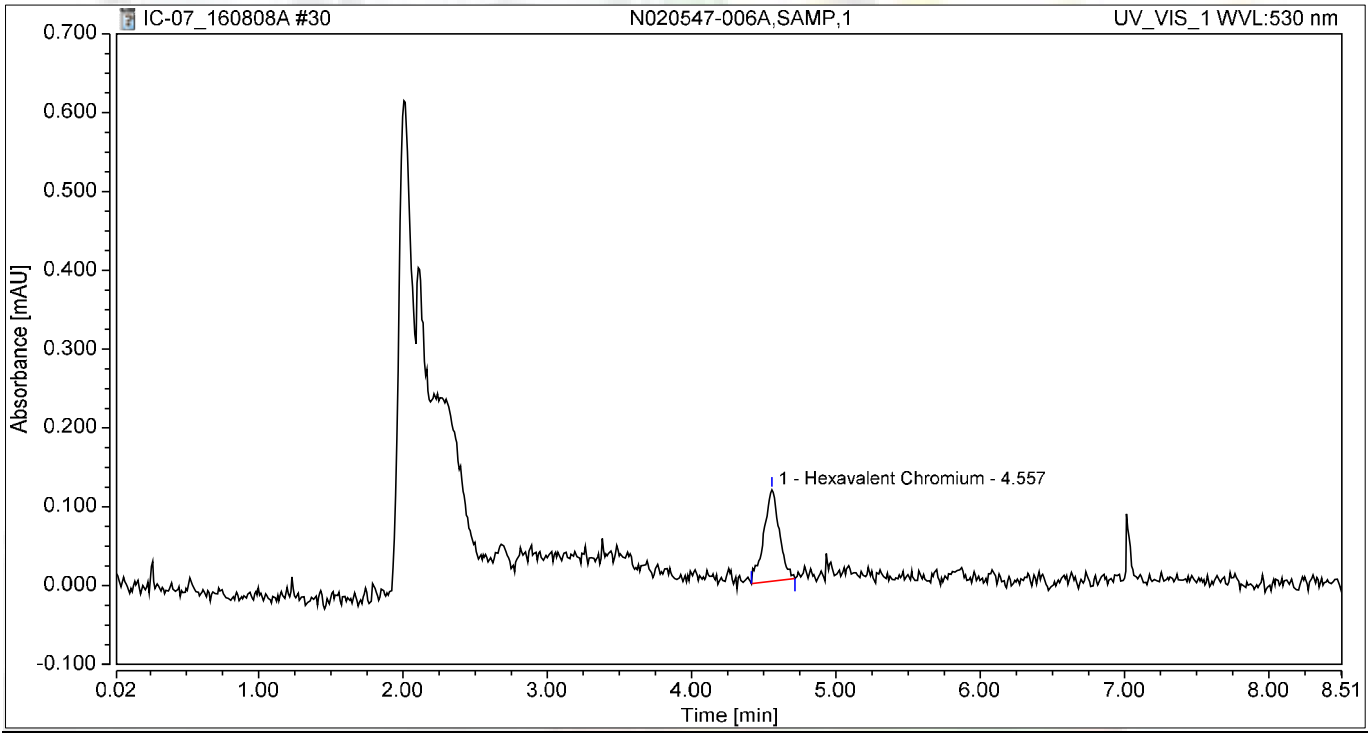
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.515	0.215	1.341	100.00	100.00	0.8137
Total:			**0.215**	**1.341**	**100.00**	**100.00**	

Chromatogram and Results

Injection Details

Injection Name:	**N020547-006A,SAMP,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:	**160803_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**08/Aug/16 14:15**	*Sample Weight:*	**1.0000**

Chromatogram



Integration Results

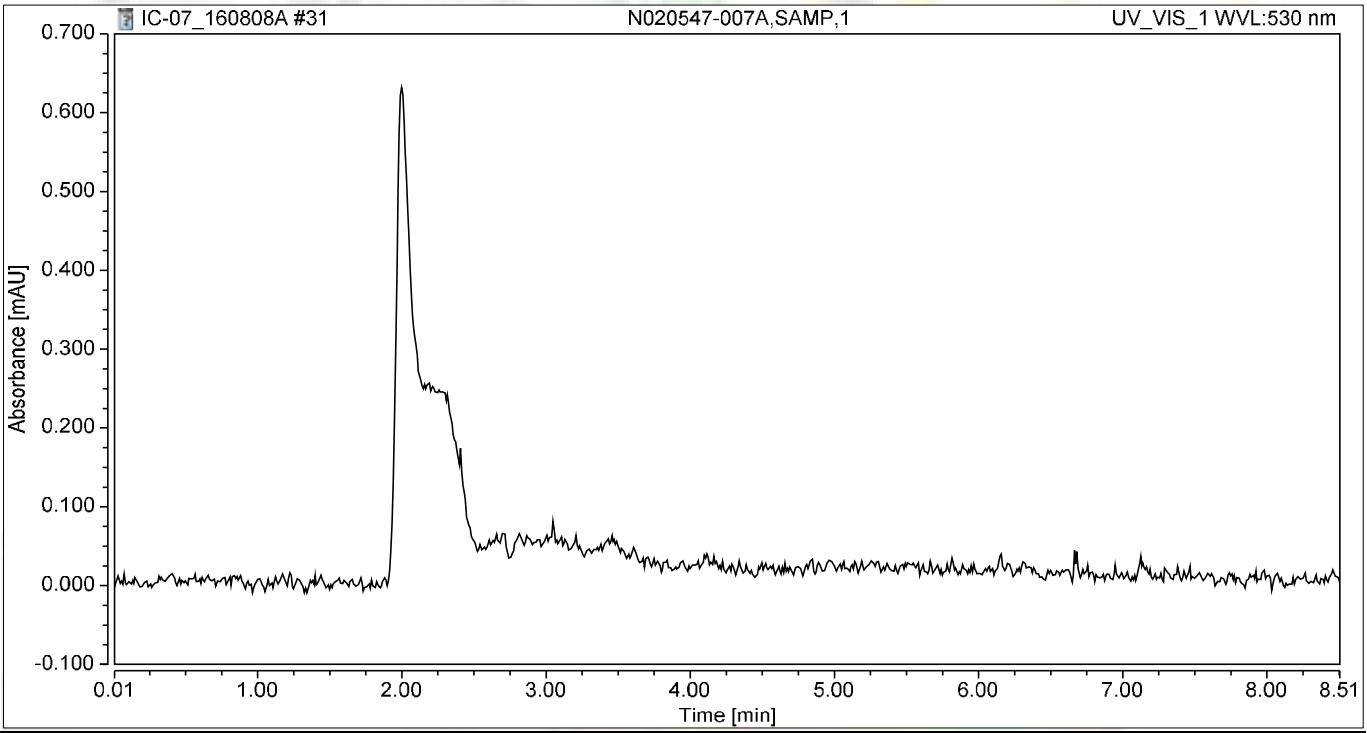
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.557	0.015	0.116	100.00	100.00	0.0550
Total:			**0.015**	**0.116**	**100.00**	**100.00**	

Chromatogram and Results

Injection Details

Injection Name:	**N020547-007A,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:	**160803_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**08/Aug/16 14:25**	*Sample Weight:*	**1.0000**

Chromatogram



Integration Results

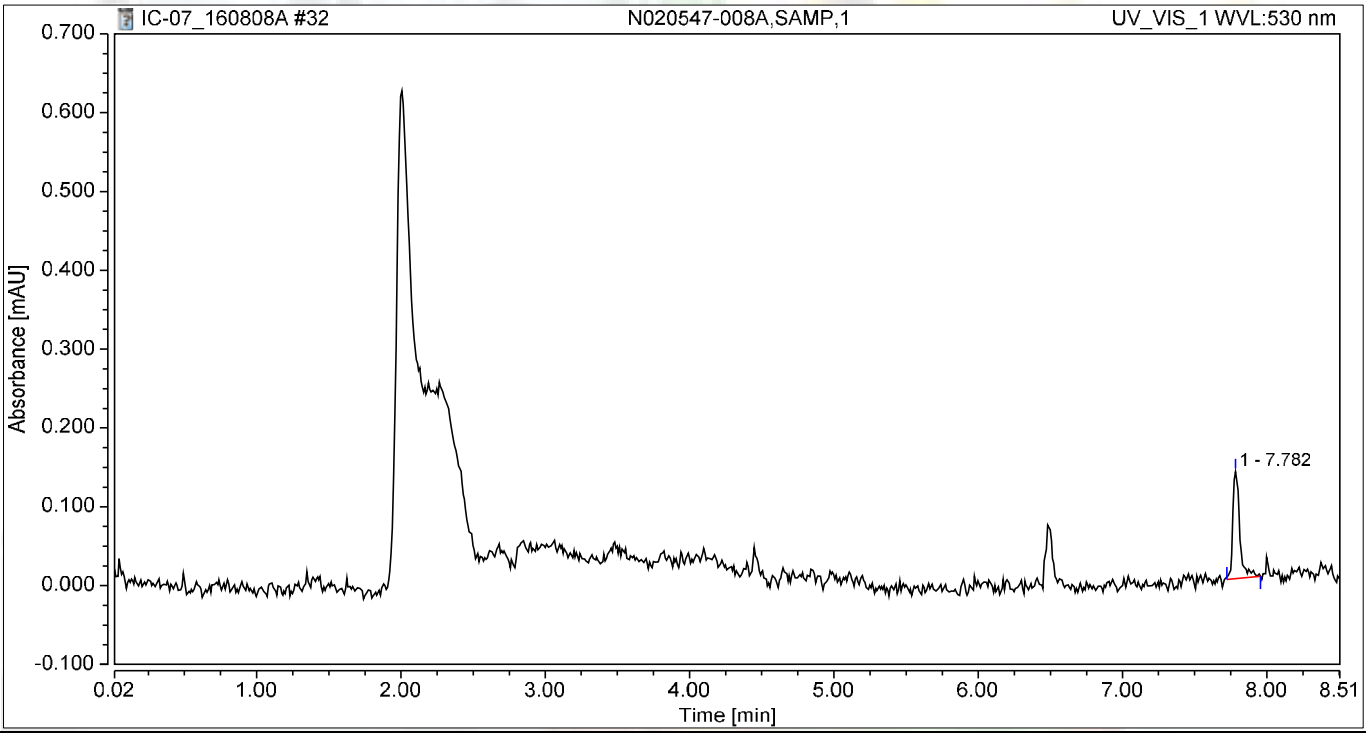
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
n.a.	Hexavalent Chromium	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Total:			**0.000**	**0.000**	**0.00**	**0.00**	

Chromatogram and Results

Injection Details

Injection Name:	**N020547-008A,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:	**160803_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**08/Aug/16 14:34**	*Sample Weight:*	**1.0000**

Chromatogram



Integration Results

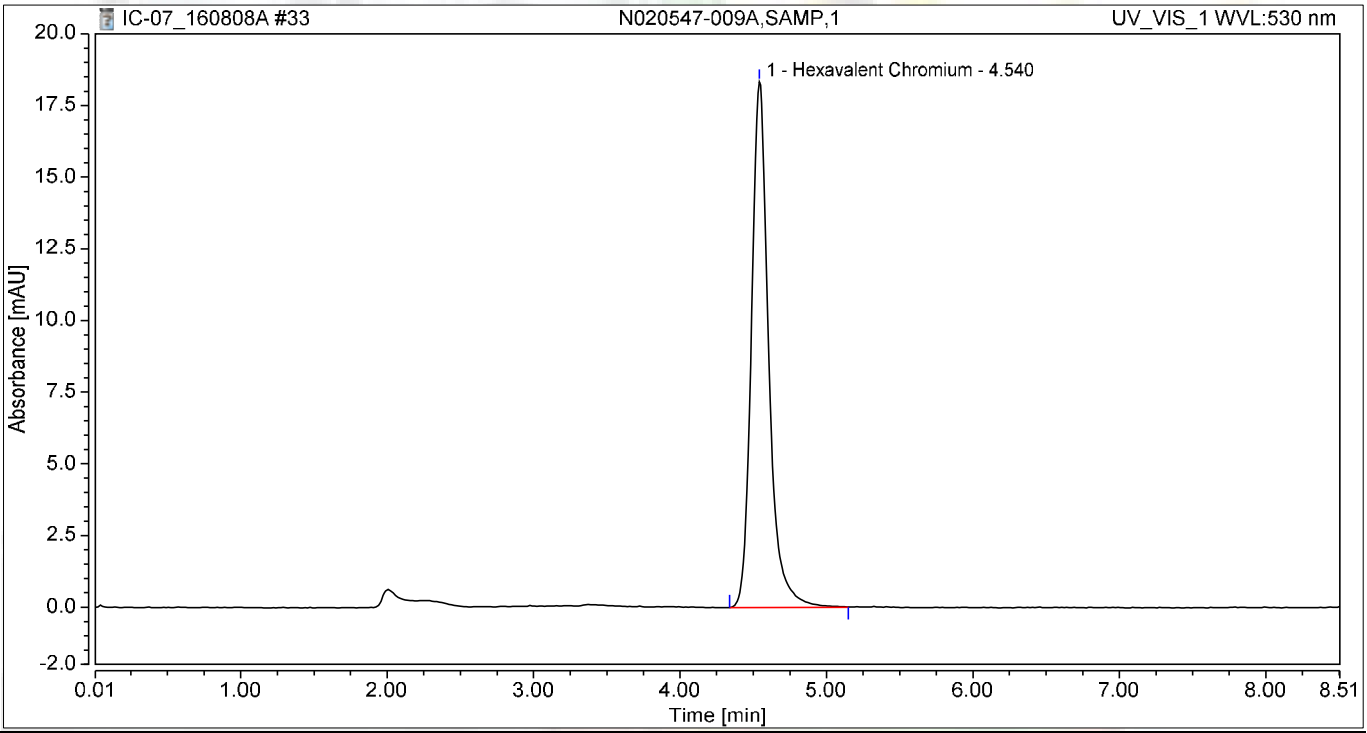
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
n.a.	Hexavalent Chromium	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
1		7.782	0.008	0.136	100.00	100.00	n.a.
Total:			**0.008**	**0.136**	**100.00**	**100.00**	

Chromatogram and Results

Injection Details

Injection Name:	**N020547-009A,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:	**160803_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**08/Aug/16 14:44**	*Sample Weight:*	**1.0000**

Chromatogram



Integration Results

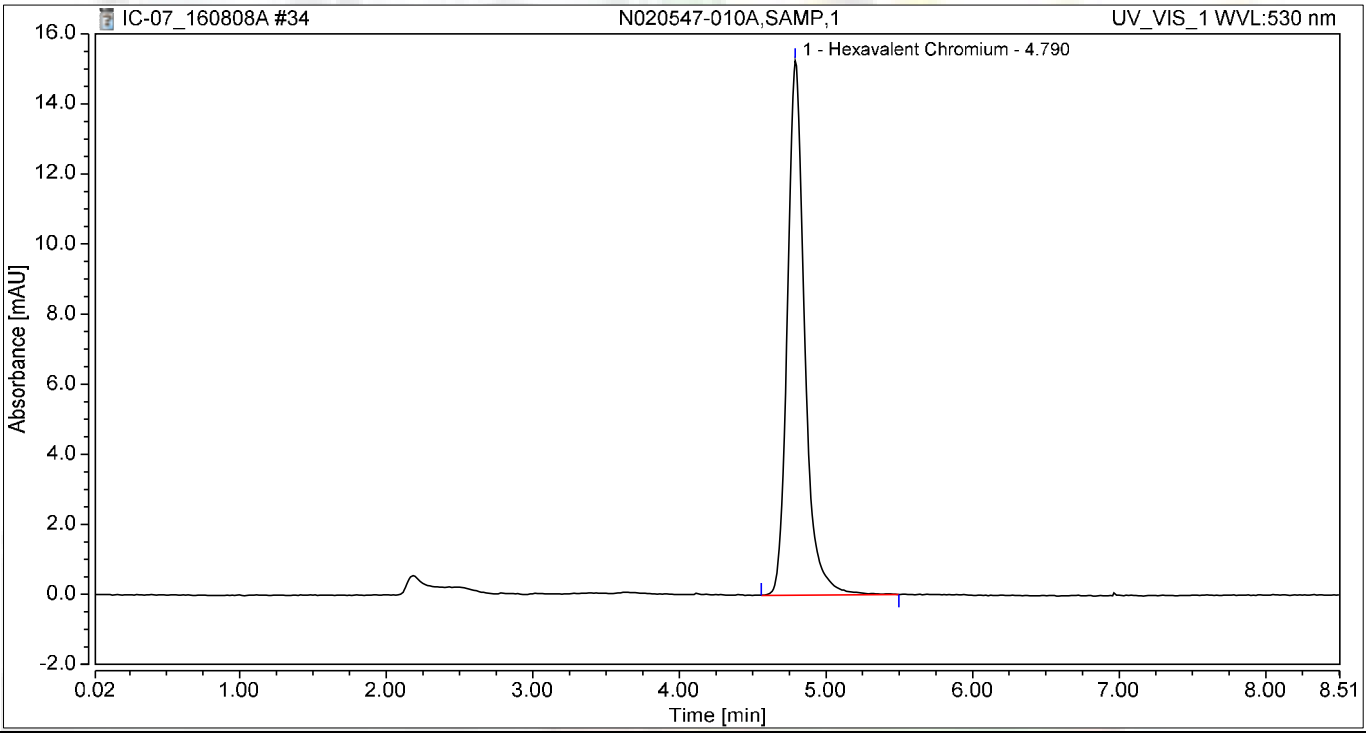
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.540	2.509	18.335	100.00	100.00	9.5176
Total:			**2.509**	**18.335**	**100.00**	**100.00**	

Chromatogram and Results

Injection Details

Injection Name:	**N020547-010A,SAMP,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:	**160803_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**08/Aug/16 14:53**	*Sample Weight:*	**1.0000**

Chromatogram



Integration Results

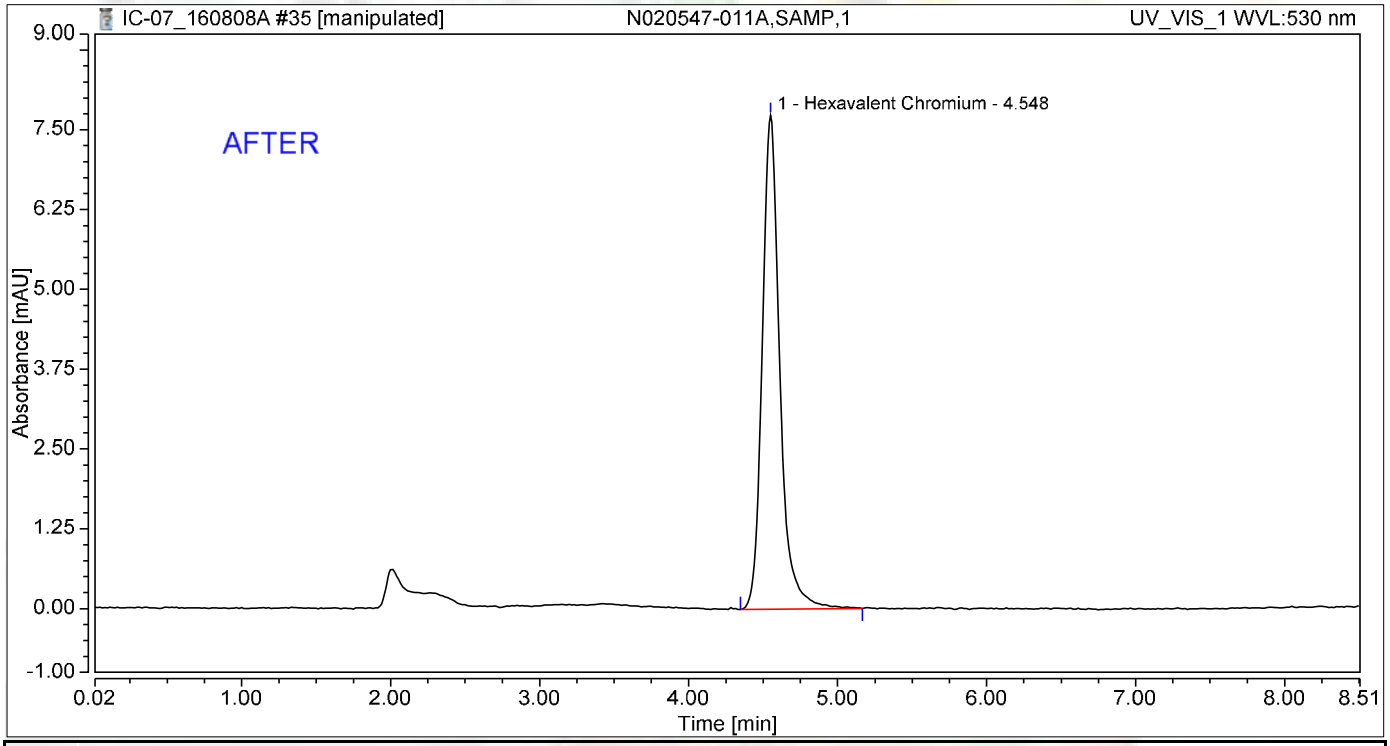
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.790	2.085	15.251	100.00	100.00	7.9098
Total:			**2.085**	**15.251**	**100.00**	**100.00**	

Chromatogram and Results

Injection Details

Injection Name:	**N020547-011A,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:	**160803_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**08/Aug/16 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	4.548	1.056	7.735	100.00	100.00	4.0062
Total:			**1.056**	**7.735**	**100.00**	**100.00**	

8/16/2016

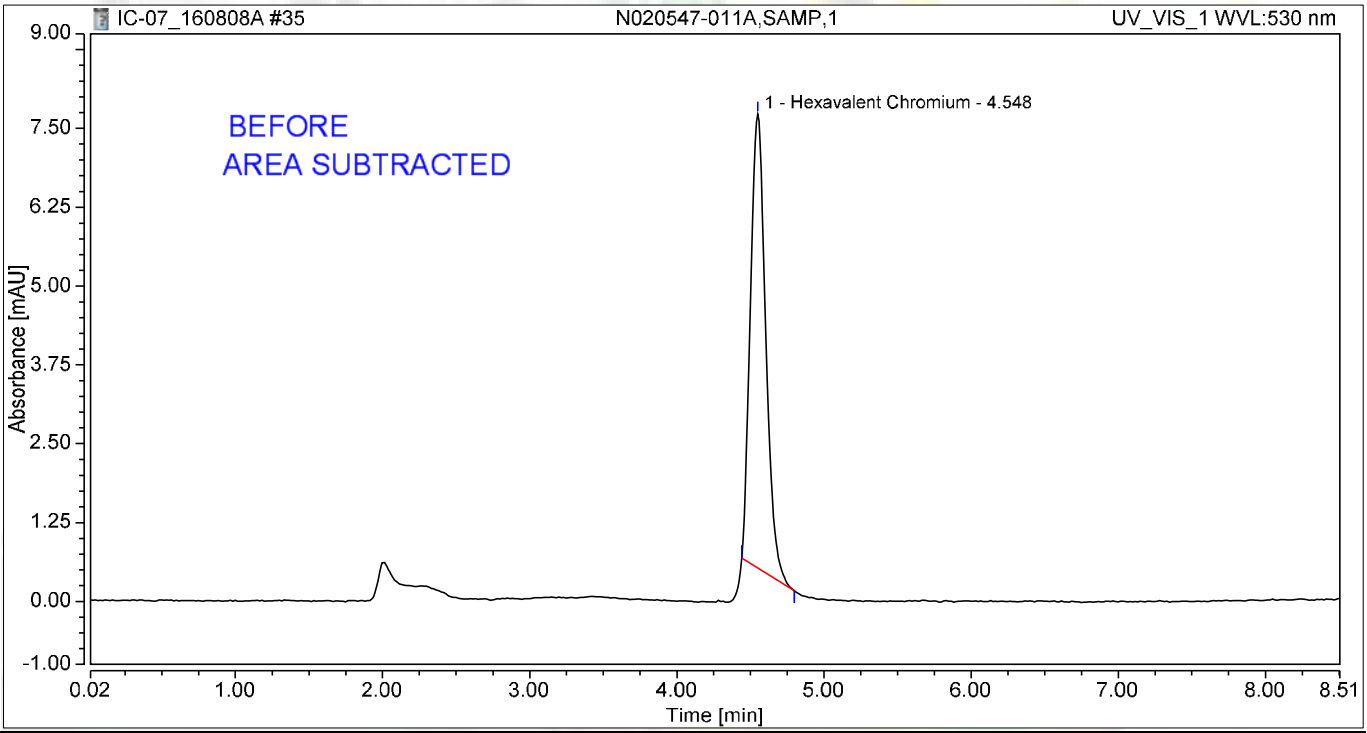
Reviewed by:
Nancy 8/17/2016

Chromatogram and Results

Injection Details

Injection Name:	**N020547-011A,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:	**160803_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**08/Aug/16 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	4.548	0.866	7.192	100.00	100.00	3.2840
Total:			**0.866**	**7.192**	**100.00**	**100.00**	

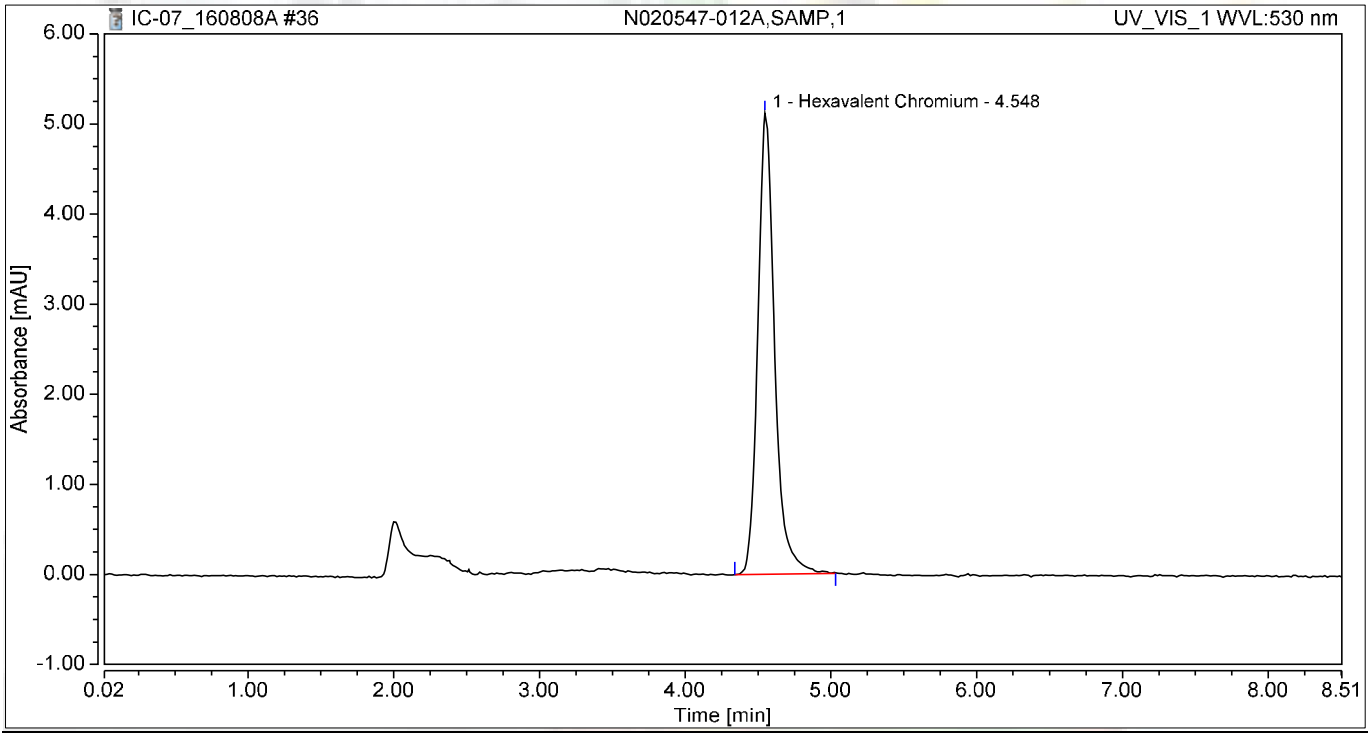
8/16/2016

Chromatogram and Results

Injection Details

Injection Name:	**N020547-012A,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:	**160803_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**08/Aug/16 15:12**	*Sample Weight:*	**1.0000**

Chromatogram



Integration Results

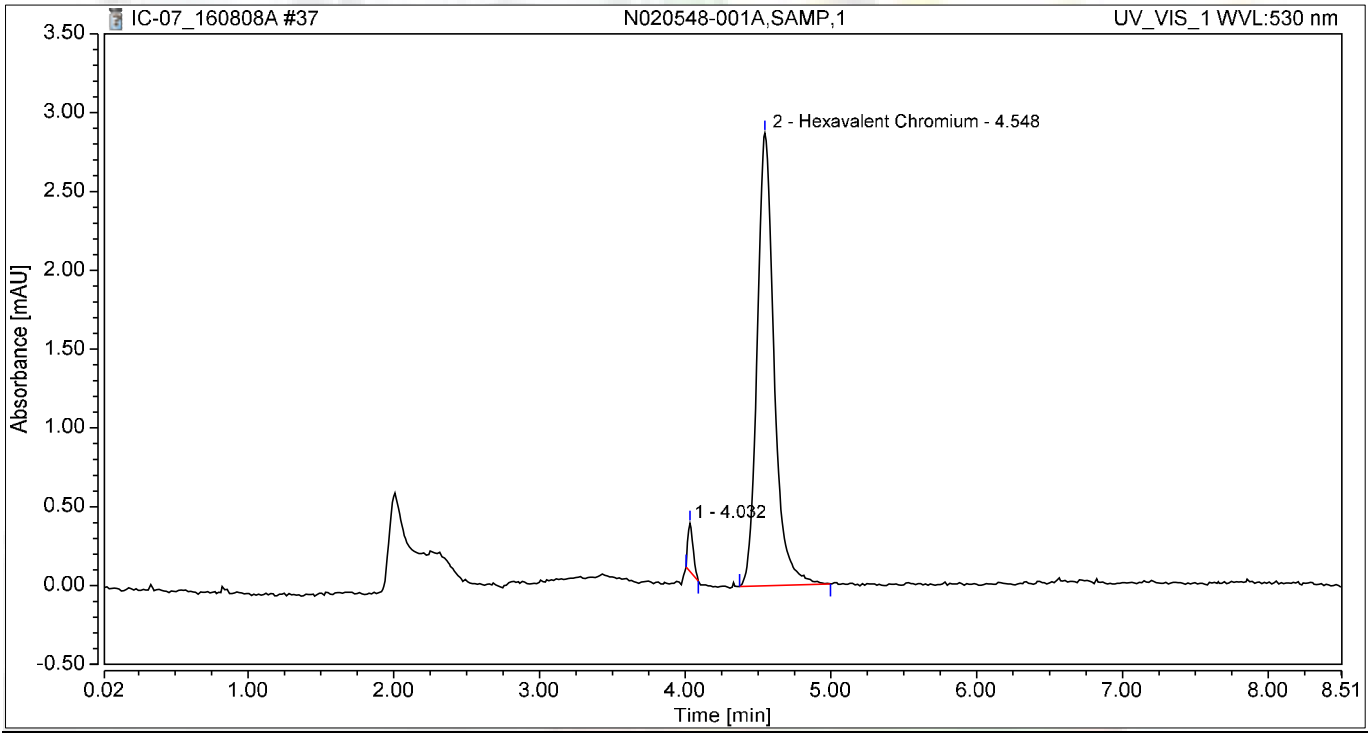
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.548	0.686	5.117	100.00	100.00	2.6017
Total:			**0.686**	**5.117**	**100.00**	**100.00**	

Chromatogram and Results

Injection Details

Injection Name:	**N020548-001A,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:	**160803_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**08/Aug/16 15:21**	*Sample Weight:*	**1.0000**

Chromatogram



Integration Results

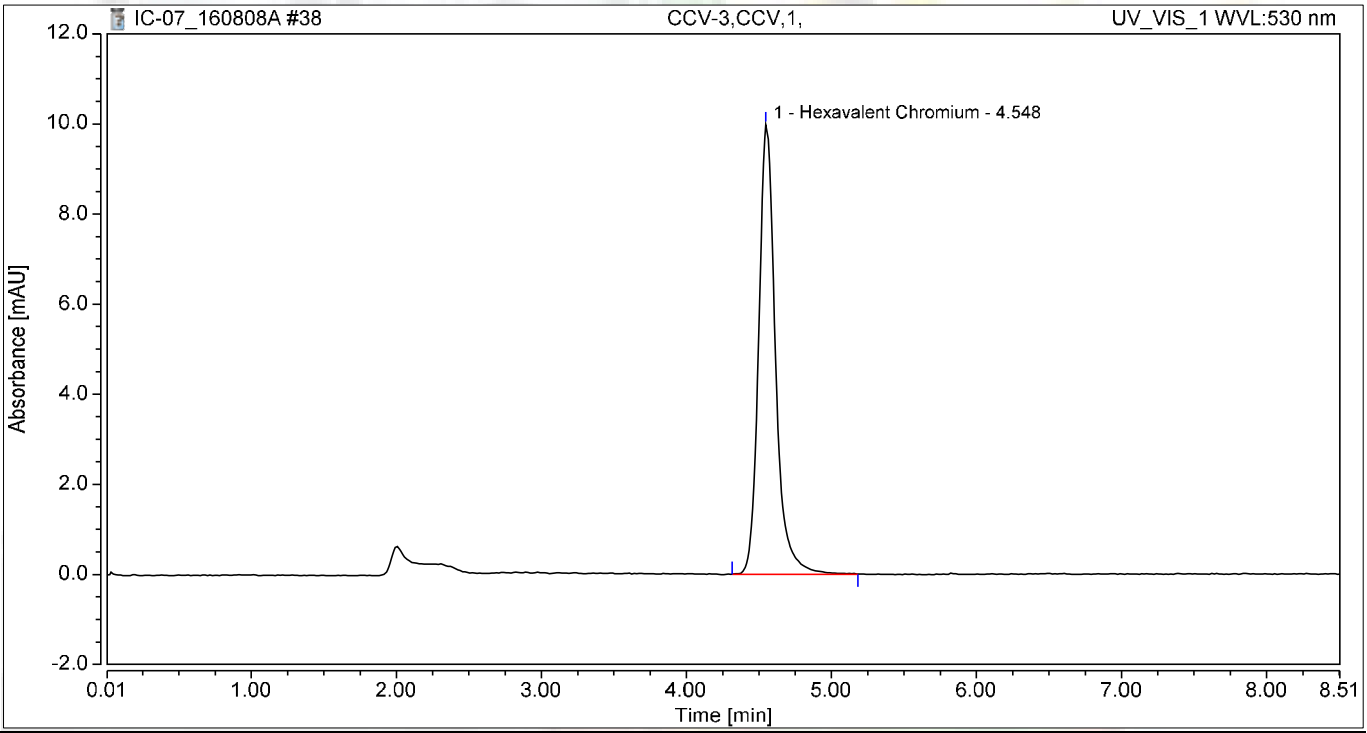
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1		4.032	0.013	0.303	3.15	9.54	n.a.
2	Hexavalent Chromium	4.548	0.387	2.871	96.85	90.46	1.4689
Total:			**0.400**	**3.174**	**100.00**	**100.00**	

Chromatogram and Results

Injection Details

Injection Name:	**CCV-3,CCV,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:	**160803_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**08/Aug/16 15:31**	*Sample Weight:*	**1.0000**

Chromatogram



Integration Results

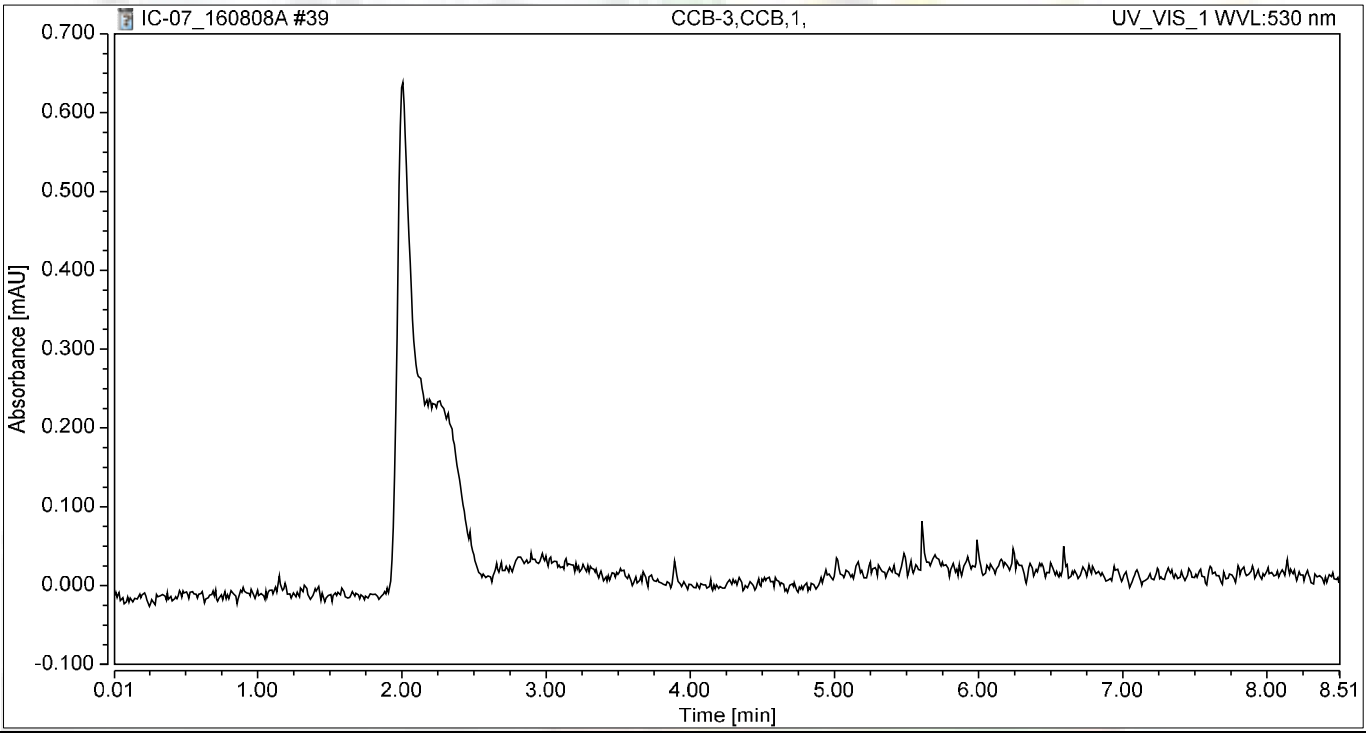
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.548	1.343	9.979	100.00	100.00	5.0959
Total:			**1.343**	**9.979**	**100.00**	**100.00**	

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:	**160803_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**08/Aug/16 15:40**	*Sample Weight:*	**1.0000**

Chromatogram



Integration Results

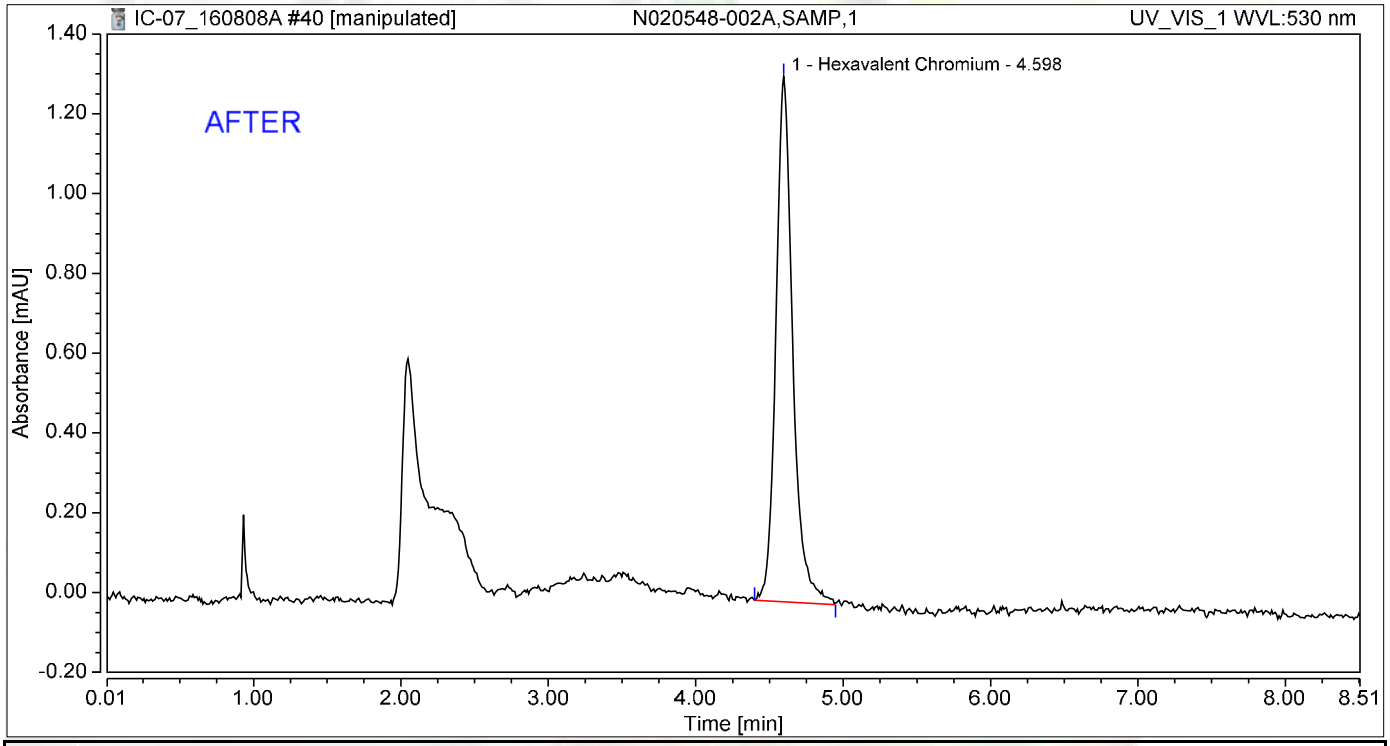
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
n.a.	Hexavalent Chromium	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Total:			**0.000**	**0.000**	**0.00**	**0.00**	

Chromatogram and Results

Injection Details

Injection Name:	**N020548-002A,SAMP,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:	**160803_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**08/Aug/16 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
1	Hexavalent Chromium	4.598	0.175	1.317	100.00	100.00	0.6656
Total:			**0.175**	**1.317**	**100.00**	**100.00**	

8/16/2016

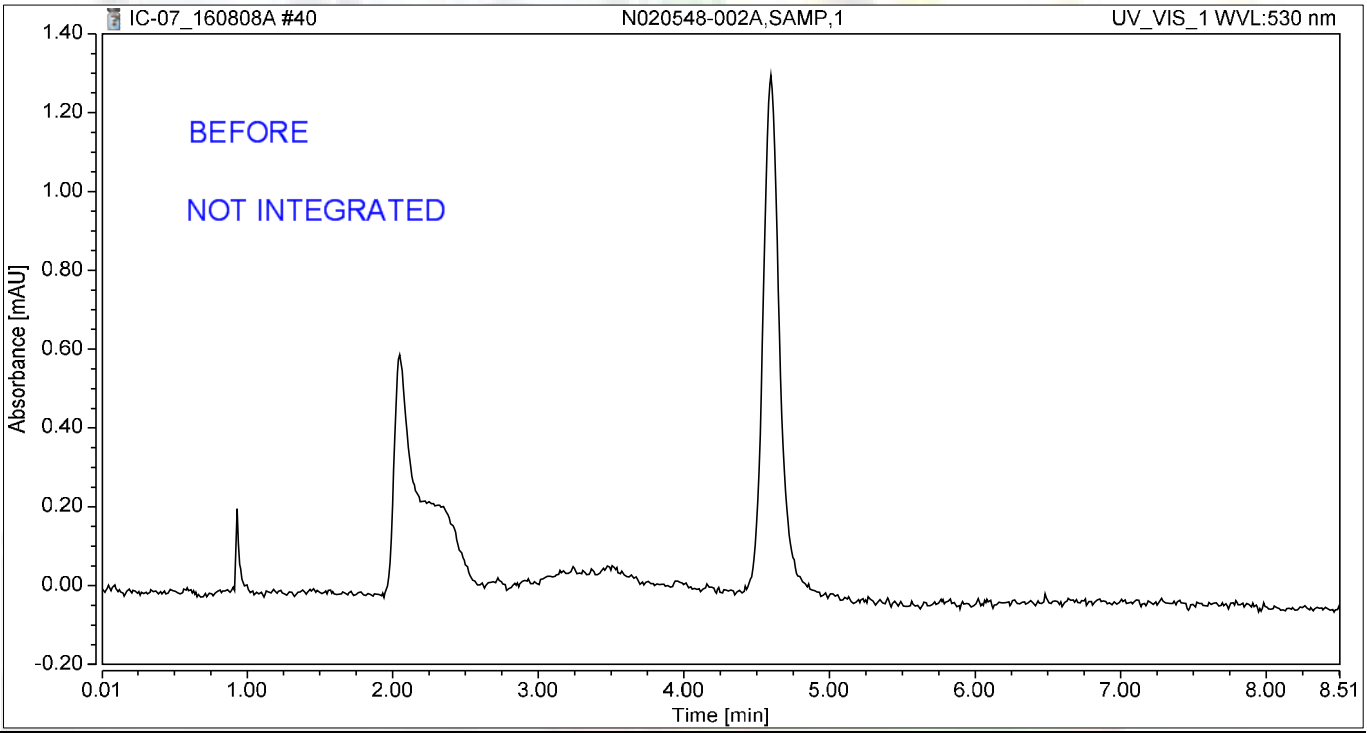
Reviewed by:
Nancy 8/17/2016

Chromatogram and Results

Injection Details

Injection Name:	**N020548-002A,SAMP,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:	**160803_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**08/Aug/16 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.
Total:			**0.000**	**0.000**	**0.00**	**0.00**	

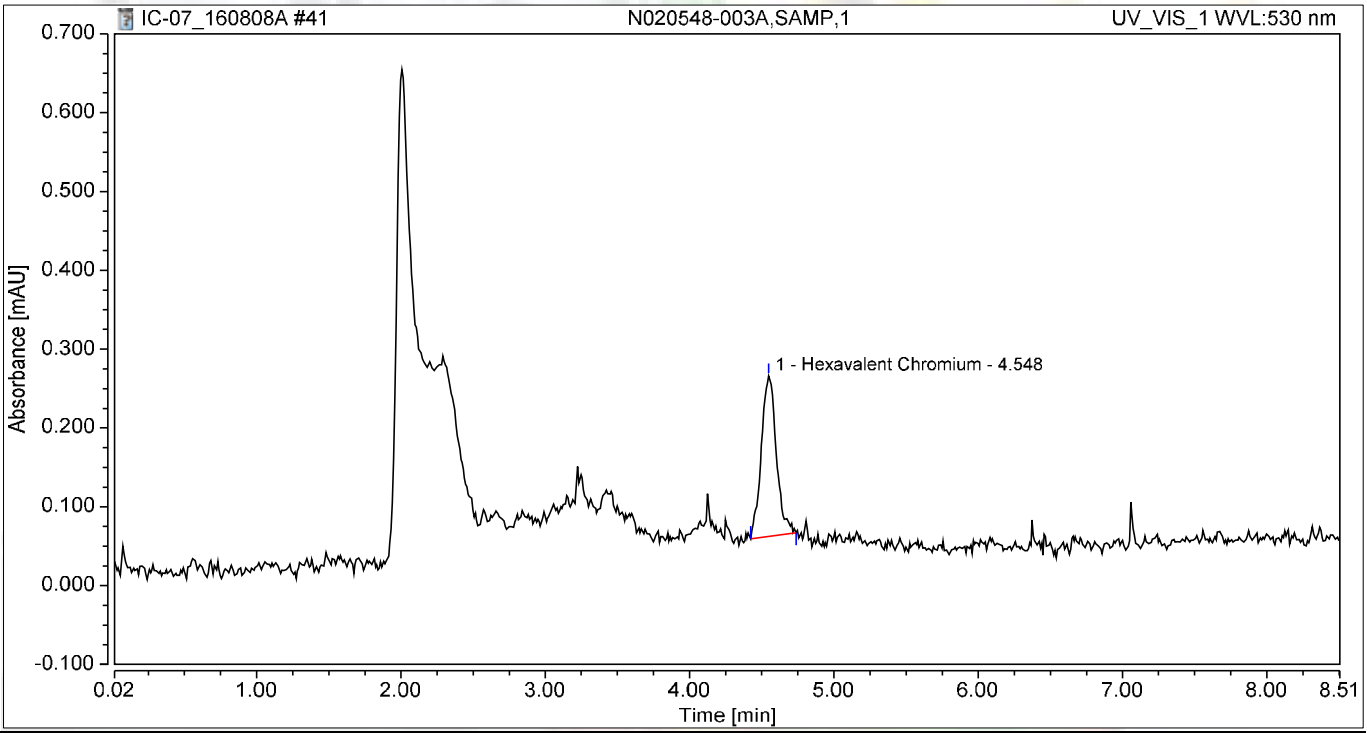
8/16/2016

Chromatogram and Results

Injection Details

Injection Name:	**N020548-003A,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:	**160803_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**08/Aug/16 15:59**	*Sample Weight:*	**1.0000**

Chromatogram



Integration Results

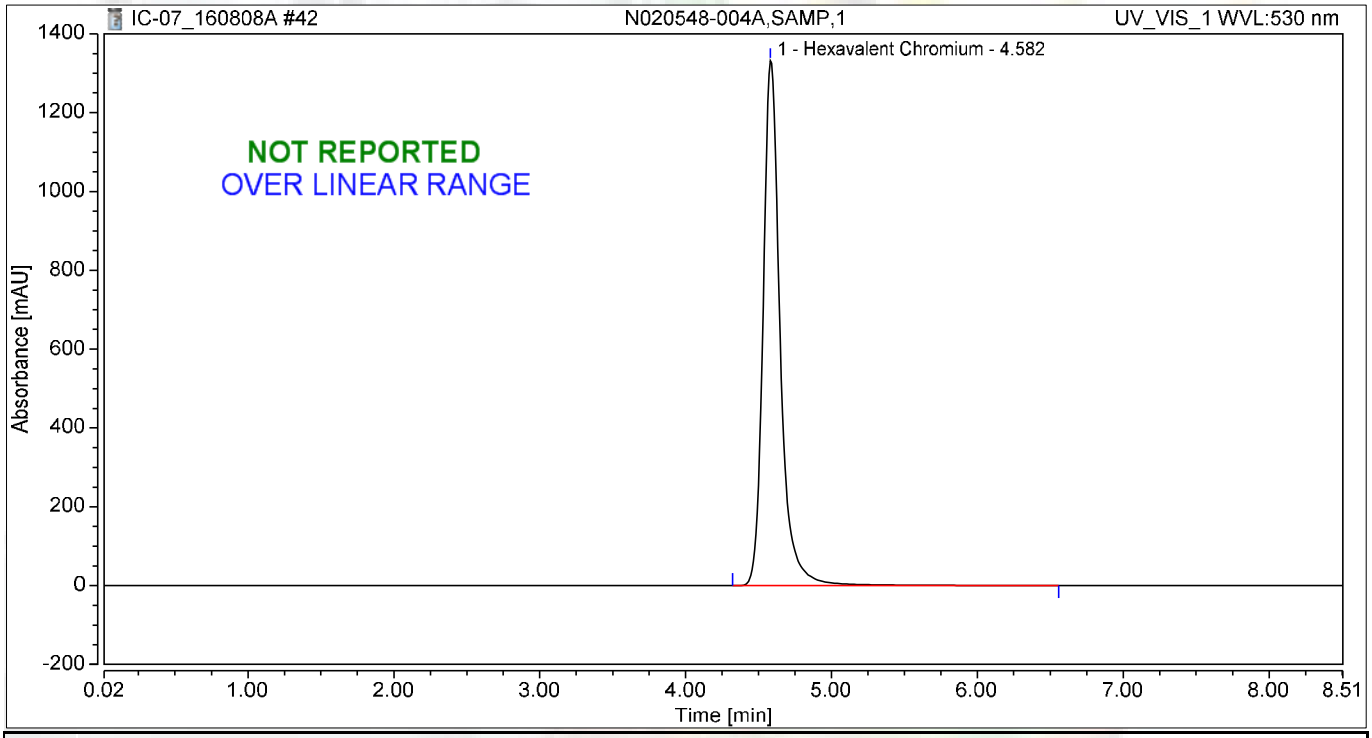
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.548	0.025	0.203	100.00	100.00	0.0932
Total:			**0.025**	**0.203**	**100.00**	**100.00**	

Chromatogram and Results

Injection Details

Injection Name:	**N020548-004A,SAMP,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:	**160803_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**08/Aug/16 16:09**	*Sample Weight:*	**1.0000**

Chromatogram



Integration Results

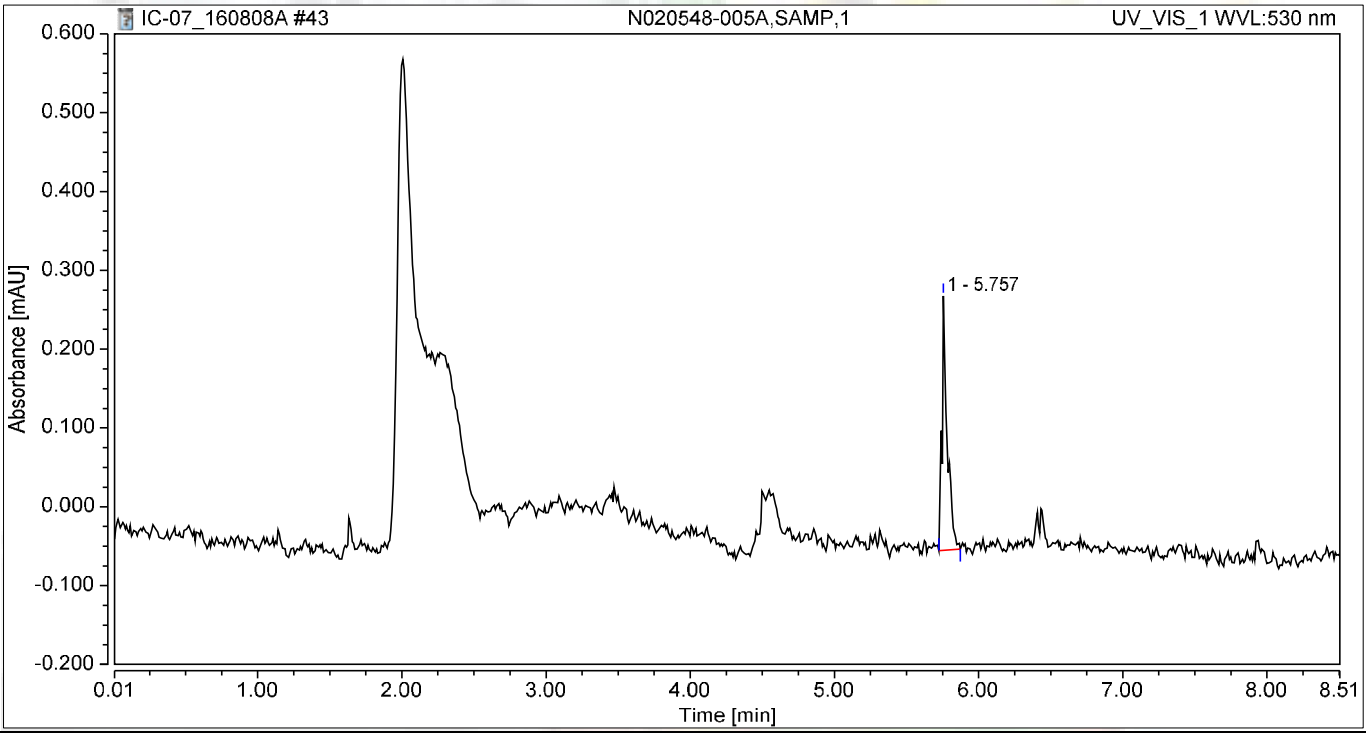
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.582	180.612	1331.594	100.00	100.00	685.1143
Total:			**180.612**	**1331.594**	**100.00**	**100.00**	

Chromatogram and Results

Injection Details

Injection Name:	**N020548-005A,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:	**160803_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**08/Aug/16 16:18**	*Sample Weight:*	**1.0000**

Chromatogram



Integration Results

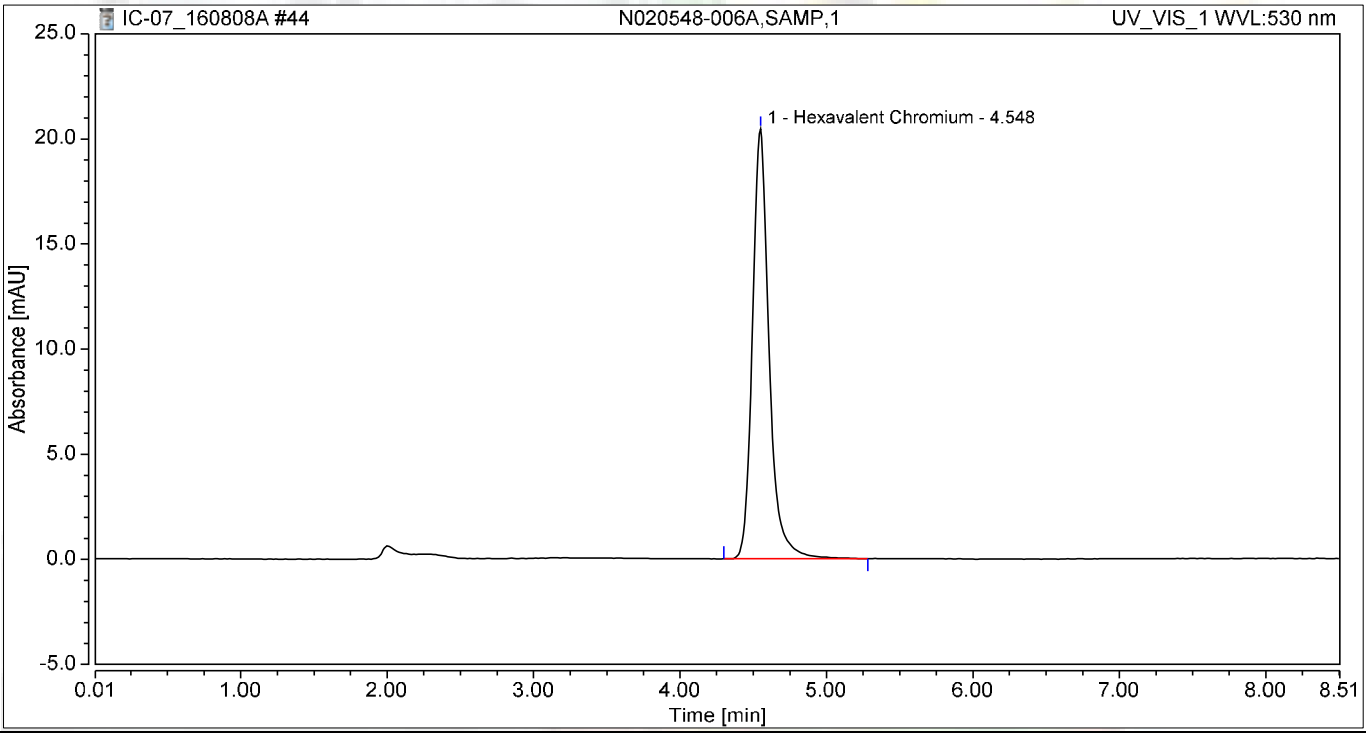
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
n.a.	Hexavalent Chromium	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
1		5.757	0.013	0.323	100.00	100.00	n.a.
Total:			**0.013**	**0.323**	**100.00**	**100.00**	

Chromatogram and Results

Injection Details

Injection Name:	**N020548-006A,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:	**160803_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**08/Aug/16 16:28**	*Sample Weight:*	**1.0000**

Chromatogram



Integration Results

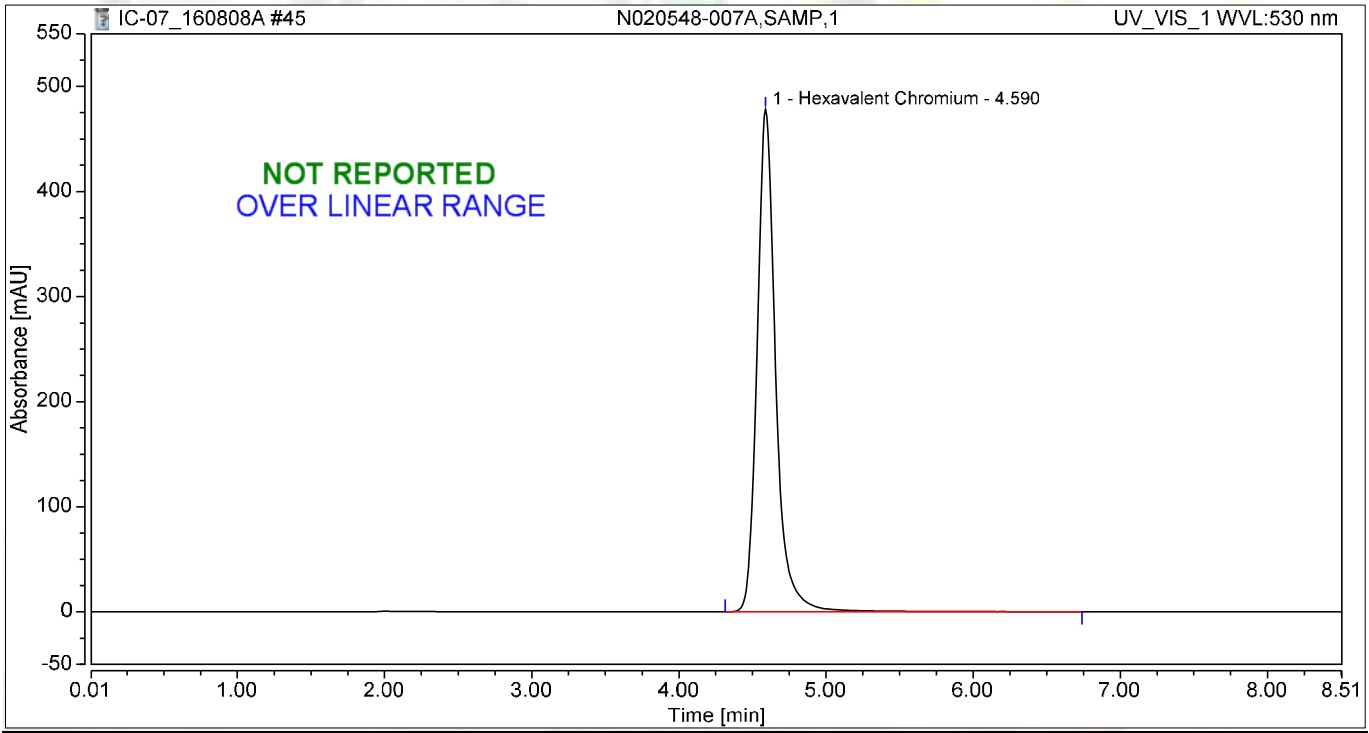
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.548	2.709	20.453	100.00	100.00	10.2770
Total:			**2.709**	**20.453**	**100.00**	**100.00**	

Chromatogram and Results

Injection Details

Injection Name:	**N020548-007A,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:	**160803_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**08/Aug/16 16:37**	*Sample Weight:*	**1.0000**

Chromatogram



Integration Results

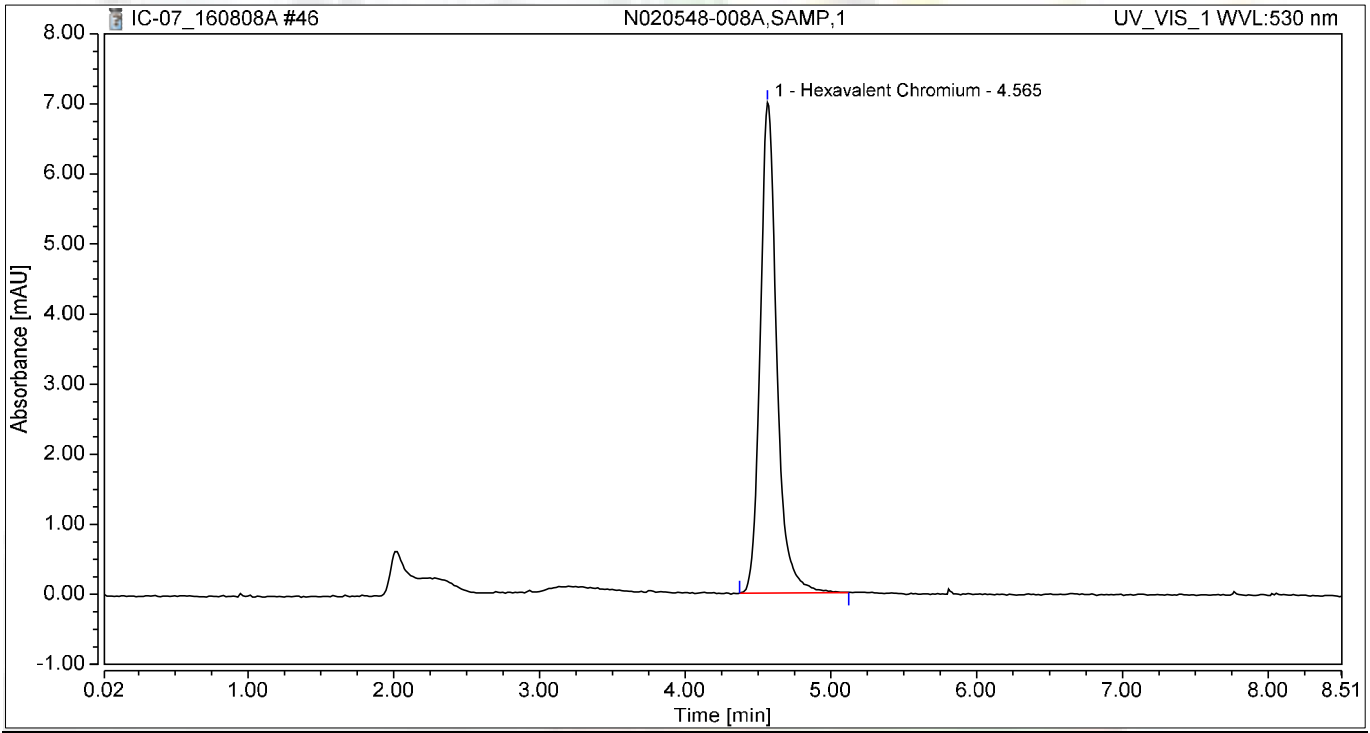
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.590	70.152	477.867	100.00	100.00	266.1056
Total:			**70.152**	**477.867**	**100.00**	**100.00**	

Chromatogram and Results

Injection Details

Injection Name:	**N020548-008A,SAMP,1**	*Run Time (min):*	**8.49**
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:	**160803_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**08/Aug/16 16:47**	*Sample Weight:*	**1.0000**

Chromatogram



Integration Results

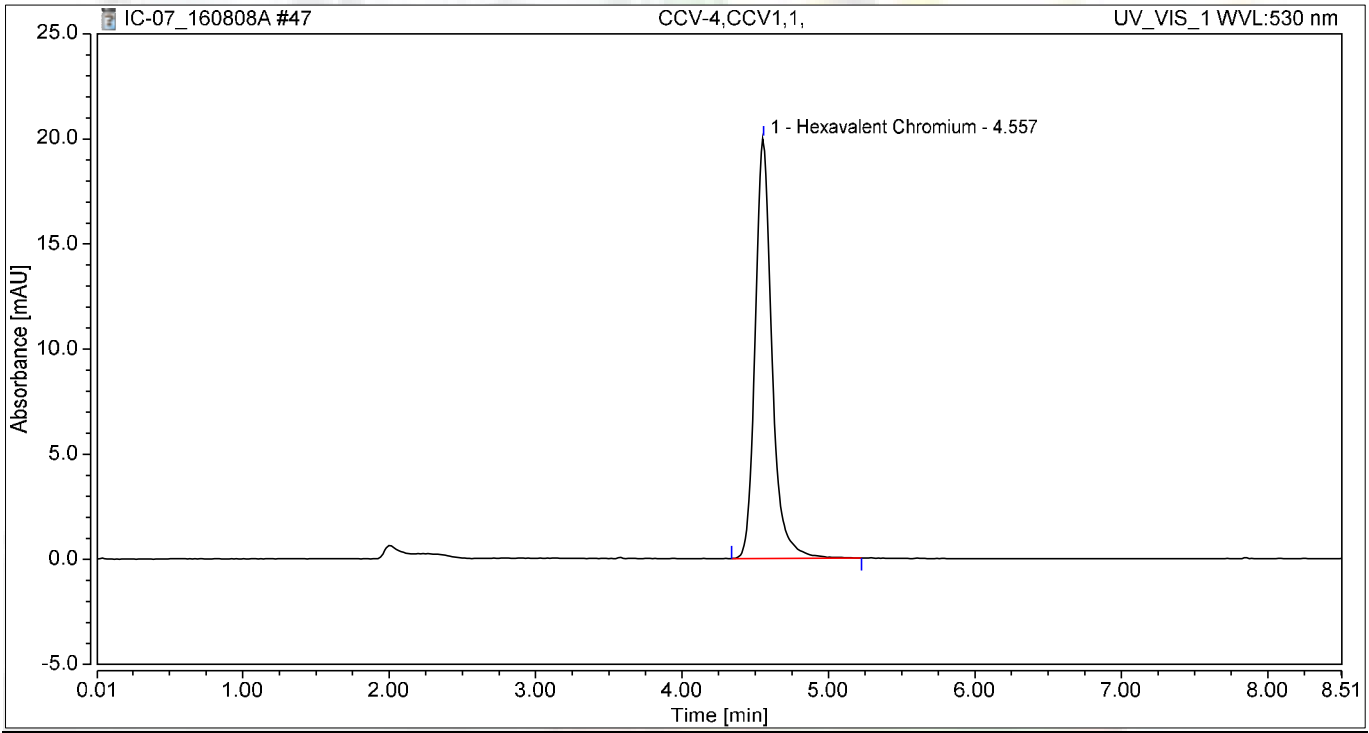
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.565	0.924	7.002	100.00	100.00	3.5056
Total:			**0.924**	**7.002**	**100.00**	**100.00**	

Chromatogram and Results

Injection Details

Injection Name:	**CCV-4,CCV1,1,**	*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:	**160803_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**08/Aug/16 16:56**	*Sample Weight:*	**1.0000**

Chromatogram



Integration Results

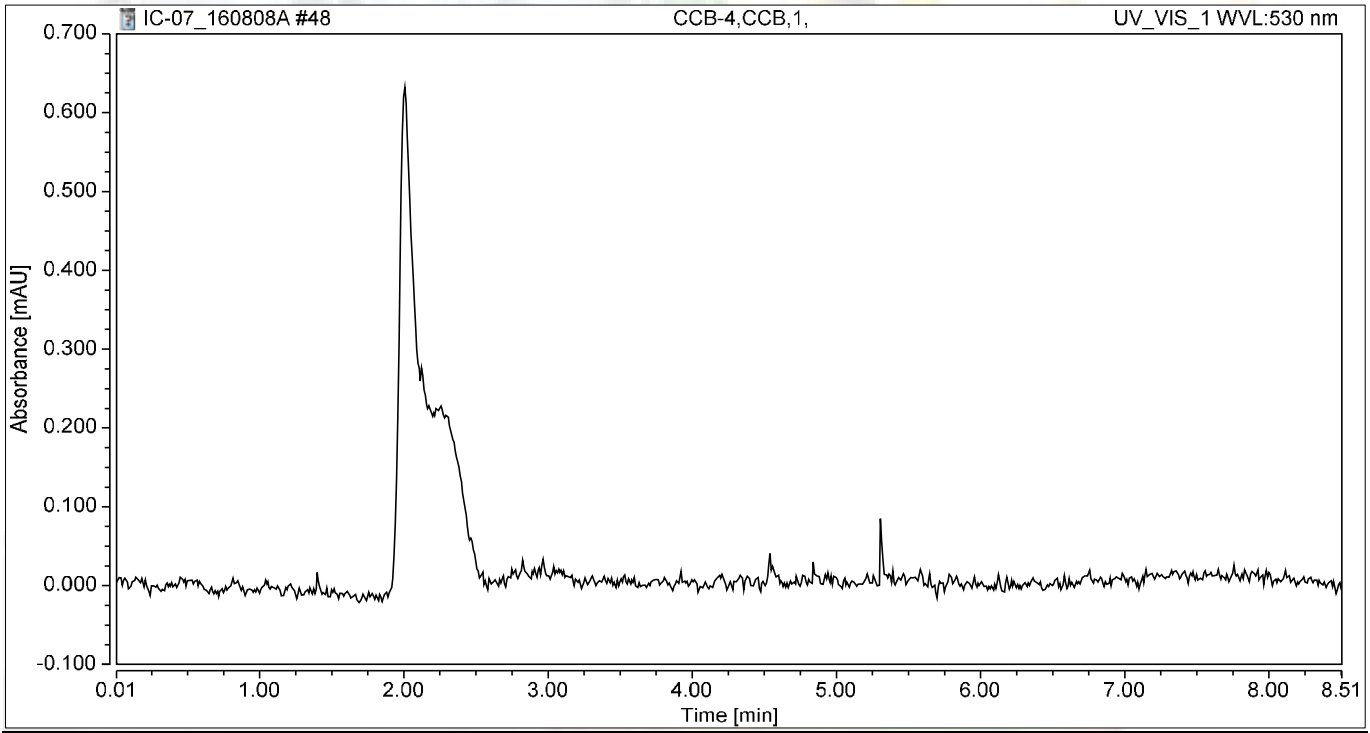
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.557	2.649	19.963	100.00	100.00	10.0476
Total:			**2.649**	**19.963**	**100.00**	**100.00**	

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:	**160803_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**08/Aug/16 17:06**	*Sample Weight:*	**1.0000**

Chromatogram



Integration Results

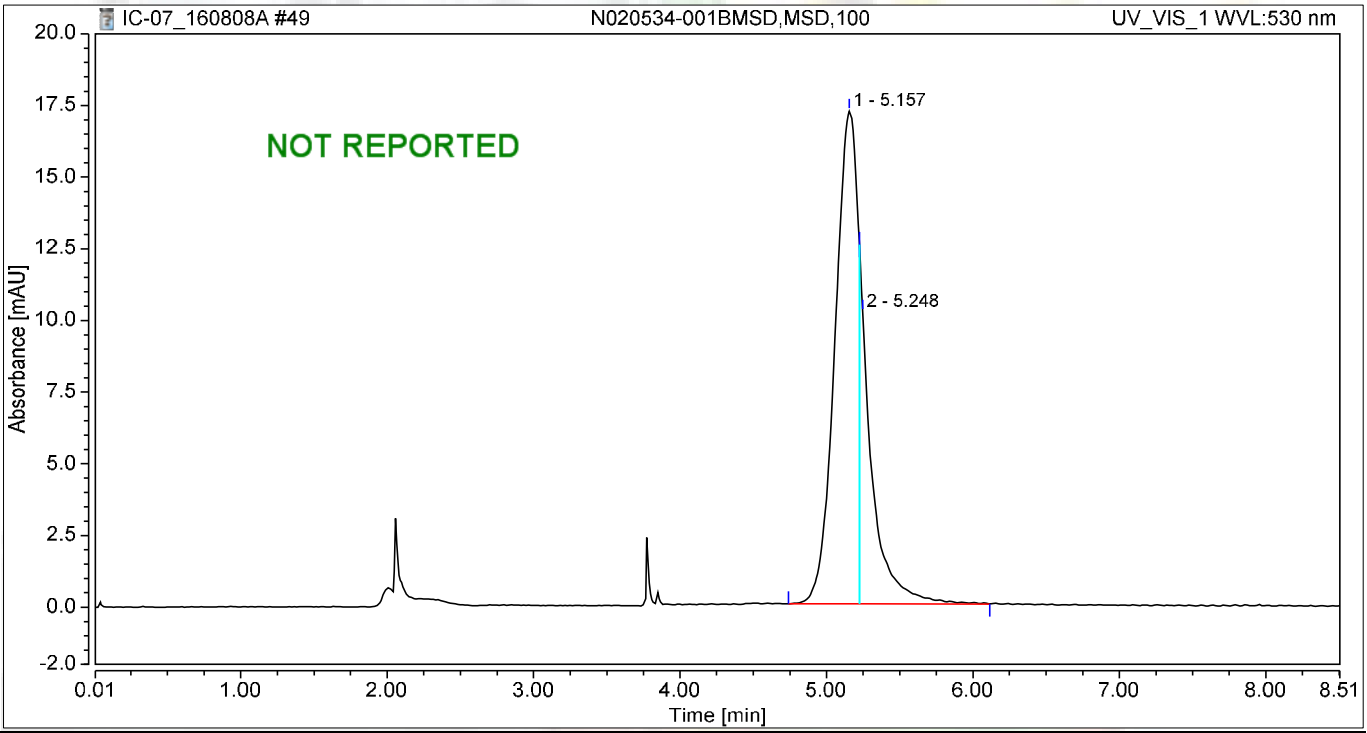
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
n.a.	Hexavalent Chromium	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Total:			**0.000**	**0.000**	**0.00**	**0.00**	

Chromatogram and Results

Injection Details

Injection Name:	**N020534-001BMSD,MSD,100**	*Run Time (min):*	**8.50**
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:	**160803_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**08/Aug/16 18:07**	*Sample Weight:*	**1.0000**

Chromatogram



Integration Results

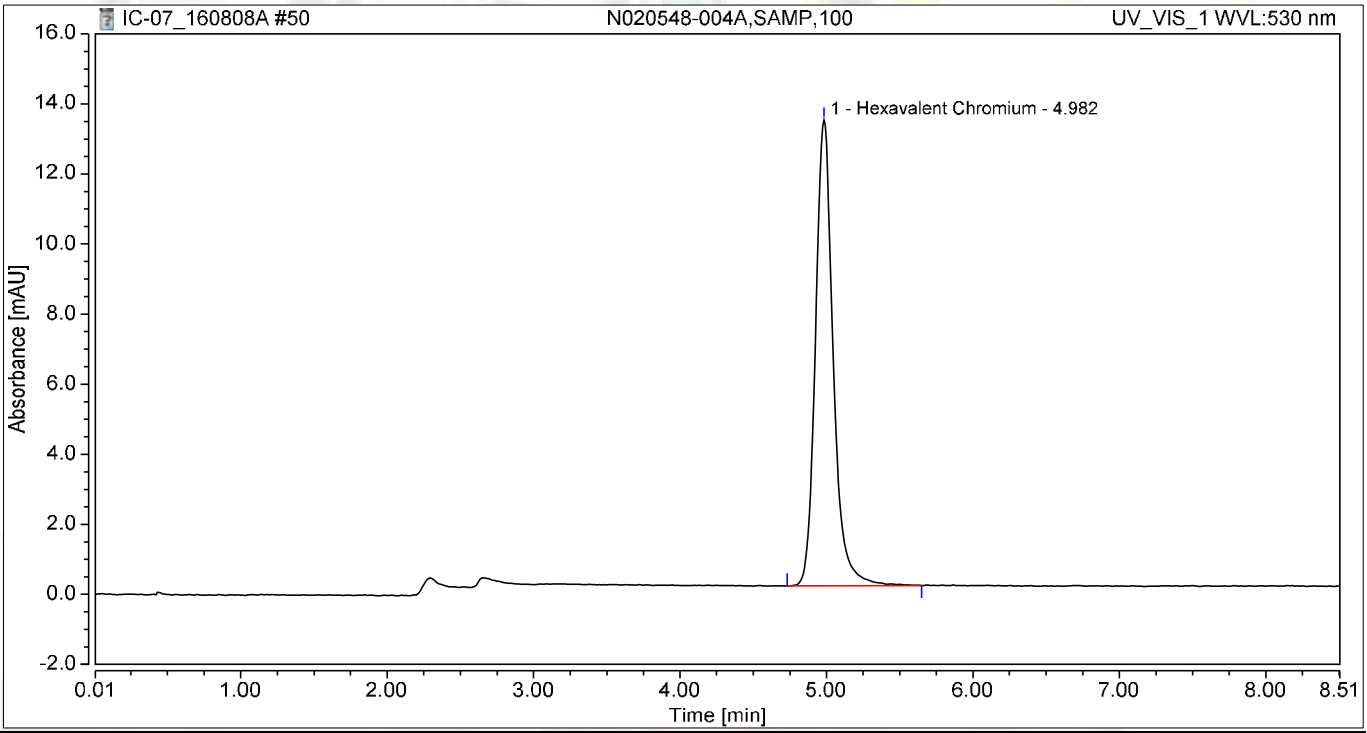
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
n.a.	Hexavalent Chromium	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
1		5.157	2.962	17.179	71.77	62.81	n.a.
2		5.248	1.165	10.170	28.23	37.19	n.a.
Total:			**4.127**	**27.349**	**100.00**	**100.00**	

Chromatogram and Results

Injection Details

Injection Name:	**N020548-004A,SAMP,100**	*Run Time (min):*	**8.50**
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:	**160803_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**08/Aug/16 18:18**	*Sample Weight:*	**1.0000**

Chromatogram



Integration Results

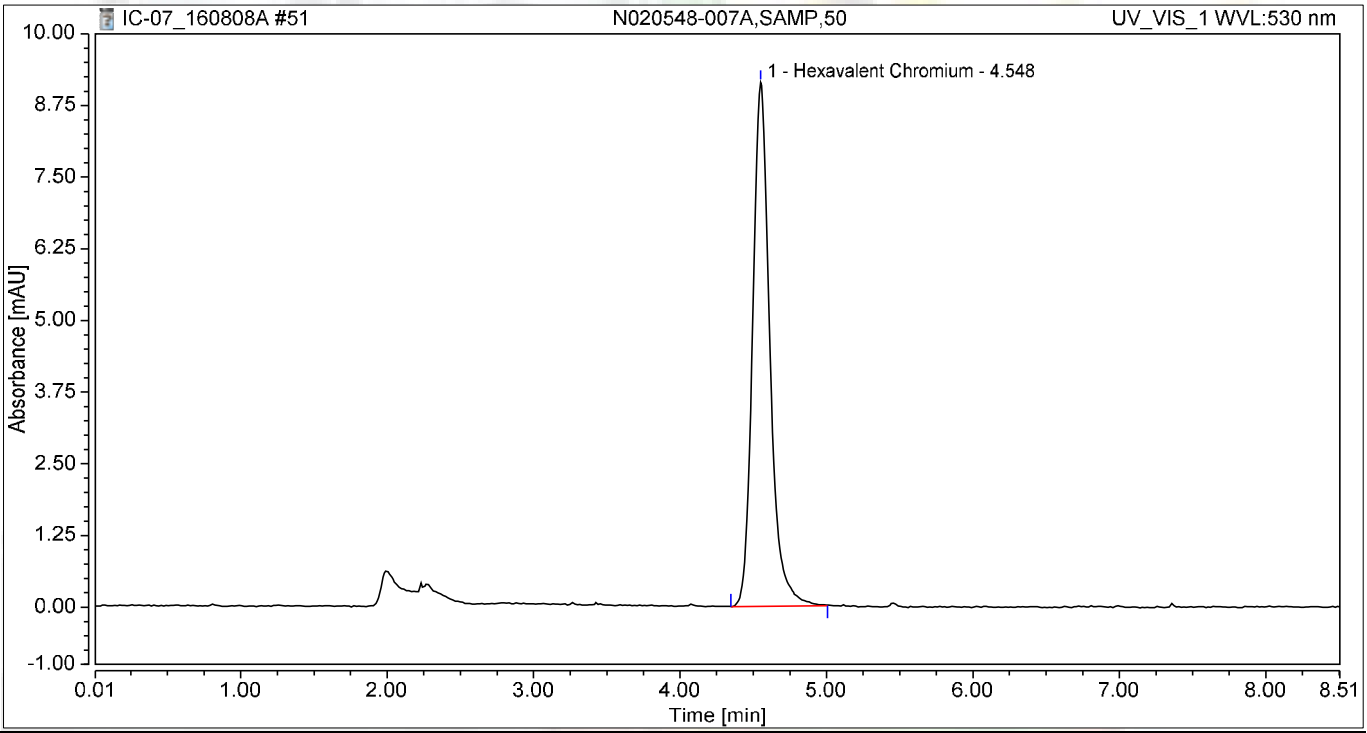
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.982	1.865	13.297	100.00	100.00	7.0753
Total:			**1.865**	**13.297**	**100.00**	**100.00**	

Chromatogram and Results

Injection Details

Injection Name:	**N020548-007A,SAMP,50**	*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:	**160803_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**08/Aug/16 18:28**	*Sample Weight:*	**1.0000**

Chromatogram



Integration Results

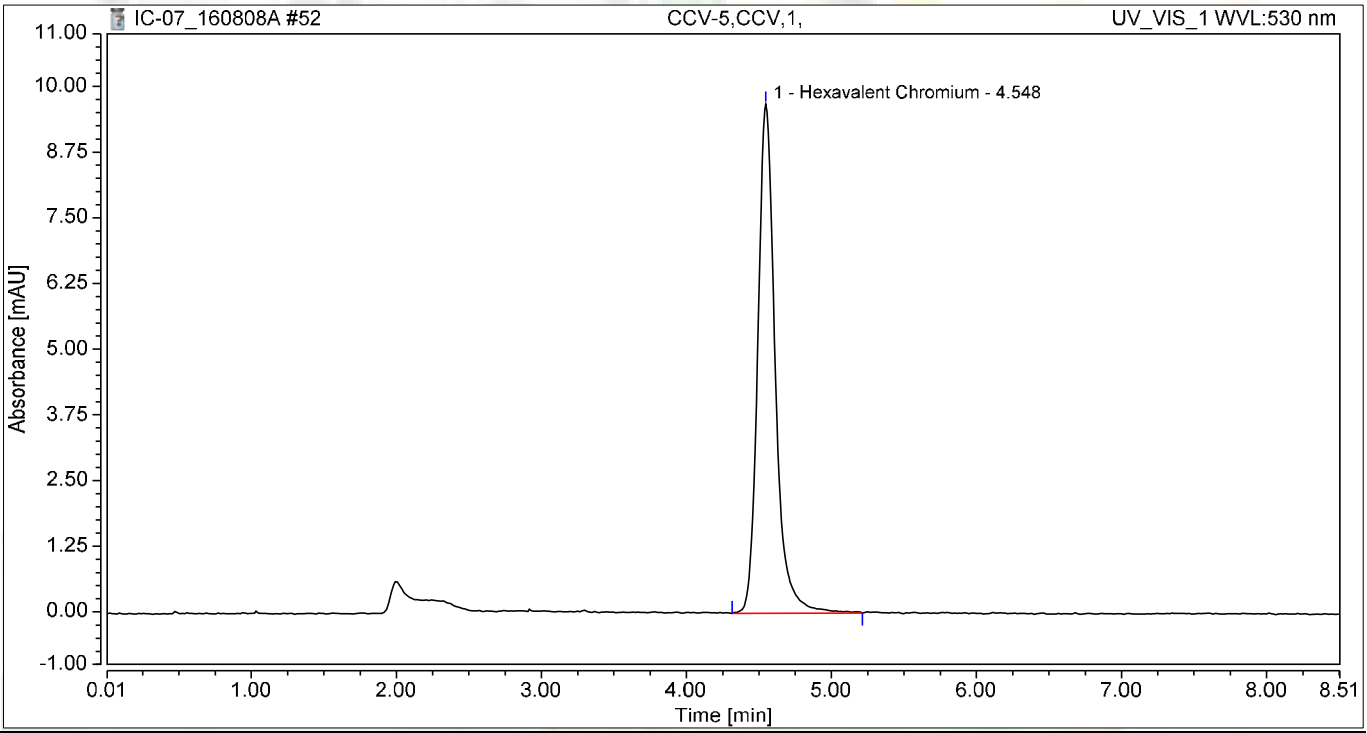
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.548	1.247	9.132	100.00	100.00	4.7309
Total:			**1.247**	**9.132**	**100.00**	**100.00**	

Chromatogram and Results

Injection Details

Injection Name:	**CCV-5,CCV,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:	**160803_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**08/Aug/16 18:37**	*Sample Weight:*	**1.0000**

Chromatogram



Integration Results

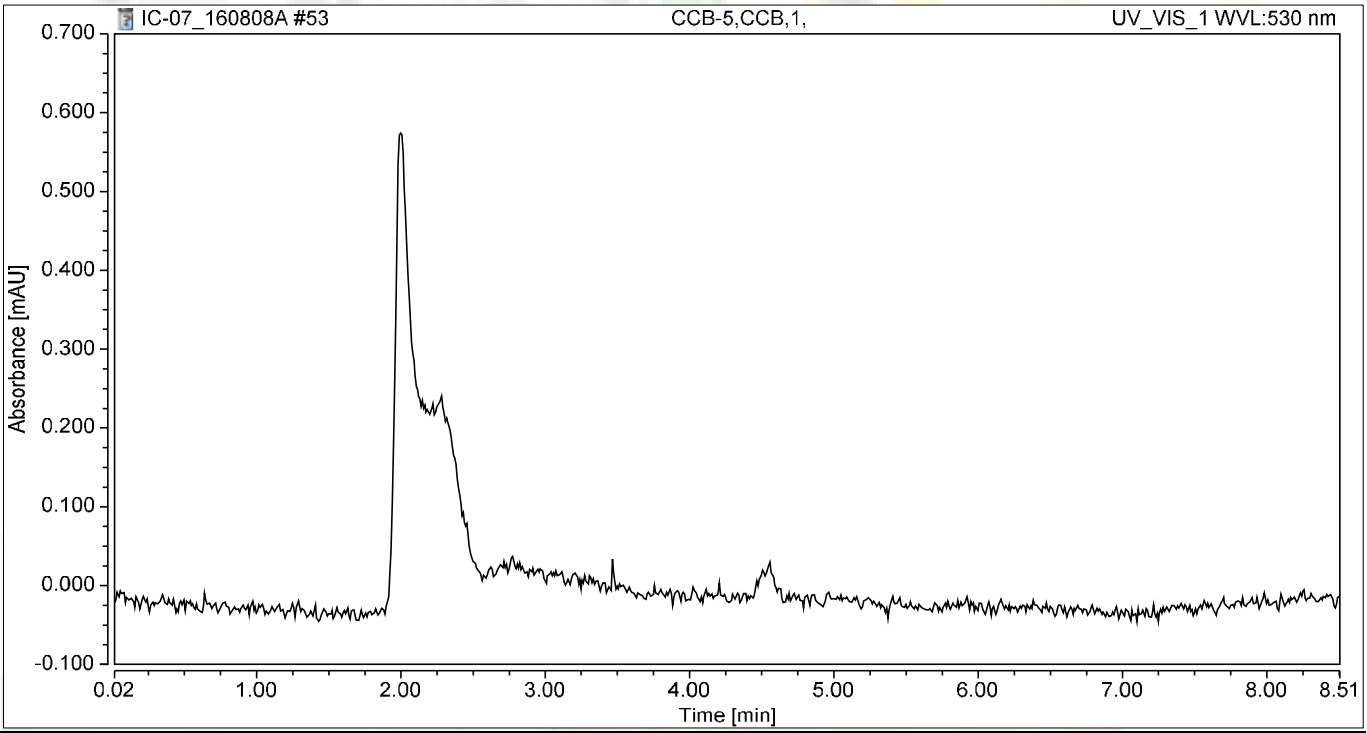
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.548	1.350	9.686	100.00	100.00	5.1202
Total:			**1.350**	**9.686**	**100.00**	**100.00**	

Chromatogram and Results

Injection Details

Injection Name:	**CCB-5,CCB,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:	**160803_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**08/Aug/16 18:47**	*Sample Weight:*	**1.0000**

Chromatogram



Integration Results

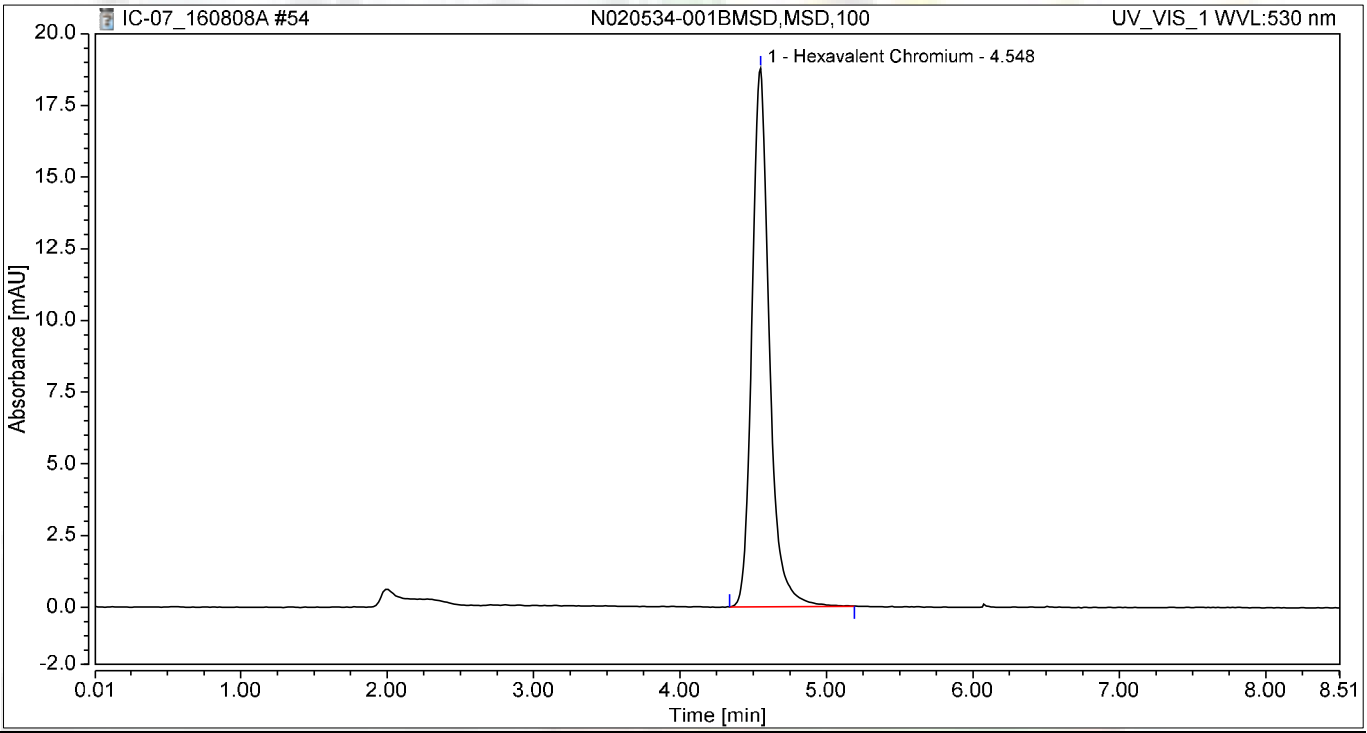
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
n.a.	Hexavalent Chromium	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Total:			**0.000**	**0.000**	**0.00**	**0.00**	

Chromatogram and Results

Injection Details

Injection Name:	**N020534-001BMSD,MSD,100**	*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:	**160803_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**08/Aug/16 18:56**	*Sample Weight:*	**1.0000**

Chromatogram



Integration Results

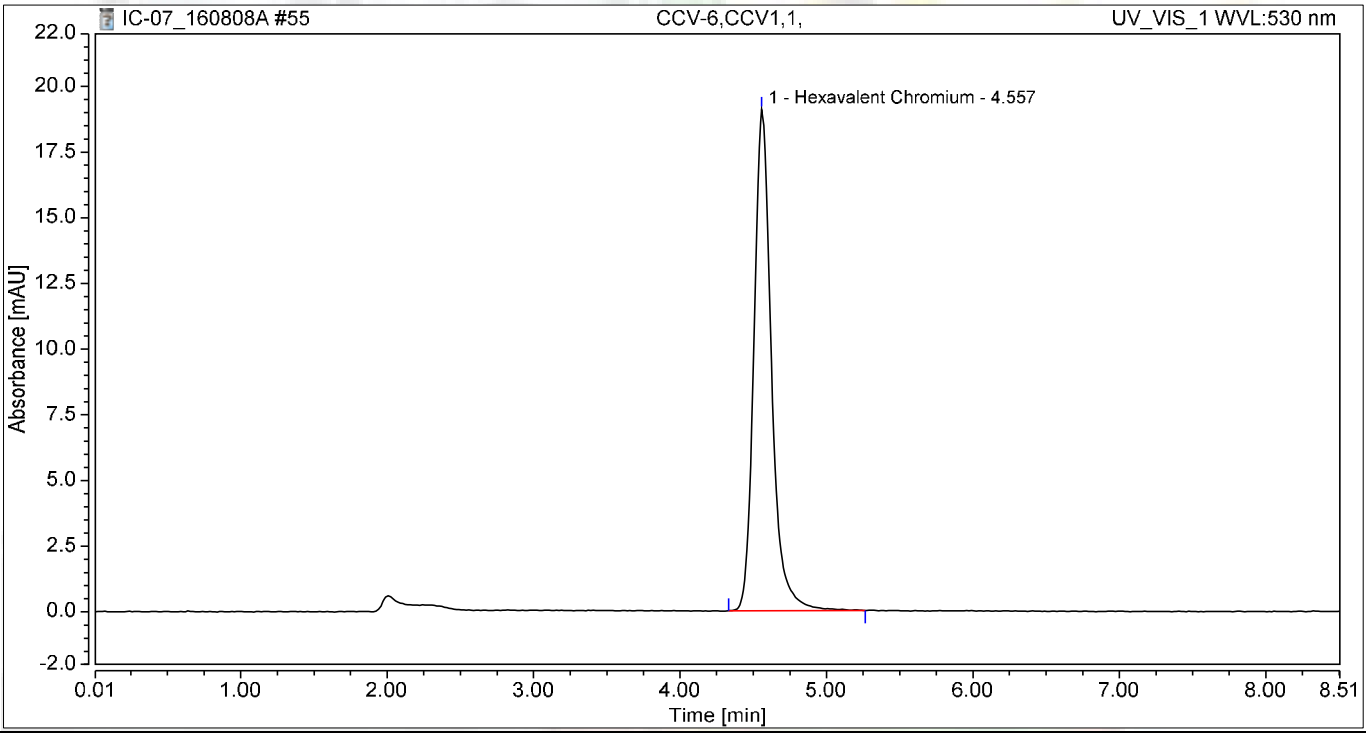
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.548	2.589	18.771	100.00	100.00	9.8207
Total:			**2.589**	**18.771**	**100.00**	**100.00**	

Chromatogram and Results

Injection Details

Injection Name:	**CCV-6,CCV1,1,**	*Run Time (min):*	**8.50**
Vial Number:	**47**	*Injection Volume:*	**1000.00**
Injection Type:	**Unknown**	*Channel:*	**UV_VIS_1**
Calibration Level:		*Wavelength:*	**530.0**
Instrument Method:	**Hex Chrom 4 mm**	*Bandwidth:*	**n.a.**
Processing Method:	**160803_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**08/Aug/16 19:09**	*Sample Weight:*	**1.0000**

Chromatogram



Integration Results

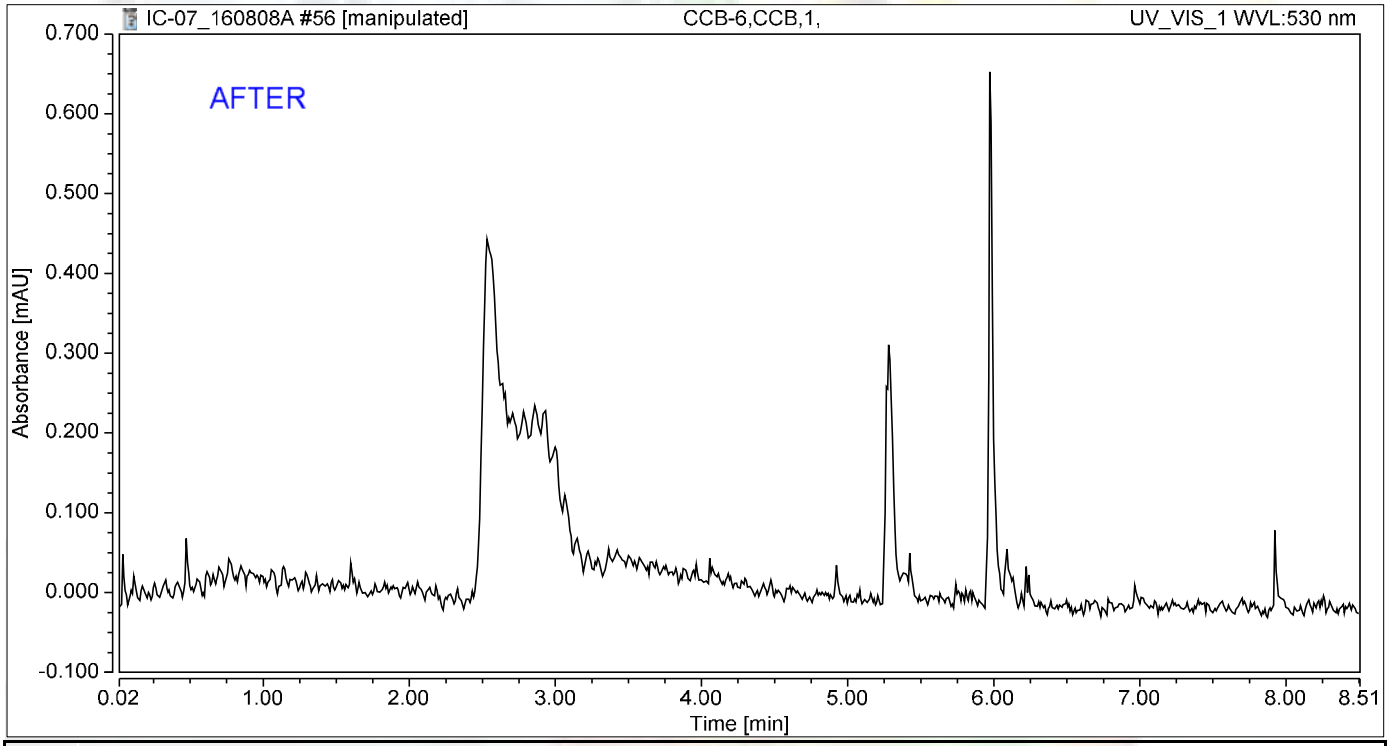
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.557	2.664	19.085	100.00	100.00	10.1038
Total:			**2.664**	**19.085**	**100.00**	**100.00**	

Chromatogram and Results

Injection Details

Injection Name:	**CCB-6,CCB,1,**	*Run Time (min):*	**8.49**
Vial Number:	**48**	*Injection Volume:*	**1000.00**
Injection Type:	**Unknown**	*Channel:*	**UV_VIS_1**
Calibration Level:		*Wavelength:*	**530.0**
Instrument Method:	**Hex Chrom 4 mm**	*Bandwidth:*	**n.a.**
Processing Method:	**160803_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**08/Aug/16 19:19**	*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.
Total:			**0.000**	**0.000**	**0.00**	**0.00**	

8/16/2016

Reviewed by:

8/17/2016

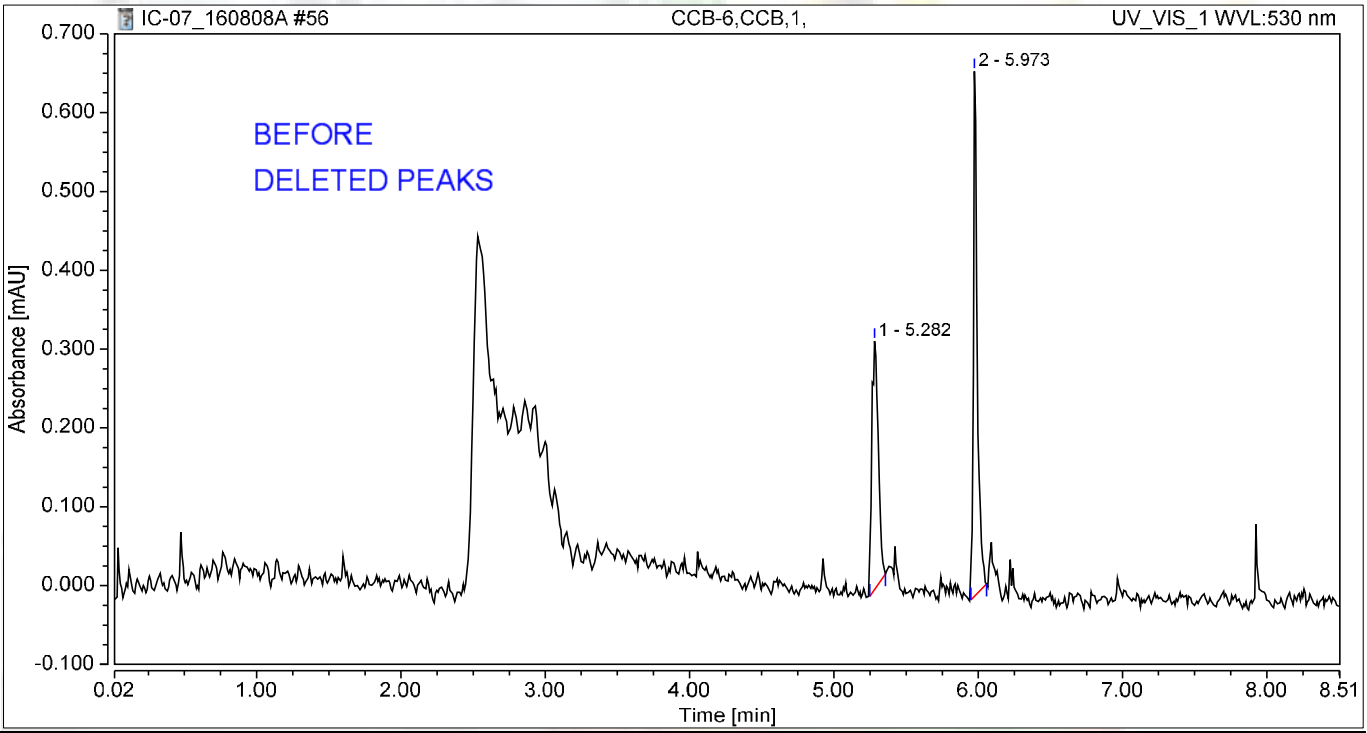
My first report/Integration

Chromatogram and Results

Injection Details

Injection Name:	**CCB-6,CCB,1,**	*Run Time (min):*	**8.49**
Vial Number:	**48**	*Injection Volume:*	**1000.00**
Injection Type:	**Unknown**	*Channel:*	**UV_VIS_1**
Calibration Level:		*Wavelength:*	**530.0**
Instrument Method:	**Hex Chrom 4 mm**	*Bandwidth:*	**n.a.**
Processing Method:	**160803_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**08/Aug/16 19:19**	*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.
1		5.282	0.016	0.315	42.95	32.11	n.a.
2		5.973	0.022	0.666	57.05	67.89	n.a.
Total:			**0.038**	**0.981**	**100.00**	**100.00**	

8/16/2016

SM 2320B

Wet Chemistry Technical Batch Review Checklist (ARCUS02)

ASSET LABORATORIES - LAS VEGAS

FIRST LEVEL REVIEW:

QC Batch Number: R109819 **Analyst:** LSR

ASSET #: N020532 **Date Analyzed:** 8/4/2016

Method: EPA 2320

Initial Calibration	1st Level Review Y	1st Level Review N	1st Level Review N/A	2nd Level Review Y	2nd Level Review N	2nd Level Review 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:

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: 8/8/2016

2nd Level Reviewer: 8/18/2016 Date:

SAMPLE CALCULATION

Sample ID: **N020532-001C @ pH 8.10**

A. Standardization of Sulfuric Acid (titrant):

Normality of acid = (A) (B)/ (53.00) (C)

Where:

A, grams weighed for Na_2CO_3 solution (Na_2CO_3 Standardization Solution)
B, mL Na2CO3 solution taken for titration, and
C, ml of sulfuric acid used to inflection point

Spike Standards

Na_2CO_3 Standardization Solution, ACS Grade (1.00 ml = 2500ug as $CaCO_3$): Dissolve 2.650 grams of Na_2CO_3 in distilled water and dilute to 1 liter.

LCS/MS/MSD Stock $NaHCO_3$, ACS Grade (1.00 ml = 5000 ug as $CaCO_3$): Dissolve 0.8398 grams of $NaHCO_3$ in distilled water and dilute to 1 liter.

Therefore,

Normality of Acid = (2.65g/L) (5mL) / (53.00) (11.65 mL)

= **0.02146 N**

B. CALCULATION OF ALKALINITY (for a 50 ml sample)

Total Alkalinity (as $CaCO_3$), mg/L = $M_{vol.}$ * N H_2SO_4 * DF * 1000

Where:

$M_{vol.}$ volume titrant used to reach pH 4.5, ml
N, Normality of H_2SO_4
DF, Dilution Factor = (50 ml) / (Vol. of Sample used)

Therefore,

Total Alkalinity (as $CaCO_3$), mg/L = (10.50) (0.02146 N) (1) * 1000

= 225.3300 mg**/L**

Reporting results in two significant figures,

= **230 mg/L** as CaCO3

Julia Ramit 8/8/2016

C. SPECIATED ALKALINITY:

Phenolphthalein Alkalinity

P alkalinity, mg/L as $CaCO_3$ = $P_{vol.}$ * N H_2SO_4 * DF * 1000

= (0) (0.02146 N) (1) * 1000

= **0**

Total Alkalinity

T alkalinity, mg/L as $CaCO_3$ = $M_{vol.}$ * N H_2SO_4 * DF * 1000

= (10.50 mL) (0.02146) (1) * 1000

= 225.3300 **mg/L** as CaCO3

Where:

$P_{vol.}$ - Volume titrant used to reach pH 8.3, ml
$M_{vol.}$ - Volume titrant used to reach pH 4.5, ml
N - Normality of H_2SO_4
DF - Dilution Factor = (50 ml) / (Vol. of Sample used)

Then OH, CO_3, HCO_3 alkalinities as $CaCO_3$ will be calculated as follows:

Result of Titration	**OH Alkalinity as $CaCO_3$**	**CO_3 Alkalinity as $CaCO_3$**	**HCO_3 Alkalinity as $CaCO_3$**
P = 0	0	0	T
P < ½ T	0	2P	T – 2P
P = ½ T	0	2P	0
P > ½ T	2P – T	2(T – P)	0
P = T	T	0	0

Therefore,

OH Alkalinity as $CaCO_3$ = **0**

CO_3 Alkalinity as $CaCO_3$ = **0**

HCO_3 Alkalinity as $CaCO_3$ = **225.3300 mg/L**

Reporting results in two significant figures,

OH Alkalinity as $CaCO_3$ = **0**

CO_3 Alkalinity as $CaCO_3$ = **0**

HCO_3 Alkalinity as $CaCO_3$ = **230 mg/L**

Sujita Ramit 8/8/2016

LOGBOOK DATA, QUANTITATION REPORT and/or SPECTRA

SAMPLE	PH SAMPLE	AMOUNT	V@8.3	VT TO 4.5	Sample Type
MB-1	5.14	50	0.00	0.05	MBLK
LCS-1	8.70	50	0.10	4.55	LCS
N020532-001C	8.10	50	0.00	10.50	SAMP
N020532-002C	7.81	50	0.00	6.50	SAMP
N020533-001A	8.07	50	0.00	10.35	SAMP
N020533-002A	7.87	50	0.00	6.60	SAMP
N020532-002CDUP	7.80	50	0.00	6.50	DUP
N020533-002AMS	8.02	50	0.00	11.00	MS
N020533-002AMSD	7.98	50	0.00	10.90	MSD

Standardization:		
Spike amt:	**5**	ml
Titrant used:	**11.65**	ml
N H2SO4	**0.02146**	Normal
Date Analyzed:	**8/4/16**	
Time:	**10:05 AM**	
Analyzed By:	**LSR**	
Sodium Carbonate:	**CINV-160125B**	
Sodium Bicarbonate:	**CINV-150601A**	
Sulfuric Acid:	**R160706B**	

Silvia Ramit 8/8/2016

Date Analyzed:	8/4/16		**Reagents:**					**Standardization:**					**P = 0**
Time Started:	10:05 AM			Sodium Carbonate:		CINV-160125B			Spike amt:	5	**mL**		**P < 1/2 T**
Analyzed By:	**LSR**			Hydrochloric Acid:		0			Titrant used:	11.65	**mL**		**P = 1/2 T**
				Sulfuric Acid:		R160706B							**P > 1/2 T**
									N H2SO4	0.02146	**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	5.14				0.02146	0.00	0.05	0.05	1	0.00	1.07	
LCS-1	50	8.7				0.02146	0.10	4.45	4.55	1	2.15	97.64	
N020532-001C	50	8.1				0.02146	0.00	10.50	10.50	1	0.00	225.32	
N020532-002C	50	7.81				0.02146	0.00	6.50	6.50	1	0.00	139.48	
N020533-001A	50	8.07				0.02146	0.00	10.35	10.35	1	0.00	222.10	
N020533-002A	50	7.87				0.02146	0.00	6.60	6.60	1	0.00	141.63	
N020532-002CDU	50	7.8				0.02146	0.00	6.50	6.50	1	0.00	139.48	
N020533-002AMS	50	8.02				0.02146	0.00	11.00	11.00	1	0.00	236.05	
N020533-002AMS	50	7.98				0.02146	0.00	10.90	10.90	1	0.00	233.91	

Julia Ramit 8/8/2016

Speciated, Alkalinity as CaCO3

SM 2320B

Date Analyzed:	8/4/16
Time:	10:05 AM
Analyzed By:	LSR

SAMPLE ID	OH	CO3	HCO3	TOTAL	CHECK	COMMENT	REMARKS
MB-1	0.00	0.00	1.07	1.07	1.07		P = 0
LCS-1	0.00	4.29	93.35	97.64	97.64		P < 1/2 T
N020532-001C	0.00	0.00	225.32	225.32	225.32		P = 0
N020532-002C	0.00	0.00	139.48	139.48	139.48		P = 0
N020533-001A	0.00	0.00	222.10	222.10	222.10		P = 0
N020533-002A	0.00	0.00	141.63	141.63	141.63		P = 0
N020532-002CDUP	0.00	0.00	139.48	139.48	139.48		P = 0
N020533-002AMS	0.00	0.00	236.05	236.05	236.05		P = 0
N020533-002AMSD	0.00	0.00	233.91	233.91	233.91		P = 0

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Book #5

Matrix: H_2O

Date Extracted: 8/4/16
Time Extracted: 2
Extracted By: LCR

Date Analyzed: 8/4/16
Time Analyzed: 1005
Analyzed By: LCR

Reagent Lot # / Reagent ID
Sodium Carbonate: CINV-160125B
Hydrochloric Acid:
Sulfuric Acid: R160706B
$NaHCO_3$: CINV150601A

pH meter CALIBRATION:
SLOPE: 95.0%
pH 4 = 4.02 - CINV - 160322A
7 = 6.97 160309A
10 = 10.02 160609C

	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
	STANDARDIZATION											
	#1	50mL	10.64	1WST160729A	5mL	0.05N	-	-	11.65	50/50	$N_{H_2SO_4} = \frac{(265\ g/L)(5mL)}{(53)(V\ titrant)}$	= 0.021459227
	#2	↓	10.61	↓	↓	↓	-	-	11.65	↓		
1)	MBLK	50mL	5.14	-	-	-	0.02 14L	0	0.05	50/50		
2)	LCS		8.70	1WST160729B	1mL	0.05N		0.10	4.55			
3)	N020532-001C		8.10	-	-	-		0	10.50			
4)	↓ 2C		7.81	-	-	-		0	6.50			
5)	N020533-001A		8.07	-	-	-		0	10.35			
6)	↓ 2A		7.87	-	-	-		0	6.60			
7)	N020532-2C DUP		7.80	-	-	-		0	6.50			
8)	N020533-2AMS		8.02	1WST160729B	1mL	0.05N		0	11.00			
9)	↓ 2AMSD		7.98	↓	↓	↓		0	10.90			
10)												
11)												
12)												
13)												
14)												
15)												
16)				$P = \frac{(V\ pH\ 8.3)(N\ H_2SO_4)(50{,}000)}{VSX}$								
17)												
18)												
19)												
20)				$T = \frac{(V\ pH\ 4.5)(N\ H_2SO_4)(50{,}000)}{VSX}$								
	MS											
	MSD											
	LCS											

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EPA 300.0

IC Technical Batch Review Checklist (ARCUS02)

ASSET LABORATORIES - LAS VEGAS

IC ARCUS
REV 2.0
011416

QC Batch Number: R109912
ASSET #: N020532

Instrument ID: IC-02
Analyst: QBM
Date Analyzed: 8/8/2016

Method:

[X] **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					
Continuing Calibration						
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			
Sample Information						
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			
QC Items						
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			
Raw Data and Miscellaneous Information						
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					
Preliminary Report						
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 _____ Date: 8/15/2016

2nd Level Reviewer _____ 8/18/2016 Date: _____

SAMPLE CALCULATION

Sample Calculation

METHOD: EPA 300.0
TEST NAME: INORGANIC ANIONS BY IC
MATRIX: GROUNDWATER

FORMULA:

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

Chlorine, mg/L = A * DF

where:

A = mg/L, IC calculated concentration
DF = dilution factor

For **N020532-001C** concentration in mg/L is calculated as follows:

Chlorine, mg/L = 5.035 * 200

= 1007

Reporting result in two significant values,

Chlorine**, mg/L** = **1000**

8/17/2016

ANALYSIS RUN LOG

DIONEX SCHEDULE - C:\DX\SCHEDULE\160718.SCH

Inj#	Sample Name	Method	Data File	Vol.	Dil.	Int.Std.
1	,BLANK,	..\160718.M	..\16071801.D01	1	1	1
2	,BLANK,	..\160718.M	..\16071801.D02	1	1	1
3	AUTOCAL1R	..\160718.M	..\16071801.D03	1	1	1
4	AUTOCAL2R	..\160718.M	..\16071801.D04	1	1	1
5	AUTOCAL3R	..\160718.M	..\16071801.D05	1	1	1
6	AUTOCAL4R	..\160718.M	..\16071801.D06	1	1	1
7	AUTOCAL5R	..\160718.M	..\16071801.D07	1	1	1
8	AUTOCAL6R	..\160718.M	..\16071801.D08	1	1	1
9	,ICV,ICV,1,	..\160718.M	..\16071801.D09	1	1	1
10	,ICB,ICB,1,	..\160718.M	..\16071801.D10	1	1	1
11	,MB-WIPE,MBLK,1,	..\160718.M	..\16071801.D11	1	1	1
12	,LCS-WIPE,LCS,1,	..\160718.M	..\16071801.D12	1	1	1
13	,LCSD-WIPE,LCSD,1,	..\160718.M	..\16071801.D13	1	1	1
14	,N020284-001A,SAMP,	..\160718.M	..\16071801.D14	1	1	1
15	,N020284-002A,SAMP,	..\160718.M	..\16071801.D15	1	1	1
16	,N020284-003A,SAMP,	..\160718.M	..\16071801.D16	1	1	1
17	,N020284-004A,SAMP,	..\160718.M	..\16071801.D17	1	1	1
18	,N020284-005A,SAMP,	..\160718.M	..\16071801.D18	1	1	1
19	,BLANK,	..\160718.M	..\16071801.D19	1	1	1
20	,N020284-001A,SAMP,	..\160718.M	..\16071801.D20	1	1	1
21	,CCV-1,CCV,1,	..\160718.M	..\16071801.D21	1	1	1
22	,CCB-1,CCB,1,	..\160718.M	..\16071801.D22	1	1	1
23	,N020284-002A,SAMP,	..\160718.M	..\16071801.D23	1	1	1
24	,N020284-003A,SAMP,	..\160718.M	..\16071801.D24	1	1	1
25	,N020284-004A,SAMP,	..\160718.M	..\16071801.D25	1	1	1
26	,N020284-005A,SAMP,	..\160718.M	..\16071801.D26	1	1	1
27	,BLANK,	..\160718.M	..\16071801.D27	1	1	1
28	,N020284-005A,SAMP,	..\160718.M	..\16071801.D28	1	1	1
29	,BLANK,	..\160718.M	..\16071801.D29	1	1	1
30	,CCV-2,CCV,1,	..\160718.M	..\16071801.D30	1	1	1
31	,CCB-2,CCB,1,	..\160718.M	..\16071801.D31	1	1	1
32	SHUTDOWN	..\SHUTDOWN		1	1	1

Comment:
Standard for IC-02 (Anions) = ICAL/CCV : ISST-150730A, B, C, D, E, F, G; ICV/LCS/MS/MSD: ISST160211F, G, H, I, J, K and L

7/19/2016

DIONEX SCHEDULE - C:\DX\SCHEDULE\160808.SCH

Inj#	Sample Name	Method	Data File	Vol.	Dil.	Int.Std.
1	,BLANK,	..\160718.M	..\16080801.D01	1	1	1
2	,CCV-1,CCV,1,	..\160718.M	..\16080801.D02	1	1	1
3	,CCB-1,CCB,1,	..\160718.M	..\16080801.D03	1	1	1
4	,MB-H2O,MBLK,1,	..\160718.M	..\16080801.D04	1	1	1
5	,LCS-H2O,LCS,1,	..\160718.M	..\16080801.D05	1	1	1
6	,N020552-001B,SAMP,	..\160718.M	..\16080801.D06	1	1	1
7	,N020553-001B,SAMP,	..\160718.M	..\16080801.D07	1	1	1
8	,N020554-001B,SAMP,	..\160718.M	..\16080801.D08	1	1	1
9	,N020555-001B,SAMP,	..\160718.M	..\16080801.D09	1	1	1
10	,N020556-001B,SAMP,	..\160718.M	..\16080801.D10	1	1	1
11	,N020576-001B,SAMP,	..\160718.M	..\16080801.D11	1	1	1
12	,N020577-001B,SAMP,	..\160718.M	..\16080801.D12	1	1	1
13	,N020578-001B,SAMP,	..\160718.M	..\16080801.D13	1	1	1
14	,CCV-2,CCV,1,	..\160718.M	..\16080801.D14	1	1	1
15	,CCB-2,CCB,1,	..\160718.M	..\16080801.D15	1	1	1
16	,N020578-001BMS,MS,	..\160718.M	..\16080801.D16	1	1	1
17	,N020532-001C,SAMP,	..\160718.M	..\16080801.D17	1	1	1
18	,N020532-001CDUP,DU	..\160718.M	..\16080801.D18	1	1	1
19	,N020532-002C,SAMP,	..\160718.M	..\16080801.D19	1	1	1
20	,N020532-002CMS,MS,	..\160718.M	..\16080801.D20	1	1	1
21	,N020532-002CMSD,MS	..\160718.M	..\16080801.D21	1	1	1
22	,N020533-001A,SAMP,	..\160718.M	..\16080801.D22	1	1	1
23	,N020533-002A,SAMP,	..\160718.M	..\16080801.D23	1	1	1
24	,N020532-001C,SAMP,	..\160718.M	..\16080801.D24	1	1	1
25	,N020532-001CDUP,DU	..\160718.M	..\16080801.D25	1	1	1
26	,CCV-3,CCV,1,	..\160718.M	..\16080801.D26	1	1	1
27	,CCB-3,CCB,1,	..\160718.M	..\16080801.D27	1	1	1
28	,N020532-002C,SAMP,	..\160718.M	..\16080801.D28	1	1	1
29	,N020532-002CMS,MS,	..\160718.M	..\16080801.D29	1	1	1
30	,N020532-002CMSD,MS	..\160718.M	..\16080801.D30	1	1	1
31	,N020533-001A,SAMP,	..\160718.M	..\16080801.D31	1	1	1
32	,N020533-002A,SAMP,	..\160718.M	..\16080801.D32	1	1	1
33	,CCV-4,CCV,1,	..\160718.M	..\16080801.D33	1	1	1
34	,CCB-4,CCB,1,	..\160718.M	..\16080801.D34	1	1	1
35	SHUTDOWN	..\SHUTDOWN		1	1	1

Comment:
Standard for IC-02 (Anions) = ICAL/CCV : ISST-150730A, B, C, D, E, F, G; ICV/LCS/MS/MSD: ISST160211F, G, H, I, J, K and L

8/15/2016

INITIAL CALIBRATION DATA SUMMARY

DIONEX METHOD PARAMETERS - 160718.MET

Method Comment:
Column ID:
Analyst ID:

System Parameters

System Name: ANIONS

Number of Detectors	1
Run Time (minutes)	13.00
Sampling Rate (seconds)	0.20
Detector 1 Type	COND
Detector 1 real time plot scale maximum (mV)	100.000
minimum	-10.000
Detector 1 Output Equivalent to 1 Volt (in mV)	100.00
Detector 1 ACI Analog Input Connection	DET1
Save Data File	Yes

Data File Name: C:\DX\DATA\14120201.D02

-- DETECTOR 1 PARAMETERS --

Report Options

Create ASCII Report File	No
Print Report	Yes
Print All Components	Yes
Print Components Found	No
Print Missing Components	No
Print All Peaks	Yes
Print Unknown Peaks	Yes
Print Chromatogram	Yes
Autoscale Chromatogram Maximum	Yes
Autoscale Maximum Value Delay (minutes)	0.0
Autoscale Chromatogram Minimum	Yes
Autoscale Minimum Value Delay (minutes)	0.0
Fill Peaks with Color	No
Draw Grid Lines on Chromatogram	No
Show Component Fraction Numbers	No
Label with Peak Number	No
Label with Retention Times on Chromatogram	No
Label with Component Name	Yes

Format File Name: C:\DX\METHOD\DEFAULT.PRF

Integration Parameters

Starting Peak Width (seconds)	5.0
Peak Threshold	0.500
Peak Area Reject	2000
Area Reject for Reference Peaks	3000

Data Events

Time	Description
0.50	Start peak detection
0.51	Force baseline at start of this peak
0.51	Split peak
0.51	Force common baseline following this peak
0.52	End peaks on baseline penetration

7/19/2016

Calibration Parameters

Number Of Levels for Calibration	6
Force Calibration Curve Through Origin	No
Calibration Fit Type	Linear
Replace Or Average Calibrations	Replace
External or Internal Calibration	External
Calculate Unknowns by Area or Height	Area
Default Sample Volume	1.0
Default Dilution Factor	1.0
Default Response Factor for Unknown Peaks	0.0
Calibration Standard Volume	1.0
Internal Standard Amount in Samples	1.0
Amount Units	

7/19/2016

Component Table -- Last Modified: 12:35 on Mon, 18 Jul 2016

Component # 1 Fluoride Retention Time 2.54
Reference Comp. Fluoride Window Size 0.10 min.
Amount = K0 + K1*Area
K0 = 2.10348E-002
K1 = 2.70278E-006

Level	Amount	Area	Height
1	0.00000E+000	0	0
2	5.00000E-002	15108	1463
3	5.00000E-001	188895	14794
4	1.00000E+000	330455	29769
5	2.50000E+000	924079	84018
6	5.00000E+000	1843168	178280

Component # 2 Chloride Retention Time 3.75
Reference Comp. Chloride Window Size 0.10 min.
Amount = K0 + K1*Area
K0 = 4.98181E-002
K1 = 3.63533E-006

Level	Amount	Area	Height
1	0.00000E+000	0	0
2	5.00000E-001	142334	12481
3	1.00000E+000	257317	23579
4	2.50000E+000	650835	61750
5	5.00000E+000	1342374	131120
6	1.00000E+001	2751397	283073

Component # 3 Nitrite Retention Time 4.55
Reference Comp. Nitrite Window Size 0.20 min.
Amount = K0 + K1*Area
K0 = 1.57046E-002
K1 = 1.98332E-006

Level	Amount	Area	Height
1	0.00000E+000	0	0
2	5.00000E-002	29487	2149
3	5.00000E-001	242149	17667
4	1.00000E+000	473798	35429
5	2.50000E+000	1252845	97110
6	5.00000E+000	2517271	203813

Component # 4 Bromide Retention Time 5.49
Reference Comp. Bromide Window Size 0.20 min.
Amount = K0 + K1*Area
K0 = 4.04816E-004
K1 = 8.55403E-006

Level	Amount	Area	Height
1	0.00000E+000	0	0
2	2.00000E-001	26606	2206
3	5.00000E-001	51500	3988
4	1.00000E+000	120264	8786
5	2.50000E+000	293055	22849
6	5.00000E+000	583808	46435

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Component # 5 Nitrate Retention Time 6.18
Reference Comp. Nitrate Window Size 0.20 min.
Amount = K0 + K1*Area
K0 = 3.49964E-002
K1 = 1.42910E-006

Level	Amount	Area	Height
1	0.00000E+000	0	0
2	5.00000E-002	32176	2397
3	5.00000E-001	309993	22408
4	1.00000E+000	638617	46472
5	2.50000E+000	1720863	129315
6	5.00000E+000	3484078	269114

Component # 6 Phosphate Retention Time 7.92
Reference Comp. Phosphate Window Size 0.50 min.
Amount = K0 + K1*Area
K0 = -1.25356E-002
K1 = 4.24658E-006

Level	Amount	Area	Height
1	0.00000E+000	0	0
2	1.00000E-001	39246	1728
3	5.00000E-001	120846	6602
4	1.00000E+000	223647	12623
5	2.50000E+000	596675	34228
6	5.00000E+000	1180197	69690

Component # 7 Sulfate Retention Time 8.99
Reference Comp. Sulfate Window Size 0.50 min.
Amount = K0 + K1*Area
K0 = 1.24667E-001
K1 = 4.99741E-006

Level	Amount	Area	Height
1	0.00000E+000	0	0
2	5.00000E-001	108866	5433
3	2.00000E+000	381275	20421
4	5.00000E+000	938982	52310
5	1.00000E+001	1908998	110214
6	2.00000E+001	4016084	238445

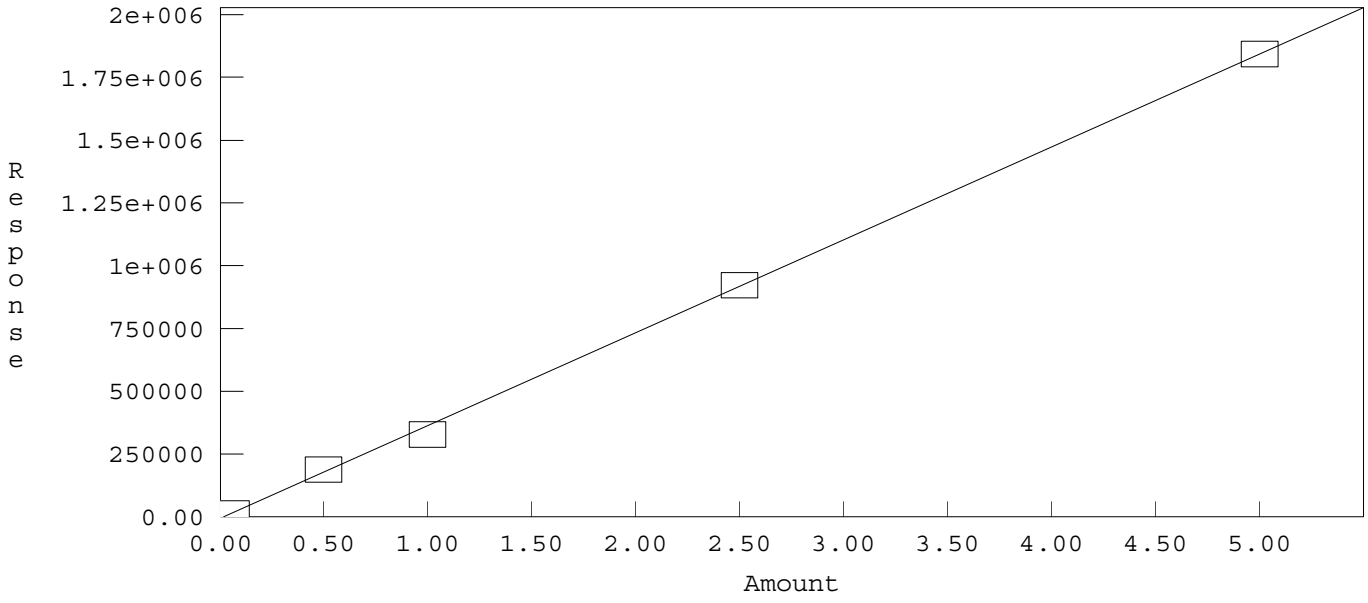
Timed Events File: C:\DX\METHOD\AS4ASC2.TE

Step	Time	Description
Init		ACI Autosmp OFF
Init		ACI Autooff OFF
Init		ACI Pmpstrt ON
Init		ACI Inject OFF
Init		ACI OFF
Init		ACI OFF
Init		ACI OFF
Init		ACI OFF
Init		ACI OFF
Init		ACI OFF
1	0.0	ACI Autosmp ON
2	2.3	ACI Autosmp OFF
2	2.3	ACI Autooff ON
3	2.4	ACI Inject ON
3	2.4	Start Sampling

7/19/2016

Method: 160718.MET - Last Updated: 12:35 on Mon, 18 Jul 2016

Component: Fluoride
Fit Type: Linear
r^2 = 0.999507
Amt = Resp * 2.703e-006 + 0.02103
Resp = Amt * 3.7e+005 + -7783
Standardization: External
Calibration: Area



Method: C:\DX\METHOD\160718.MET

Component: Chloride
Fit Type: Linear
r^2 = 0.999697
Amt = Resp * 3.635e-006 + 0.04982
Resp = Amt * 2.751e+005 + -1.37e+004
Standardization: External
Calibration: Area

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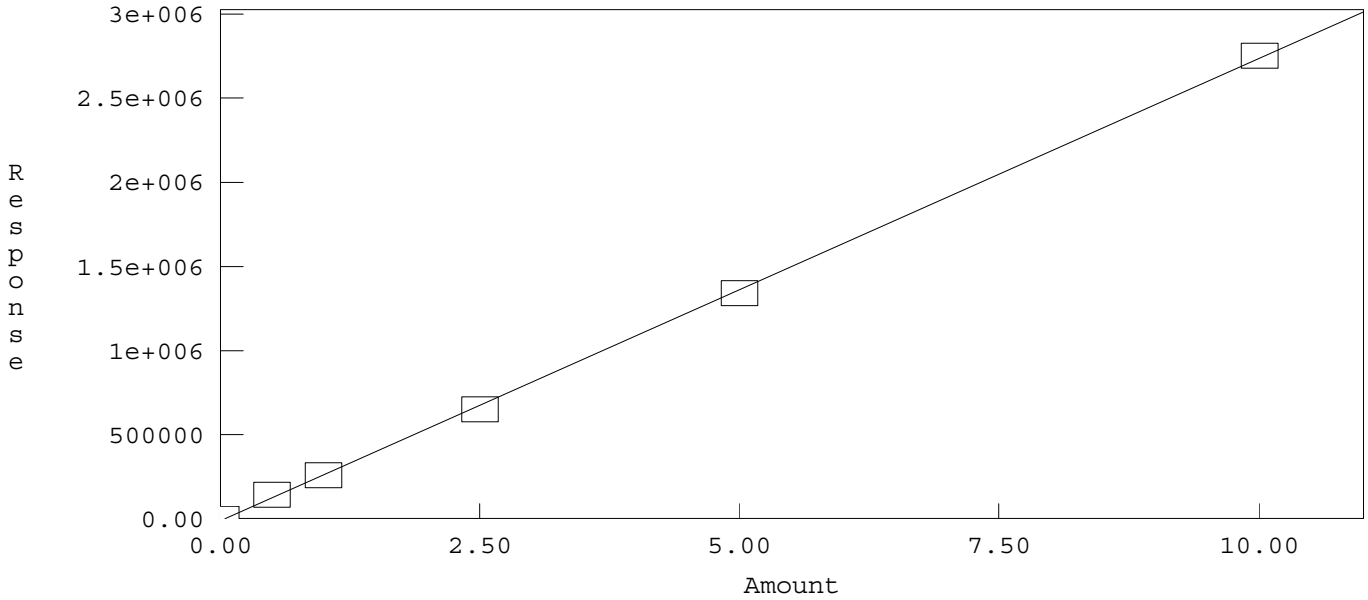
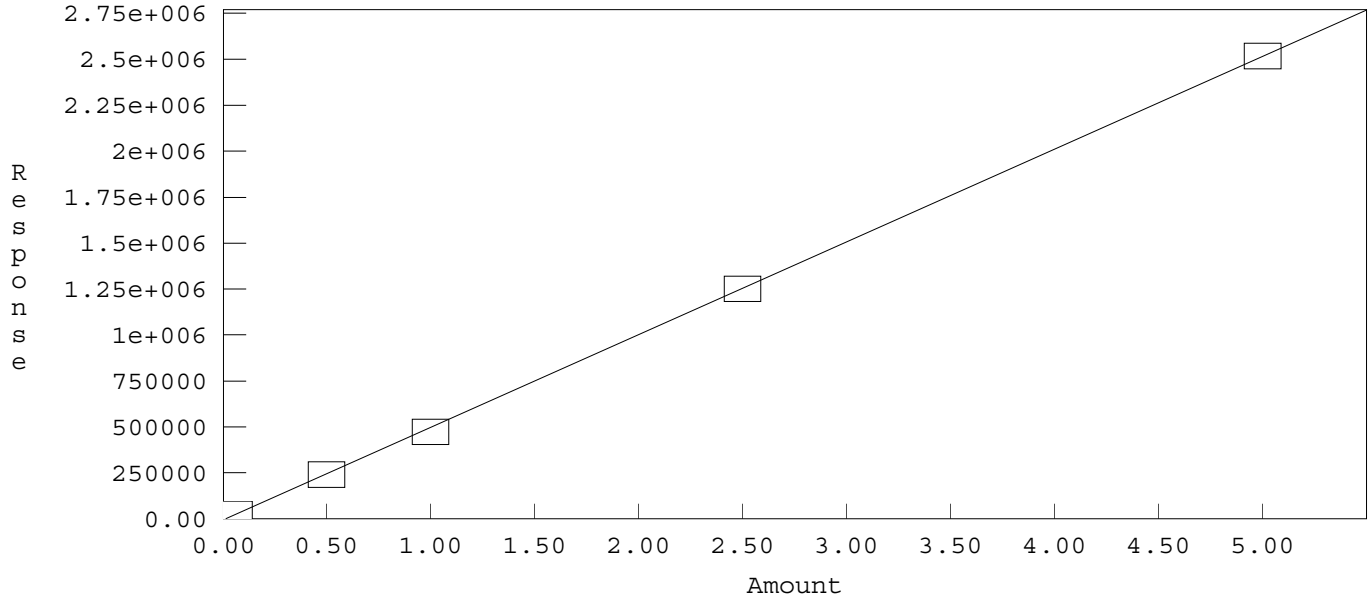


Method: C:\DX\METHOD\160718.MET

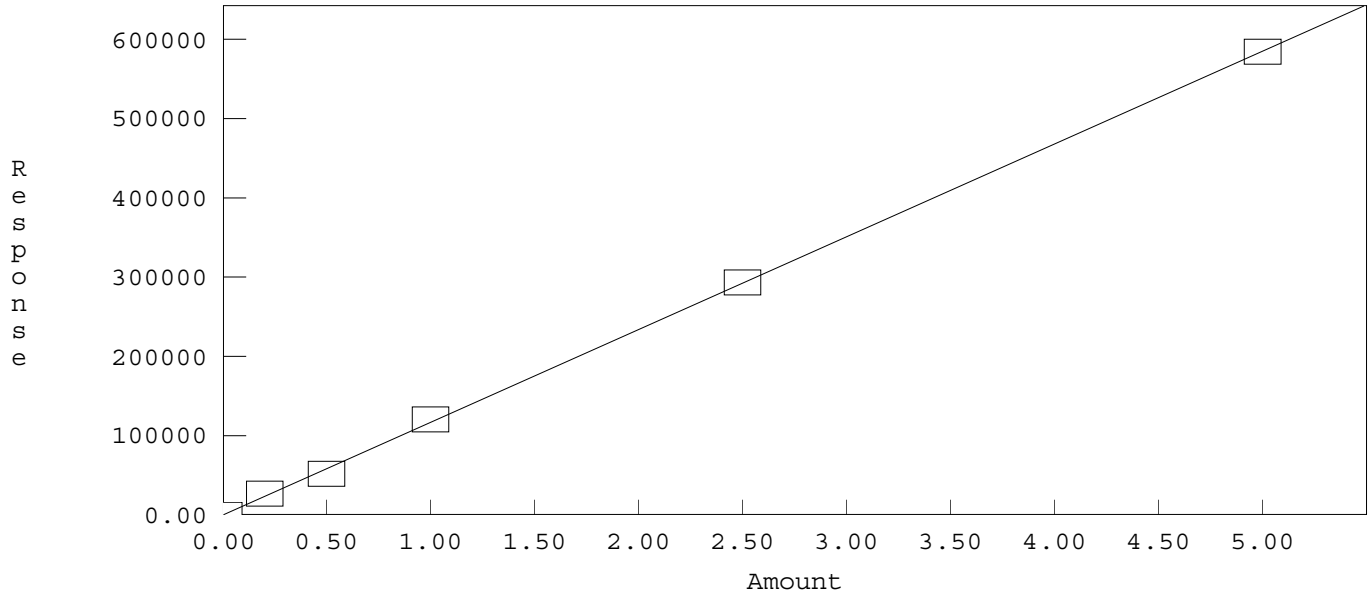
Component: Nitrite
Fit Type: Linear
r² = 0.999846
Amt = Resp * 1.983e-006 + 0.0157
Resp = Amt * 5.042e+005 + -7918
Standardization: External
Calibration: Area



Method: C:\DX\METHOD\160718.MET

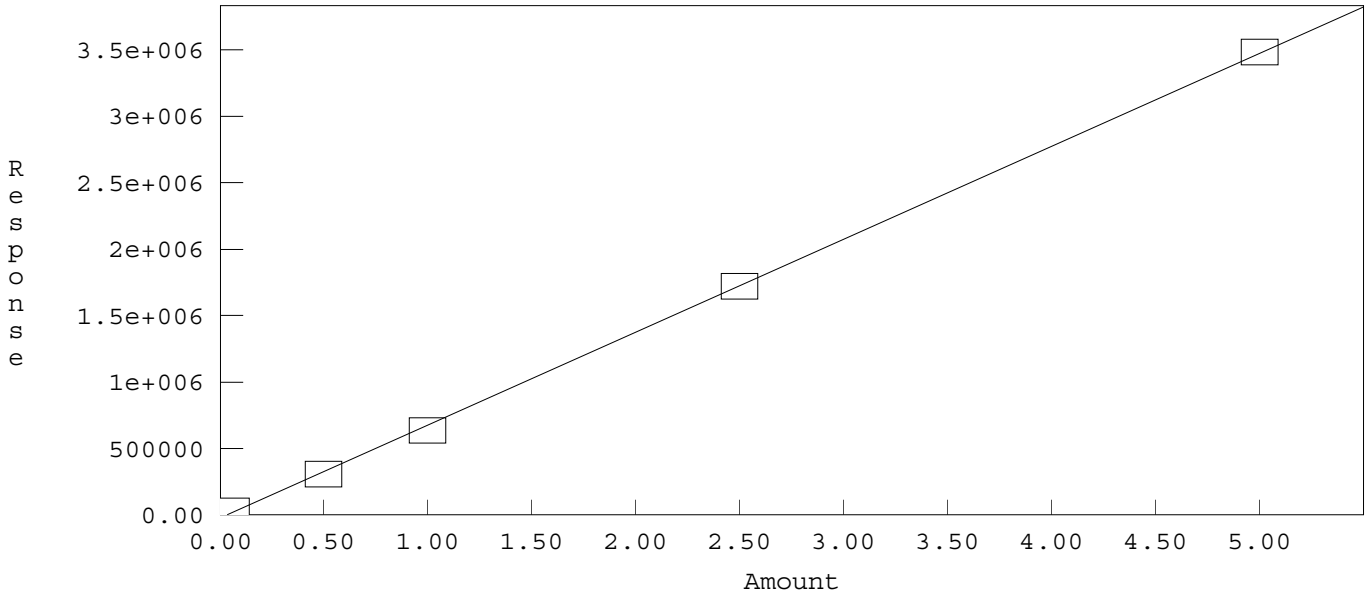
Component: Bromide
Fit Type: Linear
r² = 0.999718
Amt = Resp * 8.554e-006 + 0.0004048
Resp = Amt * 1.169e+005 + -47.32
Standardization: External
Calibration: Area

7/19/2016



Method: C:\DX\METHOD\160718.MET

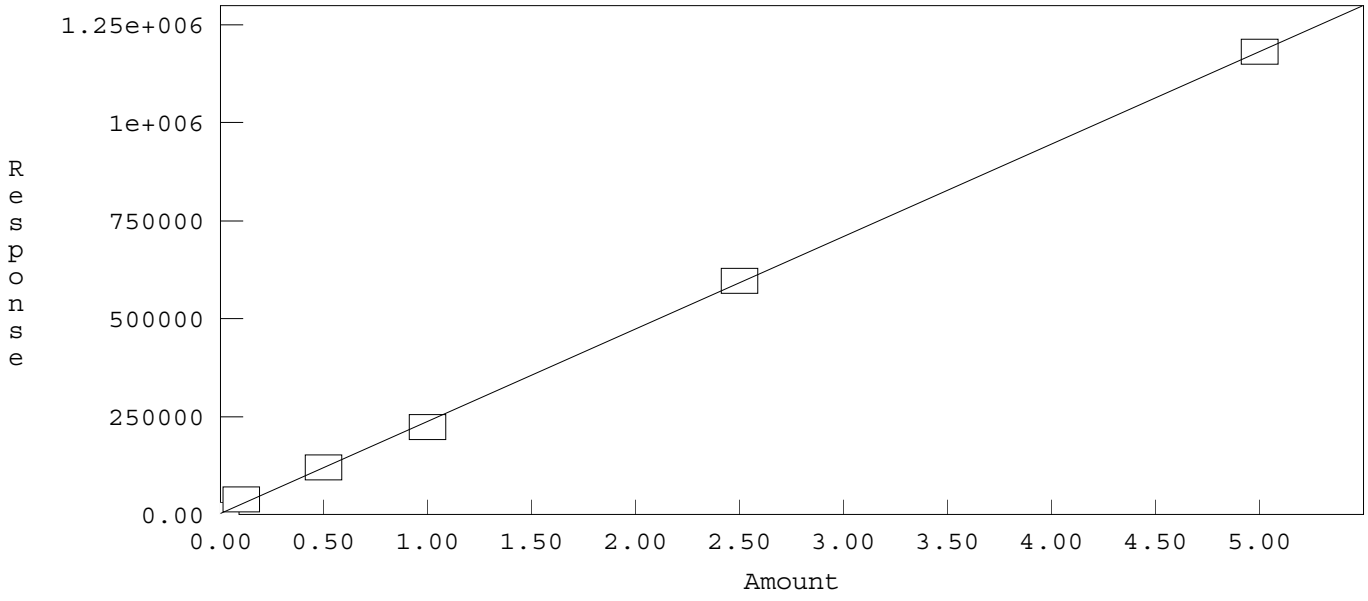
Component: Nitrate
Fit Type: Linear
r^2 = 0.999701
Amt = Resp * 1.429e-006 + 0.035
Resp = Amt * 6.997e+005 + -2.449e+004
Standardization: External
Calibration: Area



Method: C:\DX\METHOD\160718.MET

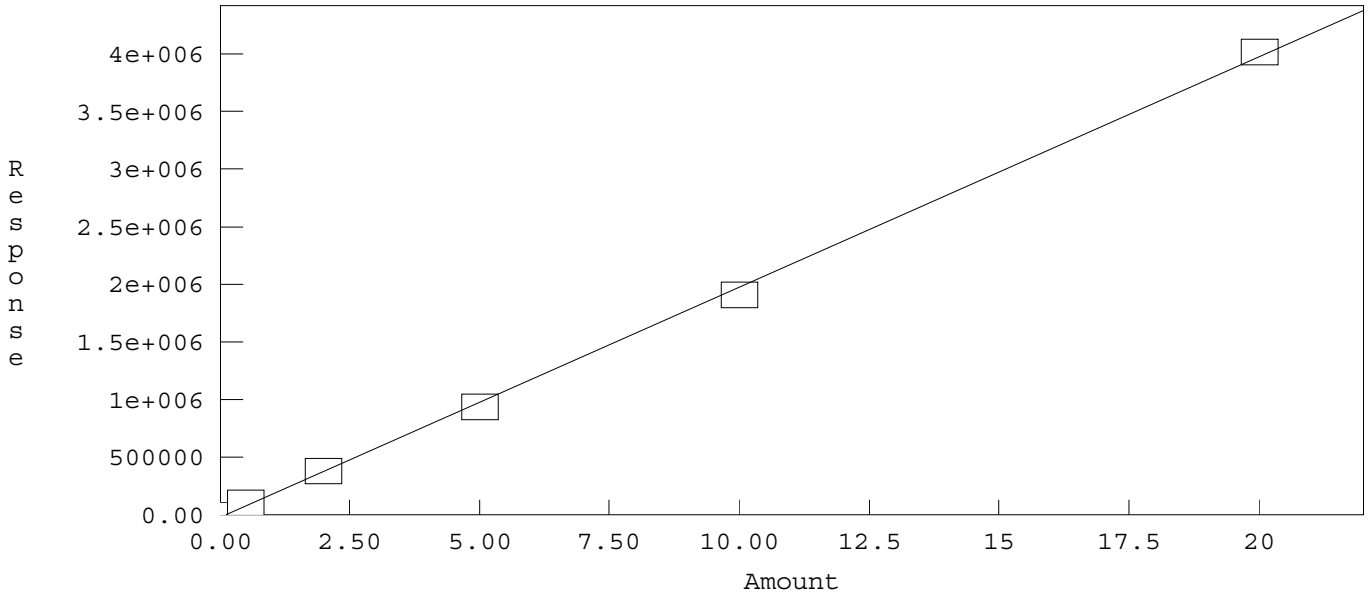
Component: Phosphate
Fit Type: Linear
r^2 = 0.999600
Amt = Resp * 4.247e-006 + -0.01254
Resp = Amt * 2.355e+005 + 2952
Standardization: External
Calibration: Area

7/19/2016



Method: C:\DX\METHOD\160718.MET

Component: Sulfate
Fit Type: Linear
r^2 = 0.999225
Amt = Resp * 4.997e-006 + 0.1247
Resp = Amt * 2.001e+005 + -2.495e+004
Standardization: External
Calibration: Area



7/19/2016

INITIAL CALIBRATION AND CONTINUING CALIBRATION VERIFICATION SUMMARY

CLIENT: ARCADIS U.S., Inc. - California
Work Order: N020532
Project: PG&E Topock - PMP, RC000753.801A

ANALYTICAL QC SUMMARY REPORT

TestCode: 300_W_CLPGE

Sample ID **ICV**	SampType: **ICV**	TestCode: **300_W_CLP**	Units: **mg/L**	Prep Date:	RunNo: **109912**
Client ID: **ICV**	Batch ID: **R109912**	TestNo: **EPA 300.0**		Analysis Date: **7/18/2016**	SeqNo: **2397556**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride	2.462	0.50	2.500	0	98.5	90	110				

Sample ID **CCV-1**	SampType: **CCV**	TestCode: **300_W_CLP**	Units: **mg/L**	Prep Date:	RunNo: **109912**
Client ID: **CCV**	Batch ID: **R109912**	TestNo: **EPA 300.0**		Analysis Date: **8/8/2016**	SeqNo: **2397558**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride	2.393	0.50	2.500	0	95.7	90	110				

Sample ID **CCV-2**	SampType: **CCV**	TestCode: **300_W_CLP**	Units: **mg/L**	Prep Date:	RunNo: **109912**
Client ID: **CCV**	Batch ID: **R109912**	TestNo: **EPA 300.0**		Analysis Date: **8/8/2016**	SeqNo: **2397570**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride	2.454	0.50	2.500	0	98.2	90	110				

Sample ID **CCV-3**	SampType: **CCV**	TestCode: **300_W_CLP**	Units: **mg/L**	Prep Date:	RunNo: **109912**
Client ID: **CCV**	Batch ID: **R109912**	TestNo: **EPA 300.0**		Analysis Date: **8/8/2016**	SeqNo: **2397575**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride	2.323	0.50	2.500	0	92.9	90	110				

Sample ID **CCV-4**	SampType: **CCV**	TestCode: **300_W_CLP**	Units: **mg/L**	Prep Date:	RunNo: **109912**
Client ID: **CCV**	Batch ID: **R109912**	TestNo: **EPA 300.0**		Analysis Date: **8/8/2016**	SeqNo: **2397582**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride	2.453	0.50	2.500	0	98.1	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: N020532
Project: PG&E Topock - PMP, RC000753.801A

ANALYTICAL QC SUMMARY REPORT

TestCode: 300_W_SO4PGE

Sample ID **ICV**	SampType: **ICV**	TestCode: **300_W_SO4P**	Units: **mg/L**	Prep Date:	RunNo: **109912**
Client ID: **ICV**	Batch ID: **R109912**	TestNo: **EPA 300.0**		Analysis Date: **7/18/2016**	SeqNo: **2397584**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Sulfate	4.762	0.50	5.000	0	95.2	90	110				

Sample ID **CCV-1**	SampType: **CCV**	TestCode: **300_W_SO4P**	Units: **mg/L**	Prep Date:	RunNo: **109912**
Client ID: **CCV**	Batch ID: **R109912**	TestNo: **EPA 300.0**		Analysis Date: **8/8/2016**	SeqNo: **2397586**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Sulfate	4.851	0.50	5.000	0	97.0	90	110				

Sample ID **CCV-2**	SampType: **CCV**	TestCode: **300_W_SO4P**	Units: **mg/L**	Prep Date:	RunNo: **109912**
Client ID: **CCV**	Batch ID: **R109912**	TestNo: **EPA 300.0**		Analysis Date: **8/8/2016**	SeqNo: **2397598**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Sulfate	4.878	0.50	5.000	0	97.6	90	110				

Sample ID **CCV-3**	SampType: **CCV**	TestCode: **300_W_SO4P**	Units: **mg/L**	Prep Date:	RunNo: **109912**
Client ID: **CCV**	Batch ID: **R109912**	TestNo: **EPA 300.0**		Analysis Date: **8/8/2016**	SeqNo: **2397608**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Sulfate	4.687	0.50	5.000	0	93.7	90	110				

Sample ID **CCV-4**	SampType: **CCV**	TestCode: **300_W_SO4P**	Units: **mg/L**	Prep Date:	RunNo: **109912**
Client ID: **CCV**	Batch ID: **R109912**	TestNo: **EPA 300.0**		Analysis Date: **8/8/2016**	SeqNo: **2397610**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Sulfate	4.851	0.50	5.000	0	97.0	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

CLIENT: ARCADIS U.S., Inc. - California
Work Order: N020532
Project: PG&E Topock - PMP, RC000753.801A

ANALYTICAL QC SUMMARY REPORT

TestCode: 300_W_CLPGE

Sample ID **ICB**	SampType: **ICB**	TestCode: **300_W_CLP**	Units: **mg/L**	Prep Date:	RunNo: **109912**
Client ID: **ICB**	Batch ID: **R109912**	TestNo: **EPA 300.0**		Analysis Date: **7/18/2016**	SeqNo: **2397557**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride	ND	0.50									

Sample ID **CCB-1**	SampType: **CCB**	TestCode: **300_W_CLP**	Units: **mg/L**	Prep Date:	RunNo: **109912**
Client ID: **CCB**	Batch ID: **R109912**	TestNo: **EPA 300.0**		Analysis Date: **8/8/2016**	SeqNo: **2397559**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride	ND	0.50									

Sample ID **CCB-2**	SampType: **CCB**	TestCode: **300_W_CLP**	Units: **mg/L**	Prep Date:	RunNo: **109912**
Client ID: **CCB**	Batch ID: **R109912**	TestNo: **EPA 300.0**		Analysis Date: **8/8/2016**	SeqNo: **2397571**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride	ND	0.50									

Sample ID **CCB-3**	SampType: **CCB**	TestCode: **300_W_CLP**	Units: **mg/L**	Prep Date:	RunNo: **109912**
Client ID: **CCB**	Batch ID: **R109912**	TestNo: **EPA 300.0**		Analysis Date: **8/8/2016**	SeqNo: **2397576**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride	ND	0.50									

Sample ID **CCB-4**	SampType: **CCB**	TestCode: **300_W_CLP**	Units: **mg/L**	Prep Date:	RunNo: **109912**
Client ID: **CCB**	Batch ID: **R109912**	TestNo: **EPA 300.0**		Analysis Date: **8/8/2016**	SeqNo: **2397583**

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: N020532
Project: PG&E Topock - PMP, RC000753.801A

ANALYTICAL QC SUMMARY REPORT

TestCode: 300_W_SO4PGE

Sample ID	ICB	SampType:	ICB	TestCode:	300_W_SO4P	Units:	mg/L	Prep Date:		RunNo:	109912
Client ID:	ICB	Batch ID:	R109912	TestNo:	EPA 300.0			Analysis Date:	7/18/2016	SeqNo:	2397585

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Sulfate	ND	0.50									

Sample ID	CCB-1	SampType:	CCB	TestCode:	300_W_SO4P	Units:	mg/L	Prep Date:		RunNo:	109912
Client ID:	CCB	Batch ID:	R109912	TestNo:	EPA 300.0			Analysis Date:	8/8/2016	SeqNo:	2397587

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Sulfate	ND	0.50									

Sample ID	CCB-2	SampType:	CCB	TestCode:	300_W_SO4P	Units:	mg/L	Prep Date:		RunNo:	109912
Client ID:	CCB	Batch ID:	R109912	TestNo:	EPA 300.0			Analysis Date:	8/8/2016	SeqNo:	2397599

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Sulfate	ND	0.50									

Sample ID	CCB-3	SampType:	CCB	TestCode:	300_W_SO4P	Units:	mg/L	Prep Date:		RunNo:	109912
Client ID:	CCB	Batch ID:	R109912	TestNo:	EPA 300.0			Analysis Date:	8/8/2016	SeqNo:	2397609

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Sulfate	ND	0.50									

Sample ID	CCB-4	SampType:	CCB	TestCode:	300_W_SO4P	Units:	mg/L	Prep Date:		RunNo:	109912
Client ID:	CCB	Batch ID:	R109912	TestNo:	EPA 300.0			Analysis Date:	8/8/2016	SeqNo:	2397611

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
- 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

RETENTION TIME (RT) SUMMARY

Instrument ID: IC-02

Analytical Sequence

Date Analyzed: 8/8/2016

Sample Name		Retention Time	Evaluation
CCV-1	Chloride	3.75	
CCV-2	Chloride	3.72	
CCV-3	Chloride	3.67	
CCV-4	Chloride	3.7	
	Average	3.710	
	Lower Limit	3.510	
	Upper Limit	3.910	
MB-R109912_CL	Chloride	0	N.A
LCS-R109912_CL	Chloride	3.74	PASS
N020578-001BMS	Chloride	3.66	PASS
N020532-001C	Chloride	3.71	PASS
N020532-001CDUP	Chloride	3.71	PASS
N020532-002C	Chloride	3.65	PASS
N020532-002CMS	Chloride	3.71	PASS
N020532-002CMSD	Chloride	3.65	PASS

8/17/2016

RETENTION TIME (RT) SUMMARY

Instrument ID: IC-02

Analytical Sequence

Date Analyzed: 8/8/2016

Sample Name		Retention Time	Evaluation
CCV-1	Sulfate	8.92	
CCV-2	Sulfate	8.86	
CCV-3	Sulfate	8.81	
CCV-4	Sulfate	8.86	
	Average	8.863	
	Lower Limit	8.663	
	Upper Limit	9.063	
MB-R109912_SO4	Sulfate	0	N.A
LCS-R109912_SO4	Sulfate	8.88	PASS
N020578-001BMS	Sulfate	8.75	PASS
N020532-001C	Sulfate	8.90	PASS
N020532-001CDUP	Sulfate	8.79	PASS
N020532-002C	Sulfate	8.83	PASS
N020532-002CMS	Sulfate	8.95	PASS
N020532-002CMSD	Sulfate	8.92	PASS

8/17/2016

MDL STUDY

METHOD DETECTION LIMIT 2016

Method Name: **INORGANIC IONS by Ion Chromatography (PG&E)**
Method Number: EPA 300.0
Analysis Date(s): 2/22/2016, 2/23/2016
Analyst/Technician: Quennie Manimtim

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

Instrument Name: **IC-02**

Acceptance Criteria: MDL < spike < 10XMDL

Analyte	#1	#2	#3	#4	#5	#6	#7	Spike Conc., mg/L	SD	MDL	LOD	PQL
Fluoride	0.072	0.081	0.065	0.068	0.074	0.069	0.066	0.020	0.0055	**0.0174**	0.035	0.10
Chloride	0.205	0.218	0.212	0.218	0.208	0.202	0.208	0.10	0.0062	**0.0194**	0.050	0.50
Nitrite	0.045	0.058	0.043	0.046	0.050	0.055	0.040	0.020	0.0065	**0.0205**	0.030	0.50
Bromide	0.073	0.076	0.085	0.094	0.073	0.070	0.058	0.040	0.0114	**0.0359**	0.100	0.20
Nitrate	0.052	0.063	0.062	0.061	0.058	0.056	0.063	0.020	0.0042	**0.0130**	0.030	0.50
Phosphate	0.057	0.054	0.074	0.045	0.048	0.047	0.063	0.050	0.0103	**0.0325**	0.050	0.10
Sulfate	0.285	0.238	0.238	0.264	0.249	0.241	0.284	0.10	0.0208	**0.0655**	0.150	0.50

MDL/LOD & PQL Verification 2016 (2nd Quarter)

Method Name: **Inorganic Ions by Ion Chromatography for PG&E** Matrix: **WATER**
Method Number: EPA Method 300.0 Unit: mg/L
Analysis Date(s): 5/25/2016
Analyst: Quennie B. Manimtim

Instrument Name: **IC-02**

Compound	MDL	LOD Spike Conc., mg/L	LOD Actual Conc., mg/L	PQL Spike Conc., mg/L	PQL Actual Conc., mg/L	%Recovery
Fluoride	**0.0174**	0.035	0.072	0.10	0.110	110
Chloride	**0.0194**	0.050	0.146	0.50	0.546	**109**
Nitrite	**0.0205**	0.030	0.063	0.50	0.493	99
Bromide	**0.0359**	0.100	0.077	0.20	0.242	**121**
Nitrate	**0.0130**	0.030	0.061	0.50	0.521	104
Phosphate	**0.0325**	0.050	0.074	0.10	0.120	120
Sulfate	**0.0655**	0.150	0.269	0.50	0.603	**121**

SM 3500-Cr B

Wet Chemistry Technical Batch Review Checklist (ARCUS02)

ASSET LABORATORIES - LAS VEGAS

FIRST LEVEL REVIEW:

QC Batch Number: R110021 **Analyst:** CEI

ASSET #: N020532 **Date Analyzed:** 8/15/2016

Method: 3500

Initial Calibration	Ist 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:

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 8/17/2016 Date: —

2nd Level Reviewer 8/18/2016 Date: —

SAMPLE CALCULATION

SAMPLE CALCULATION

METHOD: SM 3500-Cr B
TEST NAME: Hexavalent Chromium by Colorimetric Method
MATRIX: ~~Water~~ Groundwater

FORMULA:

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

Hexavalent Chromium, ug/L = A * DF

Where:

A= ug/L, UV-VIS Hexavalent Chromium calculated concentration

DF= dilution factor

For N020532-002A, concentration in ug/L is calculated as follows:

Hexavalent Chromium, ug/L = 106.773 * 5

= 533.865 ug/L

Reporting result in 2 significant figures,

Hexavalent Chromium, ug/L = 530

8/17/2016

INITIAL CALIBRATION DATA SUMMARY

THERMO SPECTRONIC ~ VISION32 SOFTWARE V1.25

Operator Name	(None Entered)		
Department	(None Entered)	Date of Report	8/15/2016
Organisation	(None Entered)	Time of Report	3:18:19
Information	(None Entered)		

Calibration - EPA 7196_08152016.fqc

Operator Name	(None Entered)
Instrument ID	152119

Calibration Method - EPA 7196_08152016.fqc

Description	Hexavalent Chromium by EPA 7196 (Colorimetric)		
Operator Name	MG		
Quant Mode	Single Lambda	Standards	5
Lambda 1	540.0 nm	Replicates	1
Lambda 2	Off	Initial Curve Fit	Linear
Lambda 3	Off	Conc. Units	ug/L
Integ. Time	00:00:01	Conc. Dec. Places	3
Lamp Change	325.0 nm	Flier Detection	Off
Bandwidth	2.0 nm	Valid Until	~~8/8/2017~~ 8/15/2017
Method Status	Unlocked		

8/17/2016

Standards Table - EPA 7196_08152016.fqc

Standard	Conc.	Use	540.0nm	Errors
Standard01	10.000	Yes	0.006	None
Standard02	50.000	Yes	0.042	None
Standard03	100.000	Yes	0.085	None
Standard04	250.000	Yes	0.210	None
Standard05	500.000	Yes	0.417	None

All calculations have been performed to double precision as defined by ANSI/IEEE STD 754-1985 but have been rounded for display purposes.

Errors Key

None	: No Errors Detected
I	: Invalid Data

Calibration Line / Curve Statistics

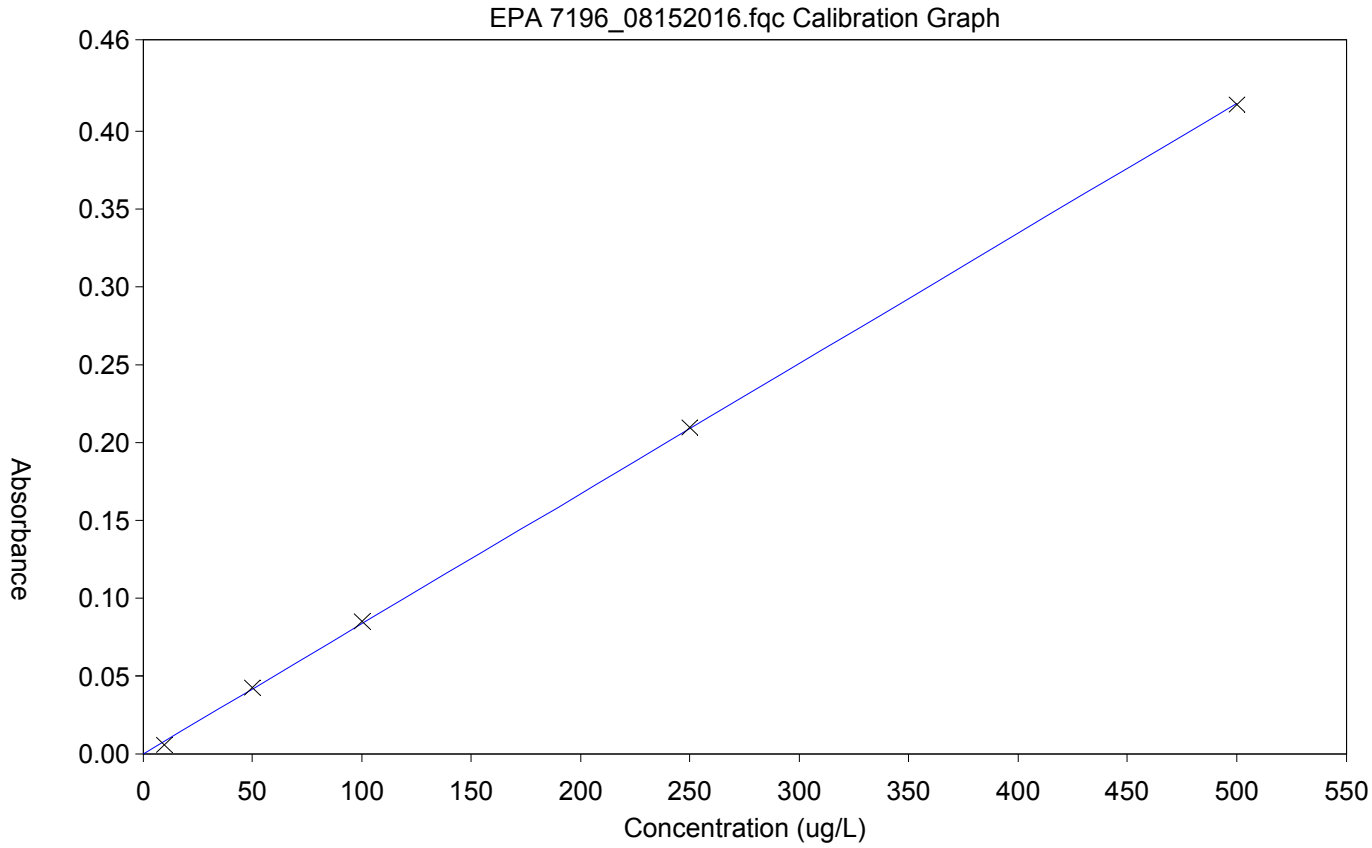
Equation	A = 0.0008 x Conc -0.0003
Selected Fit	Linear

THERMO SPECTRONIC ~ VISION32 SOFTWARE V1.25

Operator Name	(None Entered)		
Department	(None Entered)	Date of Report	8/15/2016
Organisation	(None Entered)	Time of Report	3:18:19
Information	(None Entered)		

Coefficient	0.999904
Sum of Residuals	(<0.0001)

Calibration Graph



8/17/2016

INITIAL CALIBRATION AND CONTINUING CALIBRATON VERIFICATION SUMMARY

CLIENT: ARCADIS U.S., Inc. - California
Work Order: N020532
Project: PG&E Topock - PMP, RC000753.801A

ANALYTICAL QC SUMMARY REPORT

TestCode: 3500_CrBPGE

Sample ID: **CCV-1**	SampType: **CCV**	TestCode: **3500_CrBPG**	Units: **µg/L**	Prep Date:	RunNo: **110021**
Client ID: **CCV**	Batch ID: **R110021**	TestNo: **SM 3500-Cr B**		Analysis Date: **8/15/2016**	SeqNo: **2403485**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium, Hexavalent	96.542	10	100.0	0	96.5	90	110				

Sample ID: **ICV**	SampType: **ICV**	TestCode: **3500_CrBPG**	Units: **µg/L**	Prep Date:	RunNo: **110021**
Client ID: **ICV**	Batch ID: **R110021**	TestNo: **SM 3500-Cr B**		Analysis Date: **8/15/2016**	SeqNo: **2403487**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium, Hexavalent	250.801	10	250.0	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		

INITIAL CALIBRATION AND CONTINUING CALIBRATON BLANK SUMMARY

CLIENT: ARCADIS U.S., Inc. - California
Work Order: N020532
Project: PG&E Topock - PMP, RC000753.801A

ANALYTICAL QC SUMMARY REPORT

TestCode: 3500_CrBPGE

Sample ID: **CCB-1**	SampType: **CCB**	TestCode: **3500_CrBPG**	Units: **µg/L**	Prep Date:	RunNo: **110021**
Client ID: **CCB**	Batch ID: **R110021**	TestNo: **SM 3500-Cr B**		Analysis Date: **8/15/2016**	SeqNo: **2403484**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium, Hexavalent	0.115	10									

Sample ID: **ICB**	SampType: **ICB**	TestCode: **3500_CrBPG**	Units: **µg/L**	Prep Date:	RunNo: **110021**
Client ID: **ICB**	Batch ID: **R110021**	TestNo: **SM 3500-Cr B**		Analysis Date: **8/15/2016**	SeqNo: **2403486**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium, Hexavalent	0.043	10									

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis 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

Calibration Method - EPA 7196_08152016.fqc

8/15/2016 15:20

Description	Hexavalent Chromium by EPA 7196 (Colorimetric)		
Operator Name	MG		
Quant Mode	Single Lambda	Standards	5
Lambda 1	540.0 nm	Replicates	1
Lambda 2	Off	Initial Curve Fit	Linear
Lambda 3	Off	Conc. Units	ug/L
Integ. Time	00:00:01	Conc. Dec. Places	3
Lamp Change	325.0 nm	Flier Detection	Off
Bandwidth	2.0 nm	Valid Until	~~8/8/2017~~ 8/15/2017
Method Status	Unlocked		

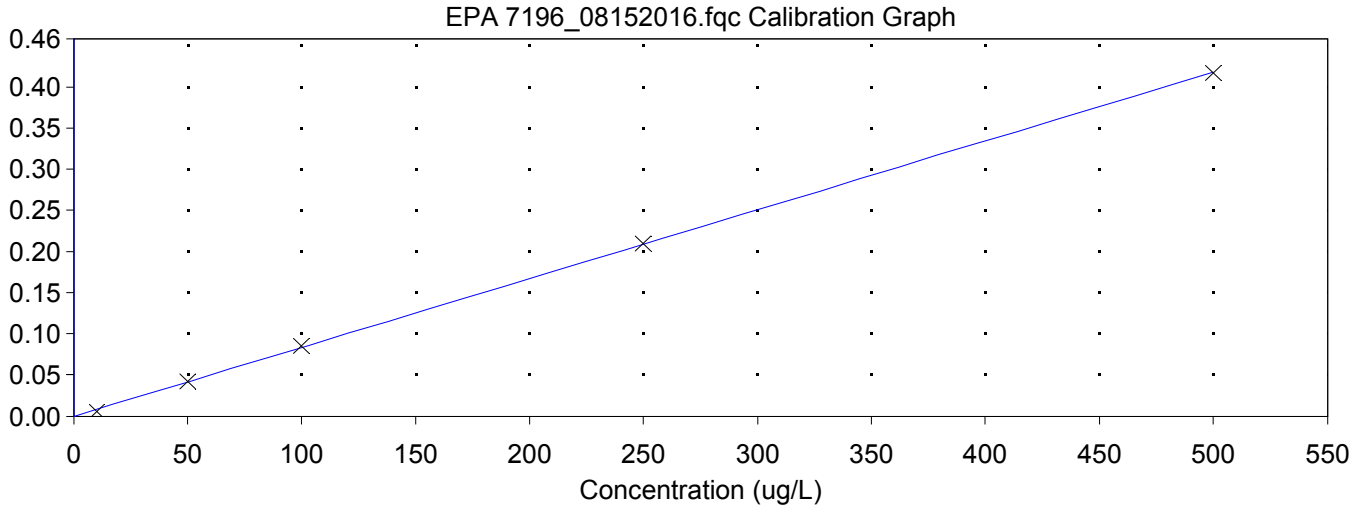
8/17/2016

Calibration Line / Curve Statistics

Equation	A = 0.0008 x Conc -0.0003
Selected Fit	Linear
Coefficient	0.999904
Sum of Residuals	(<0.0001)

Standard	Conc.	Use	540.0nm	Errors
Standard01	10.000	Yes	0.006	None
Standard02	50.000	Yes	0.042	None
Standard03	100.000	Yes	0.085	None
Standard04	250.000	Yes	0.210	None
Standard05	500.000	Yes	0.417	None

All calculations have been performed to double precision as defined by ANSI/IEEE STD 754-1985 but have been rounded for display purposes.



Batch : Hexavalent Chromium_08152016001.qre

	Sample	540.0nm	Conc.	Errors
1	,ICV,ICV,1,	0.210	250.801	None
2	,ICB,ICB,1,	0.000	0.043	None
3	,MB,MBLK,1,	0.000	0.058	None
4	,LCS,LCS,1,	0.082	98.716	None
5	,N020533-002D,SAMP,5,	0.091	109.662	None
6	,N020533-002D-MS,MS,5,	0.188	224.555	None
7	,N020533-002D-MSD,MSD,5	0.183	219.125	None
8	,N020532-002A,SAMP,5,	0.089	106.773	None
9	,N020533-001D,SAMP,1,	0.001	1.646	None
10	,N020420-019A,SAMP,1,	0.447	534.940	A
11	,N020420-019A,SAMP,2,	0.224	268.444	None
12	,CCV-1,CCV,1,	0.080	96.542	None
13	,CCB-1,CCB,1,	0.000	0.115	None

ICAL/CCV: IWST-160815B

ICV/LCS/MS/MSD: IWST-160815C

10% H2SO4: R160512E

1,5- Diphenylcarbazide Solution: R160815A

8/17/2016

All calculations have been performed to double precision as defined by ANSI/IEEE STD 754-1985 but have been rounded for display purposes.

SM 4500-NO3F

Wet Chemistry Technical Batch Review Checklist (ARCUS02)

ASSET LABORATORIES - LAS VEGAS

FIRST LEVEL REVIEW:

QC Batch Number: R110062 **Analyst:** REB

ASSET #: N020532 **Date Analyzed:** 8/15/2016

Method: 4500_NO3

Initial Calibration	1st Level Review Y	N	N/A	2nd Level Review 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:

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 Reb 08/17/2016 Date: —

2nd Level Reviewer 8/18/2016 Date: —

SAMPLE CALCULATION

Sample Calculation

METHOD: EPA 4500NO3F
TEST NAME: Nitrate/Nitrite-N by Automated Cadmium Reduction
MATRIX: ~~Water~~ Groundwater

FORMULA:

Calculate the Nitrate/Nitrite-N concentration, in mg/L, in the original sample as follows:

Nitrate/Nitrite-N, mg/L = A * DF

where:

A = mg/L, Nitrate/Nitrite-N instrument calculated concentration
DF = dilution factor

For **N020532-002D**, concentration in mg/L is calculated as follows:

Nitrate/Nitrite-N, mg/L = 0.6113*5

= 3.0565 mg/L

Reporting results in two significant figures:
Nitrate/Nitrite-N, mg/L = 3.1

Reb 08/17/2016

INITIAL CALIBRATION DATA SUMMARY

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

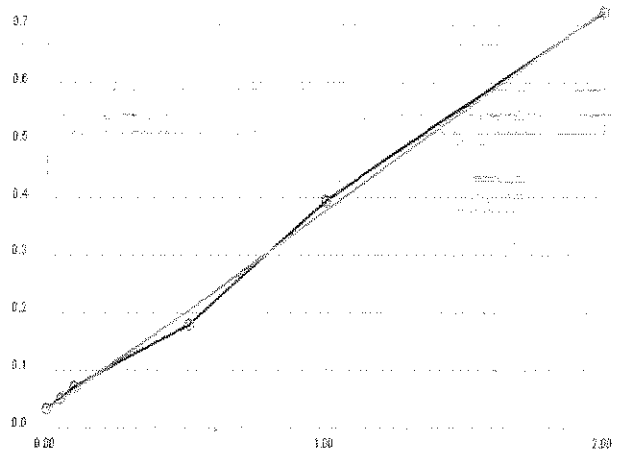
N.	Value	Tolerance
1	1	0.1

Calibration

Curve type	Linear (Calibrants)
Curve forced to zero	No
Blank inclusion	No

Formula	y = 0.3471x + 0.0309
Correlation	.998671

Calibrant	Energy	Set	Conc
1	0.0326	0.0000	0.0049
2	0.0517	0.0500	0.0600
3	0.0715	0.1000	0.1170
4	0.1791	0.5000	0.4269
5	0.3947	1.0000	1.0480
6	0.7228	2.0000	1.9932



Notes:

2% CuSO4- R160814A
R1 Buffer- R160814B
R2 Coloring reagent- R160814C

STD 1°- ISST160211J
STD 2°- ISST150730E

Reb 08/17/2016

INITIAL CALIBRATION AND CONTINUING CALIBRATON VERIFICATION SUMMARY

CLIENT: ARCADIS U.S., Inc. - California
Work Order: N020532
Project: PG&E Topock - PMP, RC000753.801A

ANALYTICAL QC SUMMARY REPORT

TestCode: 4500N03F_W

Sample ID **ICV**	SampType: **ICV**	TestCode: **4500N03F_W**	Units: **mg/L**	Prep Date:	RunNo: **110062**
Client ID: **ICV**	Batch ID: **R110062**	TestNo: **SM4500-NO3**		Analysis Date: **8/15/2016**	SeqNo: **2405907**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrate/Nitrite as N	0.498	0.050	0.5000	0	99.5	90	110				

Sample ID **CCV-1**	SampType: **CCV**	TestCode: **4500N03F_W**	Units: **mg/L**	Prep Date:	RunNo: **110062**
Client ID: **CCV**	Batch ID: **R110062**	TestNo: **SM4500-NO3**		Analysis Date: **8/15/2016**	SeqNo: **2405919**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrate/Nitrite as N	0.470	0.050	0.5000	0	93.9	90	110				

Sample ID **CCV-2**	SampType: **CCV**	TestCode: **4500N03F_W**	Units: **mg/L**	Prep Date:	RunNo: **110062**
Client ID: **CCV**	Batch ID: **R110062**	TestNo: **SM4500-NO3**		Analysis Date: **8/15/2016**	SeqNo: **2405924**

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	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 CALIBRATON BLANK SUMMARY

CLIENT: ARCADIS U.S., Inc. - California
Work Order: N020532
Project: PG&E Topock - PMP, RC000753.801A

ANALYTICAL QC SUMMARY REPORT

TestCode: 4500N03F_W

Sample ID **ICB**	SampType: **ICB**	TestCode: **4500N03F_W**	Units: **mg/L**	Prep Date:	RunNo: **110062**
Client ID: **ICB**	Batch ID: **R110062**	TestNo: **SM4500-NO3**		Analysis Date: **8/15/2016**	SeqNo: **2405908**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrate/Nitrite as N	0.024	0.050									

Sample ID **CCB-1**	SampType: **CCB**	TestCode: **4500N03F_W**	Units: **mg/L**	Prep Date:	RunNo: **110062**
Client ID: **CCB**	Batch ID: **R110062**	TestNo: **SM4500-NO3**		Analysis Date: **8/15/2016**	SeqNo: **2405920**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrate/Nitrite as N	0.023	0.050									

Sample ID **CCB-2**	SampType: **CCB**	TestCode: **4500N03F_W**	Units: **mg/L**	Prep Date:	RunNo: **110062**
Client ID: **CCB**	Batch ID: **R110062**	TestNo: **SM4500-NO3**		Analysis Date: **8/15/2016**	SeqNo: **2405925**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrate/Nitrite as N	0.036	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
DO	Surrogate Diluted Out		Calculations are based on raw values		

LOGBOOK DATA, QUANTITATION REPORT and/or SPECTRA

Advanced Technology Laboratories, Inc.

3151 W. Post Rd.
Las Vegas, NV. 89118
702-307-2659
702-307-2691
www.atl-labs.com

Time start: 08-15-2016 18:08
Time end: 08-15-2016 20:00

			EPA 353.2 NO3 as N		
			ppm	Flags	OD
1	<BLANK>	19:36:12	0.0070		0.0333
2	<BLANK>	19:37:12	0.0052		0.0327
3	<CAL1>	19:38:08	0.0049	[0]	0.0326
4	<CAL2>	19:39:07	0.0600	[0.05]	0.0517
5	<CAL3>	19:40:02	0.1170	[0.1]	0.0715
6	<CAL4>	19:41:03	0.4269	[0.5]	0.1791
7	<CAL5>	19:42:05	1.0480	[1]	0.3947
8	<CAL6>	19:42:59	1.9932	[2]	0.7228
9	,BLANK,BLANK,1,	19:43:54	0.0585		0.0512
10	,ICV,ICV,1,	19:44:43	0.4975		0.2036
11	,ICB,ICB,1,	19:45:31	0.0239		0.0392
12	,MB-H2O,MBLK,1,	19:46:14	0.0081		0.0337
13	,LCS-H2O,LCS,1,	19:46:56	0.5114		0.2084
14	,N020532-001D,SAMP,1,	19:47:45	0.0335		0.0425
15	,N020532-001DDUP,DUP,1,	19:48:27	0.0444		0.0463
16	,N020532-001DMS,MS,1,	19:49:16	0.5410		0.2187
17	,N020532-001DMSD,MSD,1,	19:50:00	0.5278		0.2141
18	,N020532-002D,SAMP,5,	19:50:42	0.6113		0.2431
19	,N020533-001C,SAMP,1,	19:51:31	0.0418		0.0454
20	,N020533-002C,SAMP,5,	19:52:13	0.5975		0.2383
21	,BLANK,BLANK,1	19:52:56	0.0234		0.0390
22	,CCV-1,CCV,1,	19:53:44	0.4696		0.1939
23	,CCB-1,CCB,1,	19:54:27	0.0225		0.0387
24	,N020534-002D,SAMP,5,	19:55:16	0.4941		0.2024
25	,N020647-001D,SAMP,5,	19:55:58	0.5044		0.2060
26	,BLANK,BLANK,1	19:56:42	0.0409		0.0451

Reb 08/17/2016

			EPA 353.2 NO3 as N		
			ppm	Flags	OD
27	,CCV-2,CCV,1,	19:57:29	0.4811		0.1979
28	,CCB-2,CCB,1,	19:58:13	0.0355		0.0432

Rob 08/17/2016

Nitrate/Nitrite as N by Cadmium Reduction Preparation and Runlog

Matrix:

Method: SM 4500-NO3-F/ EPA 353.2
Insturument: Easy Chem Analyzer

Date Analyzed: 08/15/2016
Time Analyzed: 18:08 PM
Analyzed By: REB

SLOPE- 96.1%
pH4- 4.03
pH7- 7.02
pH10- 10.01
LCS-7.01

Reagent ID #
Ammonium Chloride reagent/Buffer: R160814B
Color reagent: R160814C
2% Copper Sulfate: R160814A
Ammonium Hydroxide: CINV-160607C

	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)
1)	N020532-001D		8.03						
2)	N020532-002D		8.65						
3)	N020533-001C		8.57						
4)	N020533-002C		8.47						
5)	N020534-002D		8.78						
6)	N020647-001D		8.89						
7)									
8)									
9)									
10)									
11)									
12)									
13)									
14)									
15)									
16)									
17)									
18)									
19)									
20)									
21)									
22)									
23)									

Advanced Technology Laboratories, Inc.
Book # 1

Reb 08/17/2016

ARCADIS

Project: PG&E Topock - PMP
Project No.: RC000753.801A

ASSET Laboratories Work Order:
N020873

ANALYTICAL and QC RESULTS
SAMPLE RECEIVING ITEMS

PRIVILEGED AND CONFIDENTIAL

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EPA 6020_Dissolved	243-281

September 22, 2016

Dan Bush
ARCADIS U.S., Inc. - California
1410 Rocky Ridge Dr #330
Roseville, CA 95661

TEL: (916) 786-3302
FAX:

CA-ELAP No.: 2676
NV Cert. No.: NV-00922

Workorder No.: N020873

RE: PG&E Topock - PMP, RC000753.801A

Attention: Dan Bush

Enclosed are the results for sample(s) received on September 08, 2016 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 Ribucas for

Puri Romualdo
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.

CLIENT: ARCADIS U.S., Inc. - California
Project: PG&E Topock - PMP, RC000753.801A
Lab Order: N020873

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 6010B_Dissolved:

Matrix Spike (MS) and Matrix Spike Duplicate (MSD) are outside recovery criteria for Sodium on QC samples N020873-002B-MS2 and N020873-002B-MSD2 since the analyte concentration in the sample is disproportionate to the spike level. The associated Laboratory Control Sample (LCS) recovery was acceptable.

ASSET LABORATORIES
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3151 W. Post Rd., Las Vegas, NV 89118
ELAP Cert 2676 | NV Cert NV00922
ORELAP/NELAP Cert 4046

ASSET Laboratories

Date: *22-Sep-16*

CLIENT: ARCADIS U.S., Inc. - California
Project: PG&E Topock - PMP, RC000753.801A
Lab Order: N020873
Contract No:

Work Order Sample Summary

Lab Sample ID	Client Sample ID	Matrix	Collection Date	Date Received	Date Reported
N020873-001A	PE-01-0916	Groundwater	9/8/2016 8:50:00 AM	9/8/2016	9/22/2016
N020873-001B	PE-01-0916	Groundwater	9/8/2016 8:50:00 AM	9/8/2016	9/22/2016
N020873-001C	PE-01-0916	Groundwater	9/8/2016 8:50:00 AM	9/8/2016	9/22/2016
N020873-001D	PE-01-0916	Groundwater	9/8/2016 8:50:00 AM	9/8/2016	9/22/2016
N020873-002A	TW-03D-0916	Groundwater	9/8/2016 8:30:00 AM	9/8/2016	9/22/2016
N020873-002B	TW-03D-0916	Groundwater	9/8/2016 8:30:00 AM	9/8/2016	9/22/2016
N020873-002C	TW-03D-0916	Groundwater	9/8/2016 8:30:00 AM	9/8/2016	9/22/2016
N020873-002D	TW-03D-0916	Groundwater	9/8/2016 8:30:00 AM	9/8/2016	9/22/2016

CLIENT: ARCADIS U.S., Inc. - California
Lab Order: N020873
Project: PG&E Topock - PMP, RC000753.801A
Lab ID: N020873-001

Client Sample ID: PE-01-0916
Collection Date: 9/8/2016 8:50:00 AM
Matrix: GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
SPECIFIC CONDUCTANCE							
			EPA 120.1				
RunID: **WETCHEM_160909A**	QC Batch: **R110471**			PrepDate			Analyst: **LR**
Specific Conductance	4200	0.10	0.10		umhos/cm	1	9/9/2016 08:50 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

CLIENT:	ARCADIS U.S., Inc. - California	**Client Sample ID:**	TW-03D-0916
Lab Order:	N020873	**Collection Date:**	9/8/2016 8:30:00 AM
Project:	PG&E Topock - PMP, RC000753.801A	**Matrix:**	GROUNDWATER
Lab ID:	N020873-002		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
SPECIFIC CONDUCTANCE							
			EPA 120.1				
RunID: **WETCHEM_160909A**	QC Batch: **R110471**			PrepDate			Analyst: **LR**
Specific Conductance	7400	0.10	0.10		umhos/cm	1	9/9/2016 08:50 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

CLIENT: ARCADIS U.S., Inc. - California
Work Order: N020873
Project: PG&E Topock - PMP, RC000753.801A

ANALYTICAL QC SUMMARY REPORT

TestCode: 120.1_WPGE

Sample ID **N020873-002CDUP**	SampType: **DUP**	TestCode: **120.1_WPGE**	Units: **umhos/cm**	Prep Date:				RunNo: **110471**		
Client ID: **ZZZZZZ**	Batch ID: **R110471**	TestNo: **EPA 120.1**		Analysis Date: **9/9/2016**				SeqNo: **2423994**		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Specific Conductance	7360.000	0.10						7400	0.542	10	

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis 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
Lab Order: N020873
Project: PG&E Topock - PMP, RC000753.801A
Lab ID: N020873-001

Client Sample ID: PE-01-0916
Collection Date: 9/8/2016 8:50:00 AM
Matrix: GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
PH							
			SM4500-H+B				
RunID: **WETCHEM_160909B**	QC Batch: **R110472**			PrepDate			Analyst: **LR**
pH	7.6	0.10	0.10	H	pH Units	1	9/9/2016 09:00 AM
Temp. at time of pH Analysis	19	0.10	0.10	H	°C	1	9/9/2016 09:00 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

CLIENT: ARCADIS U.S., Inc. - California
Lab Order: N020873
Project: PG&E Topock - PMP, RC000753.801A
Lab ID: N020873-002

Client Sample ID: TW-03D-0916
Collection Date: 9/8/2016 8:30:00 AM
Matrix: GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
PH							
			SM4500-H+B				
RunID: **WETCHEM_160909B**	QC Batch: **R110472**			PrepDate			Analyst: **LR**
pH	7.4	0.10	0.10	H	pH Units	1	9/9/2016 09:00 AM
Temp. at time of pH Analysis	19	0.10	0.10	H	°C	1	9/9/2016 09:00 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

CLIENT: ARCADIS U.S., Inc. - California
Work Order: N020873
Project: PG&E Topock - PMP, RC000753.801A

ANALYTICAL QC SUMMARY REPORT

TestCode: 150.1_4500H+B_W

Sample ID **N020873-001CDUP** SampType: **DUP** TestCode: **150.1_4500H** Units: **pH Units** Prep Date: RunNo: **110472**
Client ID: **ZZZZZZ** Batch ID: **R110472** TestNo: **SM4500-H+B** Analysis Date: **9/9/2016** SeqNo: **2423998**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
pH	7.590	0.10						7.560	0.396	10	H
Temp. at time of pH Analysis	19.200	0.10						19.40	1.04	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
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: ARCADIS U.S., Inc. - California
Lab Order: N020873
Project: PG&E Topock - PMP, RC000753.801A
Lab ID: N020873-001

Client Sample ID: PE-01-0916
Collection Date: 9/8/2016 8:50:00 AM
Matrix: GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
TOTAL FILTERABLE RESIDUE							
			SM2540C				
RunID: **WETCHEM_160909H**	QC Batch: **59613**				PrepDate	**9/9/2016**	Analyst: **LR**
Total Dissolved Solids (Residue, Filterable)	2600	33	33		mg/L	1	9/9/2016 08:28 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

CLIENT:	ARCADIS U.S., Inc. - California	**Client Sample ID:**	TW-03D-0916
Lab Order:	N020873	**Collection Date:**	9/8/2016 8:30:00 AM
Project:	PG&E Topock - PMP, RC000753.801A	**Matrix:**	GROUNDWATER
Lab ID:	N020873-002		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
TOTAL FILTERABLE RESIDUE							
			SM2540C				
RunID: **WETCHEM_160909H**	QC Batch: **59613**				PrepDate	**9/9/2016**	Analyst: **LR**
Total Dissolved Solids (Residue, Filterable)	4500	50	50		mg/L	1	9/9/2016 08:28 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		

CLIENT: ARCADIS U.S., Inc. - California
Work Order: N020873
Project: PG&E Topock - PMP, RC000753.801A

ANALYTICAL QC SUMMARY REPORT

TestCode: 160.1_2540C_W

Sample ID **LCS-59613**	SampType: **LCS**	TestCode: **160.1_2540C**	Units: **mg/L**	Prep Date: **9/9/2016**	RunNo: **110487**
Client ID: **LCSW**	Batch ID: **59613**	TestNo: **SM2540C**		Analysis Date: **9/9/2016**	SeqNo: **2424424**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	969.000	10	1000	0	96.9	80	120				

Sample ID **MBLK-59613**	SampType: **MBLK**	TestCode: **160.1_2540C**	Units: **mg/L**	Prep Date: **9/9/2016**	RunNo: **110487**
Client ID: **PBW**	Batch ID: **59613**	TestNo: **SM2540C**		Analysis Date: **9/9/2016**	SeqNo: **2424425**

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 **N020865-001ADUP**	SampType: **DUP**	TestCode: **160.1_2540C**	Units: **mg/L**	Prep Date: **9/9/2016**	RunNo: **110487**
Client ID: **ZZZZZZ**	Batch ID: **59613**	TestNo: **SM2540C**		Analysis Date: **9/9/2016**	SeqNo: **2424427**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	955.000	25						960.0	0.522	5	

Sample ID **N020873-002CDUP**	SampType: **DUP**	TestCode: **160.1_2540C**	Units: **mg/L**	Prep Date: **9/9/2016**	RunNo: **110487**
Client ID: **ZZZZZZ**	Batch ID: **59613**	TestNo: **SM2540C**		Analysis Date: **9/9/2016**	SeqNo: **2424430**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	4460.000	50						4500	0.893	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
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: ARCADIS U.S., Inc. - California
Lab Order: N020873
Project: PG&E Topock - PMP, RC000753.801A
Lab ID: N020873-001

Client Sample ID: PE-01-0916
Collection Date: 9/8/2016 8:50:00 AM
Matrix: GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
HEXAVALENT CHROMIUM BY IC							
			EPA 218.6				
RunID: **IC7_160909A**	QC Batch: **R110505**			PrepDate			Analyst: **RAB**
Hexavalent Chromium	1.1	0.066	0.20		µg/L	1	9/9/2016 02:17 PM
DISSOLVED METALS BY ICP-MS							
	EPA 3010A		**EPA 6020**				
RunID: **ICP7_160913B**	QC Batch: **59626**			PrepDate	**9/12/2016**		Analyst: **CEI**
Chromium	1.1	0.019	1.0		µg/L	1	9/13/2016 01:48 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

CLIENT: ARCADIS U.S., Inc. - California
Lab Order: N020873
Project: PG&E Topock - PMP, RC000753.801A
Lab ID: N020873-002

Client Sample ID: TW-03D-0916
Collection Date: 9/8/2016 8:30:00 AM
Matrix: GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
HEXAVALENT CHROMIUM							
			SM 3500-CR B				
RunID: **WETCHEM_160920C**	QC Batch: **R110608**			PrepDate			Analyst: **QBM**
Chromium, Hexavalent	600	6.9	50		µg/L	5	9/20/2016
DISSOLVED METALS BY ICP-MS							
		EPA 3010A		**EPA 6020**			
RunID: **ICP7_160913B**	QC Batch: **59626**			PrepDate	**9/12/2016**		Analyst: **CEI**
Chromium	580	0.096	5.0		µg/L	5	9/13/2016 02:28 PM

Qualifiers:

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

CLIENT: ARCADIS U.S., Inc. - California
Work Order: N020873
Project: PG&E Topock - PMP, RC000753.801A

ANALYTICAL QC SUMMARY REPORT

TestCode: 218.6_WPGE

Sample ID **MB-R110505**	SampType: **MBLK**	TestCode: **218.6_WPGE**	Units: **µg/L**	Prep Date:	RunNo: **110505**
Client ID: **PBW**	Batch ID: **R110505**	TestNo: **EPA 218.6**		Analysis Date: **9/9/2016**	SeqNo: **2425026**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	ND	0.20									

Sample ID **LCS-R110505**	SampType: **LCS**	TestCode: **218.6_WPGE**	Units: **µg/L**	Prep Date:	RunNo: **110505**
Client ID: **LCSW**	Batch ID: **R110505**	TestNo: **EPA 218.6**		Analysis Date: **9/9/2016**	SeqNo: **2425027**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	4.967	0.20	5.000	0	99.3	90	110				

Sample ID **N020872-001ADUP**	SampType: **DUP**	TestCode: **218.6_WPGE**	Units: **µg/L**	Prep Date:	RunNo: **110505**
Client ID: **ZZZZZZ**	Batch ID: **R110505**	TestNo: **EPA 218.6**		Analysis Date: **9/9/2016**	SeqNo: **2425035**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	8.034	0.20						8.137	1.27	20	

Sample ID **N020873-001AMS**	SampType: **MS**	TestCode: **218.6_WPGE**	Units: **µg/L**	Prep Date:	RunNo: **110505**
Client ID: **ZZZZZZ**	Batch ID: **R110505**	TestNo: **EPA 218.6**		Analysis Date: **9/9/2016**	SeqNo: **2425038**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	2.210	0.20	1.000	1.134	108	90	110				

Sample ID **N020873-001AMSD**	SampType: **MSD**	TestCode: **218.6_WPGE**	Units: **µg/L**	Prep Date:	RunNo: **110505**
Client ID: **ZZZZZZ**	Batch ID: **R110505**	TestNo: **EPA 218.6**		Analysis Date: **9/9/2016**	SeqNo: **2425039**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	2.175	0.20	1.000	1.134	104	90	110	2.210	1.58	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

CLIENT: ARCADIS U.S., Inc. - California
Work Order: N020873
Project: PG&E Topock - PMP, RC000753.801A

ANALYTICAL QC SUMMARY REPORT

TestCode: 3500_CrBPGE

Sample ID	LCS-R110608	SampType:	LCS	TestCode:	3500_CrBPG	Units:	µg/L	Prep Date:		RunNo:	110608
Client ID:	LCSW	Batch ID:	R110608	TestNo:	SM 3500-Cr B			Analysis Date:	9/20/2016	SeqNo:	2428435

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium, Hexavalent	100.536	10	100.0	0	101	85	115				

Sample ID	MB-R110608	SampType:	MBLK	TestCode:	3500_CrBPG	Units:	µg/L	Prep Date:		RunNo:	110608
Client ID:	PBW	Batch ID:	R110608	TestNo:	SM 3500-Cr B			Analysis Date:	9/20/2016	SeqNo:	2428436

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium, Hexavalent	ND	10									

Sample ID	N020843-001DDUP	SampType:	DUP	TestCode:	3500_CrBPG	Units:	µg/L	Prep Date:		RunNo:	110608
Client ID:	ZZZZZZ	Batch ID:	R110608	TestNo:	SM 3500-Cr B			Analysis Date:	9/20/2016	SeqNo:	2428438

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium, Hexavalent	608.705	50						607.1	0.268	20	

Sample ID	N020873-002AMS	SampType:	MS	TestCode:	3500_CrBPG	Units:	µg/L	Prep Date:		RunNo:	110608
Client ID:	ZZZZZZ	Batch ID:	R110608	TestNo:	SM 3500-Cr B			Analysis Date:	9/20/2016	SeqNo:	2428440

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium, Hexavalent	1106.035	50	500.0	604.9	100	85	115				

Sample ID	N020873-002AMSD	SampType:	MSD	TestCode:	3500_CrBPG	Units:	µg/L	Prep Date:		RunNo:	110608
Client ID:	ZZZZZZ	Batch ID:	R110608	TestNo:	SM 3500-Cr B			Analysis Date:	9/20/2016	SeqNo:	2428441

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium, Hexavalent	1109.880	50	500.0	604.9	101	85	115	1106	0.347	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
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: ARCADIS U.S., Inc. - California
Work Order: N020873
Project: PG&E Topock - PMP, RC000753.801A

ANALYTICAL QC SUMMARY REPORT

TestCode: 6020DIS_CrPGE

Sample ID	MB-59626	SampType:	MBLK	TestCode:	6020DIS_CrP	Units:	µg/L	Prep Date:	9/12/2016	RunNo:	110531
Client ID:	PBW	Batch ID:	59626	TestNo:	EPA 6020	EPA 3010A		Analysis Date:	9/13/2016	SeqNo:	2426097

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium	ND	1.0									

Sample ID	LCS-59626	SampType:	LCS	TestCode:	6020DIS_CrP	Units:	µg/L	Prep Date:	9/12/2016	RunNo:	110531
Client ID:	LCSW	Batch ID:	59626	TestNo:	EPA 6020	EPA 3010A		Analysis Date:	9/13/2016	SeqNo:	2426098

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium	10.104	1.0	10.00	0	101	85	115				

Sample ID	N020862-001C-MS	SampType:	MS	TestCode:	6020DIS_CrP	Units:	µg/L	Prep Date:	9/12/2016	RunNo:	110531
Client ID:	ZZZZZZ	Batch ID:	59626	TestNo:	EPA 6020	EPA 3010A		Analysis Date:	9/13/2016	SeqNo:	2426102

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium	156.468	1.0	10.00	146.8	97.0	75	125				

Sample ID	N020862-001C-MSD	SampType:	MSD	TestCode:	6020DIS_CrP	Units:	µg/L	Prep Date:	9/12/2016	RunNo:	110531
Client ID:	ZZZZZZ	Batch ID:	59626	TestNo:	EPA 6020	EPA 3010A		Analysis Date:	9/13/2016	SeqNo:	2426103

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium	156.244	1.0	10.00	146.8	94.8	75	125	156.5	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
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT:	ARCADIS U.S., Inc. - California	**Client Sample ID:**	PE-01-0916
Lab Order:	N020873	**Collection Date:**	9/8/2016 8:50:00 AM
Project:	PG&E Topock - PMP, RC000753.801A	**Matrix:**	GROUNDWATER
Lab ID:	N020873-001		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
ALKALINITY, SPECIATED							
			SM 2320 B				
RunID: **WETCHEM_160909G**	QC Batch: **R110486**			PrepDate			Analyst: **LR**
Alkalinity, Total (As CaCO3)	230	1.2	5.0		mg/L	1	9/9/2016 01:45 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

CLIENT:	ARCADIS U.S., Inc. - California	**Client Sample ID:**	TW-03D-0916
Lab Order:	N020873	**Collection Date:**	9/8/2016 8:30:00 AM
Project:	PG&E Topock - PMP, RC000753.801A	**Matrix:**	GROUNDWATER
Lab ID:	N020873-002		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
ALKALINITY, SPECIATED							
			SM 2320 B				
RunID: **WETCHEM_160909G**	QC Batch: **R110486**			PrepDate			Analyst: **LR**
Alkalinity, Total (As CaCO3)	140	1.2	5.0		mg/L	1	9/9/2016 01:45 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

CLIENT: ARCADIS U.S., Inc. - California
Work Order: N020873
Project: PG&E Topock - PMP, RC000753.801A

ANALYTICAL QC SUMMARY REPORT

TestCode: 2320_W_SP

Sample ID **LCS-R110486**	SampType: **LCS**	TestCode: **2320_W_SP**	Units: **mg/L**	Prep Date:	RunNo: **110486**
Client ID: **LCSW**	Batch ID: **R110486**	TestNo: **SM 2320 B**		Analysis Date: **9/9/2016**	SeqNo: **2424417**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Alkalinity, Total (As CaCO3)	97.996	5.0	100.0	0	98.0	85	115				

Sample ID **MB-R110486**	SampType: **MBLK**	TestCode: **2320_W_SP**	Units: **mg/L**	Prep Date:	RunNo: **110486**
Client ID: **PBW**	Batch ID: **R110486**	TestNo: **SM 2320 B**		Analysis Date: **9/9/2016**	SeqNo: **2424418**

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 **N020873-001CDUP**	SampType: **DUP**	TestCode: **2320_W_SP**	Units: **mg/L**	Prep Date:	RunNo: **110486**
Client ID: **ZZZZZZ**	Batch ID: **R110486**	TestNo: **SM 2320 B**		Analysis Date: **9/9/2016**	SeqNo: **2424420**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Alkalinity, Total (As CaCO3)	236.080	5.0						233.9	0.948	30	

Sample ID **N020873-002CMS**	SampType: **MS**	TestCode: **2320_W_SP**	Units: **mg/L**	Prep Date:	RunNo: **110486**
Client ID: **ZZZZZZ**	Batch ID: **R110486**	TestNo: **SM 2320 B**		Analysis Date: **9/9/2016**	SeqNo: **2424422**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Alkalinity, Total (As CaCO3)	238.307	5.0	100.0	144.8	93.5	75	125				

Sample ID **N020873-002CMSD**	SampType: **MSD**	TestCode: **2320_W_SP**	Units: **mg/L**	Prep Date:	RunNo: **110486**
Client ID: **ZZZZZZ**	Batch ID: **R110486**	TestNo: **SM 2320 B**		Analysis Date: **9/9/2016**	SeqNo: **2424423**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Alkalinity, Total (As CaCO3)	240.535	5.0	100.0	144.8	95.8	75	125	238.3	0.930	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

CLIENT: ARCADIS U.S., Inc. - California
Lab Order: N020873
Project: PG&E Topock - PMP, RC000753.801A
Lab ID: N020873-001

Client Sample ID: PE-01-0916
Collection Date: 9/8/2016 8:50:00 AM
Matrix: GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
ANIONS BY ION CHROMATOGRAPHY							
			EPA 300.0				
RunID: **IC2_160909A**	QC Batch: **R110492**			PrepDate			Analyst: **RAB**
Chloride	1100	3.9	100		mg/L	200	9/9/2016 01:23 PM
ANIONS BY ION CHROMATOGRAPHY							
			EPA 300.0				
RunID: **IC2_160909A**	QC Batch: **R110492**			PrepDate			Analyst: **RAB**
Sulfate	380	3.3	25		mg/L	50	9/9/2016 09:49 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

CLIENT: ARCADIS U.S., Inc. - California
Lab Order: N020873
Project: PG&E Topock - PMP, RC000753.801A
Lab ID: N020873-002

Client Sample ID: TW-03D-0916
Collection Date: 9/8/2016 8:30:00 AM
Matrix: GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
ANIONS BY ION CHROMATOGRAPHY							
			EPA 300.0				
RunID: **IC2_160909A**	QC Batch: **R110492**			PrepDate			Analyst: **RAB**
Chloride	2100	9.7	250		mg/L	500	9/9/2016 03:19 PM
ANIONS BY ION CHROMATOGRAPHY							
			EPA 300.0				
RunID: **IC2_160909A**	QC Batch: **R110492**			PrepDate			Analyst: **RAB**
Sulfate	500	6.6	50		mg/L	100	9/9/2016 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

CLIENT: ARCADIS U.S., Inc. - California
Work Order: N020873
Project: PG&E Topock - PMP, RC000753.801A

ANALYTICAL QC SUMMARY REPORT

TestCode: 300_W_CLPGE

Sample ID **MB-R110492_CL**	SampType: **MBLK**	TestCode: **300_W_CLP**	Units: **mg/L**	Prep Date:	RunNo: **110492**
Client ID: **PBW**	Batch ID: **R110492**	TestNo: **EPA 300.0**		Analysis Date: **9/9/2016**	SeqNo: **2424606**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride	ND	0.50									

Sample ID **LCS-R110492_CL**	SampType: **LCS**	TestCode: **300_W_CLP**	Units: **mg/L**	Prep Date:	RunNo: **110492**
Client ID: **LCSW**	Batch ID: **R110492**	TestNo: **EPA 300.0**		Analysis Date: **9/9/2016**	SeqNo: **2424607**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride	2.630	0.50	2.500	0	105	90	110				

Sample ID **N020873-001CDUP**	SampType: **DUP**	TestCode: **300_W_CLP**	Units: **mg/L**	Prep Date:	RunNo: **110492**
Client ID: **ZZZZZZ**	Batch ID: **R110492**	TestNo: **EPA 300.0**		Analysis Date: **9/9/2016**	SeqNo: **2424611**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride	1095.800	100						1099	0.273	20	

Sample ID **N020873-002CMS**	SampType: **MS**	TestCode: **300_W_CLP**	Units: **mg/L**	Prep Date:	RunNo: **110492**
Client ID: **ZZZZZZ**	Batch ID: **R110492**	TestNo: **EPA 300.0**		Analysis Date: **9/9/2016**	SeqNo: **2424613**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride	3535.500	250	1250	2150	111	80	120				

Sample ID **N020873-002CMSD**	SampType: **MSD**	TestCode: **300_W_CLP**	Units: **mg/L**	Prep Date:	RunNo: **110492**
Client ID: **ZZZZZZ**	Batch ID: **R110492**	TestNo: **EPA 300.0**		Analysis Date: **9/9/2016**	SeqNo: **2424633**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride	3489.500	250	1250	2150	107	80	120	3536	1.31	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
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: ARCADIS U.S., Inc. - California
Work Order: N020873
Project: PG&E Topock - PMP, RC000753.801A

ANALYTICAL QC SUMMARY REPORT

TestCode: 300_W_SO4PGE

Sample ID	MB-R110492_SO4	SampType:	MBLK	TestCode:	300_W_SO4P	Units:	mg/L	Prep Date:		RunNo:	110492
Client ID:	PBW	Batch ID:	R110492	TestNo:	EPA 300.0			Analysis Date:	9/9/2016	SeqNo:	2424515

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Sulfate	ND	0.50									

Sample ID	LCS-R110492_SO4	SampType:	LCS	TestCode:	300_W_SO4P	Units:	mg/L	Prep Date:		RunNo:	110492
Client ID:	LCSW	Batch ID:	R110492	TestNo:	EPA 300.0			Analysis Date:	9/9/2016	SeqNo:	2424516

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Sulfate	4.963	0.50	5.000	0	99.3	90	110				

Sample ID	N020873-001CDUP	SampType:	DUP	TestCode:	300_W_SO4P	Units:	mg/L	Prep Date:		RunNo:	110492
Client ID:	ZZZZZZ	Batch ID:	R110492	TestNo:	EPA 300.0			Analysis Date:	9/9/2016	SeqNo:	2424535

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Sulfate	368.900	25						375.0	1.64	20	

Sample ID	N020873-002CMS	SampType:	MS	TestCode:	300_W_SO4P	Units:	mg/L	Prep Date:		RunNo:	110492
Client ID:	ZZZZZZ	Batch ID:	R110492	TestNo:	EPA 300.0			Analysis Date:	9/9/2016	SeqNo:	2424538

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Sulfate	984.800	50	500.0	501.3	96.7	80	120				

Sample ID	N020873-002CMSD	SampType:	MSD	TestCode:	300_W_SO4P	Units:	mg/L	Prep Date:		RunNo:	110492
Client ID:	ZZZZZZ	Batch ID:	R110492	TestNo:	EPA 300.0			Analysis Date:	9/9/2016	SeqNo:	2424599

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Sulfate	1008.700	50	500.0	501.3	101	80	120	984.8	2.40	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
- DO Surrogate Diluted Out

Calculations are based on raw values

CLIENT:	ARCADIS U.S., Inc. - California	**Client Sample ID:**	PE-01-0916
Lab Order:	N020873	**Collection Date:**	9/8/2016 8:50:00 AM
Project:	PG&E Topock - PMP, RC000753.801A	**Matrix:**	GROUNDWATER
Lab ID:	N020873-001		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
NITRATE/NITRITE-N BY CADMIUM REDUCTION							
			SM4500-NO3F				
RunID: **WETCHEM_160917A**	QC Batch: **R110590**		PrepDate				Analyst: **RB**
Nitrate/Nitrite as N	ND	0.022	0.050		mg/L	1	9/17/2016

Qualifiers:

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

CLIENT: ARCADIS U.S., Inc. - California
Lab Order: N020873
Project: PG&E Topock - PMP, RC000753.801A
Lab ID: N020873-002

Client Sample ID: TW-03D-0916
Collection Date: 9/8/2016 8:30:00 AM
Matrix: GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
NITRATE/NITRITE-N BY CADMIUM REDUCTION							
			SM4500-NO3F				
RunID: **WETCHEM_160917A**	QC Batch: **R110590**		PrepDate				Analyst: **RB**
Nitrate/Nitrite as N	2.7	0.11	0.25		mg/L	5	9/17/2016

Qualifiers:

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

CLIENT: ARCADIS U.S., Inc. - California
Work Order: N020873
Project: PG&E Topock - PMP, RC000753.801A

ANALYTICAL QC SUMMARY REPORT

TestCode: 4500N03F_W

Sample ID	MB-R110590	SampType:	MBLK	TestCode:	4500N03F_W	Units:	mg/L	Prep Date:		RunNo:	110590
Client ID:	PBW	Batch ID:	R110590	TestNo:	SM4500-NO3			Analysis Date:	9/17/2016	SeqNo:	2427864

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-R110590	SampType:	LCS	TestCode:	4500N03F_W	Units:	mg/L	Prep Date:		RunNo:	110590
Client ID:	LCSW	Batch ID:	R110590	TestNo:	SM4500-NO3			Analysis Date:	9/17/2016	SeqNo:	2427867

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrate/Nitrite as N	0.490	0.050	0.5000	0	98.0	85	115				

Sample ID	N020842-002DDUP	SampType:	DUP	TestCode:	4500N03F_W	Units:	mg/L	Prep Date:		RunNo:	110590
Client ID:	ZZZZZZ	Batch ID:	R110590	TestNo:	SM4500-NO3			Analysis Date:	9/17/2016	SeqNo:	2427869

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrate/Nitrite as N	2.837	0.25						2.803	1.21	20	

Sample ID	N020842-002DMS	SampType:	MS	TestCode:	4500N03F_W	Units:	mg/L	Prep Date:		RunNo:	110590
Client ID:	ZZZZZZ	Batch ID:	R110590	TestNo:	SM4500-NO3			Analysis Date:	9/17/2016	SeqNo:	2427870

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrate/Nitrite as N	5.112	0.25	2.500	2.803	92.3	75	125				

Sample ID	N020842-002DMSD	SampType:	MSD	TestCode:	4500N03F_W	Units:	mg/L	Prep Date:		RunNo:	110590
Client ID:	ZZZZZZ	Batch ID:	R110590	TestNo:	SM4500-NO3			Analysis Date:	9/17/2016	SeqNo:	2427871

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrate/Nitrite as N	5.514	0.25	2.500	2.803	108	75	125	5.112	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
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: ARCADIS U.S., Inc. - California
Lab Order: N020873
Project: PG&E Topock - PMP, RC000753.801A
Lab ID: N020873-001

Client Sample ID: PE-01-0916
Collection Date: 9/8/2016 8:50:00 AM
Matrix: GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
DISSOLVED METALS BY ICP							
	EPA 3010A			**EPA 6010B**			
RunID: **ICP2_160912B**	QC Batch: **59628**			PrepDate	**9/12/2016**		Analyst: **CEI**
Calcium	120000	28	500		ug/L	1	9/12/2016 02:02 PM
Iron	ND	1.8	20		ug/L	1	9/12/2016 02:02 PM
Magnesium	28000	4.4	100		ug/L	1	9/12/2016 02:02 PM
Sodium	750000	580	25000		ug/L	50	9/12/2016 04:25 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

CLIENT: ARCADIS U.S., Inc. - California
Lab Order: N020873
Project: PG&E Topock - PMP, RC000753.801A
Lab ID: N020873-002

Client Sample ID: TW-03D-0916
Collection Date: 9/8/2016 8:30:00 AM
Matrix: GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
DISSOLVED METALS BY ICP							
	EPA 3010A			**EPA 6010B**			
RunID: **ICP2_160912B**	QC Batch: **59628**			PrepDate	**9/12/2016**	Analyst: **CEI**	
Calcium	180000	28	500		ug/L	1	9/12/2016 02:33 PM
Iron	55	1.8	20		ug/L	1	9/12/2016 02:33 PM
Magnesium	25000	4.4	100		ug/L	1	9/12/2016 02:33 PM
Sodium	1400000	580	25000		ug/L	50	9/12/2016 04:29 PM

Qualifiers:

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

CLIENT: ARCADIS U.S., Inc. - California
Work Order: N020873
Project: PG&E Topock - PMP, RC000753.801A

ANALYTICAL QC SUMMARY REPORT

TestCode: 6010_WDPGEPPB

Sample ID **MB-59628**	SampType: **MBLK**	TestCode: **6010_WDPG**	Units: **ug/L**	Prep Date: **9/12/2016**	RunNo: **110509**
Client ID: **PBW**	Batch ID: **59628**	TestNo: **EPA 6010B**	**EPA 3010A**	Analysis Date: **9/12/2016**	SeqNo: **2425445**

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 **LCS1-59628**	SampType: **LCS**	TestCode: **6010_WDPG**	Units: **ug/L**	Prep Date: **9/12/2016**	RunNo: **110509**
Client ID: **LCSW**	Batch ID: **59628**	TestNo: **EPA 6010B**	**EPA 3010A**	Analysis Date: **9/12/2016**	SeqNo: **2425446**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Calcium	9358.845	500	10000	0	93.6	85	115				
Iron	108.076	20	100.0	0	108	85	115				
Magnesium	10105.157	100	10000	0	101	85	115				

Sample ID **N020873-001B-MS1**	SampType: **MS**	TestCode: **6010_WDPG**	Units: **ug/L**	Prep Date: **9/12/2016**	RunNo: **110509**
Client ID: **ZZZZZZ**	Batch ID: **59628**	TestNo: **EPA 6010B**	**EPA 3010A**	Analysis Date: **9/12/2016**	SeqNo: **2425450**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Calcium	136152.955	500	10000	123900	123	75	125				
Iron	103.140	20	100.0	12.38	90.8	75	125				
Magnesium	38405.380	100	10000	28190	102	75	125				

Sample ID **N020873-001B-MSD**	SampType: **MSD**	TestCode: **6010_WDPG**	Units: **ug/L**	Prep Date: **9/12/2016**	RunNo: **110509**
Client ID: **ZZZZZZ**	Batch ID: **59628**	TestNo: **EPA 6010B**	**EPA 3010A**	Analysis Date: **9/12/2016**	SeqNo: **2425451**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Calcium	135659.778	500	10000	123900	118	75	125	136200	0.363	20	
Iron	98.927	20	100.0	12.38	86.6	75	125	103.1	4.17	20	
Magnesium	38475.219	100	10000	28190	103	75	125	38410	0.182	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

CLIENT: ARCADIS U.S., Inc. - California
Work Order: N020873
Project: PG&E Topock - PMP, RC000753.801A

ANALYTICAL QC SUMMARY REPORT

TestCode: 6010_WDPGEPPB

Sample ID	LCS2-59628	SampType:	LCS	TestCode:	6010_WDPG	Units:	ug/L	Prep Date:	9/12/2016	RunNo:	110510
Client ID:	LCSW	Batch ID:	59628	TestNo:	EPA 6010B	EPA 3010A		Analysis Date:	9/12/2016	SeqNo:	2425463

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Sodium	19789.865	500	20000	0	98.9	85	115				

Sample ID	N020873-002B-MS2	SampType:	MS	TestCode:	6010_WDPG	Units:	ug/L	Prep Date:	9/12/2016	RunNo:	110510
Client ID:	ZZZZZZ	Batch ID:	59628	TestNo:	EPA 6010B	EPA 3010A		Analysis Date:	9/12/2016	SeqNo:	2425468

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Sodium	1418355.398	25000	20000	1418000	-0.219	75	125				S

Sample ID	N020873-002B-MSD	SampType:	MSD	TestCode:	6010_WDPG	Units:	ug/L	Prep Date:	9/12/2016	RunNo:	110510
Client ID:	ZZZZZZ	Batch ID:	59628	TestNo:	EPA 6010B	EPA 3010A		Analysis Date:	9/12/2016	SeqNo:	2425469

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Sodium	1420515.570	25000	20000	1418000	10.6	75	125	1418000	0.152	20	S

Sample ID	MB-59628	SampType:	MBLK	TestCode:	6010_WDPG	Units:	ug/L	Prep Date:	9/12/2016	RunNo:	110510
Client ID:	PBW	Batch ID:	59628	TestNo:	EPA 6010B	EPA 3010A		Analysis Date:	9/12/2016	SeqNo:	2425470

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Sodium	ND	500									

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
Lab Order: N020873
Project: PG&E Topock - PMP, RC000753.801A
Lab ID: N020873-001

Client Sample ID: PE-01-0916
Collection Date: 9/8/2016 8:50:00 AM
Matrix: GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
DISSOLVED METALS BY ICP-MS							
	EPA 3010A			**EPA 6020**			
RunID: **ICP7_160913B**	QC Batch: **59626**			PrepDate	**9/12/2016**		Analyst: **CEI**
Manganese	120	0.056	0.50		µg/L	1	9/13/2016 01:48 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

CLIENT: ARCADIS U.S., Inc. - California
Lab Order: N020873
Project: PG&E Topock - PMP, RC000753.801A
Lab ID: N020873-002

Client Sample ID: TW-03D-0916
Collection Date: 9/8/2016 8:30:00 AM
Matrix: GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
DISSOLVED METALS BY ICP-MS							
	EPA 3010A			**EPA 6020**			
RunID: **ICP7_160913B**	QC Batch: **59626**			PrepDate	**9/12/2016**		Analyst: **CEI**
Manganese	10	0.056	0.50		µg/L	1	9/13/2016 01:53 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

CLIENT: ARCADIS U.S., Inc. - California
Work Order: N020873
Project: PG&E Topock - PMP, RC000753.801A

ANALYTICAL QC SUMMARY REPORT

TestCode: 6020_DIS

Sample ID **MB-59626**	SampType: **MBLK**	TestCode: **6020_DIS**	Units: **µg/L**	Prep Date: **9/12/2016**	RunNo: **110531**
Client ID: **PBW**	Batch ID: **59626**	TestNo: **EPA 6020**	**EPA 3010A**	Analysis Date: **9/13/2016**	SeqNo: **2426133**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Manganese	ND	0.50									

Sample ID **LCS-59626**	SampType: **LCS**	TestCode: **6020_DIS**	Units: **µg/L**	Prep Date: **9/12/2016**	RunNo: **110531**
Client ID: **LCSW**	Batch ID: **59626**	TestNo: **EPA 6020**	**EPA 3010A**	Analysis Date: **9/13/2016**	SeqNo: **2426134**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Manganese	94.790	0.50	100.0	0	94.8	85	115				

Sample ID **N020862-001C-MS**	SampType: **MS**	TestCode: **6020_DIS**	Units: **µg/L**	Prep Date: **9/12/2016**	RunNo: **110531**
Client ID: **ZZZZZZ**	Batch ID: **59626**	TestNo: **EPA 6020**	**EPA 3010A**	Analysis Date: **9/13/2016**	SeqNo: **2426152**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Manganese	332.016	5.0	100.0	236.4	95.6	75	125				

Sample ID **N020862-001C-MSD**	SampType: **MSD**	TestCode: **6020_DIS**	Units: **µg/L**	Prep Date: **9/12/2016**	RunNo: **110531**
Client ID: **ZZZZZZ**	Batch ID: **59626**	TestNo: **EPA 6020**	**EPA 3010A**	Analysis Date: **9/13/2016**	SeqNo: **2426153**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Manganese	326.766	5.0	100.0	236.4	90.3	75	125	332.0	1.59	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

SAMPLE RECEIVING ITEMS

ASSET LABORATORIES
ANALYTICAL SUPPORT SERVICES FOR ENVIRONMENTAL TECHNOLOGIES

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

CHAIN OF CUSTODY RECORD

Page 1 of 1

Client: Arcadis	Report to: Dan Bush	Bill to: Marty Bloes	
Address: 1410 Rocky Ridge Dr # 330	Company: Arcadis	Address:	
Address: Roseville, CA 95661	Email: dan.bush@arcadis.com; Daniel.Bloom@Arcadis.com	Address:	
Phone: 916-786-3302 Fax:	Address: 1410 Rocky Ridge Dr # 330 Roseville, CA 95661	Email to: mbloes@pivox.com	P.O.#
Submitted By:		Phone: 949-727-1400, ext 200	Fax:
Title: Sam Mahr	Phone: 916-786-3302 Fax:		

EDD Requirement		QA/QC		Sample Receipt Condition	Y	N
Excel EDD		RTNE		1. Chilled	✓	
Geotracker		RWQCB	✓	2. Headspace		
Labspec		CalTrans		3. Container Intact		
Others	✓	LEVEL III		4. Seal Present		✓
Specify: RWQCB		LEVEL IV		5. IR number		
Global ID:		Regulatory		6. Method of Cooling:	✓	
		Specify State:			ICE	
				Sample Temp:	4.0°C	

Signature: Date: 9/8/16
I hereby authorize ASSET Labs to perform the tests indicated below

Sampled By: Nara Tag
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

Signature: Date: 9/8/16

Project Name: PG&E Topock - PMP
Project Number: RC000753.801A

Courier: Asset
Tracking No.:

Matrix: Ground x | Sediment | Potable | Soil | 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 — 250 mL poly	Cr(VI) FF (SM3500-CrB) (NH4)2, SO4, NH4, OH — 250 mL poly	Dissolved metals (SW6020A) FF; HNO3, 500 mL poly — Cr	Dissolved metals (SW6010B/SW6020Adis) FF; HNO3 — Ca, Mg, Mn, Fe, Na — 1 L poly	Dissolved metals (SW6010B/SW6020Adis) FF; HNO3 — As, Mn, Fe, Se, Mo, Ba — 1 L poly	Total metals (SW6010B); HNO3 — Fe — 500 mL poly	Anions (E300.0); 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 (SM4500N03) Nitrate; H2SO4 — 125 mL poly	Turn Around Time	No. of Container	Container Type	PRESERVATION	Remarks
1	N020873 - 01	PE-01-0916	9/8/16	0850		X		X	X			X	X	X	X	X	X	X	E	4	P	BN	
2	- 02	TW-03D-0916	↓	0830			X	X	X			X	X	X	X	X	X	X	E	4	P	BN	
3																							
4																							
5																							
6																							
7																							
8																							
9																							
10																							

Relinquished by (Signature and Printed Name)	Date/Time	Relinquished by (Signature and Printed Name)	Date/Time
Nara Tag	9/8/16 1600		
	9/8/16 @1720		9/8/16 @1720
			9/8/16 @1725

Turn Around Time (TAT)

	A	< 24 Hrs or Same Day TAT
	B	= Next Workday
	C	= 2 Workdays
	D	= 3 Workdays
X	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

Preservatives:

N=HCL	N=HNO_3	S=H_2SO_4	C=4°C
Z=Zn(AC)$_2$	O=NaOH	T=$Na_2S_2O_3$	
Others/Specify:	B	(NH4)2SO4/NH4OH	

Container Type:

T=Tube	V=VOA	P=Pint
J=Jar	B=Tedlar	G=Glass
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
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 analyses, 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:	9/8/2016	Workorder:	N020873
Rep sample Temp (Deg C):	4.0	IR Gun ID:	1
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 ☑	No ☐	Not Present ☐
2. Custody seals intact, signed, dated on shippping container/cooler?	Yes ☐	No ☐	Not Present ☑
3. Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
4. Chain of custody present?	Yes ☑	No ☐	
5. Sampler's name present in COC?	Yes ☑	No ☐	
6. Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
7. Chain of custody agrees with sample labels?	Yes ☑	No ☐	
8. Samples in proper container/bottle?	Yes ☑	No ☐	
9. Sample containers intact?	Yes ☑	No ☐	
10. Sufficient sample volume for indicated test?	Yes ☑	No ☐	
11. All samples received within holding time?	Yes ☐	No ☑	
12. Temperature of rep sample or Temp Blank within acceptable limit?	Yes ☑	No ☐	NA ☐
13. Water - VOA vials have zero headspace?	Yes ☐	No ☐	NA ☑
14. Water - pH acceptable upon receipt? Example: pH > 12 for (CN,S); pH<2 for Metals	Yes ☑	No ☐	NA ☐
15. Did the bottle labels indicate correct preservatives used?	Yes ☑	No ☐	NA ☐
16. Were there Non-Conformance issues at login?	Yes ☑	No ☐	NA ☐
Was Client notified?	Yes ☐	No ☐	NA ☑

Comments: Sample for pHwas pastholding time upon receipt.

For:

Checklist Completed By: MBC 9/9/2016

Reviewed By: 9/15/2016

ASSET Laboratories

WORK ORDER Summary

14-Sep-16

WorkOrder: N020873

Client ID: ARCUS02

Project: PG&E Topock - PMP, RC000753.801A **QC Level:** Level IV **Date Received:** 9/8/2016

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
N020873-001A	PE-01-0916	9/8/2016 8:50:00 AM	9/22/2016	Groundwater	EPA 218.6	Hexavalent Chromium by IC	☐	☐	☐	WW
N020873-001B			9/22/2016		EPA 3010A	AQPREP TOTAL METALS: ICP, FLAA	☐	☐	☐	WW
			9/22/2016		EPA 3010A	AQPREP TOTAL METALS: ICP, FLAA	☐	☐	☐	WW
			9/22/2016		EPA 6010B	DISSOLVED METALS BY ICP	☐	☐	☐	WW
			9/22/2016		EPA 6020	DISSOLVED METALS BY ICP-MS	☐	☐	☐	WW
			9/22/2016		EPA 6020	DISSOLVED METALS BY ICP-MS	☐	☐	☐	WW
N020873-001C			9/22/2016		EPA 120.1	SPECIFIC CONDUCTANCE	☐	☐	☐	WW
			9/22/2016		SM4500-H+B	pH	☐	☐	☐	WW
			9/22/2016		SM2540C	TOTAL FILTERABLE RESIDUE	☐	☐	☐	WW
			9/22/2016			Total Dissolved Solids Prep	☐	☐	☐	WW
			9/22/2016		SM 2320 B	ALKALINITY, SPECIATED	☐	☐	☐	WW
			9/22/2016		EPA 300.0	ANIONS BY ION CHROMATOGRAPHY	☐	☐	☐	WW
			9/22/2016		EPA 300.0	ANIONS BY ION CHROMATOGRAPHY	☐	☐	☐	WW
N020873-001D			9/22/2016		SM4500-NO3F	NITRATE/NITRITE-N BY CADMIUM REDUCTION	☐	☐	☐	WW
N020873-002A	TW-03D-0916	9/8/2016 8:30:00 AM	9/22/2016		SM 3500-Cr B	HEXAVALENT CHROMIUM	☐	☐	☐	WW
N020873-002B			9/22/2016		EPA 3010A	AQPREP TOTAL METALS: ICP, FLAA	☐	☐	☐	WW
			9/22/2016		EPA 3010A	AQPREP TOTAL METALS: ICP, FLAA	☐	☐	☐	WW
			9/22/2016		EPA 6010B	DISSOLVED METALS BY ICP	☐	☐	☐	WW
			9/22/2016		EPA 6020	DISSOLVED METALS BY ICP-MS	☐	☐	☐	WW
			9/22/2016		EPA 6020	DISSOLVED METALS BY ICP-MS	☐	☐	☐	WW
N020873-002C			9/22/2016		EPA 120.1	SPECIFIC CONDUCTANCE	☐	☐	☐	WW
			9/22/2016		SM4500-H+B	pH	☐	☐	☐	WW

WORK ORDER Summary

14-Sep-16

WorkOrder: N020873

Client ID: ARCUS02

Project: PG&E Topock - PMP, RC000753.801A **QC Level:** Level IV **Date Received:** 9/8/2016

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
N020873-002C	TW-03D-0916	9/8/2016 8:30:00 AM	9/22/2016	Groundwater	SM2540C	TOTAL FILTERABLE RESIDUE	☐	☐	☐	WW
			9/22/2016			Total Dissolved Solids Prep	☐	☐	☐	WW
			9/22/2016		SM 2320 B	ALKALINITY, SPECIATED	☐	☐	☐	WW
			9/22/2016		EPA 300.0	ANIONS BY ION CHROMATOGRAPHY	☐	☐	☐	WW
			9/22/2016		EPA 300.0	ANIONS BY ION CHROMATOGRAPHY	☐	☐	☐	WW
N020873-002D			9/22/2016		SM4500-NO3F	NITRATE/NITRITE-N BY CADMIUM REDUCTION	☐	☐	☐	WW
N020873-003A	FOLDER		9/22/2016		EDD	RWQCB	☐	☐	☐	LAB
			9/22/2016		Folder	Folder	☐	☐	☐	LAB

List of Analysts

ASSET Laboratories Work Order: **N020873**

NAME	TEST METHOD
Claire Ignacio	EPA 6010B, EPA 6020
Quennie Manimtim	SM 3500-Cr B
Ryan Balilu	SM 4500-NO3F
Lilia Ramit	EPA 120.1, SM 4500-H+B, SM 2540C, SM 2320B
Ria Abes	EPA 300.0, EPA 218.6

EPA 120.1

Wet Chemistry Technical Batch Review Checklist (ARCUS02)

ASSET LABORATORIES - LAS VEGAS

FIRST LEVEL REVIEW:

QC Batch Number: R110471 **Analyst:** LSR

ASSET #: N020873 **Date Analyzed:** 9/9/2016

Method: EPA 120.1

Initial Calibration	1st Level Review Y	1st Level Review N	1st Level Review N/A	2nd Level Review Y	2nd Level Review N	2nd Level Review 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:

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: 9/12/2016

2nd Level Reviewer: 9/22/2016 Date: —

LOGBOOK DATA, QUANTITATION REPORT and/or SPECTRA

Conductivity Logbook

Date: 9/9/16 850

Analyst: ISR

Standard	Std ID	Reading	Comments
10.07 µS/cm	CINJ-160715A	10.27 µS/cm @22.5°C	% Rec: (90-110%)
1411	160425A	1405 @22.3°C	
9985	160425B	10040 @22.5°C	
90MW3	160623A	9944 @22.4°C	

	Sample ID	Matrix	Reading	Comments
1	NO20865-001A	H_2O	3500 µS/cm @21.4°C	
2	NO20873-001C		4340 @20.9°C	
3	2C		7400 @21.1°C	
4	2CDup		7360 @20.8°C	
5				
6				
7				Julia Ramit 9/12/2016
8				
9	1413 µS/cm	CINJ-160111C	1461 µS/cm @21.9°C	
10	10000	160425C	10340 @22.1°C	
Dup	10000	160722B	10410 @22.3°C	Accept: 10% water, 20% soil
	Std Chk:			% Rec: (90-110%)

Date:

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%)

SM 4500-H+B

Wet Chemistry Technical Batch Review Checklist (ARCUS02)

ASSET LABORATORIES - LAS VEGAS

FIRST LEVEL REVIEW:

QC Batch Number: R110472 **Analyst:** LSR

ASSET #: N020873 **Date Analyzed:** 9/9/2016

Method: EPA 150.1

Initial Calibration	1st Level Review Y	1st Level Review N	1st Level Review N/A	2nd Level Review Y	2nd Level Review N	2nd Level Review 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:

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: 9/12/2016

2nd Level Reviewer: 9/22/2016 Date: —

LOGBOOK DATA, QUANTITATION REPORT and/or SPECTRA

pH Logbook

Date: 9/9/16 900

Analyst: LSR

Standard	Std ID	pH	Comments
Buffer 4	CIW-160715B	4.03 @ 21.9°C	SLOPE: 96.0%.
Buffer 7	160718A	7.01 @ 21.9°C	
Buffer 10	160609C	10.05 @ 21.8°C	

	Sample ID	Matrix	pH	Comments
1	NB20805-001A	H2O	7.86 @ 21.0 C	
2	1A DUP		7.86 @ 21.1°C	
3	NB20873-001C		7.56 @ 19.4°C	
4	1C DUP		7.59 @ 19.2°C	
5	7C		7.30 @ 18.9°C	
6				
7				
8				
9				Julia Ramit 9/12/2016
10				
lp				Accept: 10% water, 20% soil
	Buffer 4, (7), 10	CIW-160609B	7.03 @ 21.4°C	Accept: +/-0.1 pH units from expected value

(Circle one)

Date:

Analyst:

Standard	Std ID	pH	Comments
Buffer 4			
Buffer 7			
Buffer 10			

	Sample ID	Matrix	pH	Comments
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				
p				Accept: 10% water, 20% soil
	Buffer 4, 7, 10			Accept: +/-0.1 pH units from expected value

(Circle one)

SM 2540C

Wet Chemistry Technical Batch Review Checklist (ARCUS02)

ASSET LABORATORIES - LAS VEGAS

FIRST LEVEL REVIEW:

QC Batch Number: 59613 **Analyst:** LSR

ASSET #: N020873 **Date Analyzed:** 9/9/2016

Method: EPA 160.1

Initial Calibration	1st Level Review Y	1st Level Review N	1st Level Review N/A	2nd Level Review Y	2nd Level Review N	2nd Level Review 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:

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: 9/12/2016

2nd Level Reviewer: 9/22/2016 Date: —

SAMPLE CALCULATION

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

N020873-002C
For **~~N020843-001A~~,** TDS concentration in mg/L is calculated as follows:

$$\text{TDS, mg/L} = \frac{(54.8129–54.7229)*1000000}{20}$$

= 4500 mg/L

Reporting result in two significant figures,

TDS = 4500 mg/L

Julia Ramit 9/12/2016

Nancy for 9/22/2016

SAMPLE PREPARATION LOG

ASSET Laboratories

PREP BATCH REPORT

Prep Start Date: **9/9/2016 8:28:53 A**
Prep End Date: **9/9/2016 8:35:00 P**
Reviewed/ Date: _____
Initials/ Date: Lilia Ramit 9/12/2016
Prep Batch **59613** Prep Code: **160.1_W_PRE** Technician: **Lilia Ramit**
Prep Factor Units: **mL / mL** Temp. (°C): **180**

Sample ID	Matrix	pH	SampAmt	3 Replicates	Sol Added	Sol Recov	Fin Vol	factor	Clean Up Code	TURB Check
LCS-59613	Water		100	☐	0	0	100	1.000		
MB-59613	Water		100	☐	0	0	100	1.000		
N020865-001A	Water		40	☐	0	0	100	2.500		
N020865-001A-DU	Water		40	☐	0	0	100	2.500		
N020873-001C	Groundwater		30	☐	0	0	100	3.333		
N020873-002C	Groundwater		20	☐	0	0	100	5.000		
N020873-002C-DU	Groundwater		20	☐	0	0	100	5.000		

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

Number	Reagent Name
8548	Glass Fiber Filter, 47mm

Spk ID	Spike Name	SampType	AmtAdd
IWST160815A	1000 ppm NaCl	LCS	100

ASSET Laboratories

PREP BATCH REPORT

Prep Start Date: 9/9/2016 8:28:53 A
Prep End Date:

Reviewed/ Date: _____
Initials/ Date: Lilia Ramit 9/12/2016

Prep Batch 59613 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-59613	Water	MST160815A	100	☐	0	0	100	1.000		
MB-59613	Water		100	☐	0	0	100	1.000		
N020865-001A	Water	3500	100 /40	☐	0	0	100	1.000		
N020865-001A-DU	Water	1	100 /40	☐	0	0	100	1.000		
N020873-001C	Groundwater	4240	100 /20	☐	0	0	100	1.000		
N020873-002C	Groundwater	4400	100 /20	☐	0	0	100	1.000		
N020873-002C-DU	Groundwater	1	100 /20	☐	0	0	100	1.000		

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

E8548

LOGBOOK DATA, QUANTITATION REPORT and/or SPECTRA

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
9/9/16 828 L7	MB 59613	100	77.0848 77.0845	77.0851 77.0847	
1A	LCS 59613	100	76.8184 76.8187	76.9153 76.9156	
D	NO20865-001A	40	54.1256 54.1254	54.1634 54.1638	
2	NO20873-001C	30	54.9973 54.9973	55.0746 55.0746	Use 9/21/16
C	2C	20	54.7227 54.7229	54.8127 54.8129	
G	2C DUP	20	53.7905 53.7906	53.8794 53.8798	
E	NO20865-001A DUP	40	53.8301 53.8302	53.8681 53.8684	

Julia Ramit 9/12/2016

TOTAL DISSOLVED SOLIDS, TDS

TDS, mg/L = (A-B) X 10000*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

Date Finished:	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
9/9/2016									
MBLK-59613	100	77.0845	77.0847	2	1	2			MBLK
LCS-59613	100	76.8187	76.9156	969	1	969			LCS
N020865-001A	40	54.1254	54.1638	384	2.5	960	3500	0.274	SAMP
N020865-001ADUP	40	53.8302	53.8684	382	2.5	955	3500	0.273	DUP
N020873-001C	30	54.9973	55.0746	773	3.33333333	2576.66667	4240	0.608	SAMP
N020873-002C	20	54.7229	54.8129	900	5	4500	7400	0.608	SAMP
N020873-002CDUP	20	53.7906	53.8798	892	5	4460	7400	0.603	DUP

Julia Ramit 9/12/2016

EPA 218.6

IC Technical Batch Review Checklist (ARCUS02)

ASSET LABORATORIES - LAS VEGAS

IC ARCUS
REV 2.0
011416

QC Batch Number: R110505
ASSET #: N020873

Instrument ID: IC-07
Analyst: RBA
Date Analyzed: 9/9/2016

Method:

- [ ] EPA 300.0
- [ ] EPA 7199
- [X] 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					
Continuing Calibration						
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					
Sample Information						
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~~		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			
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			
QC Items						
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			
Raw Data and Miscellaneous Information						
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					
Preliminary Report						
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: 9/15/2016

2nd Level Reviewer: 9/22/2016 Date: →

SAMPLE CALCULATION

Sample Calculation

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

FORMULA:

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

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

where:

A = µg/L, IC Cr+6 calculated concentration
DF = dilution factor

For Sample **N020873-001A** , the concentration in µg/L is calculated as follows:

$$Cr^{+6}, \mu g/L = 1.1341 * 1$$

$$Cr^{+6}, \mu g/L = 1.13$$

Reporting results in two significant figures,

$$\mathbf{Cr^{+6}, \mu g/L = 1.1}$$

ANALYSIS RUN LOG

INJECTION LOG: 160819A

Instrument ID: IC-07

Sample No	Sample Name	Type	DF	Peak Name	Injection Date/Time	Comments
1	BLANK	BLANK	1	Hexavalent Chromium	08/19/16 11:07 AM	Not Reported
2	BLANK	BLANK	1	Hexavalent Chromium	08/19/16 11:18 AM	Not Reported
3	iBLANK	iBLANK	1	Hexavalent Chromium	08/19/16 11:27 AM	Reported
4	STD-0.2 ppb	ICAL	1	Hexavalent Chromium	08/19/16 11:37 AM	Reported
5	STD-1.0 ppb	ICAL	1	Hexavalent Chromium	08/19/16 11:46 AM	Reported
6	STD-5.0 ppb	ICAL	1	Hexavalent Chromium	08/19/16 11:56 AM	Reported
7	STD-10.0 ppb	ICAL	1	Hexavalent Chromium	08/19/16 12:05 PM	Reported
11	STD-15.0 ppb	ICAL	1	Hexavalent Chromium	08/19/16 12:56 PM	Reported
9	STD-20.0 ppb	ICAL	1	Hexavalent Chromium	08/19/16 12:24 PM	Reported
10	BLANK	BLANK	1	Hexavalent Chromium	08/19/16 12:45 PM	Not Reported
12	ICV	ICV	1	Hexavalent Chromium	08/19/16 1:06 PM	Reported
13	PQL@0.2ppb	CCV2	1	Hexavalent Chromium	08/19/16 1:15 PM	Reported
14	ICB	ICB	1	Hexavalent Chromium	08/19/16 1:32 PM	Not Reported
15	ICB	ICB	1	Hexavalent Chromium	08/19/16 1:43 PM	Reported
16	MB-R110148	MBLK	1	Hexavalent Chromium	08/19/16 1:55 PM	Reported
17	LCS-R110148	LCS	1	Hexavalent Chromium	08/19/16 2:06 PM	Reported
18	N020330-001A	SAMP	1	Hexavalent Chromium	08/19/16 2:15 PM	Not Reported
19	N020420-019A	SAMP	100	Hexavalent Chromium	08/19/16 2:25 PM	Not Reported
20	N020694-001A	SAMP	1	Hexavalent Chromium	08/19/16 2:34 PM	Reported
21	N020330-001A	SAMP	5	Hexavalent Chromium	08/19/16 2:43 PM	Reported
22	N020330-001ADUP	DUP	5	Hexavalent Chromium	08/19/16 2:53 PM	Reported
23	N020694-001AMS	MS	1	Hexavalent Chromium	08/19/16 3:07 PM	Reported
24	N020694-001AMSD	MSD	1	Hexavalent Chromium	08/19/16 3:18 PM	Reported
25	CCV-1	CCV1	1	Hexavalent Chromium	08/19/16 3:27 PM	Reported
26	CCB-1	CCB	1	Hexavalent Chromium	08/19/16 3:37 PM	Reported
27	N020645-003A	SAMP	1	Hexavalent Chromium	08/19/16 3:46 PM	Not Reported
28	N020645-003AMS	MS	1	Hexavalent Chromium	08/19/16 3:56 PM	Not Reported
29	N020645-004A	SAMP	1	Hexavalent Chromium	08/19/16 4:05 PM	Not Reported
30	N020645-004AMS	MS	1	Hexavalent Chromium	08/19/16 4:14 PM	Not Reported
31	CCV-2	CCV	1	Hexavalent Chromium	08/19/16 4:24 PM	Reported
32	CCB-2	CCB	1	Hexavalent Chromium	08/19/16 4:33 PM	Reported

Injection Log Summary

Sequence Details

Name:	**IC-07_160819A**	*Created On:*	**24/Jul/12 17:17:21**
Directory:	**Instrument Data\IC-7\2016**	*Created By:*	**ics 5000**
Data Vault:	**ChromeleonLocal**	*Updated On:*	**22/Aug/16 09:25:20**
No. of Injections:	**35**	*Updated By:*	**ics 5000**

Injection Details

No.	Injection Name	Position	Volume µL	Type	Level	Inject Time	Status	Comment
1	BLANK	1	1000	Unknown		08/19/2016 11:07	Finished	
2	BLANK	2	1000	Unknown		08/19/2016 11:18	Finished	
3	iBLANK	3	1000	Unknown		08/19/2016 11:27	Finished	INSTRUMENT BLANK
4	STD1-0.2 ppb	4	1000	Calibration Standard	01	08/19/2016 11:37	Finished	0.2 ppb, IWST160819A
5	STD2-1.0 ppb	5	1000	Calibration Standard	02	08/19/2016 11:46	Finished	1.0 ppb, IWST160819A
6	STD3-5.0 ppb	6	1000	Calibration Standard	03	08/19/2016 11:56	Finished	5.0 ppb, IWST160819A
7	STD4-10.0 ppb	7	1000	Calibration Standard	04	08/19/2016 12:05	Finished	10 ppb, IWST160819A
8	STD5-15.0 ppb	8	1000	Unknown		08/19/2016 12:15	Finished	15 ppb, IWST160819A
9	STD6-20.0 ppb	9	1000	Calibration Standard	06	08/19/2016 12:24	Finished	20 ppb, IWST160819A
10	BLANK	10	1000	Unknown		08/19/2016 12:45	Finished	
11	STD5-15.0 ppb	11	1000	Calibration Standard	05	08/19/2016 12:56	Finished	15 ppb, IWST160819A
12	ICV,ICV,1,	12	1000	Unknown		08/19/2016 13:06	Finished	ICV @5ppb, IWST-160819B
13	PQL@0.2ppb,CCV2,1	13	1000	Unknown		08/19/2016 13:15	Finished	PQL @ 0.2ppb
14	ICB,ICB,1,	14	1000	Unknown		08/19/2016 13:32	Finished	ICB R160718D
15	ICB,ICB,1,	15	1000	Unknown		08/19/2016 13:43	Finished	ICB R160718D
16	MB-H2O,MBLK,1	16	1000	Unknown		08/19/2016 13:55	Finished	MB R160718D
17	LCS-H2O,LCS,1	17	1000	Unknown		08/19/2016 14:06	Finished	LCS, IWST-160819B
18	N020330-001A,SAMP	18	1000	Unknown		08/19/2016 14:15	Finished	SAMP, 10 mL
19	N020420-019A,SAMP	19	1000	Unknown		08/19/2016 14:25	Finished	SAMP, 0.1>10 mL
20	N020694-001A,SAMP	20	1000	Unknown		08/19/2016 14:34	Finished	SAMP, 10 mL
21	N020330-001A,SAMP	21	1000	Unknown		08/19/2016 14:43	Finished	SAMP, 2>10 mL
22	N020330-001ADUP,D	22	1000	Unknown		08/19/2016 14:53	Finished	DUP, 2>10 mL
23	N020694-001AMS,MS	23	1000	Unknown		08/19/2016 15:07	Finished	MS (5ppb), IWST-160819B, 10
24	N020694-001AMSD,M	24	1000	Unknown		08/19/2016 15:18	Finished	MSD (5ppb), IWST-160819B, 1
25	CCV-1,CCV1,1,	25	1000	Unknown		08/19/2016 15:27	Finished	CCV @10ppb, IWST-160819A
26	CCB-1,CCB,1,	26	1000	Unknown		08/19/2016 15:37	Finished	CCB, R160718D
27	N020645-003A,SAMP	27	1000	Unknown		08/19/2016 15:46	Finished	SAMP, 10 mL
28	N020645-003AMS,MS	28	1000	Unknown		08/19/2016 15:56	Finished	MS (1ppb), IWST-160819B, 10
29	N020645-004A,SAMP	29	1000	Unknown		08/19/2016 16:05	Finished	SAMP, 10 mL
30	N020645-004AMS,MS	30	1000	Unknown		08/19/2016 16:14	Finished	MS (1ppb), IWST-160819B, 10
31	CCV-2,CCV,1,	31	1000	Unknown		08/19/2016 16:24	Finished	CCV @5ppb, IWST-160819A
32	CCB-2,CCB,1,	32	1000	Unknown		08/19/2016 16:33	Finished	CCB R160718D
33	SHUTDOWN	33	1000	Unknown		08/19/2016 16:43	Finished	
34	Eluent: R160819B	34	1000	Unknown		n.a.	Finished	Eluent
35	PCR: R160819C	35	1000	Unknown		n.a.	Finished	Post-Column Reagent

INJECTION LOG: 160909A

Instrument ID: IC-07

Sample No	Sample Name	Type	DF	Peak Name	Injection Date/Time	Comments
1	BLANK	BLANK	1	Hexavalent Chromium	08/19/16 11:07 AM	Not Reported
2	BLANK	BLANK	1	Hexavalent Chromium	08/19/16 11:18 AM	Not Reported
3	iBLANK	iBLANK	1	Hexavalent Chromium	08/19/16 11:27 AM	Reported
4	STD-0.2 ppb	ICAL	1	Hexavalent Chromium	08/19/16 11:37 AM	Reported
5	STD-1.0 ppb	ICAL	1	Hexavalent Chromium	08/19/16 11:46 AM	Reported
6	STD-5.0 ppb	ICAL	1	Hexavalent Chromium	08/19/16 11:56 AM	Reported
7	STD-10.0 ppb	ICAL	1	Hexavalent Chromium	08/19/16 12:05 PM	Reported
11	STD-15.0 ppb	ICAL	1	Hexavalent Chromium	08/19/16 12:56 PM	Reported
9	STD-20.0 ppb	ICAL	1	Hexavalent Chromium	08/19/16 12:24 PM	Reported
10	BLANK	BLANK	1	Hexavalent Chromium	08/19/16 12:45 PM	Not Reported
12	BLANK	BLANK	1	Hexavalent Chromium	09/09/16 8:52 AM	Not Reported
13	BLANK	BLANK	1	Hexavalent Chromium	09/09/16 9:03 AM	Not Reported
14	CCV-1	CCV	1	Hexavalent Chromium	09/09/16 9:12 AM	Reported
15	PQL@0.2ppb	CCV2	1	Hexavalent Chromium	09/09/16 9:22 AM	Reported
16	CCB-1	CCB	1	Hexavalent Chromium	09/09/16 9:31 AM	Reported
17	MB-R110505	MBLK	1	Hexavalent Chromium	09/09/16 9:41 AM	Reported
18	LCS-R110505	LCS	1	Hexavalent Chromium	09/09/16 9:50 AM	Reported
19	N020872-001A	SAMP	1	Hexavalent Chromium	09/09/16 9:59 AM	Reported
20	N020872-002A	SAMP	1	Hexavalent Chromium	09/09/16 10:09 AM	Reported
21	N020872-003A	SAMP	1	Hexavalent Chromium	09/09/16 10:18 AM	Reported
22	N020872-004A	SAMP	1	Hexavalent Chromium	09/09/16 10:28 AM	Reported
23	N020872-005A	SAMP	1	Hexavalent Chromium	09/09/16 10:37 AM	Reported
24	N020872-006A	SAMP	1	Hexavalent Chromium	09/09/16 10:47 AM	Reported
25	N020873-001A	SAMP	1	Hexavalent Chromium	09/09/16 10:56 AM	Not Reported
26	N020872-001ADUP	DUP	1	Hexavalent Chromium	09/09/16 11:06 AM	Reported
27	CCV-2	CCV1	1	Hexavalent Chromium	09/09/16 11:15 AM	Reported
28	CCB-2	CCB	1	Hexavalent Chromium	09/09/16 11:25 AM	Reported
29	N020873-001AMS	MS	1	Hexavalent Chromium	09/09/16 11:34 AM	Reported
30	N020873-001AMSD	MSD	1	Hexavalent Chromium	09/09/16 11:44 AM	Reported
31	N020873-001A	SAMP	1	Hexavalent Chromium	09/09/16 11:53 AM	Not Reported
32	N020872-005A	SAMP	1	Hexavalent Chromium	09/09/16 12:02 PM	Not Reported
33	N020872-006A	SAMP	1	Hexavalent Chromium	09/09/16 12:12 PM	Not Reported
34	N020873-001A	SAMP	1	Hexavalent Chromium	09/09/16 2:17 PM	Reported
35	CCV-3	CCV	1	Hexavalent Chromium	09/09/16 2:32 PM	Reported
36	CCB-3	CCB	1	Hexavalent Chromium	09/09/16 2:44 PM	Reported

Injection Log Summary

Sequence Details

Name:	**IC-07_160909A**	*Created On:*	**24/Jul/12 17:17:21**
Directory:	**Instrument Data\IC-7\2016**	*Created By:*	**ics 5000**
Data Vault:	**ChromeleonLocal**	*Updated On:*	**12/Sep/16 08:33:33**
No. of Injections:	**39**	*Updated By:*	**ics 5000**

Injection Details

No.	Injection Name	Position	Volume µL	Type	Level	Inject Time	Status	Comment
1	BLANK	1	1000	Unknown		08/19/2016 11:07	Finished	
2	BLANK	2	1000	Unknown		08/19/2016 11:18	Finished	
3	iBLANK	3	1000	Unknown		08/19/2016 11:27	Finished	INSTRUMENT BLANK
4	STD1-0.2 ppb	4	1000	Calibration Standard	01	08/19/2016 11:37	Finished	0.2 ppb, IWST160819A
5	STD2-1.0 ppb	5	1000	Calibration Standard	02	08/19/2016 11:46	Finished	1.0 ppb, IWST160819A
6	STD3-5.0 ppb	6	1000	Calibration Standard	03	08/19/2016 11:56	Finished	5.0 ppb, IWST160819A
7	STD4-10.0 ppb	7	1000	Calibration Standard	04	08/19/2016 12:05	Finished	10 ppb, IWST160819A
8	STD5-15.0 ppb	8	1000	Unknown		08/19/2016 12:15	Finished	15 ppb, IWST160819A
9	STD6-20.0 ppb	9	1000	Calibration Standard	06	08/19/2016 12:24	Finished	20 ppb, IWST160819A
10	BLANK	10	1000	Unknown		08/19/2016 12:45	Finished	
11	STD5-15.0 ppb	11	1000	Calibration Standard	05	08/19/2016 12:56	Finished	15 ppb, IWST160819A
12	BLANK	1	1000	Unknown		09/09/2016 08:52	Finished	
13	BLANK	2	1000	Unknown		09/09/2016 09:03	Finished	
14	CCV-1,CCV,1,	3	1000	Unknown		09/09/2016 09:12	Finished	CCV @5ppb, IWST-160819A
15	PQL@0.2ppb,CCV2,1	4	1000	Unknown		09/09/2016 09:22	Finished	PQL @ 0.2ppb
16	CCB-1,CCB,1,	5	1000	Unknown		09/09/2016 09:31	Finished	CCB R160718D
17	MB-H2O,MBLK,1	6	1000	Unknown		09/09/2016 09:41	Finished	MB R160718D
18	LCS-H2O,LCS,1	7	1000	Unknown		09/09/2016 09:50	Finished	LCS, IWST-160819B
19	N020872-001A,SAMP	8	1000	Unknown		09/09/2016 09:59	Finished	SAMP, 10 mL
20	N020872-002A,SAMP	9	1000	Unknown		09/09/2016 10:09	Finished	SAMP, 10 mL
21	N020872-003A,SAMP	10	1000	Unknown		09/09/2016 10:18	Finished	SAMP, 10 mL
22	N020872-004A,SAMP	11	1000	Unknown		09/09/2016 10:28	Finished	SAMP, 10 mL
23	N020872-005A,SAMP	12	1000	Unknown		09/09/2016 10:37	Finished	SAMP, 10 mL
24	N020872-006A,SAMP	13	1000	Unknown		09/09/2016 10:47	Finished	SAMP, 10 mL
25	N020873-001A,SAMP	14	1000	Unknown		09/09/2016 10:56	Finished	SAMP, 10 mL
26	N020872-001ADUP,D	15	1000	Unknown		09/09/2016 11:06	Finished	DUP, 10 mL
27	CCV-2,CCV1,1,	16	1000	Unknown		09/09/2016 11:15	Finished	CCV @10ppb, IWST-160819A
28	CCB-2,CCB,1,	17	1000	Unknown		09/09/2016 11:25	Finished	CCB, R160718D
29	N020873-001AMS,MS	18	1000	Unknown		09/09/2016 11:34	Finished	MS (1ppb), IWST-160819B, 10
30	N020873-001AMSD,M	19	1000	Unknown		09/09/2016 11:44	Finished	MSD (1ppb), IWST-160819B, 1
31	N020873-001A,SAMP	20	1000	Unknown		09/09/2016 11:53	Finished	SAMP, 10 mL
32	N020872-005A,SAMP	21	1000	Unknown		09/09/2016 12:02	Finished	SAMP, 10 mL
33	N020872-006A,SAMP	22	1000	Unknown		09/09/2016 12:12	Finished	SAMP, 10 mL
34	N020873-001A,SAMP	23	1000	Unknown		09/09/2016 14:17	Finished	SAMP, 10 mL
35	CCV-3,CCV,1,	24	1000	Unknown		09/09/2016 14:32	Finished	CCV @5ppb, IWST-160819A
36	CCB-3,CCB,1,	25	1000	Unknown		09/09/2016 14:44	Finished	CCB, R160718D
37	SHUTDOWN	26	1000	Unknown		09/09/2016 14:53	Finished	
38	Eluent: R160824B	27	1000	Unknown		n.a.	Finished	Eluent
39	PCR: R160907A	28	1000	Unknown		n.a.	Finished	Post-Column Reagent

SAMPLE PREPARATION LOG

Hexavalent Chromium Preparation and Runlog

Sample Preparation

Date Prepared: 9/9/16
Time Prepared: _____
Prepared By: Mark

slope = 98.01 %
pH4 - 4.03 @ 21.9°C
pH7 - 7.01 @ 21.9°C
pH10 - 10.05 @ 21.8°C
LCS - 7.03 @ 21.4°C

Reagent ID:
Sulfuric Acid: H8529
Diphenylcarbazide: CINV_160408A
NH4OH + NH4SO4 eluent: R1608248
NH4OH + NH4SO4 buffer: R1607180

6N NaOH : R1606138

	Sample ID.	pH of sample	pH after treatment	Initial Volume of sample	Final Volume after buffer add'n	Volume of buffer added	Comments
1)	MD28872-1A	9.32	-	~250 ml	~250 ml		R1607188
2)	2A	9.40	-				
3)	3A	9.15	9.39			3drops 6N NaOH	
4)	4A	9.49	-				
5)	5A	9.41	-				
6)	6A	9.55	-				
7)	MD20873-1A	9.43	-				
8)	2A	9.46	-	-	-		-
9)							
10)							
11)							
12)							
13)							
14)							
15)							

Sample Preparation

Date Prepared: _____
Time Prepared: _____
Prepared By: _____

Reagent ID:
Sulfuric Acid: _____
Diphenylcarbazide: _____
NH4OH + NH4SO4 eluent: _____
NH4OH + NH4SO4 buffer: _____

	Sample ID.	pH of sample	pH after treatment	Initial Volume of sample	Final Volume after buffer add'n	Volume of buffer added	Comments
1)							
2)							
3)							
4)							
5)							
6)							
7)							
8)							
9)							
10)							
11)							
12)							
13)							
14)							
15)							

Logbook No. 11

rba 9/15/2016

INITIAL CALIBRATION DATA SUMMARY

(EPA 218.6) - INITIAL CALIBRATION

Instrument ID: IC-07
Date Calibrated: 8/19/2016

Initial Calibration:

Hexavalent Chromium	STD1	STD2	STD3	STD4	STD5	STD6	
COMPOUND, in ug/L	0.2	1	5	10	15	20	R^2
Area,mAU*min	0.0517	0.2418	1.2516	2.4996	3.7294	4.9724	1.0000

	Stock	Working
Standard Concentration:	1,000,000 PPB	1,000 PPB
Standard ID:	ISST160817H	IWST160819A

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

CLIENT: ARCADIS U.S., Inc. - California
Work Order: N020873
Project: PG&E Topock - PMP, RC000753.801A

ANALYTICAL QC SUMMARY REPORT

TestCode: 218.6_WPGE

Sample ID **ICV**	SampType: **ICV**	TestCode: **218.6_WPGE**	Units: **µg/L**	Prep Date:	RunNo: **110505**
Client ID: **ICV**	Batch ID: **R110505**	TestNo: **EPA 218.6**		Analysis Date: **8/19/2016**	SeqNo: **2425020**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	5.037	0.20	5.000	0	101	90	110				

Sample ID **PQL@0.2ppb**	SampType: **CCV2**	TestCode: **218.6_WPGE**	Units: **µg/L**	Prep Date:	RunNo: **110505**
Client ID: **ZZZZZZ**	Batch ID: **R110505**	TestNo: **EPA 218.6**		Analysis Date: **8/19/2016**	SeqNo: **2425021**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	0.211	0.20	0.2000	0	106	80	120				

Sample ID **CCV-1**	SampType: **CCV**	TestCode: **218.6_WPGE**	Units: **µg/L**	Prep Date:	RunNo: **110505**
Client ID: **CCV**	Batch ID: **R110505**	TestNo: **EPA 218.6**		Analysis Date: **9/9/2016**	SeqNo: **2425023**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	4.976	0.20	5.000	0	99.5	95	105				

Sample ID **PQL@0.2ppb**	SampType: **CCV2**	TestCode: **218.6_WPGE**	Units: **µg/L**	Prep Date:	RunNo: **110505**
Client ID: **ZZZZZZ**	Batch ID: **R110505**	TestNo: **EPA 218.6**		Analysis Date: **9/9/2016**	SeqNo: **2425024**

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 **CCV-2**	SampType: **CCV1**	TestCode: **218.6_WPGE**	Units: **µg/L**	Prep Date:	RunNo: **110505**
Client ID: **ZZZZZZ**	Batch ID: **R110505**	TestNo: **EPA 218.6**		Analysis Date: **9/9/2016**	SeqNo: **2425036**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	10.048	0.20	10.00	0	100	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: N020873
Project: PG&E Topock - PMP, RC000753.801A

ANALYTICAL QC SUMMARY REPORT

TestCode: 218.6_WPGE

Sample ID **CCV-3** SampType: **CCV** TestCode: **218.6_WPGE** Units: **µg/L** Prep Date: RunNo: **110505**
Client ID: **CCV** Batch ID: **R110505** TestNo: **EPA 218.6** Analysis Date: **9/9/2016** SeqNo: **2425044**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	4.897	0.20	5.000	0	97.9	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

SUMMARY OF INSTRUMENT BLANKS

CLIENT: ARCADIS U.S., Inc. - California
Work Order: N020873
Project: PG&E Topock - PMP, RC000753.801A

ANALYTICAL QC SUMMARY REPORT

TestCode: 218.6_WPGE

Sample ID **ICB**	SampType: **ICB**	TestCode: **218.6_WPGE**	Units: **µg/L**	Prep Date:	RunNo: **110505**
Client ID: **ICB**	Batch ID: **R110505**	TestNo: **EPA 218.6**		Analysis Date: **8/19/2016**	SeqNo: **2425022**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	ND	0.20									

Sample ID **CCB-1**	SampType: **CCB**	TestCode: **218.6_WPGE**	Units: **µg/L**	Prep Date:	RunNo: **110505**
Client ID: **CCB**	Batch ID: **R110505**	TestNo: **EPA 218.6**		Analysis Date: **9/9/2016**	SeqNo: **2425025**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	ND	0.20									

Sample ID **CCB-2**	SampType: **CCB**	TestCode: **218.6_WPGE**	Units: **µg/L**	Prep Date:	RunNo: **110505**
Client ID: **CCB**	Batch ID: **R110505**	TestNo: **EPA 218.6**		Analysis Date: **9/9/2016**	SeqNo: **2425037**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	ND	0.20									

Sample ID **CCB-3**	SampType: **CCB**	TestCode: **218.6_WPGE**	Units: **µg/L**	Prep Date:	RunNo: **110505**
Client ID: **CCB**	Batch ID: **R110505**	TestNo: **EPA 218.6**		Analysis Date: **9/9/2016**	SeqNo: **2425045**

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

RETENTION TIME (RT) SUMMARY

Instrument ID: IC-07

Analytical Sequence

Date Analyzed: 9/9/2016

Sample Name	Retention Time	Evaluation
CCV-1	4.390	
CCV-2	4.390	
CCV-3	4.390	
Average	4.390	
Actual RT Window	4.310 - 4.470	
Applied RT Window	4.190 - 4.590	
MB-R110505	N.A.	N.A.
LCS-R110505	4.390	PASS
N020872-001A	4.373	PASS
N020872-002A	4.382	PASS
N020872-003A	4.357	PASS
N020872-004A	4.365	PASS
N020872-005A	4.390	PASS
N020872-006A	N.A.	N.A.
N020873-001A	4.340	PASS
N020872-001ADUP	4.373	PASS
N020873-001AMS	4.340	PASS
N020873-001AMSD	4.332	PASS
N020873-001A	4.340	PASS
N020872-005A	4.382	PASS
N020872-006A	N.A.	N.A.
N020873-001A	4.340	PASS

MDL STUDY

METHOD DETECTION LIMIT 2016

Method Name: **HEXAVALENT CHROMIUM by Ion Chromatography**
Method Number: EPA 218.6/EPA 7199
Analysis Date(s): 2/12/2016, 2/23/2016, 2/24/2016, 2/25/2016, 3/7/2016, 3/9/2016 & 3/11/2016
Analyst: Ryan Balilu, Jannette Soria

Matrix: **WATER**
Unit: ug/L

Instrument Name: **IC-06**

Acceptance Criteria: MDL < spike < 10X MDL

Datafile:	160212	160223	160224	160225	160307	160309	160311						
Analyte	**#1**	**#2**	**#3**	**#4**	**#5**	**#6**	**#7**	**Spike Conc., mg/L**	**SD**	**$t_{(n-1)}$ value**	**MDL**	**PQL**	**Remarks**
ICAL:													
Hexavalent Chromiu	0.2195	0.2048	0.2167	0.1675	0.2194	0.1811	0.1826	0.20	0.0215	3.143	**0.0675**	**0.20**	OK,meets criteria

gog 04/11/16

Students' **t** Values at 99% CL

#	$t_{(n-1)}$
10	2.821
9	2.896
8	2.998
7	3.143

LOD & PQL Verification 2016 (2nd Quarter)

Method Name: **Hexavalent Chromium by IC** Matrix: **WATER**
Method Number: EPA Method 218.6/7199 Unit: µg/L
Analysis Date(s): 5/23/2016
Analyst: Jannette Soria

Instrument Name: **IC-06**

Compound	MDL	LOD Spike Conc., µg/L	LOD actual Conc., µg/L
Hexavalent Chromium	0.068	0.15	0.157

Compound	PQL	PQL Spike Conc., µg/L	PQL actual Conc., µg/L	% Recovery
Hexavalent Chromium	0.20	0.20	0.211	**105**

METHOD DETECTION LIMIT 2016

Method Name: **HEXAVALENT CHROMIUM by Ion Chromatography**
Method Number: EPA 218.6/EPA 7199
Analysis Date(s): 3/16/2016; 3/18/2016; 3/21/2016, 3/22/2016, 3/25/2016 & 3/30/2016
Analyst: Jannette Soria

Matrix: **WATER**
Unit: ug/L

Instrument Name: **IC-07**

Acceptance Criteria: MDL < spike < 10X MDL

Datafile:	160316	160318	160321	160322	160323	160325	160330						
Analyte	**#1**	**#2**	**#3**	**#4**	**#5**	**#6**	**#7**	**Spike Conc., mg/L**	**SD**	**$t_{(n-1)}$ value**	**MDL**	**PQL**	**Remarks**
ICAL:													
Hexavalent Chromiu	0.1906	0.2326	0.2339	0.2002	0.2394	0.2147	0.1920	0.20	0.0208	3.143	**0.0655**	**0.20**	OK,meets criteria

jog 04/11/16

Students' **t** Values at 99% CL

#	$t_{(n-1)}$
10	2.821
9	2.896
8	2.998
7	3.143

LOD & PQL Verification 2016 (2nd Quarter)

Method Name: **Hexavalent Chromium by IC** Matrix: **WATER**
Method Number: EPA Method 218.6/7199 Unit: µg/L
Analysis Date(s): 5/26/2016
Analyst: Jannette Soria

Instrument Name: **IC-07**

Compound	MDL	LOD Spike Conc., µg/L	LOD actual Conc., µg/L
Hexavalent Chromium	0.066	0.15	0.171

Compound	PQL	PQL Spike Conc., µg/L	PQL actual Conc., µg/L	% Recovery
Hexavalent Chromium	0.20	0.20	0.214	**107**

RAW DATA

INITIAL CALIBRATION

INJECTION LOG: 160819A

Instrument ID: IC-07

Sample No	Sample Name	Type	DF	Peak Name	Injection Date/Time	Comments
1	BLANK	BLANK	1	Hexavalent Chromium	08/19/16 11:07 AM	Not Reported
2	BLANK	BLANK	1	Hexavalent Chromium	08/19/16 11:18 AM	Not Reported
3	iBLANK	iBLANK	1	Hexavalent Chromium	08/19/16 11:27 AM	Reported
4	STD-0.2 ppb	ICAL	1	Hexavalent Chromium	08/19/16 11:37 AM	Reported
5	STD-1.0 ppb	ICAL	1	Hexavalent Chromium	08/19/16 11:46 AM	Reported
6	STD-5.0 ppb	ICAL	1	Hexavalent Chromium	08/19/16 11:56 AM	Reported
7	STD-10.0 ppb	ICAL	1	Hexavalent Chromium	08/19/16 12:05 PM	Reported
11	STD-15.0 ppb	ICAL	1	Hexavalent Chromium	08/19/16 12:56 PM	Reported
9	STD-20.0 ppb	ICAL	1	Hexavalent Chromium	08/19/16 12:24 PM	Reported
10	BLANK	BLANK	1	Hexavalent Chromium	08/19/16 12:45 PM	Not Reported
12	ICV	ICV	1	Hexavalent Chromium	08/19/16 1:06 PM	Reported
13	PQL@0.2ppb	CCV2	1	Hexavalent Chromium	08/19/16 1:15 PM	Reported
14	ICB	ICB	1	Hexavalent Chromium	08/19/16 1:32 PM	Reported
15	ICB	ICB	1	Hexavalent Chromium	08/19/16 1:43 PM	Reported
16	MB-R110148	MBLK	1	Hexavalent Chromium	08/19/16 1:55 PM	Reported
17	LCS-R110148	LCS	1	Hexavalent Chromium	08/19/16 2:06 PM	Reported
18	N020330-001A	SAMP	1	Hexavalent Chromium	08/19/16 2:15 PM	Not Reported
19	N020420-019A	SAMP	100	Hexavalent Chromium	08/19/16 2:25 PM	Not Reported
20	N020694-001A	SAMP	1	Hexavalent Chromium	08/19/16 2:34 PM	Reported
21	N020330-001A	SAMP	5	Hexavalent Chromium	08/19/16 2:43 PM	Reported
22	N020330-001ADUP	DUP	5	Hexavalent Chromium	08/19/16 2:53 PM	Reported
23	N020694-001AMS	MS	1	Hexavalent Chromium	08/19/16 3:07 PM	Reported
24	N020694-001AMSD	MSD	1	Hexavalent Chromium	08/19/16 3:18 PM	Reported
25	CCV-1	CCV1	1	Hexavalent Chromium	08/19/16 3:27 PM	Reported
26	CCB-1	CCB	1	Hexavalent Chromium	08/19/16 3:37 PM	Reported
27	N020645-003A	SAMP	1	Hexavalent Chromium	08/19/16 3:46 PM	Not Reported
28	N020645-003AMS	MS	1	Hexavalent Chromium	08/19/16 3:56 PM	Not Reported
29	N020645-004A	SAMP	1	Hexavalent Chromium	08/19/16 4:05 PM	Not Reported
30	N020645-004AMS	MS	1	Hexavalent Chromium	08/19/16 4:14 PM	Not Reported
31	CCV-2	CCV	1	Hexavalent Chromium	08/19/16 4:24 PM	Reported
32	CCB-2	CCB	1	Hexavalent Chromium	08/19/16 4:33 PM	Reported

8/25/2016

Injection Log Summary

Sequence Details

Name:	**IC-07_160819A**	*Created On:*	**24/Jul/12 17:17:21**
Directory:	**Instrument Data\IC-7\2016**	*Created By:*	**ics 5000**
Data Vault:	**ChromeleonLocal**	*Updated On:*	**22/Aug/16 09:25:20**
No. of Injections:	**35**	*Updated By:*	**ics 5000**

Injection Details

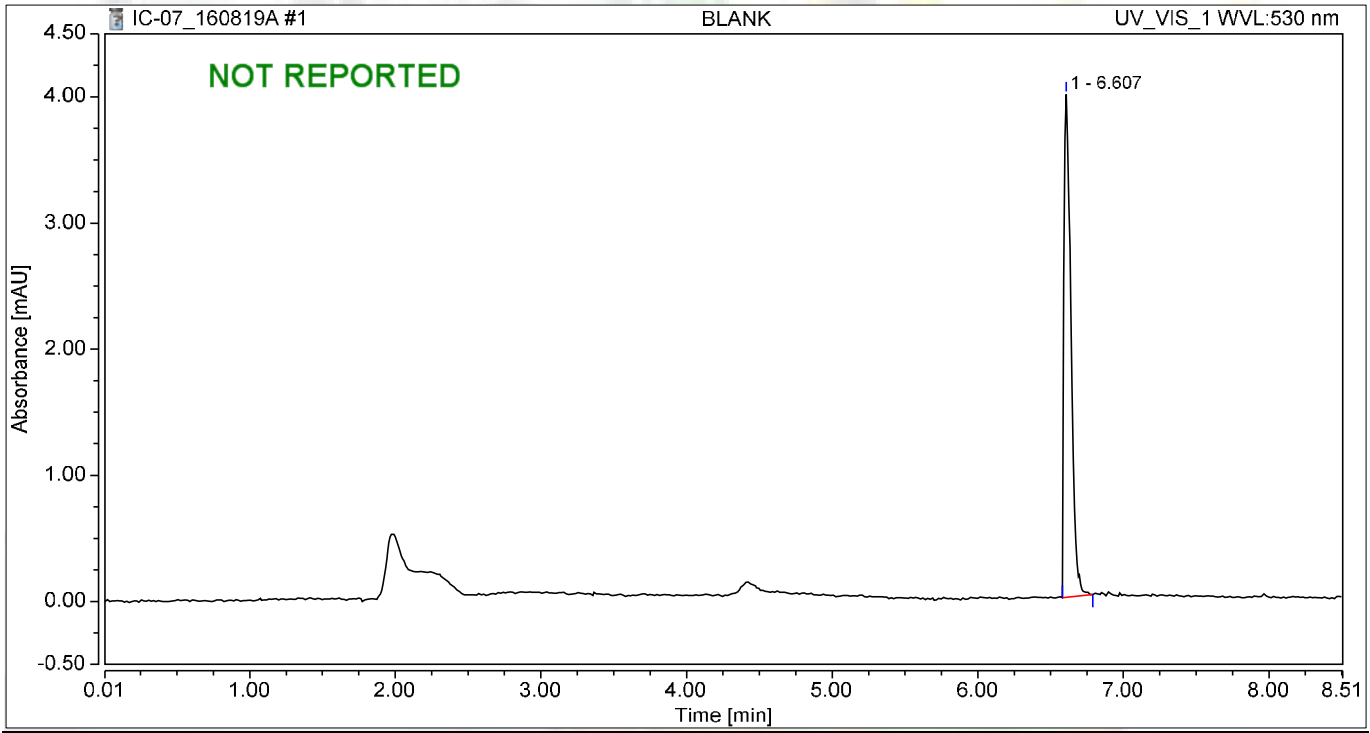
No.	Injection Name	Position	Volume µL	Type	Level	Inject Time	Status	Comment
1	BLANK	1	1000	Unknown		08/19/2016 11:07	Finished	
2	BLANK	2	1000	Unknown		08/19/2016 11:18	Finished	
3	iBLANK	3	1000	Unknown		08/19/2016 11:27	Finished	INSTRUMENT BLANK
4	STD1-0.2 ppb	4	1000	Calibration Standard	01	08/19/2016 11:37	Finished	0.2 ppb, IWST160819A
5	STD2-1.0 ppb	5	1000	Calibration Standard	02	08/19/2016 11:46	Finished	1.0 ppb, IWST160819A
6	STD3-5.0 ppb	6	1000	Calibration Standard	03	08/19/2016 11:56	Finished	5.0 ppb, IWST160819A
7	STD4-10.0 ppb	7	1000	Calibration Standard	04	08/19/2016 12:05	Finished	10 ppb, IWST160819A
8	STD5-15.0 ppb	8	1000	Unknown		08/19/2016 12:15	Finished	15 ppb, IWST160819A
9	STD6-20.0 ppb	9	1000	Calibration Standard	06	08/19/2016 12:24	Finished	20 ppb, IWST160819A
10	BLANK	10	1000	Unknown		08/19/2016 12:45	Finished	
11	STD5-15.0 ppb	11	1000	Calibration Standard	05	08/19/2016 12:56	Finished	15 ppb, IWST160819A
12	ICV,ICV,1,	12	1000	Unknown		08/19/2016 13:06	Finished	ICV @5ppb, IWST-160819B
13	PQL@0.2ppb,CCV2,1	13	1000	Unknown		08/19/2016 13:15	Finished	PQL @ 0.2ppb
14	ICB,ICB,1,	14	1000	Unknown		08/19/2016 13:32	Finished	ICB R160718D
15	ICB,ICB,1,	15	1000	Unknown		08/19/2016 13:43	Finished	ICB R160718D
16	MB-H2O,MBLK,1	16	1000	Unknown		08/19/2016 13:55	Finished	MB R160718D
17	LCS-H2O,LCS,1	17	1000	Unknown		08/19/2016 14:06	Finished	LCS, IWST-160819B
18	N020330-001A,SAMP	18	1000	Unknown		08/19/2016 14:15	Finished	SAMP, 10 mL
19	N020420-019A,SAMP	19	1000	Unknown		08/19/2016 14:25	Finished	SAMP, 0.1>10 mL
20	N020694-001A,SAMP	20	1000	Unknown		08/19/2016 14:34	Finished	SAMP, 10 mL
21	N020330-001A,SAMP	21	1000	Unknown		08/19/2016 14:43	Finished	SAMP, 2>10 mL
22	N020330-001ADUP,D	22	1000	Unknown		08/19/2016 14:53	Finished	DUP, 2>10 mL
23	N020694-001AMS,MS	23	1000	Unknown		08/19/2016 15:07	Finished	MS (5ppb), IWST-160819B, 10
24	N020694-001AMSD,M	24	1000	Unknown		08/19/2016 15:18	Finished	MSD (5ppb), IWST-160819B, 1
25	CCV-1,CCV1,1,	25	1000	Unknown		08/19/2016 15:27	Finished	CCV @10ppb, IWST-160819A
26	CCB-1,CCB,1,	26	1000	Unknown		08/19/2016 15:37	Finished	CCB, R160718D
27	N020645-003A,SAMP	27	1000	Unknown		08/19/2016 15:46	Finished	SAMP, 10 mL
28	N020645-003AMS,MS	28	1000	Unknown		08/19/2016 15:56	Finished	MS (1ppb), IWST-160819B, 10
29	N020645-004A,SAMP	29	1000	Unknown		08/19/2016 16:05	Finished	SAMP, 10 mL
30	N020645-004AMS,MS	30	1000	Unknown		08/19/2016 16:14	Finished	MS (1ppb), IWST-160819B, 10
31	CCV-2,CCV,1,	31	1000	Unknown		08/19/2016 16:24	Finished	CCV @5ppb, IWST-160819A
32	CCB-2,CCB,1,	32	1000	Unknown		08/19/2016 16:33	Finished	CCB R160718D
33	SHUTDOWN	33	1000	Unknown		08/19/2016 16:43	Finished	
34	Eluent: R160819B	34	1000	Unknown		n.a.	Finished	Eluent
35	PCR: R160819C	35	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:	**160819_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**19/Aug/16 11:07**	*Sample Weight:*	**1.0000**

Chromatogram



Integration Results

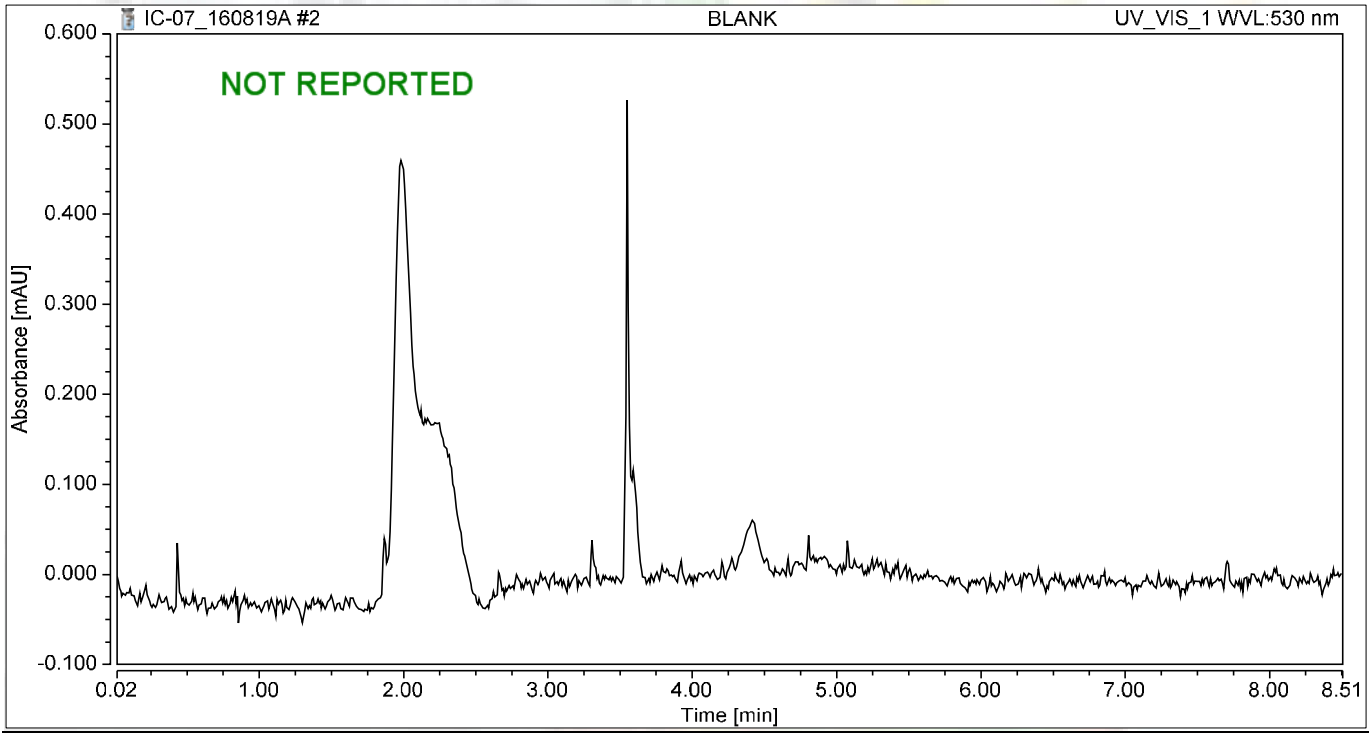
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
n.a.	Hexavalent Chromium	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
1		6.607	0.223	3.986	100.00	100.00	n.a.
Total:			**0.223**	**3.986**	**100.00**	**100.00**	

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:	**160819_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**19/Aug/16 11:18**	*Sample Weight:*	**1.0000**

Chromatogram



Integration Results

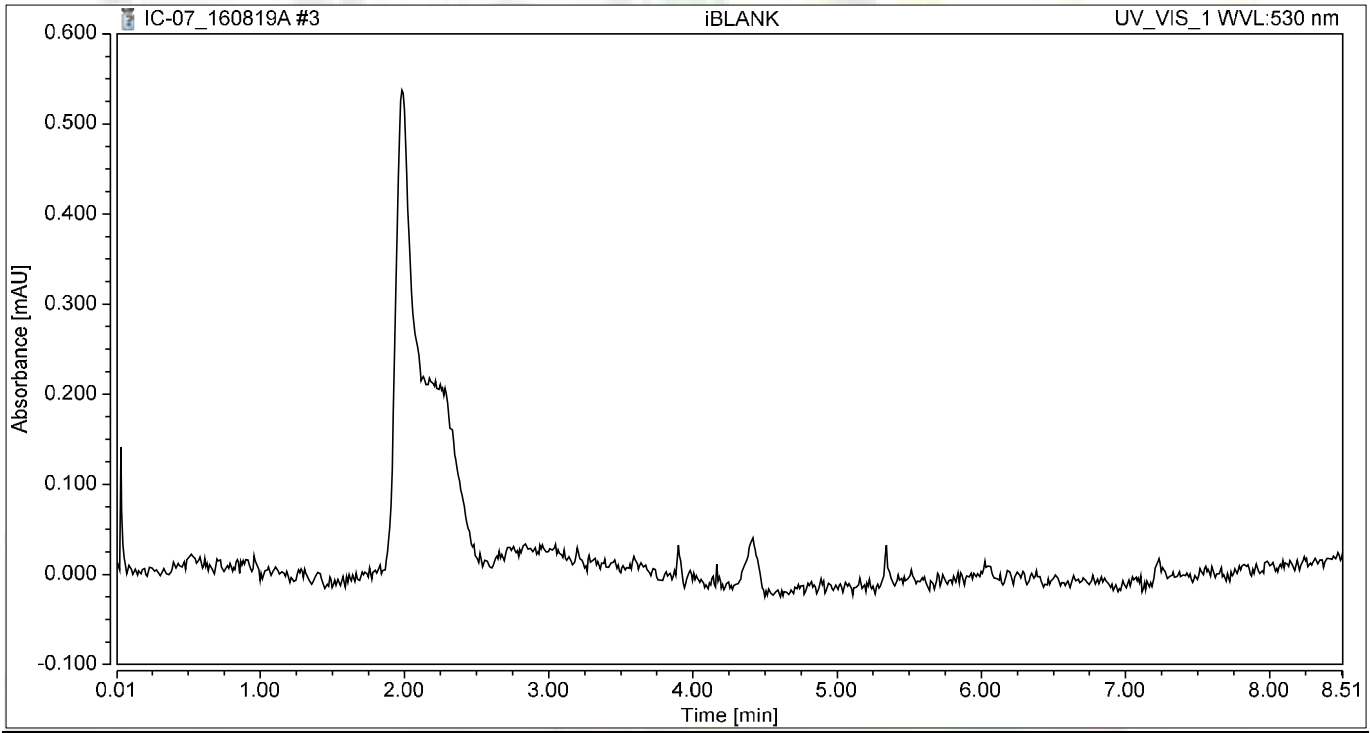
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
n.a.	Hexavalent Chromium	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Total:			**0.000**	**0.000**	**0.00**	**0.00**	

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:	**160819_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**19/Aug/16 11:27**	*Sample Weight:*	**1.0000**

Chromatogram



Integration Results

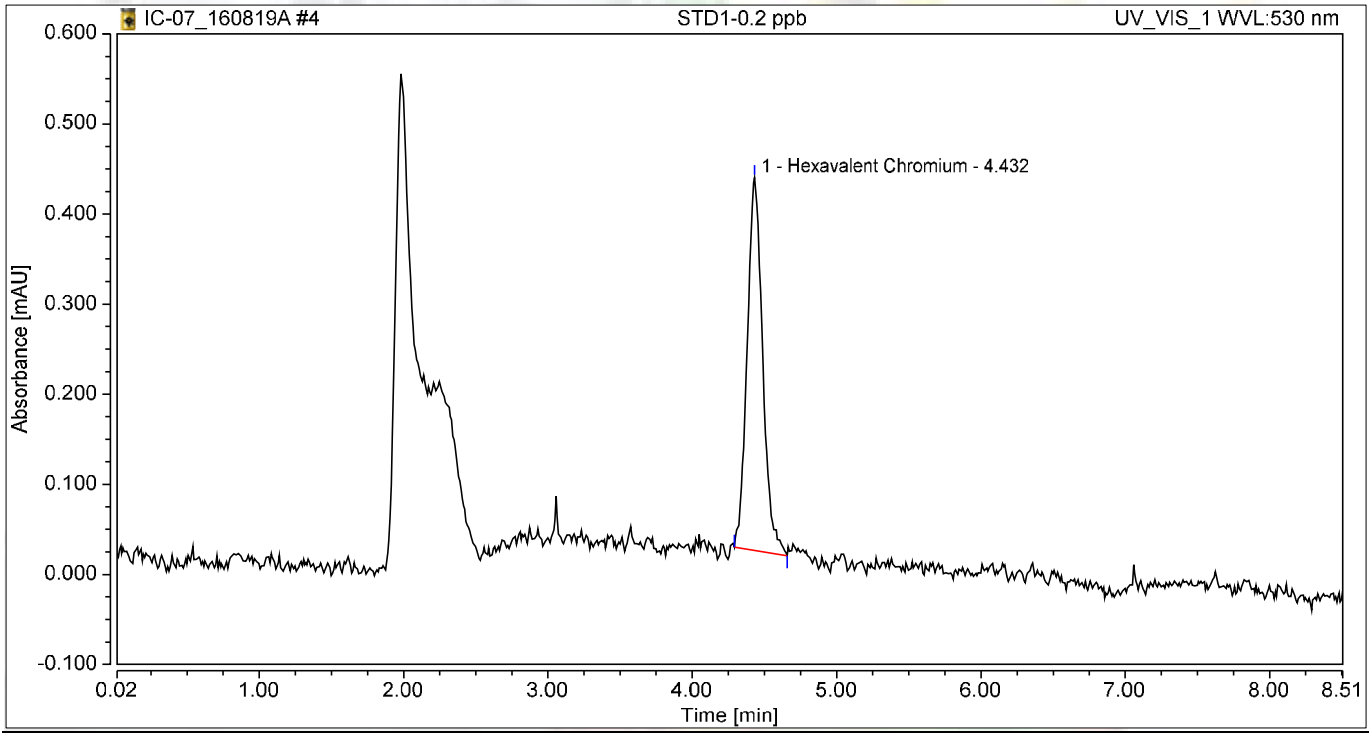
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
n.a.	Hexavalent Chromium	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Total:			**0.000**	**0.000**	**0.00**	**0.00**	

Chromatogram and Results

Injection Details

Injection Name:	**STD1-0.2 ppb**	*Run Time (min):*	**8.49**
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:	**160819_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**19/Aug/16 11:37**	*Sample Weight:*	**1.0000**

Chromatogram



Integration Results

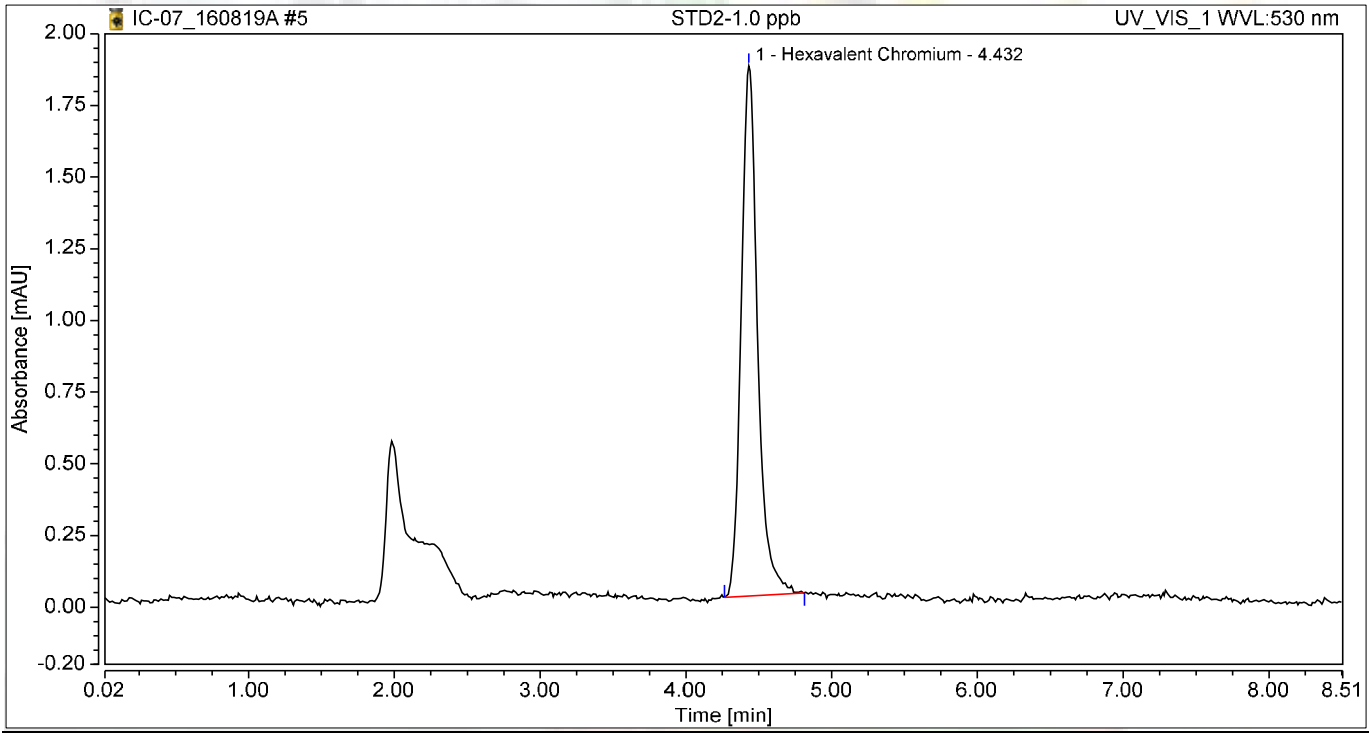
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.432	0.052	0.414	100.00	100.00	0.2079
Total:			**0.052**	**0.414**	**100.00**	**100.00**	

Chromatogram and Results

Injection Details

Injection Name:	**STD2-1.0 ppb**	*Run Time (min):*	**8.49**
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:	**160819_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**19/Aug/16 11:46**	*Sample Weight:*	**1.0000**

Chromatogram



Integration Results

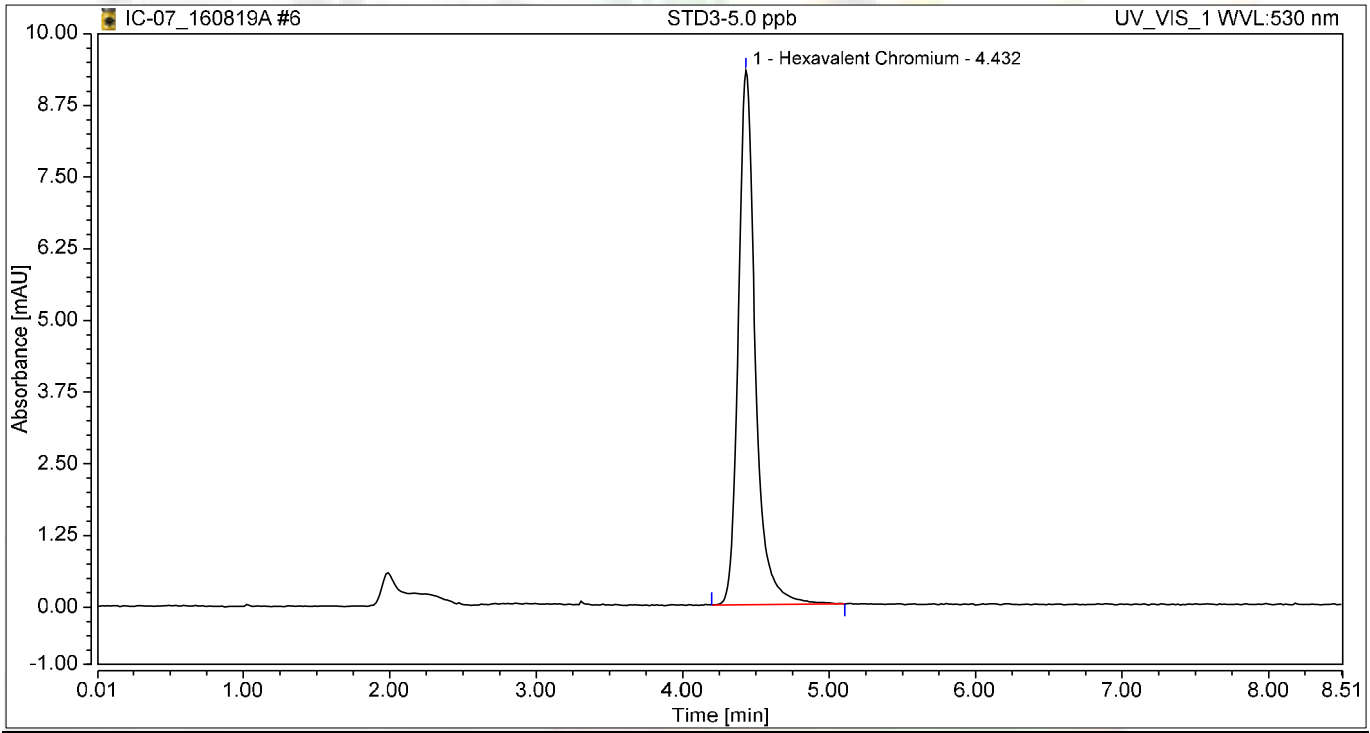
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.432	0.242	1.849	100.00	100.00	0.9717
Total:			**0.242**	**1.849**	**100.00**	**100.00**	

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:	**160819_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**19/Aug/16 11:56**	*Sample Weight:*	**1.0000**

Chromatogram



Integration Results

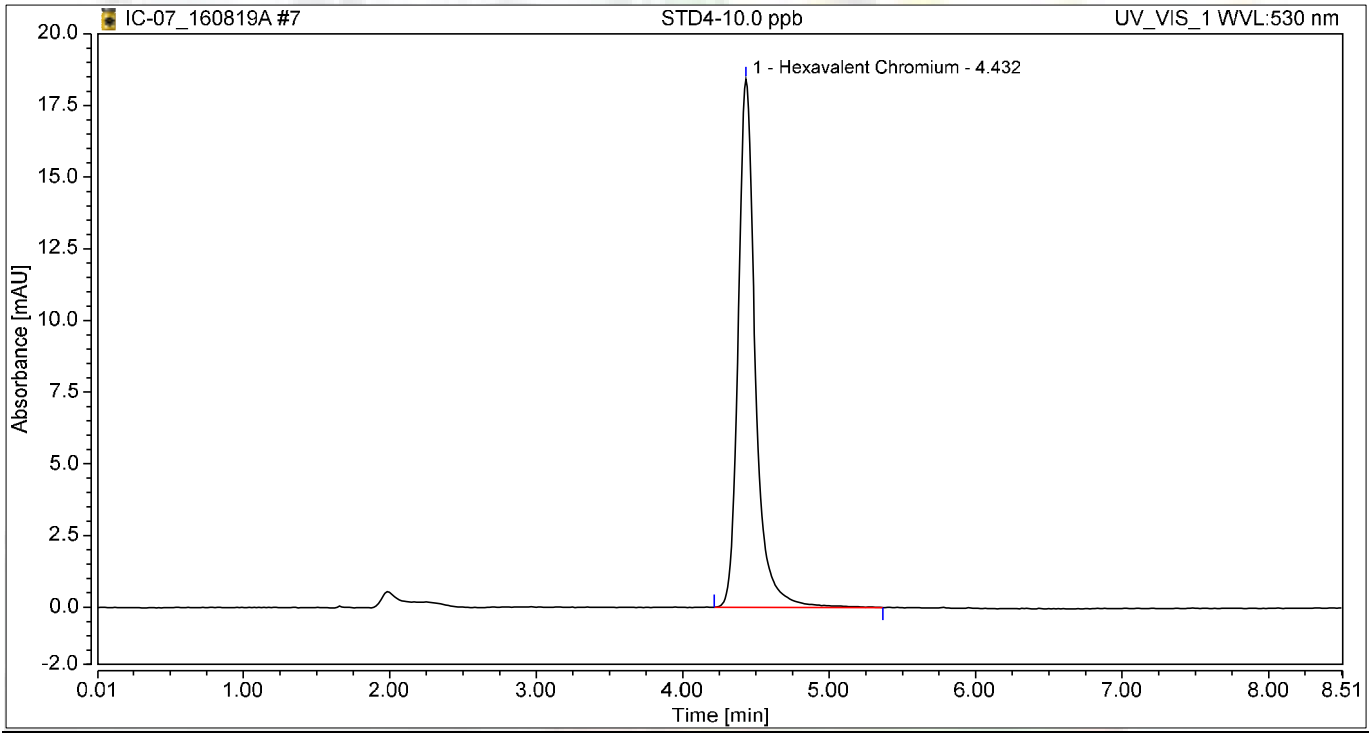
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.432	1.252	9.315	100.00	100.00	5.0296
Total:			**1.252**	**9.315**	**100.00**	**100.00**	

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:	**160819_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**19/Aug/16 12:05**	*Sample Weight:*	**1.0000**

Chromatogram



Integration Results

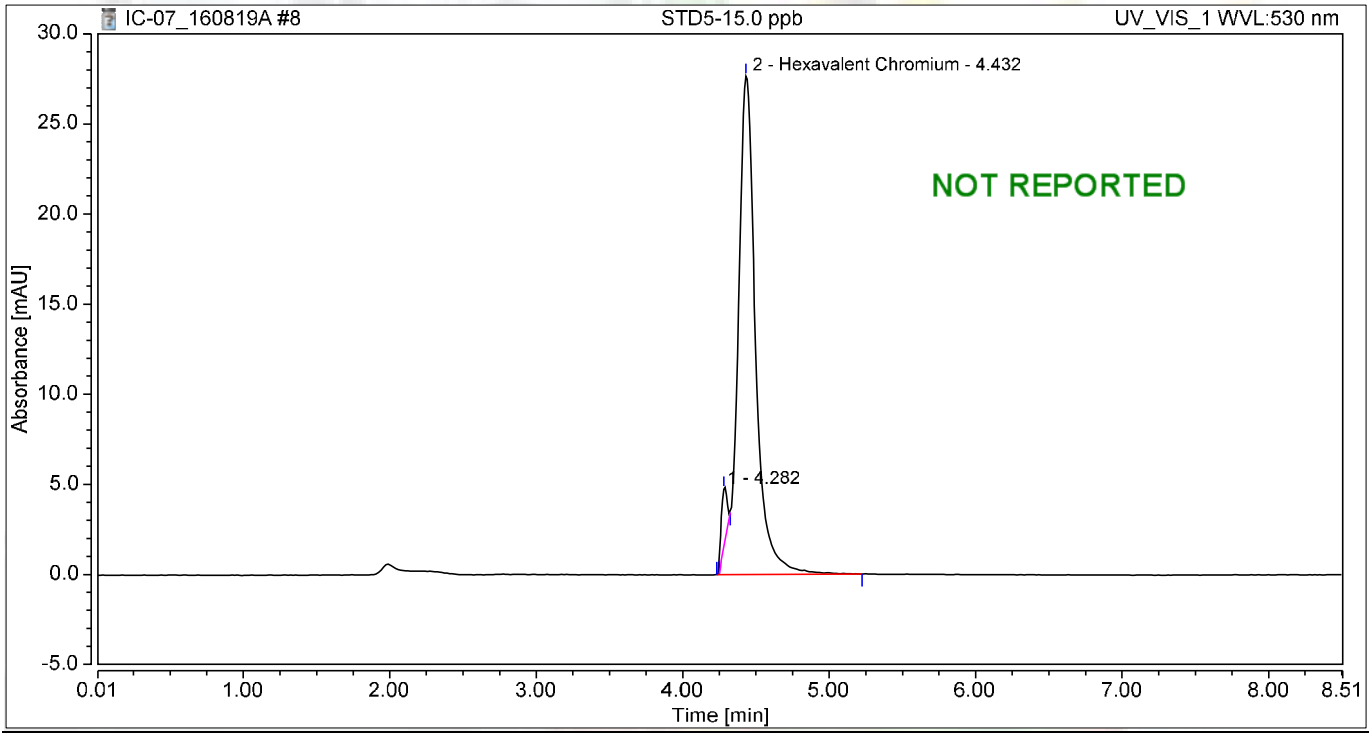
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.432	2.500	18.418	100.00	100.00	10.0447
Total:			**2.500**	**18.418**	**100.00**	**100.00**	

Chromatogram and Results

Injection Details

Injection Name:	**STD5-15.0 ppb**	*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:	**160819_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**19/Aug/16 12:15**	*Sample Weight:*	**1.0000**

Chromatogram



Integration Results

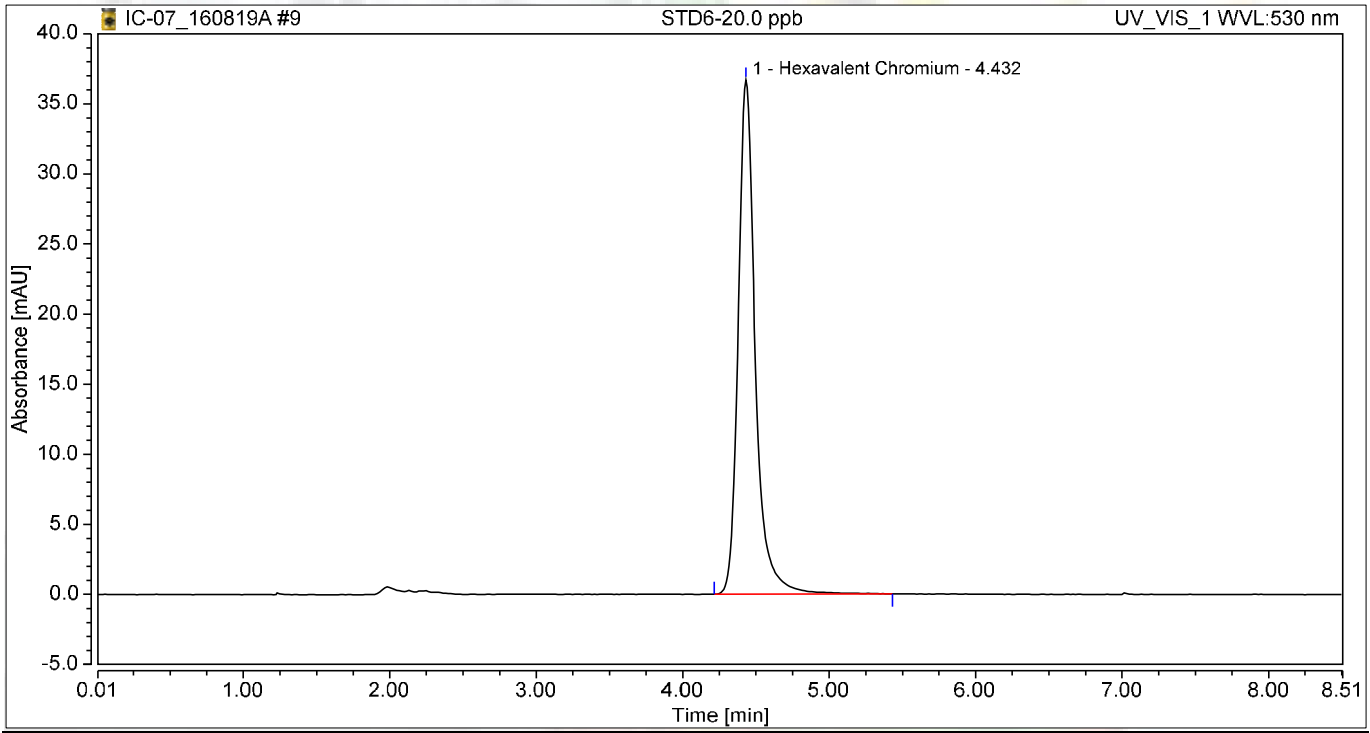
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1		4.282	0.140	3.180	3.50	10.31	n.a.
2	Hexavalent Chromium	4.432	3.850	27.655	96.50	89.69	15.4701
Total:			**3.989**	**30.836**	**100.00**	**100.00**	

Chromatogram and Results

Injection Details

Injection Name:	**STD6-20.0 ppb**	*Run Time (min):*	**8.50**
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:	**160819_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**19/Aug/16 12:24**	*Sample Weight:*	**1.0000**

Chromatogram



Integration Results

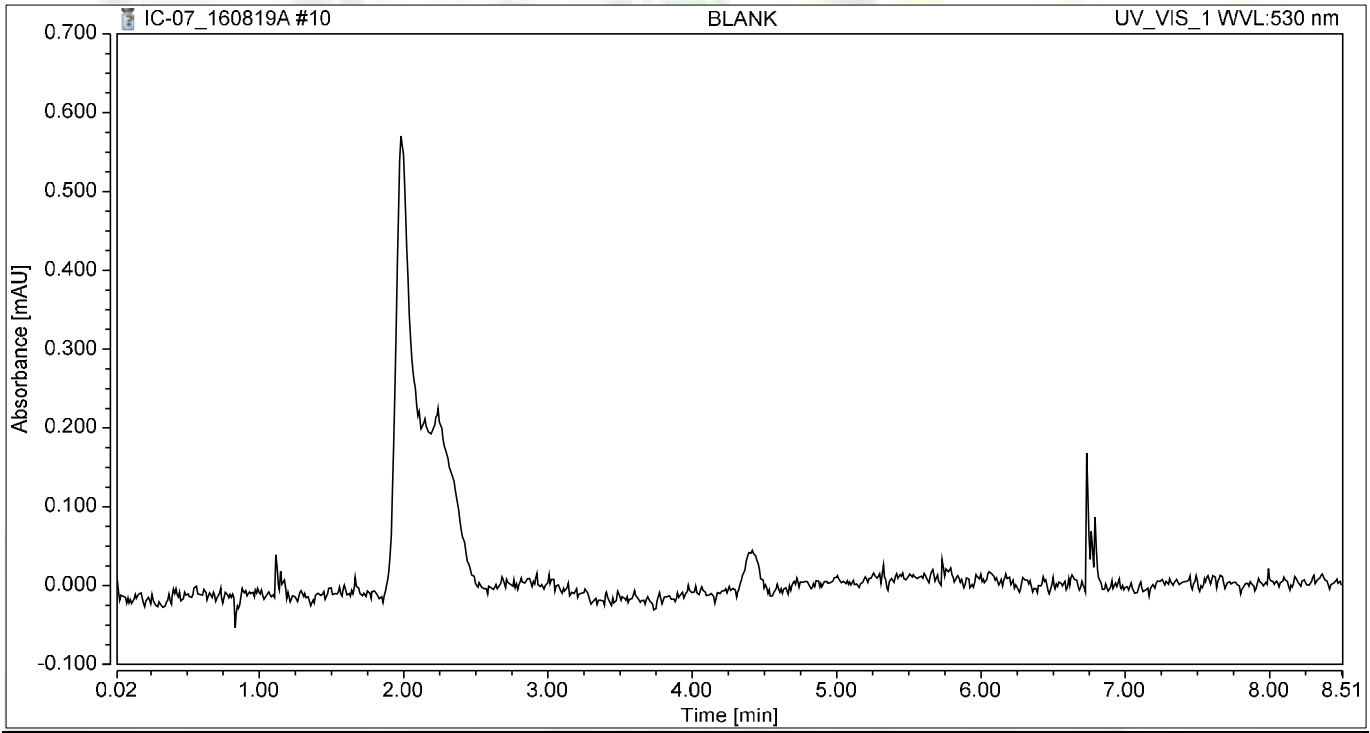
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.432	4.972	36.689	100.00	100.00	19.9816
Total:			**4.972**	**36.689**	**100.00**	**100.00**	

Chromatogram and Results

Injection Details

Injection Name:	**BLANK**	*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:	**160819_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**19/Aug/16 12:45**	*Sample Weight:*	**1.0000**

Chromatogram



Integration Results

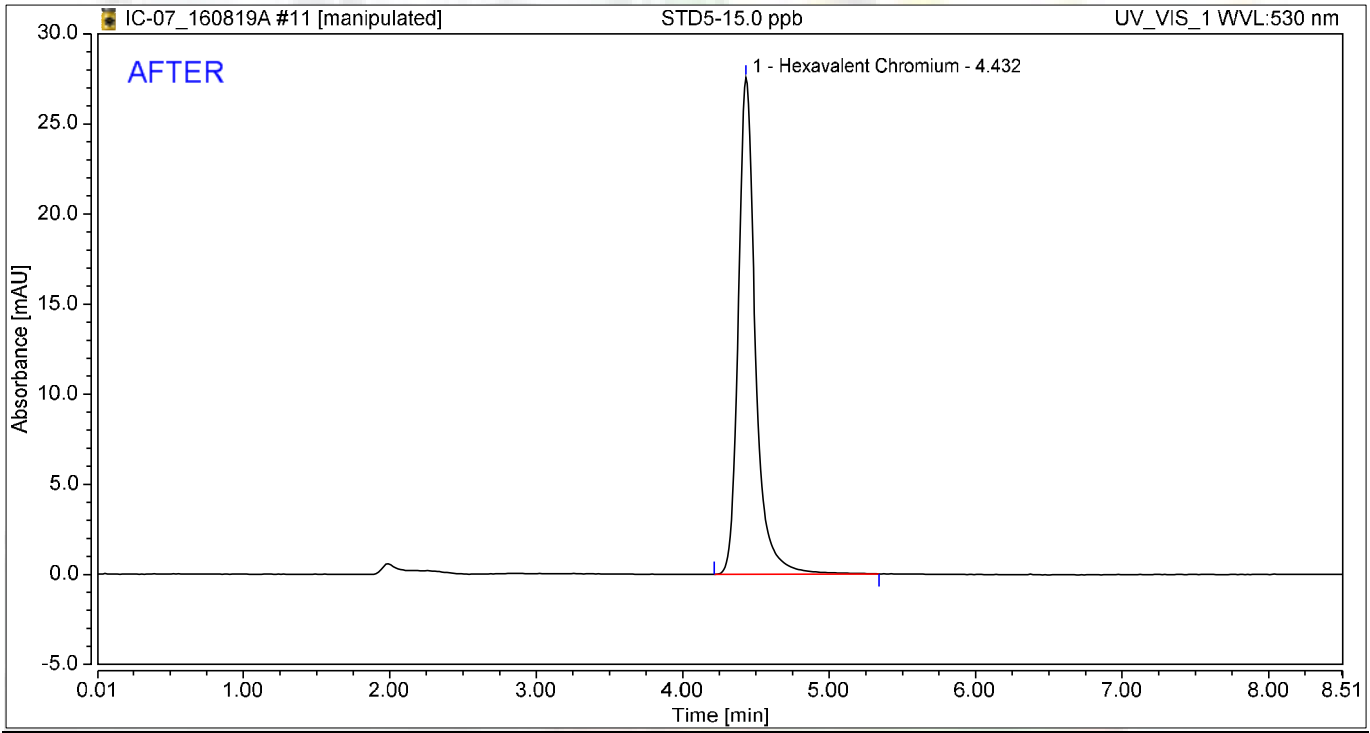
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
n.a.	Hexavalent Chromium	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Total:			**0.000**	**0.000**	**0.00**	**0.00**	

Chromatogram and Results

Injection Details

Injection Name:	**STD5-15.0 ppb**	*Run Time (min):*	**8.50**
Vial Number:	**11**	*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:	**160819_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**19/Aug/16 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	4.432	3.729	27.555	100.00	100.00	14.9866
Total:			**3.729**	**27.555**	**100.00**	**100.00**	

8/25/2016

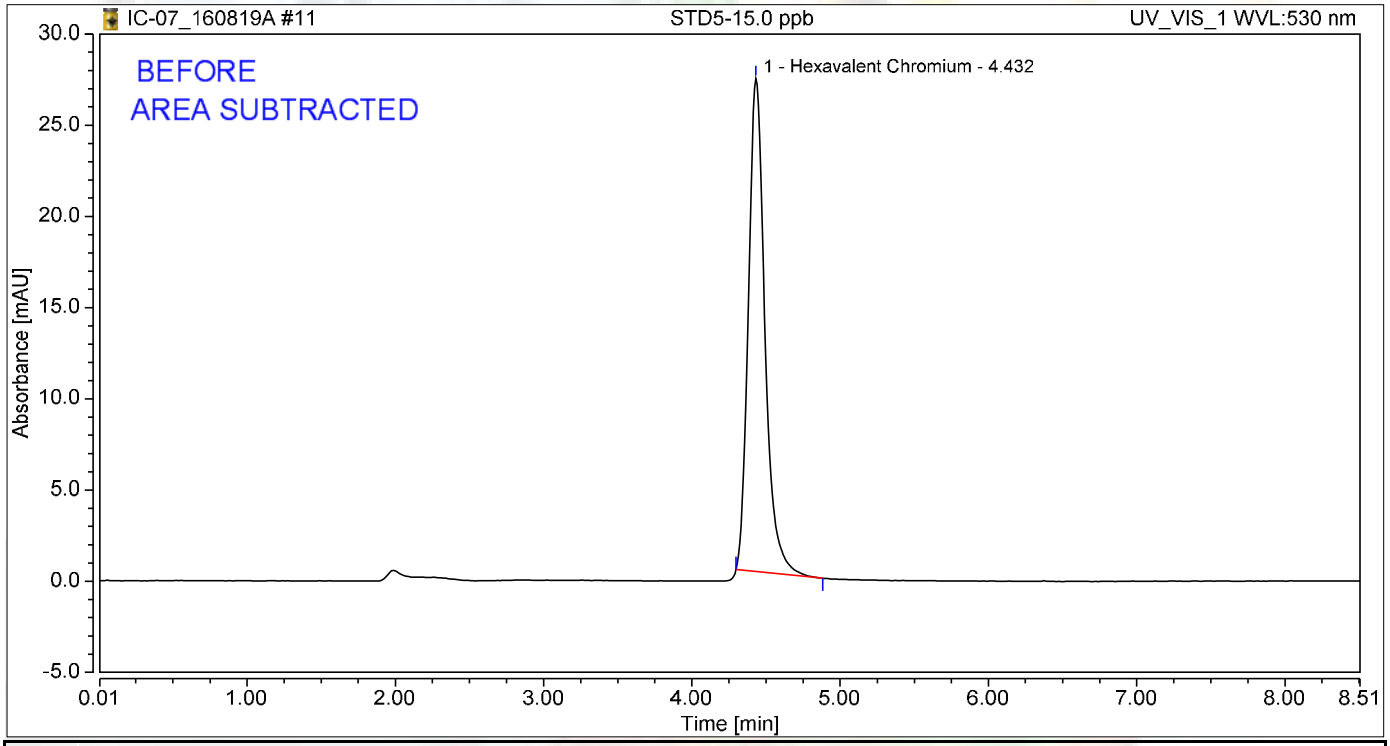
Reviewed by: 8/29/2016

Chromatogram and Results

Injection Details

Injection Name:	**STD5-15.0 ppb**	*Run Time (min):*	**8.50**
Vial Number:	**11**	*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:	**160819_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**19/Aug/16 12:56**	*Sample Weight:*	**1.0000**

Chromatogram



Integration Results

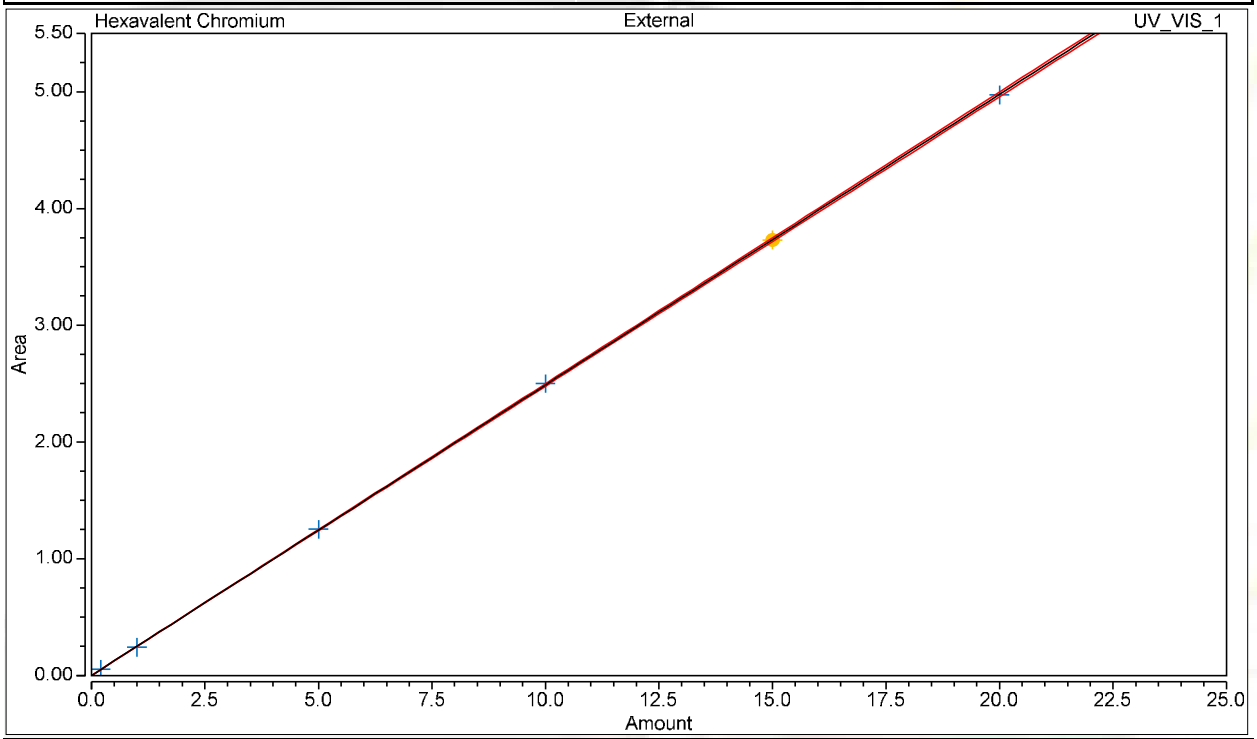
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.432	3.467	27.028	100.00	100.00	14.2311
Total:			**3.467**	**27.028**	**100.00**	**100.00**	

8/25/2016

Initial Calibration Summary

Calibration Details	Hexavalent Chromium		
Calibration Type	Lin	*Offset (C0)*	0.0000
Evaluation Type	Area	*Slope (C1)*	0.2488
Number of Calibration Points	6	*Curve (C2)*	0.0000
Number of disabled Calibration Points	0	*R-Square*	0.99999

Calibration Plot Hexavalent Chromium



Calibration Results Hexavalent Chromium

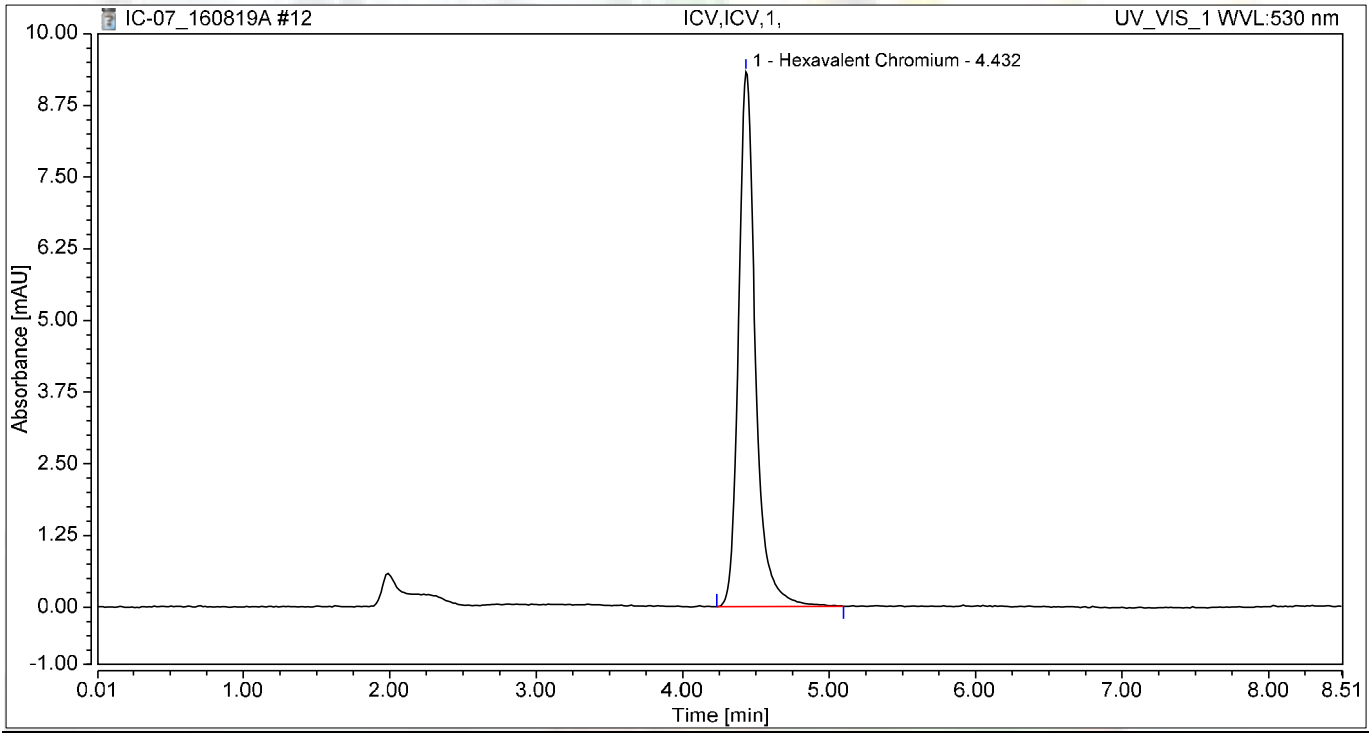
No.	Injection Name	Calibration Level	X Value	Y Value	Area mAU*min	Height mAU
4	STD1-0.2 ppb	01	0.2000	0.0517	0.052	0.414
5	STD2-1.0 ppb	02	1.0000	0.2418	0.242	1.849
6	STD3-5.0 ppb	03	5.0000	1.2516	1.252	9.315
7	STD4-10.0 ppb	04	10.0000	2.4996	2.500	18.418
9	STD6-20.0 ppb	06	20.0000	4.9724	4.972	36.689
11	STD5-15.0 ppb	05	15.0000	3.7294	3.729	27.555

Chromatogram and Results

Injection Details

Injection Name:	**ICV,ICV,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:	**160819_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**19/Aug/16 13:06**	*Sample Weight:*	**1.0000**

Chromatogram



Integration Results

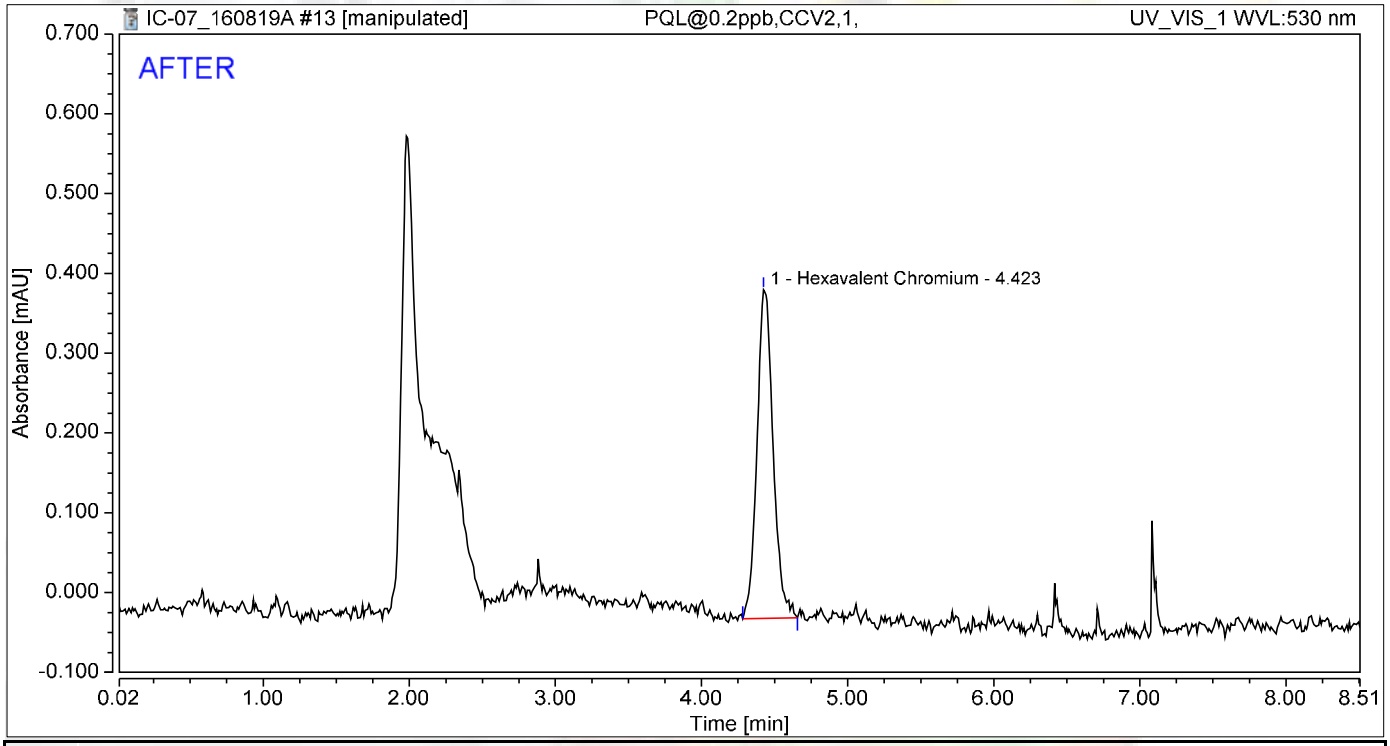
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.432	1.253	9.326	100.00	100.00	5.0372
Total:			**1.253**	**9.326**	**100.00**	**100.00**	

Chromatogram and Results

Injection Details

Injection Name:	**PQL@0.2ppb,CCV2,1,**	*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:	**160819_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**19/Aug/16 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	4.423	0.053	0.412	100.00	100.00	0.2110
Total:			**0.053**	**0.412**	**100.00**	**100.00**	

8/25/2016

Reviewed by: 8/29/2016

My first report/Integration

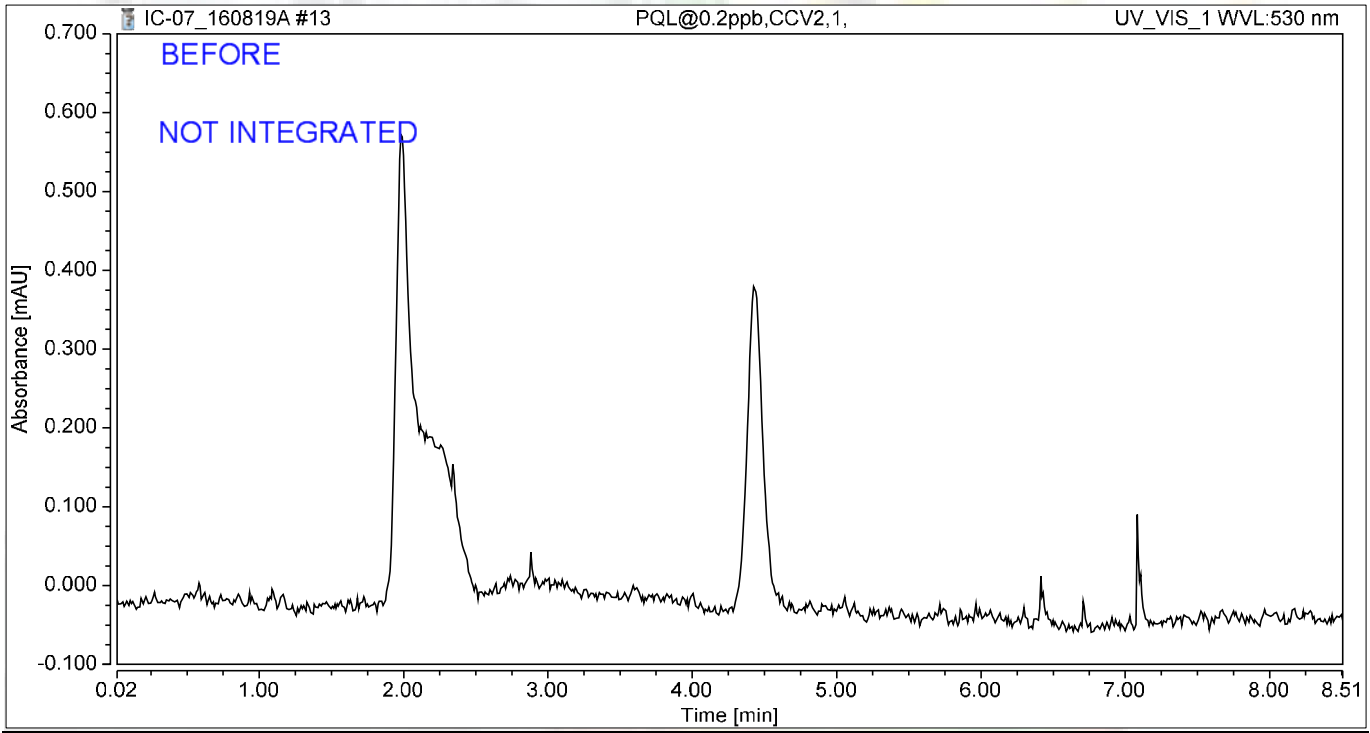
Chromeleon (c) Dionex Version 7.1.1.1127

Chromatogram and Results

Injection Details

Injection Name:	**PQL@0.2ppb,CCV2,1,**	*Run Time (min):*	**8.49**
Vial Number:	**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:	**160819_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**19/Aug/16 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
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**	

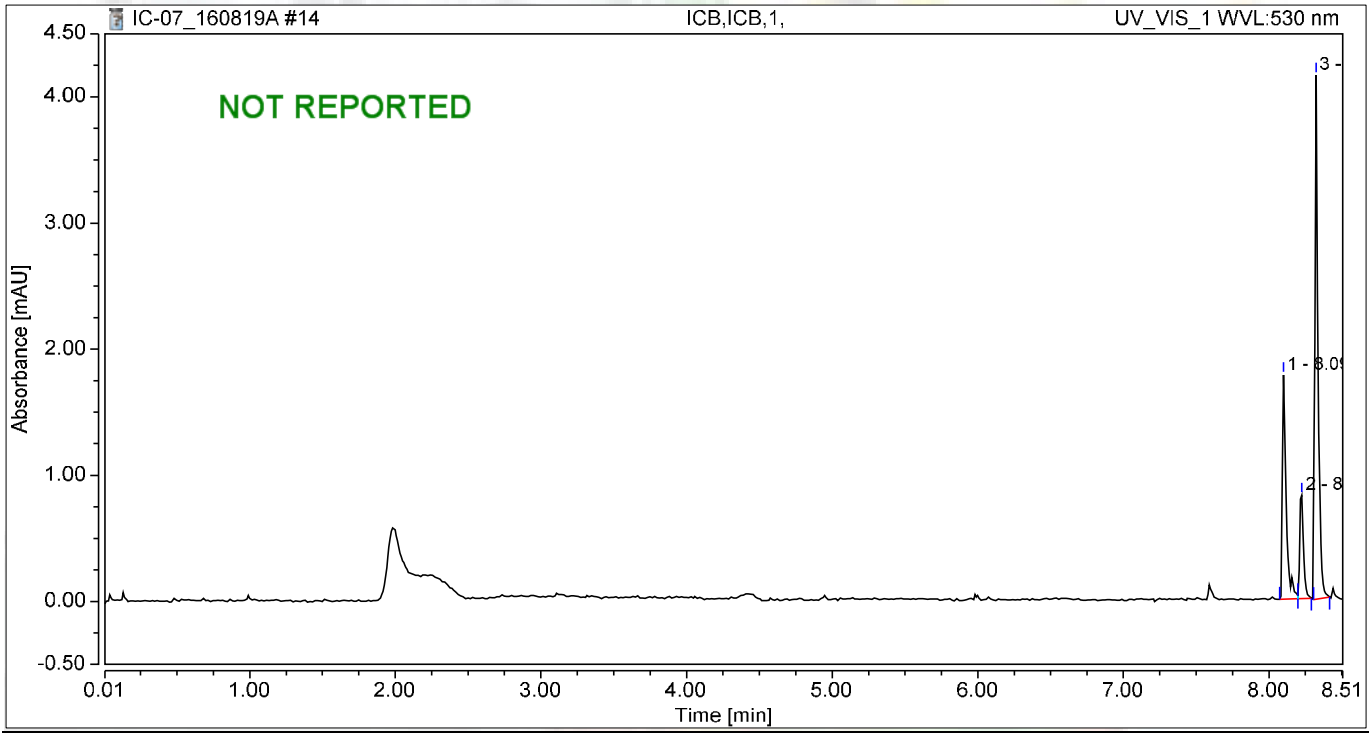
8/25/2016

Chromatogram and Results

Injection Details

Injection Name:	**ICB,ICB,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:	**160819_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**19/Aug/16 13:32**	*Sample Weight:*	**1.0000**

Chromatogram



Integration Results

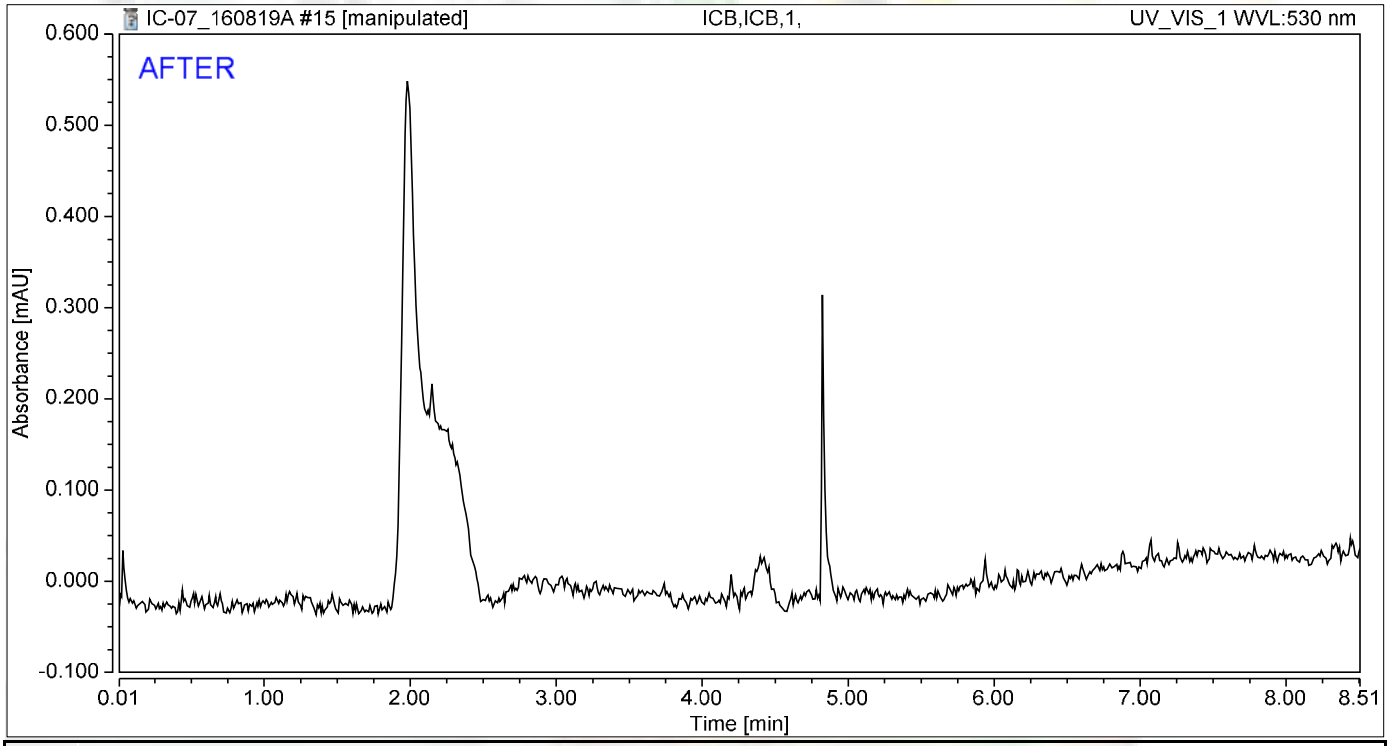
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
n.a.	Hexavalent Chromium	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
1		8.098	0.054	1.779	30.67	26.35	n.a.
2		8.223	0.025	0.818	14.11	12.12	n.a.
3		8.323	0.097	4.156	55.23	61.54	n.a.
Total:			**0.175**	**6.754**	**100.00**	**100.00**	

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:	**160819_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**19/Aug/16 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
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**	

8/25/2016

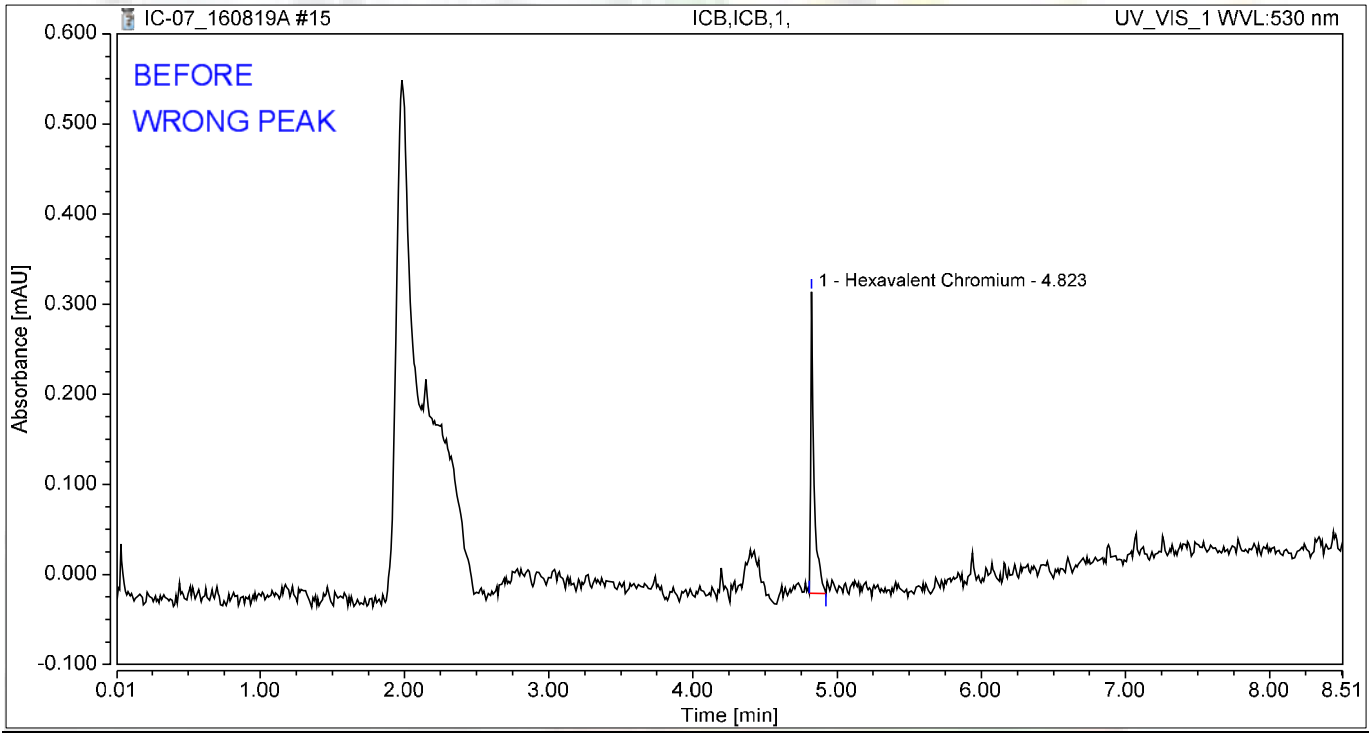
Reviewed by: 8/29/2016

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:	**160819_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**19/Aug/16 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	4.823	0.009	0.335	100.00	100.00	0.0354
Total:			**0.009**	**0.335**	**100.00**	**100.00**	

8/25/2016

RAW DATA

INJECTION LOG: 160909A

Instrument ID: IC-07

Sample No	Sample Name	Type	DF	Peak Name	Injection Date/Time	Comments
1	BLANK	BLANK	1	Hexavalent Chromium	08/19/16 11:07 AM	Not Reported
2	BLANK	BLANK	1	Hexavalent Chromium	08/19/16 11:18 AM	Not Reported
3	iBLANK	iBLANK	1	Hexavalent Chromium	08/19/16 11:27 AM	Reported
4	STD-0.2 ppb	ICAL	1	Hexavalent Chromium	08/19/16 11:37 AM	Reported
5	STD-1.0 ppb	ICAL	1	Hexavalent Chromium	08/19/16 11:46 AM	Reported
6	STD-5.0 ppb	ICAL	1	Hexavalent Chromium	08/19/16 11:56 AM	Reported
7	STD-10.0 ppb	ICAL	1	Hexavalent Chromium	08/19/16 12:05 PM	Reported
11	STD-15.0 ppb	ICAL	1	Hexavalent Chromium	08/19/16 12:56 PM	Reported
9	STD-20.0 ppb	ICAL	1	Hexavalent Chromium	08/19/16 12:24 PM	Reported
10	BLANK	BLANK	1	Hexavalent Chromium	08/19/16 12:45 PM	Not Reported
12	BLANK	BLANK	1	Hexavalent Chromium	09/09/16 8:52 AM	Not Reported
13	BLANK	BLANK	1	Hexavalent Chromium	09/09/16 9:03 AM	Not Reported
14	CCV-1	CCV	1	Hexavalent Chromium	09/09/16 9:12 AM	Reported
15	PQL@0.2ppb	CCV2	1	Hexavalent Chromium	09/09/16 9:22 AM	Reported
16	CCB-1	CCB	1	Hexavalent Chromium	09/09/16 9:31 AM	Reported
17	MB-R110505	MBLK	1	Hexavalent Chromium	09/09/16 9:41 AM	Reported
18	LCS-R110505	LCS	1	Hexavalent Chromium	09/09/16 9:50 AM	Reported
19	N020872-001A	SAMP	1	Hexavalent Chromium	09/09/16 9:59 AM	Reported
20	N020872-002A	SAMP	1	Hexavalent Chromium	09/09/16 10:09 AM	Reported
21	N020872-003A	SAMP	1	Hexavalent Chromium	09/09/16 10:18 AM	Reported
22	N020872-004A	SAMP	1	Hexavalent Chromium	09/09/16 10:28 AM	Reported
23	N020872-005A	SAMP	1	Hexavalent Chromium	09/09/16 10:37 AM	Reported
24	N020872-006A	SAMP	1	Hexavalent Chromium	09/09/16 10:47 AM	Reported
25	N020873-001A	SAMP	1	Hexavalent Chromium	09/09/16 10:56 AM	Not Reported
26	N020872-001ADUP	DUP	1	Hexavalent Chromium	09/09/16 11:06 AM	Reported
27	CCV-2	CCV1	1	Hexavalent Chromium	09/09/16 11:15 AM	Reported
28	CCB-2	CCB	1	Hexavalent Chromium	09/09/16 11:25 AM	Reported
29	N020873-001AMS	MS	1	Hexavalent Chromium	09/09/16 11:34 AM	Reported
30	N020873-001AMSD	MSD	1	Hexavalent Chromium	09/09/16 11:44 AM	Reported
31	N020873-001A	SAMP	1	Hexavalent Chromium	09/09/16 11:53 AM	Not Reported
32	N020872-005A	SAMP	1	Hexavalent Chromium	09/09/16 12:02 PM	Not Reported
33	N020872-006A	SAMP	1	Hexavalent Chromium	09/09/16 12:12 PM	Not Reported
34	N020873-001A	SAMP	1	Hexavalent Chromium	09/09/16 2:17 PM	Reported
35	CCV-3	CCV	1	Hexavalent Chromium	09/09/16 2:32 PM	Reported
36	CCB-3	CCB	1	Hexavalent Chromium	09/09/16 2:44 PM	Reported

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IC1 RBA 9/13/2016 8:29 AM

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Injection Log Summary

Sequence Details

Name:	**IC-07_160909A**	*Created On:*	**24/Jul/12 17:17:21**
Directory:	**Instrument Data\IC-7\2016**	*Created By:*	**ics 5000**
Data Vault:	**ChromeleonLocal**	*Updated On:*	**12/Sep/16 08:33:33**
No. of Injections:	**39**	*Updated By:*	**ics 5000**

Injection Details

No.	Injection Name	Position	Volume µL	Type	Level	Inject Time	Status	Comment
1	BLANK	1	1000	Unknown		08/19/2016 11:07	Finished	
2	BLANK	2	1000	Unknown		08/19/2016 11:18	Finished	
3	iBLANK	3	1000	Unknown		08/19/2016 11:27	Finished	INSTRUMENT BLANK
4	STD1-0.2 ppb	4	1000	Calibration Standard	01	08/19/2016 11:37	Finished	0.2 ppb, IWST160819A
5	STD2-1.0 ppb	5	1000	Calibration Standard	02	08/19/2016 11:46	Finished	1.0 ppb, IWST160819A
6	STD3-5.0 ppb	6	1000	Calibration Standard	03	08/19/2016 11:56	Finished	5.0 ppb, IWST160819A
7	STD4-10.0 ppb	7	1000	Calibration Standard	04	08/19/2016 12:05	Finished	10 ppb, IWST160819A
8	STD5-15.0 ppb	8	1000	Unknown		08/19/2016 12:15	Finished	15 ppb, IWST160819A
9	STD6-20.0 ppb	9	1000	Calibration Standard	06	08/19/2016 12:24	Finished	20 ppb, IWST160819A
10	BLANK	10	1000	Unknown		08/19/2016 12:45	Finished	
11	STD5-15.0 ppb	11	1000	Calibration Standard	05	08/19/2016 12:56	Finished	15 ppb, IWST160819A
12	BLANK	1	1000	Unknown		09/09/2016 08:52	Finished	
13	BLANK	2	1000	Unknown		09/09/2016 09:03	Finished	
14	CCV-1,CCV,1,	3	1000	Unknown		09/09/2016 09:12	Finished	CCV @5ppb, IWST-160819A
15	PQL@0.2ppb,CCV2,1	4	1000	Unknown		09/09/2016 09:22	Finished	PQL @ 0.2ppb
16	CCB-1,CCB,1,	5	1000	Unknown		09/09/2016 09:31	Finished	CCB R160718D
17	MB-H2O,MBLK,1	6	1000	Unknown		09/09/2016 09:41	Finished	MB R160718D
18	LCS-H2O,LCS,1	7	1000	Unknown		09/09/2016 09:50	Finished	LCS, IWST-160819B
19	N020872-001A,SAMP	8	1000	Unknown		09/09/2016 09:59	Finished	SAMP, 10 mL
20	N020872-002A,SAMP	9	1000	Unknown		09/09/2016 10:09	Finished	SAMP, 10 mL
21	N020872-003A,SAMP	10	1000	Unknown		09/09/2016 10:18	Finished	SAMP, 10 mL
22	N020872-004A,SAMP	11	1000	Unknown		09/09/2016 10:28	Finished	SAMP, 10 mL
23	N020872-005A,SAMP	12	1000	Unknown		09/09/2016 10:37	Finished	SAMP, 10 mL
24	N020872-006A,SAMP	13	1000	Unknown		09/09/2016 10:47	Finished	SAMP, 10 mL
25	N020873-001A,SAMP	14	1000	Unknown		09/09/2016 10:56	Finished	SAMP, 10 mL
26	N020872-001ADUP,D	15	1000	Unknown		09/09/2016 11:06	Finished	DUP, 10 mL
27	CCV-2,CCV1,1,	16	1000	Unknown		09/09/2016 11:15	Finished	CCV @10ppb, IWST-160819A
28	CCB-2,CCB,1,	17	1000	Unknown		09/09/2016 11:25	Finished	CCB, R160718D
29	N020873-001AMS,MS	18	1000	Unknown		09/09/2016 11:34	Finished	MS (1ppb), IWST-160819B, 10
30	N020873-001AMSD,M	19	1000	Unknown		09/09/2016 11:44	Finished	MSD (1ppb), IWST-160819B, 1
31	N020873-001A,SAMP	20	1000	Unknown		09/09/2016 11:53	Finished	SAMP, 10 mL
32	N020872-005A,SAMP	21	1000	Unknown		09/09/2016 12:02	Finished	SAMP, 10 mL
33	N020872-006A,SAMP	22	1000	Unknown		09/09/2016 12:12	Finished	SAMP, 10 mL
34	N020873-001A,SAMP	23	1000	Unknown		09/09/2016 14:17	Finished	SAMP, 10 mL
35	CCV-3,CCV,1,	24	1000	Unknown		09/09/2016 14:32	Finished	CCV @5ppb, IWST-160819A
36	CCB-3,CCB,1,	25	1000	Unknown		09/09/2016 14:44	Finished	CCB, R160718D
37	SHUTDOWN	26	1000	Unknown		09/09/2016 14:53	Finished	
38	Eluent: R160824B	27	1000	Unknown		n.a.	Finished	Eluent
39	PCR: R160907A	28	1000	Unknown		n.a.	Finished	Post-Column Reagent

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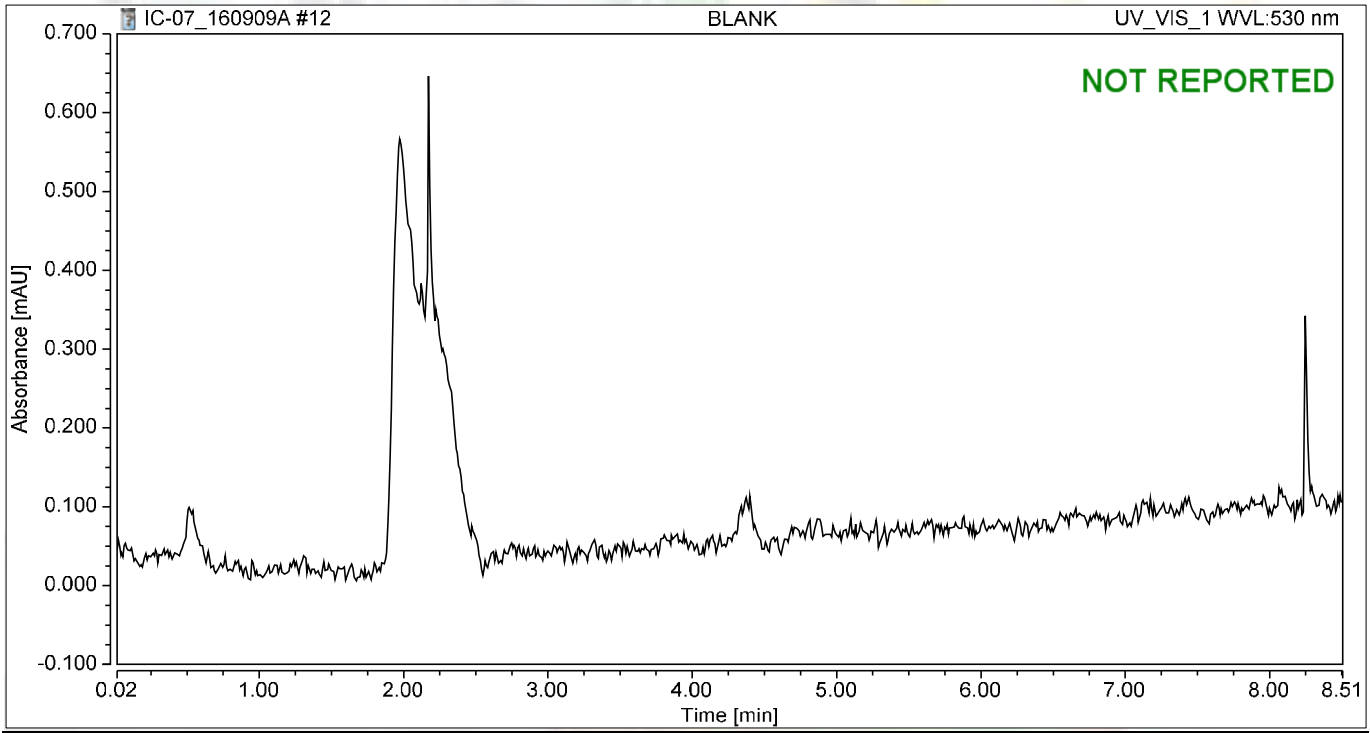
Chromatogram and Results

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:	**160819_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**09/Sep/16 08:52**	*Sample Weight:*	**1.0000**

Chromatogram



Integration Results

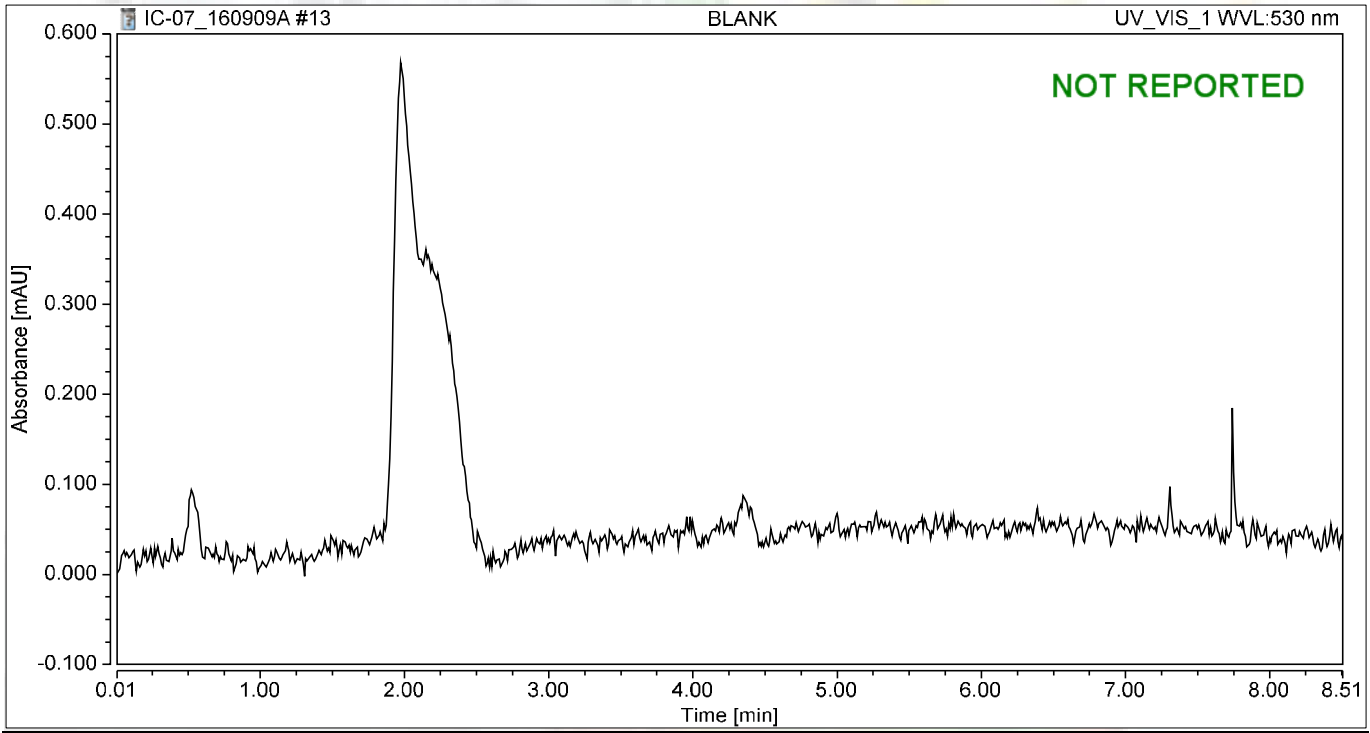
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
n.a.	Hexavalent Chromium	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Total:			**0.000**	**0.000**	**0.00**	**0.00**	

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:	**160819_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**09/Sep/16 09:03**	*Sample Weight:*	**1.0000**

Chromatogram



Integration Results

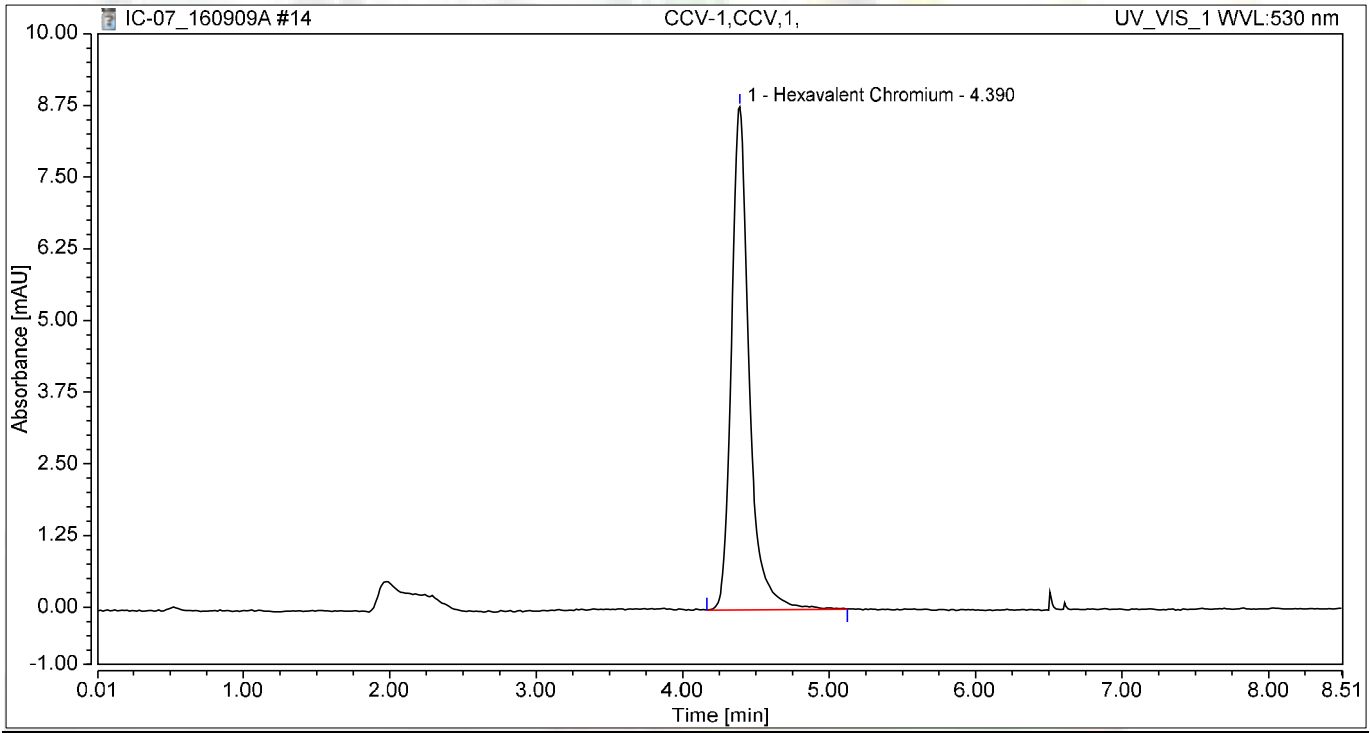
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
n.a.	Hexavalent Chromium	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Total:			**0.000**	**0.000**	**0.00**	**0.00**	

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:	**160819_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**09/Sep/16 09:12**	*Sample Weight:*	**1.0000**

Chromatogram



Integration Results

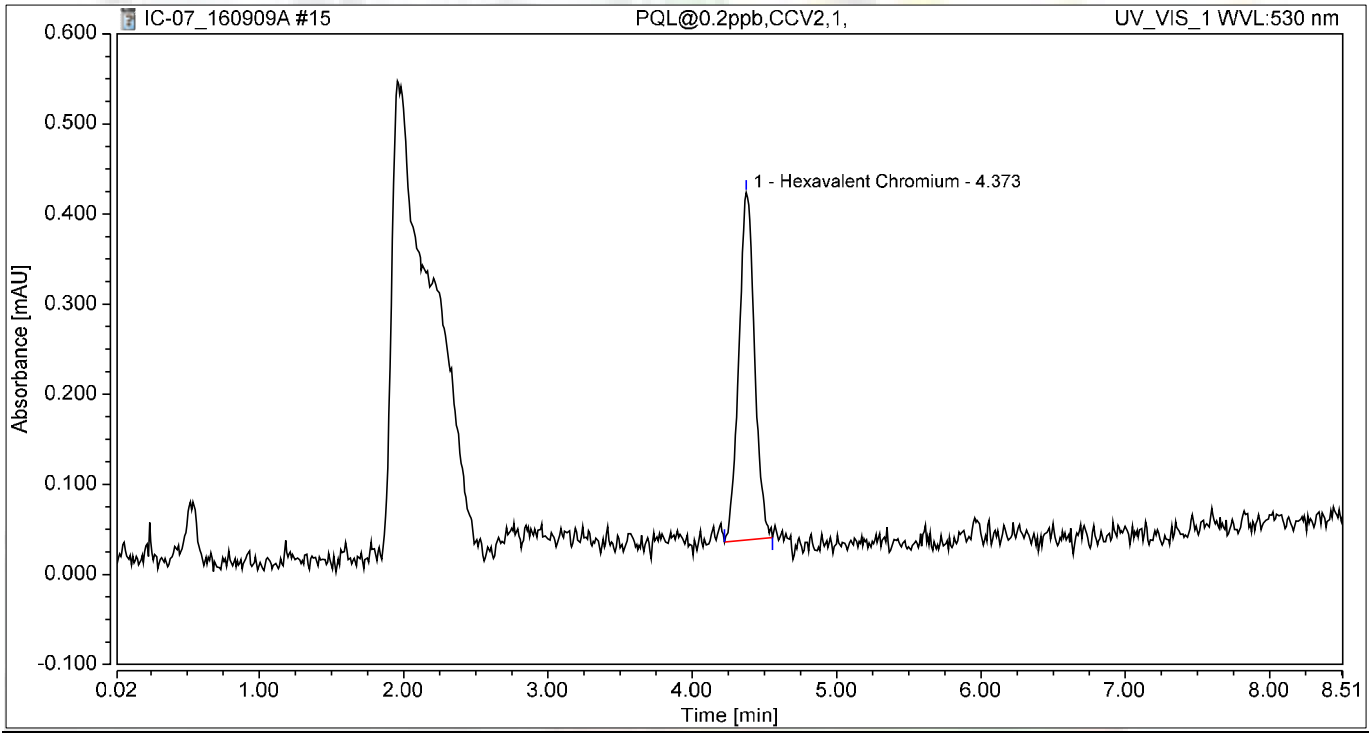
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.390	1.239	8.780	100.00	100.00	4.9757
Total:			**1.239**	**8.780**	**100.00**	**100.00**	

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:*	**n.a.**
Instrument Method:	**Hex Chrom 4 mm**	*Bandwidth:*	**n.a.**
Processing Method:	**160819_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**09/Sep/16 09:22**	*Sample Weight:*	**1.0000**

Chromatogram



Integration Results

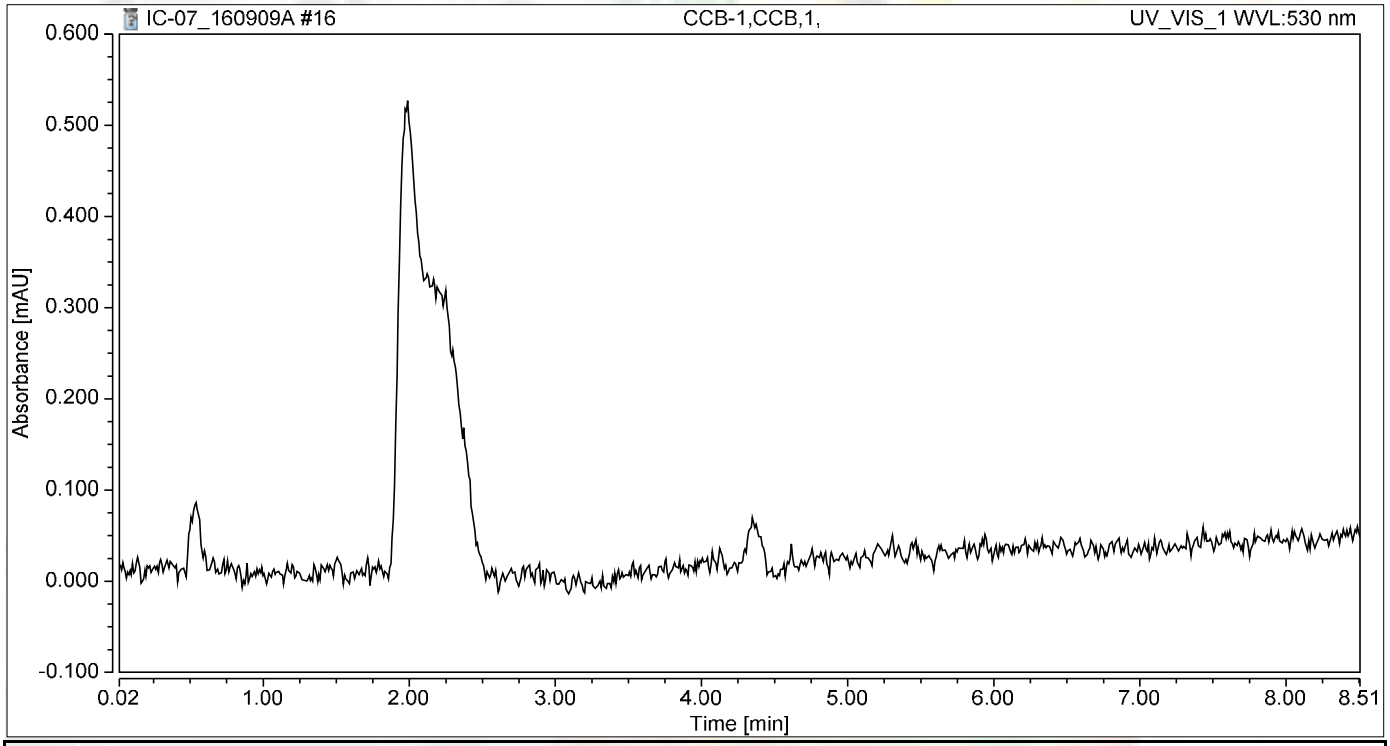
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.373	0.049	0.385	100.00	100.00	0.1954
Total:			**0.049**	**0.385**	**100.00**	**100.00**	

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:	**160819_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**09/Sep/16 09:31**	*Sample Weight:*	**1.0000**

Chromatogram



Integration Results

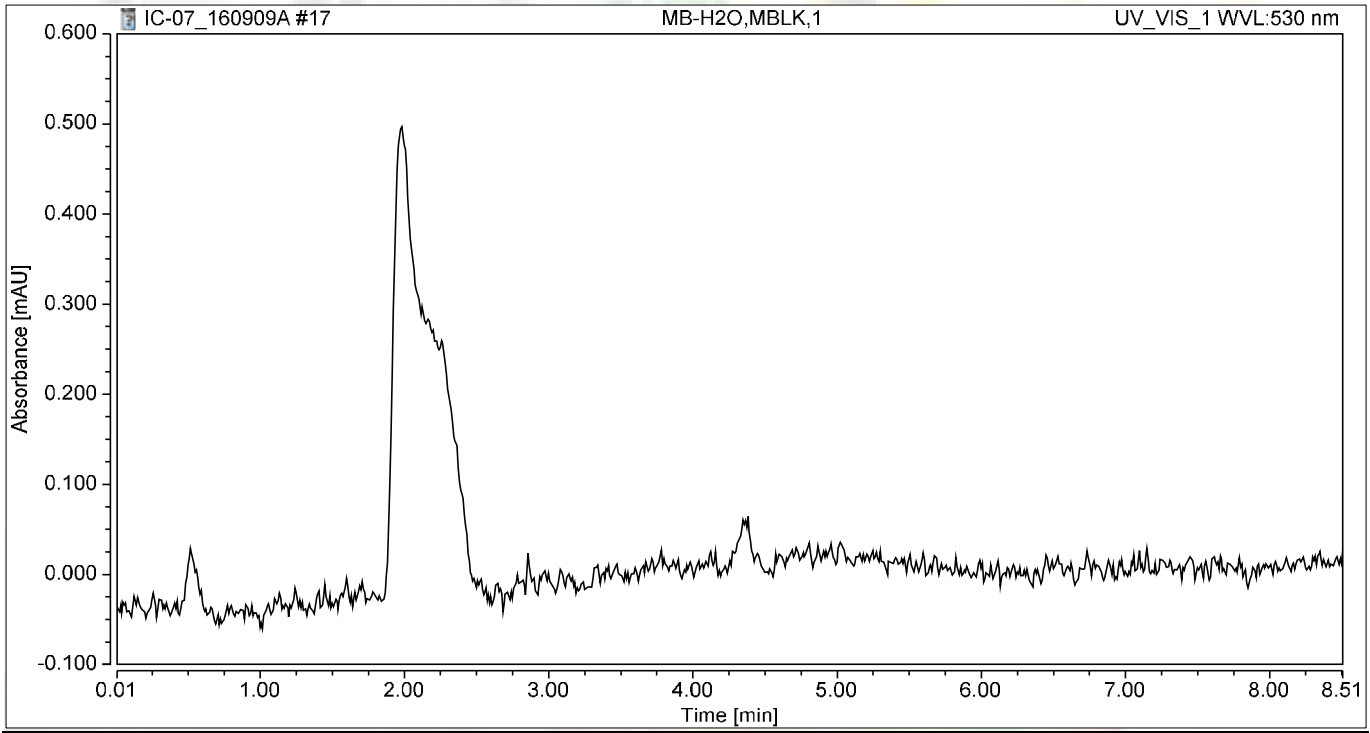
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
n.a.	Hexavalent Chromium	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Total:			**0.000**	**0.000**	**0.00**	**0.00**	

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:	**160819_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**09/Sep/16 09:41**	*Sample Weight:*	**1.0000**

Chromatogram



Integration Results

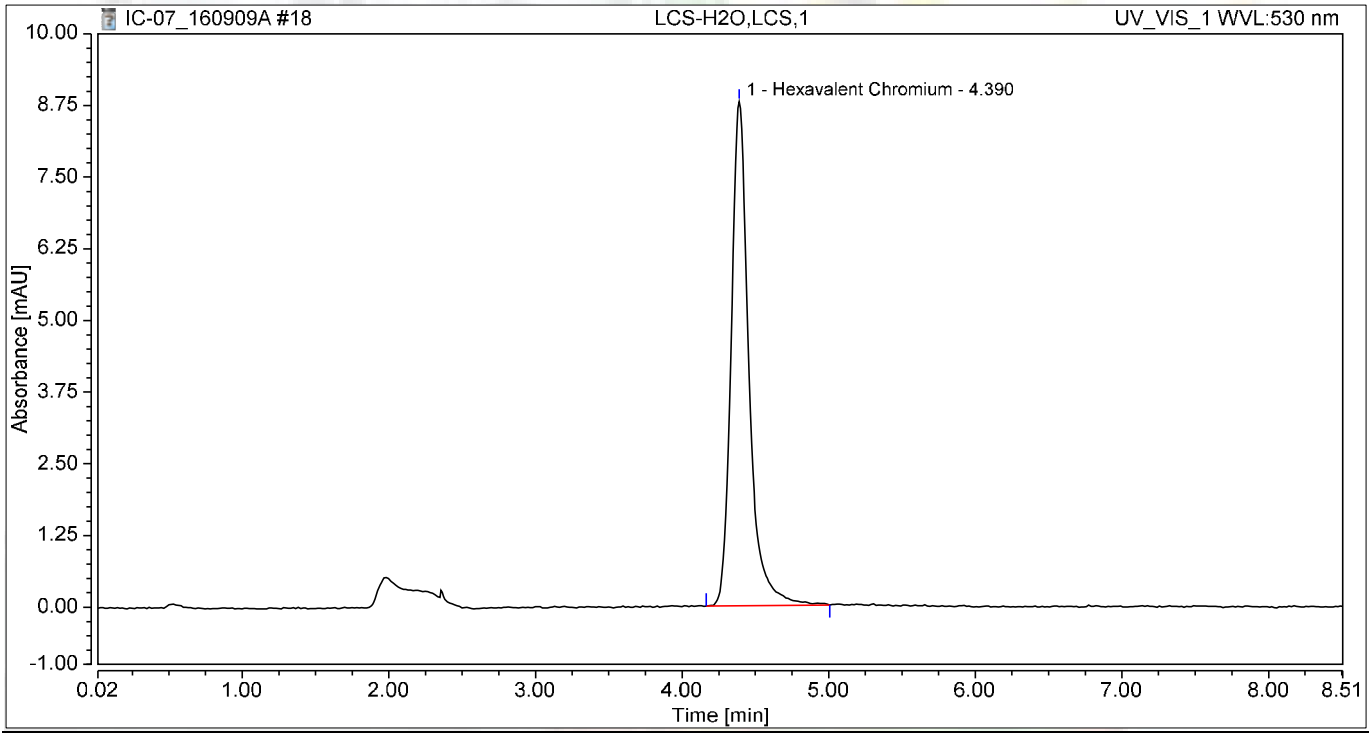
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
n.a.	Hexavalent Chromium	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Total:			**0.000**	**0.000**	**0.00**	**0.00**	

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:	**160819_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**09/Sep/16 09:50**	*Sample Weight:*	**1.0000**

Chromatogram



Integration Results

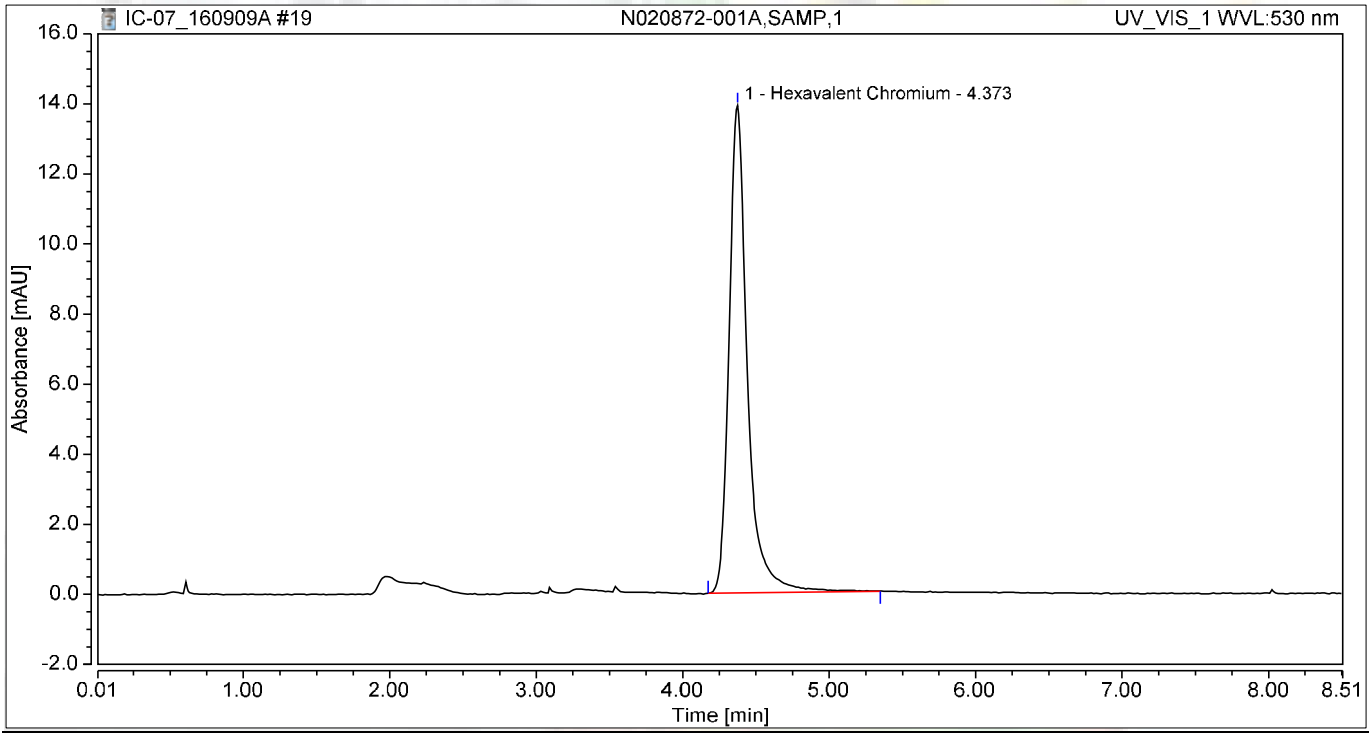
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.390	1.236	8.792	100.00	100.00	4.9665
Total:			**1.236**	**8.792**	**100.00**	**100.00**	

Chromatogram and Results

Injection Details

Injection Name:	**N020872-001A,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:	**160819_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**09/Sep/16 09:59**	*Sample Weight:*	**1.0000**

Chromatogram



Integration Results

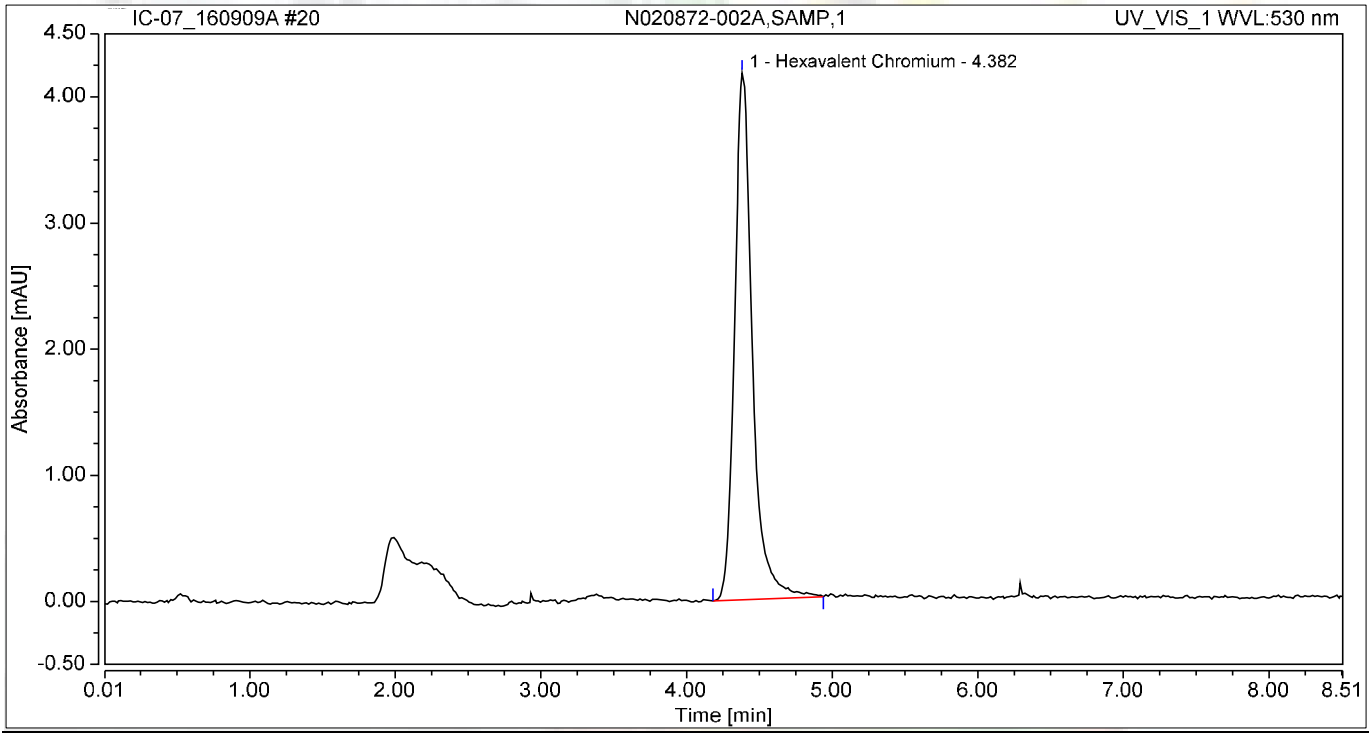
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.373	2.026	13.921	100.00	100.00	8.1370
Total:			**2.026**	**13.921**	**100.00**	**100.00**	

Chromatogram and Results

Injection Details

Injection Name:	**N020872-002A,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:	**160819_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**09/Sep/16 10:09**	*Sample Weight:*	**1.0000**

Chromatogram



Integration Results

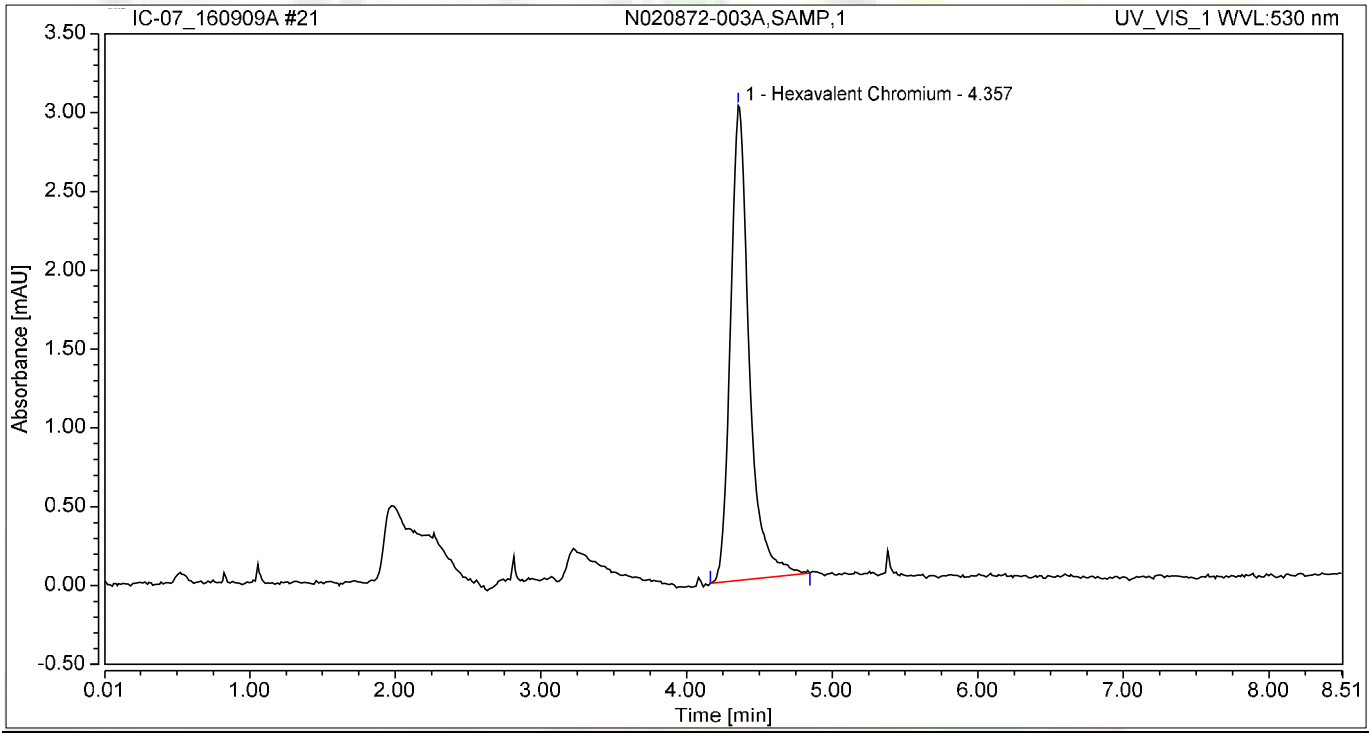
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.382	0.592	4.177	100.00	100.00	2.3780
Total:			**0.592**	**4.177**	**100.00**	**100.00**	

Chromatogram and Results

Injection Details

Injection Name:	**N020872-003A,SAMP,1**	*Run Time (min):*	**8.50**
Vial Number:	**10**	*Injection Volume:*	**1000.00**
Injection Type:	**Unknown**	*Channel:*	**UV_VIS_1**
Calibration Level:		*Wavelength:*	**n.a.**
Instrument Method:	**Hex Chrom 4 mm**	*Bandwidth:*	**n.a.**
Processing Method:	**160819_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**09/Sep/16 10:18**	*Sample Weight:*	**1.0000**

Chromatogram



Integration Results

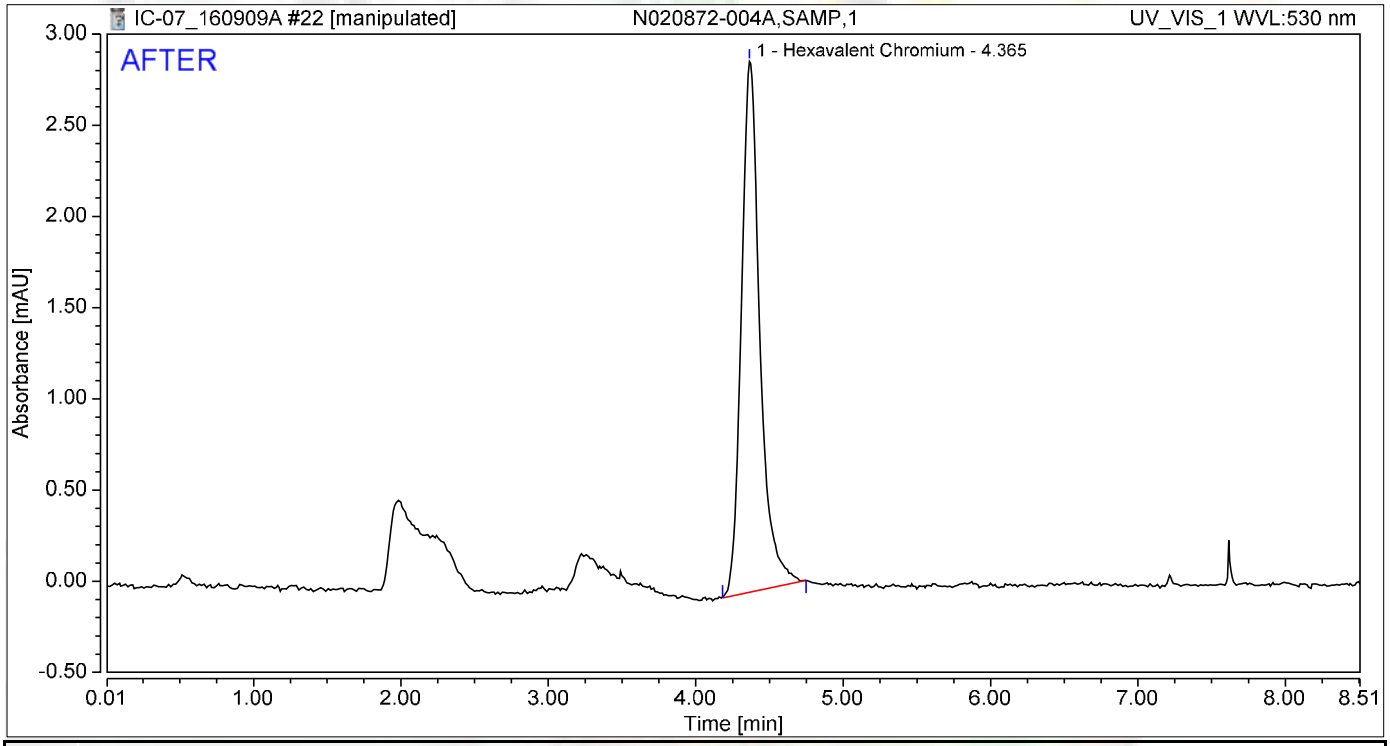
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.357	0.451	3.012	100.00	100.00	1.8122
Total:			**0.451**	**3.012**	**100.00**	**100.00**	

Chromatogram and Results

Injection Details

Injection Name:	**N020872-004A,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:	**160819_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**09/Sep/16 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	4.365	0.423	2.908	100.00	100.00	1.6987
Total:			**0.423**	**2.908**	**100.00**	**100.00**	

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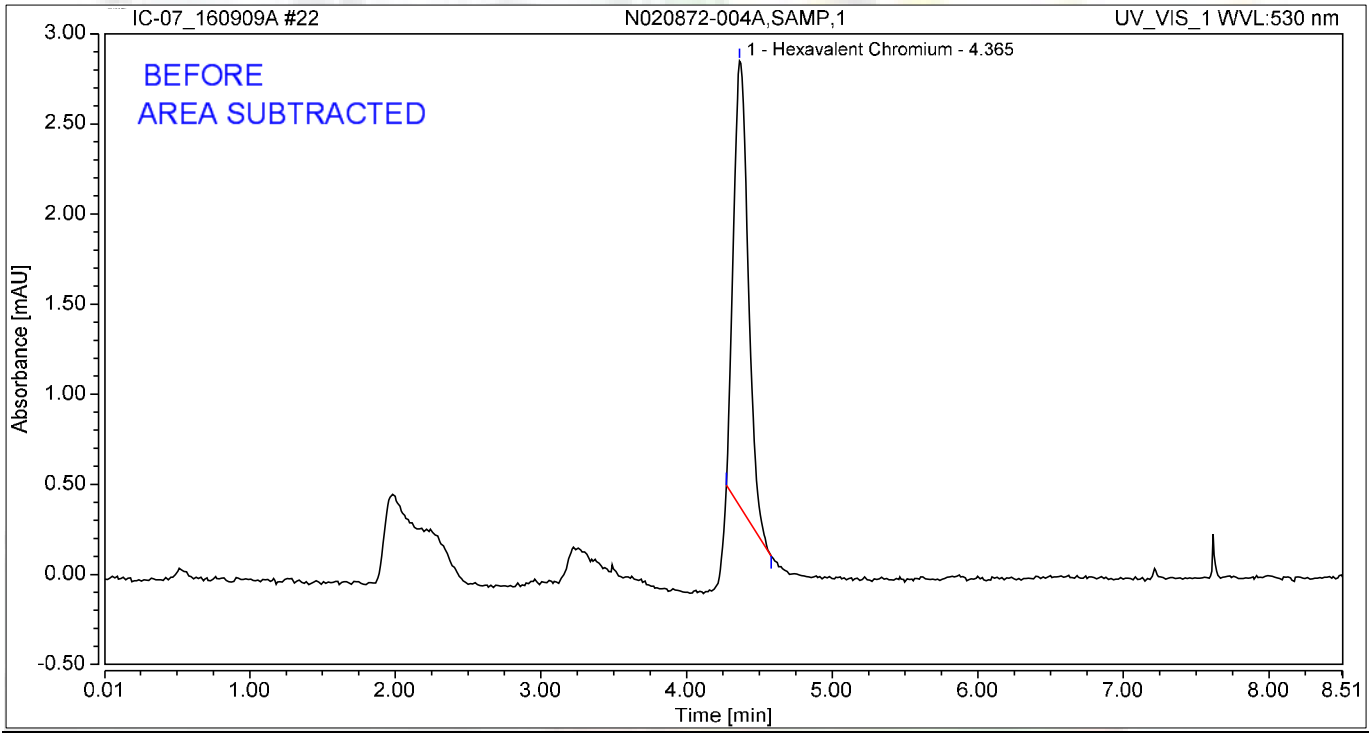
Reviewed by: Nancy 9/22/2016

Chromatogram and Results

Injection Details

Injection Name:	**N020872-004A,SAMP,1**	*Run Time (min):*	**8.50**
Vial Number:	**11**	*Injection Volume:*	**1000.00**
Injection Type:	**Unknown**	*Channel:*	**UV_VIS_1**
Calibration Level:		*Wavelength:*	**n.a.**
Instrument Method:	**Hex Chrom 4 mm**	*Bandwidth:*	**n.a.**
Processing Method:	**160819_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**09/Sep/16 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	4.365	0.294	2.469	100.00	100.00	1.1793
Total:			**0.294**	**2.469**	**100.00**	**100.00**	

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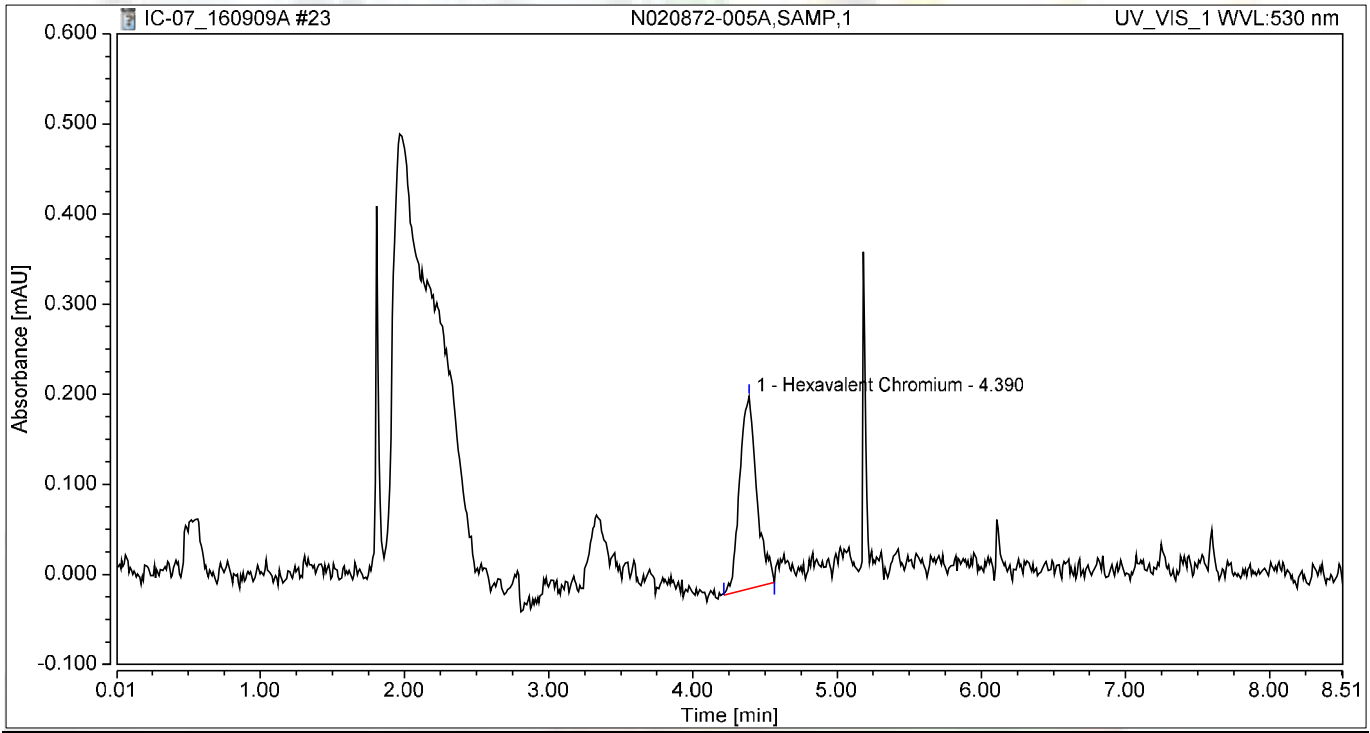
Chromatogram and Results

Injection Details

Injection Name:	**N020872-005A,SAMP,1**	*Run Time (min):*	**8.50**
Vial Number:	**12**	*Injection Volume:*	**1000.00**
Injection Type:	**Unknown**	*Channel:*	**UV_VIS_1**
Calibration Level:		*Wavelength:*	**n.a.**
Instrument Method:	**Hex Chrom 4 mm**	*Bandwidth:*	**n.a.**
Processing Method:	**160819_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**09/Sep/16 10:37**	*Sample Weight:*	**1.0000**

Chromatogram



Integration Results

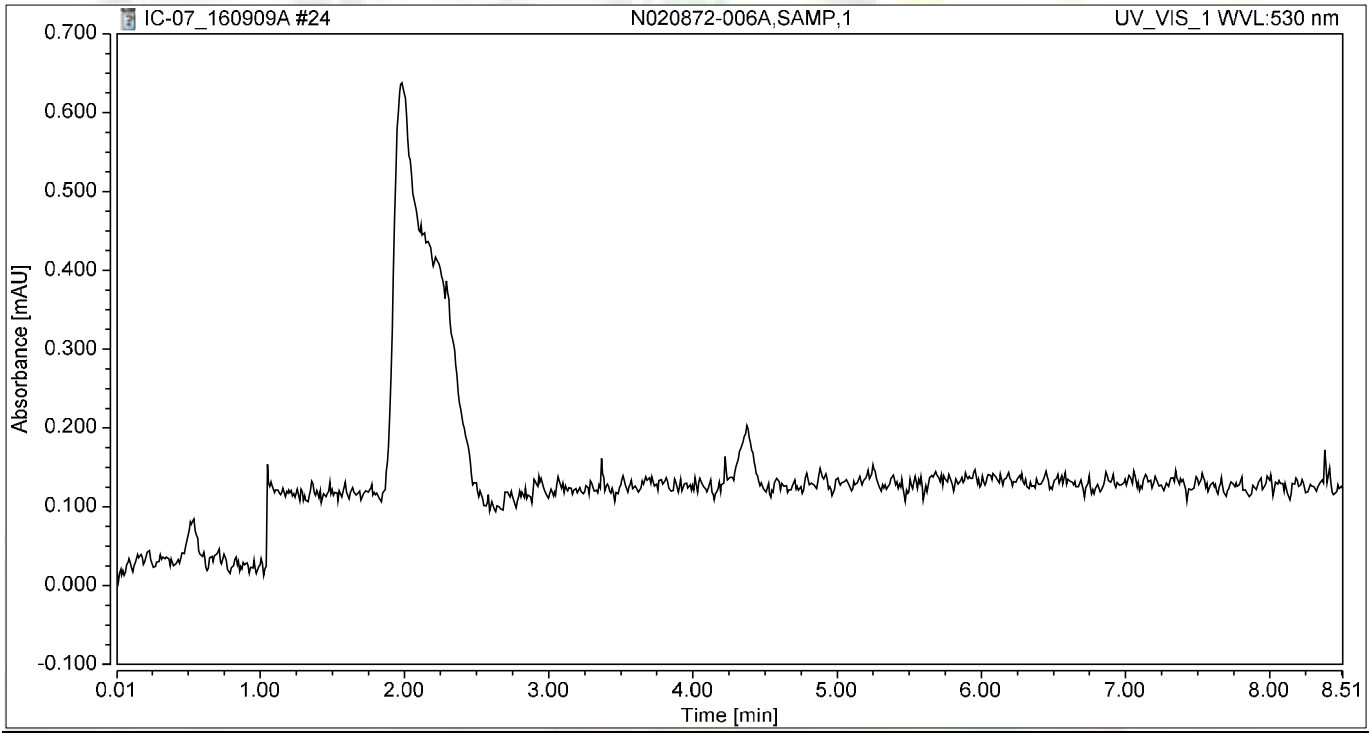
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.390	0.029	0.213	100.00	100.00	0.1182
Total:			**0.029**	**0.213**	**100.00**	**100.00**	

Chromatogram and Results

Injection Details

Injection Name:	**N020872-006A,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:	**160819_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**09/Sep/16 10:47**	*Sample Weight:*	**1.0000**

Chromatogram



Integration Results

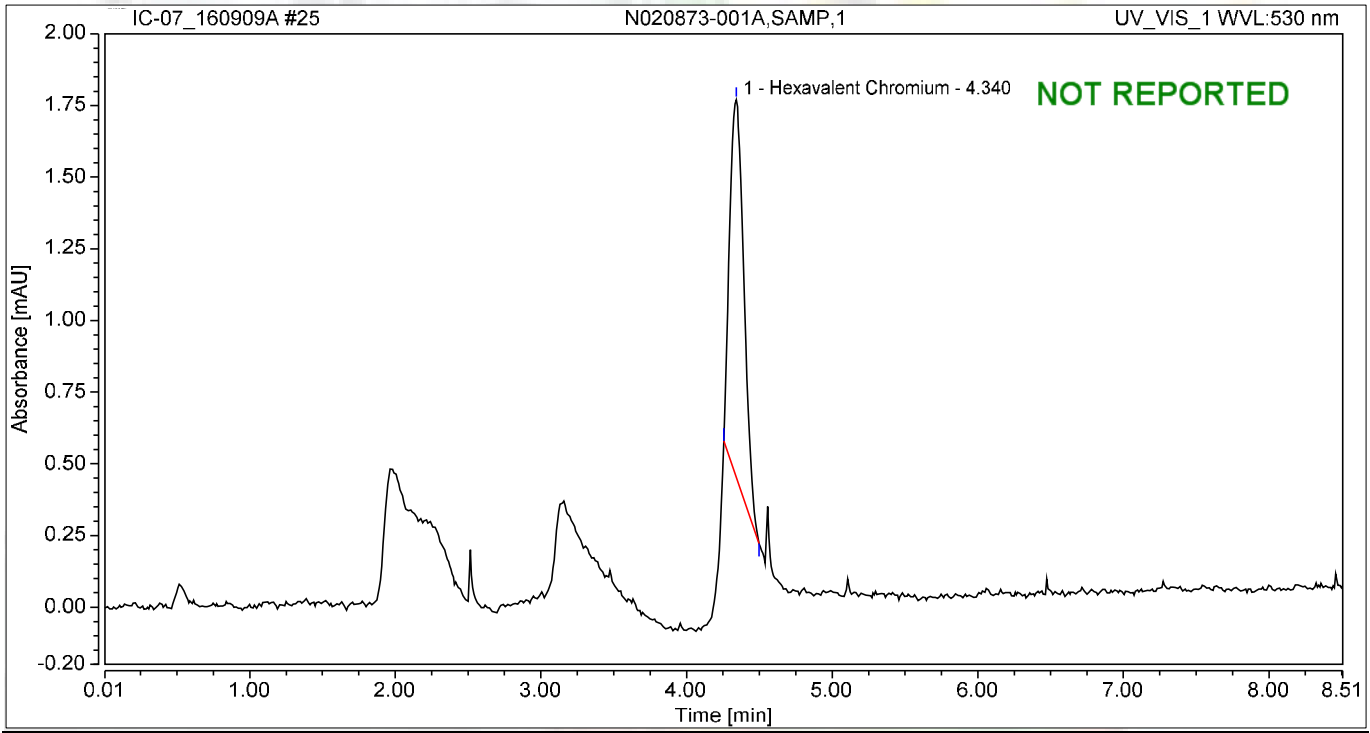
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
n.a.	Hexavalent Chromium	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Total:			**0.000**	**0.000**	**0.00**	**0.00**	

Chromatogram and Results

Injection Details

Injection Name:	**N020873-001A,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:	**160819_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**09/Sep/16 10:56**	*Sample Weight:*	**1.0000**

Chromatogram



Integration Results

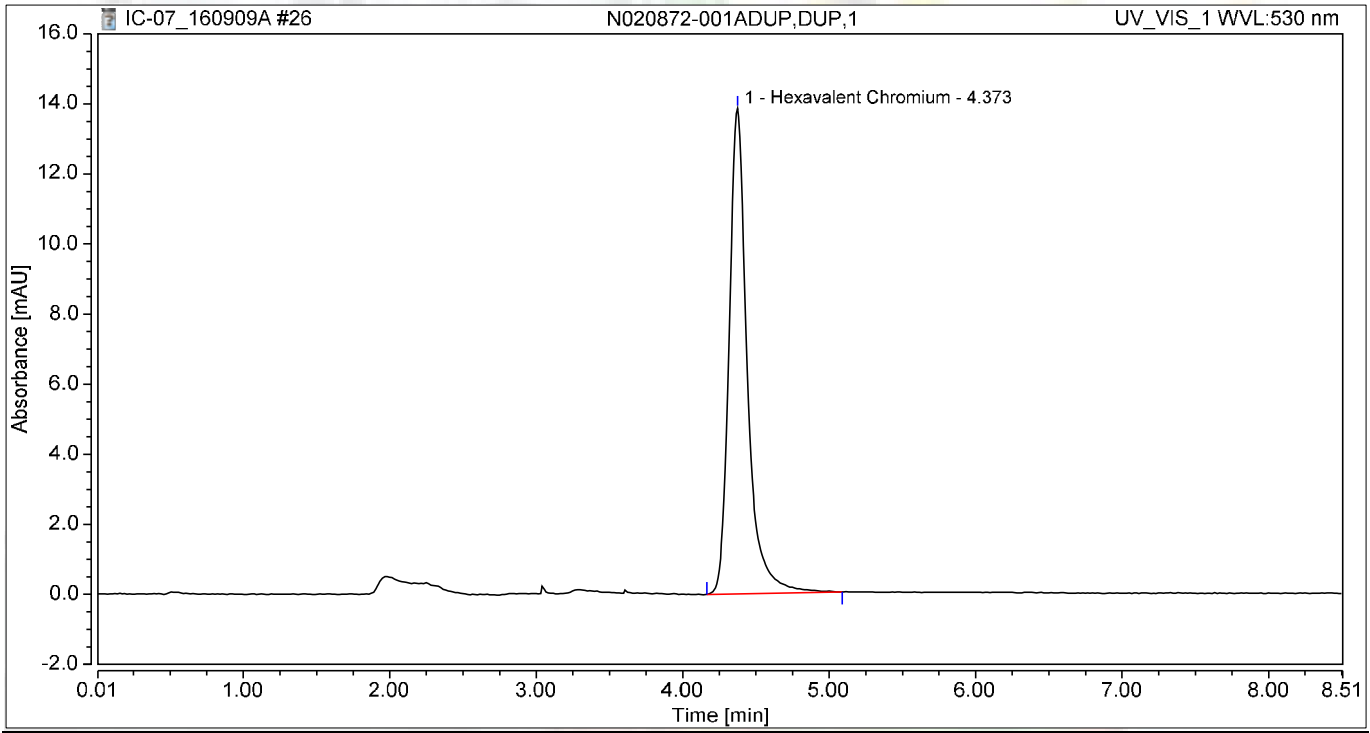
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.340	0.149	1.313	100.00	100.00	0.6001
Total:			**0.149**	**1.313**	**100.00**	**100.00**	

Chromatogram and Results

Injection Details

Injection Name:	**N020872-001ADUP,DUP,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:	**160819_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**09/Sep/16 11:06**	*Sample Weight:*	**1.0000**

Chromatogram



Integration Results

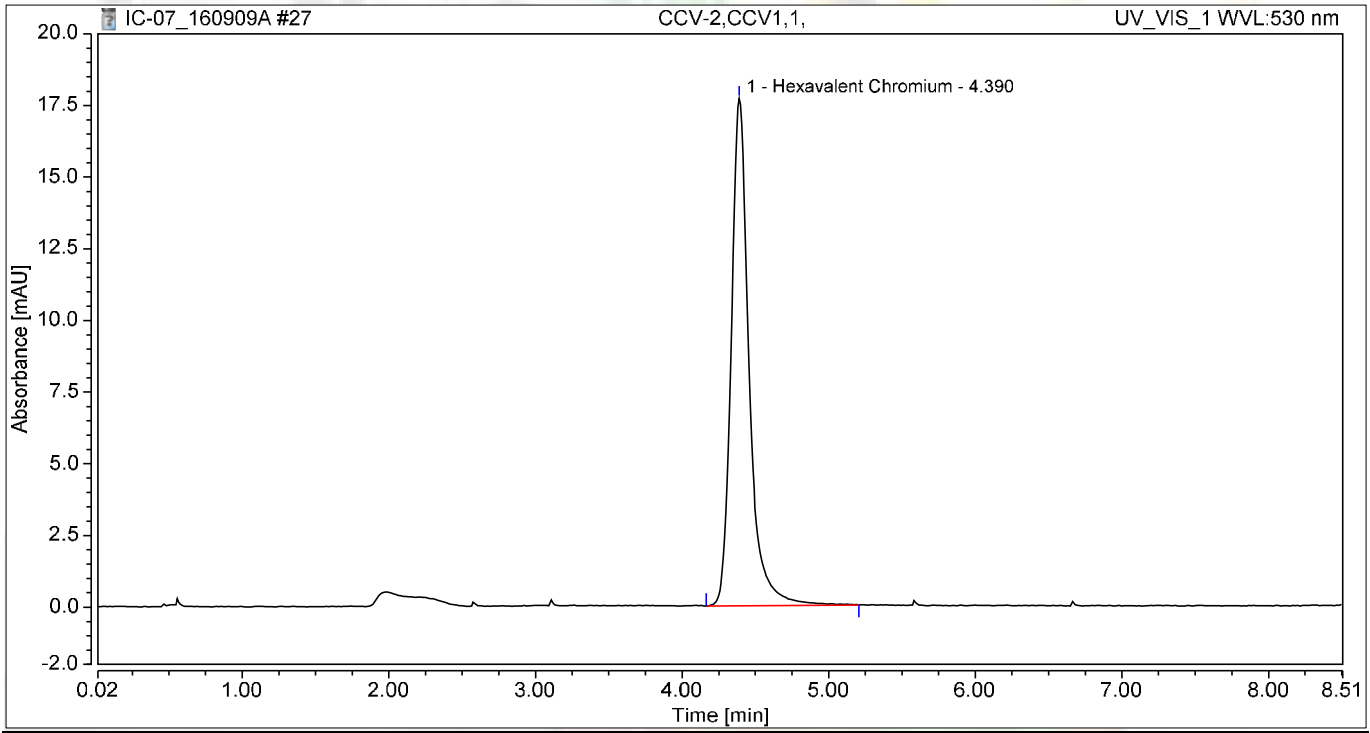
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.373	2.000	13.854	100.00	100.00	8.0341
Total:			**2.000**	**13.854**	**100.00**	**100.00**	

Chromatogram and Results

Injection Details

Injection Name:	**CCV-2,CCV1,1,**	*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:	**160819_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**09/Sep/16 11:15**	*Sample Weight:*	**1.0000**

Chromatogram



Integration Results

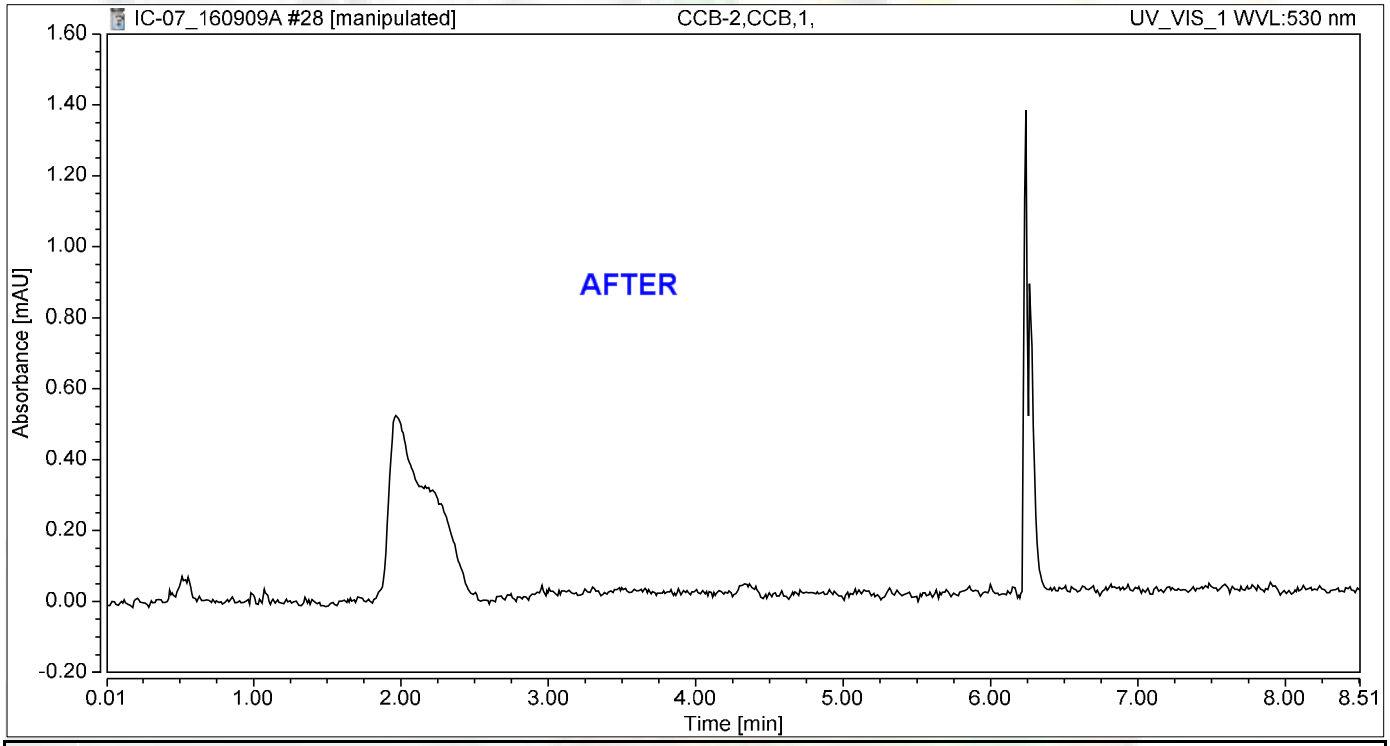
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.390	2.501	17.691	100.00	100.00	10.0479
Total:			**2.501**	**17.691**	**100.00**	**100.00**	

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:	**160819_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**09/Sep/16 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.
Total:			**0.000**	**0.000**	**0.00**	**0.00**	

rba 9/14/2016

Reviewed by: Barney 9/22/2016

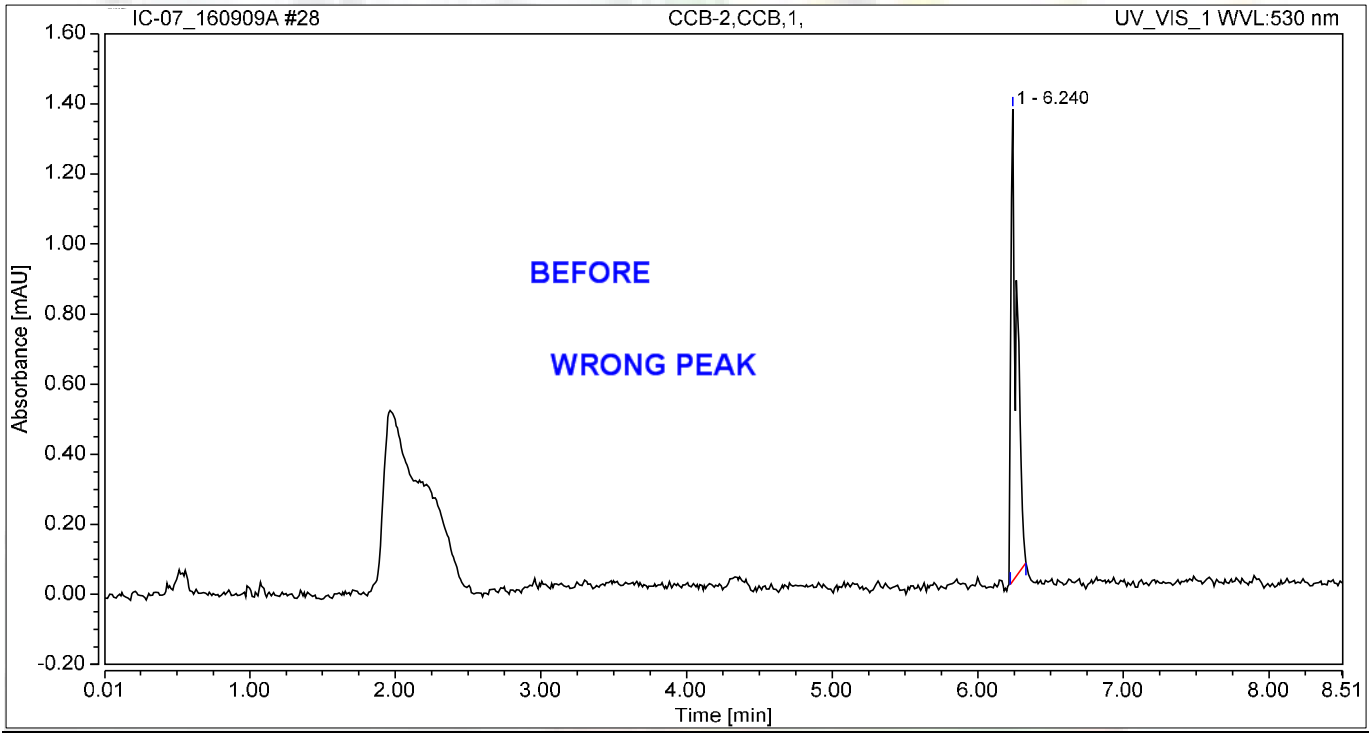
My first report integration

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:	**160819_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**09/Sep/16 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.
1		6.240	0.058	1.347	100.00	100.00	n.a.
Total:			**0.058**	**1.347**	**100.00**	**100.00**	

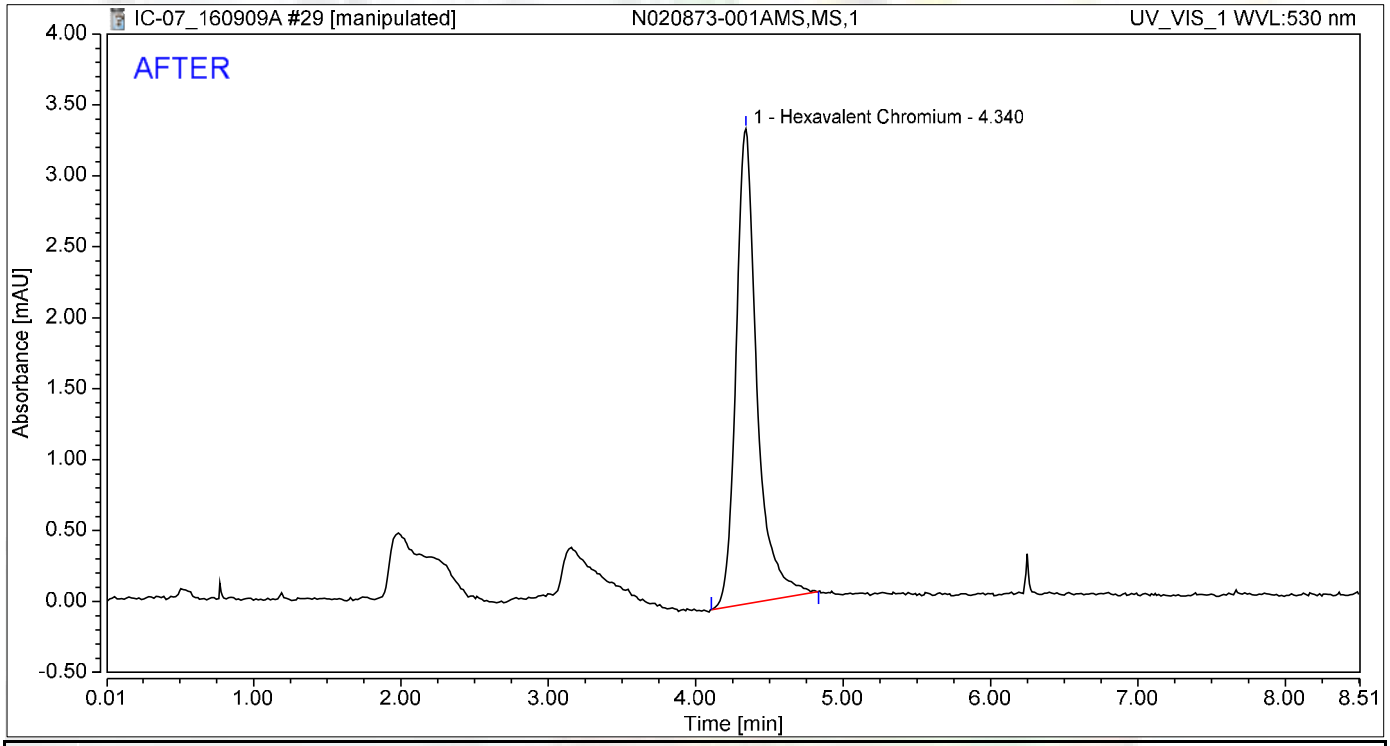
rba **9/14/2016**

Chromatogram and Results

Injection Details

Injection Name:	**N020873-001AMS,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:	**160819_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**09/Sep/16 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	4.340	0.550	3.349	100.00	100.00	2.2098
Total:			**0.550**	**3.349**	**100.00**	**100.00**	

rba 9/14/2016

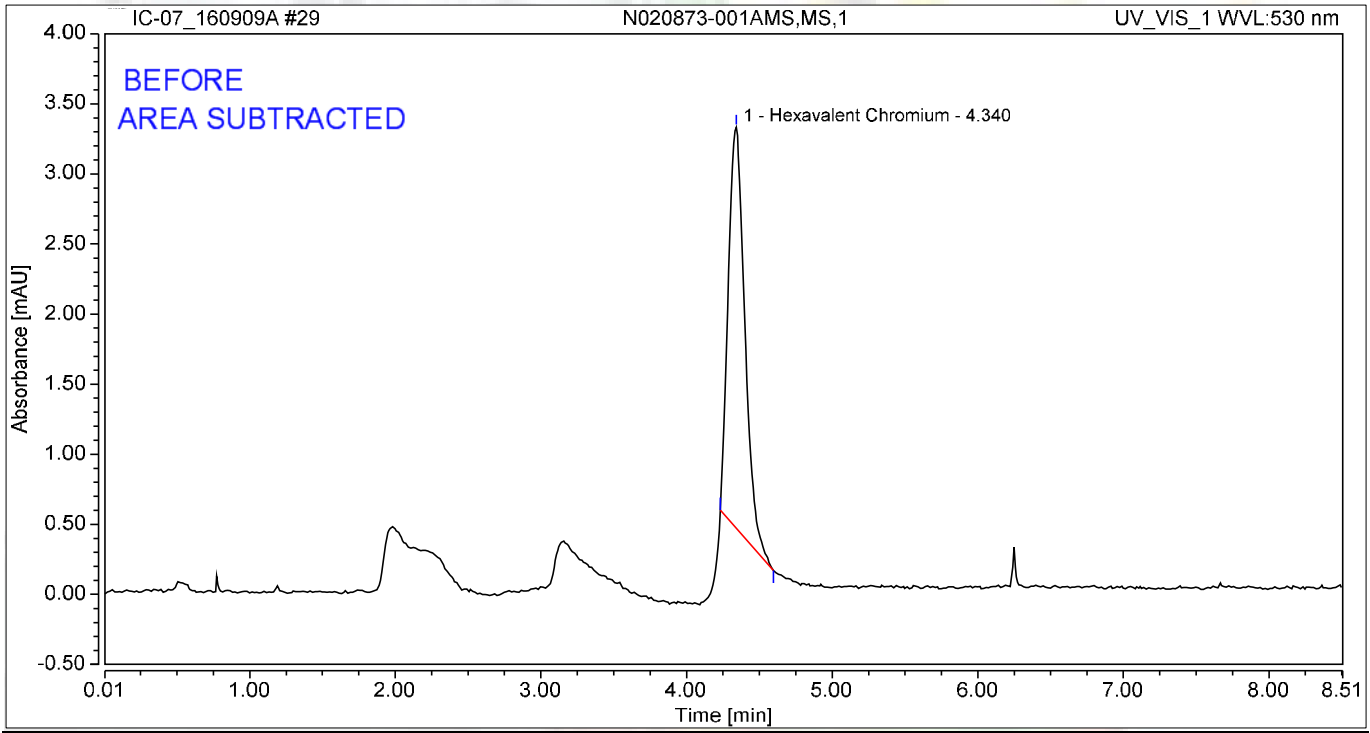
Reviewed by: Nancy 9/22/2016

Chromatogram and Results

Injection Details

Injection Name:	**N020873-001AMS,MS,1**	*Run Time (min):*	**8.50**
Vial Number:	**18**	*Injection Volume:*	**1000.00**
Injection Type:	**Unknown**	*Channel:*	**UV_VIS_1**
Calibration Level:		*Wavelength:*	**n.a.**
Instrument Method:	**Hex Chrom 4 mm**	*Bandwidth:*	**n.a.**
Processing Method:	**160819_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**09/Sep/16 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	4.340	0.376	2.859	100.00	100.00	1.5100
Total:			**0.376**	**2.859**	**100.00**	**100.00**	

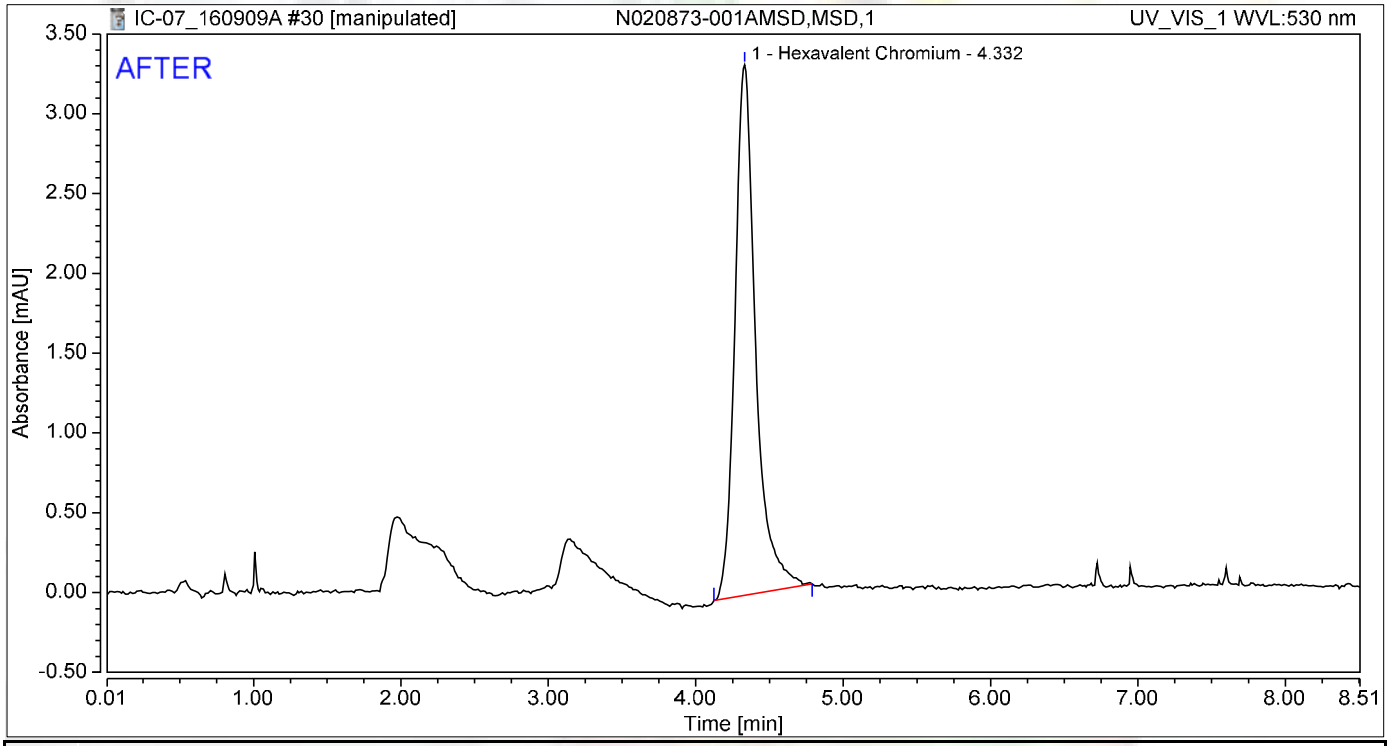
rba 9/14/2016

Chromatogram and Results

Injection Details

Injection Name:	**N020873-001AMSD,MSD,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:	**160819_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**09/Sep/16 11:44**	*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	4.332	0.542	3.322	100.00	100.00	2.1752
Total:			**0.542**	**3.322**	**100.00**	**100.00**	

rba 9/14/2016

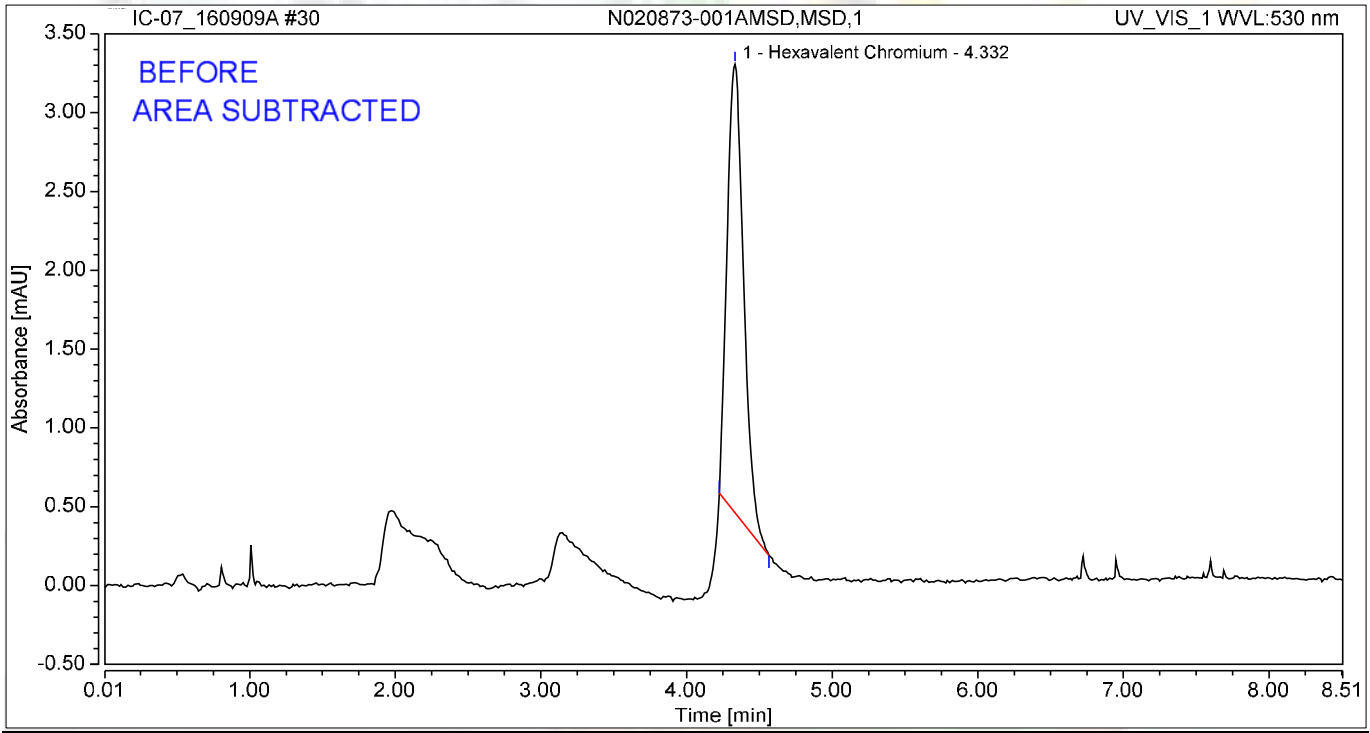
Reviewed by: 9/22/2016

Chromatogram and Results

Injection Details

Injection Name:	**N020873-001AMSD,MSD,1**	*Run Time (min):*	**8.50**
Vial Number:	**19**	*Injection Volume:*	**1000.00**
Injection Type:	**Unknown**	*Channel:*	**UV_VIS_1**
Calibration Level:		*Wavelength:*	**n.a.**
Instrument Method:	**Hex Chrom 4 mm**	*Bandwidth:*	**n.a.**
Processing Method:	**160819_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**09/Sep/16 11:44**	*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	4.332	0.375	2.845	100.00	100.00	1.5074
Total:			**0.375**	**2.845**	**100.00**	**100.00**	

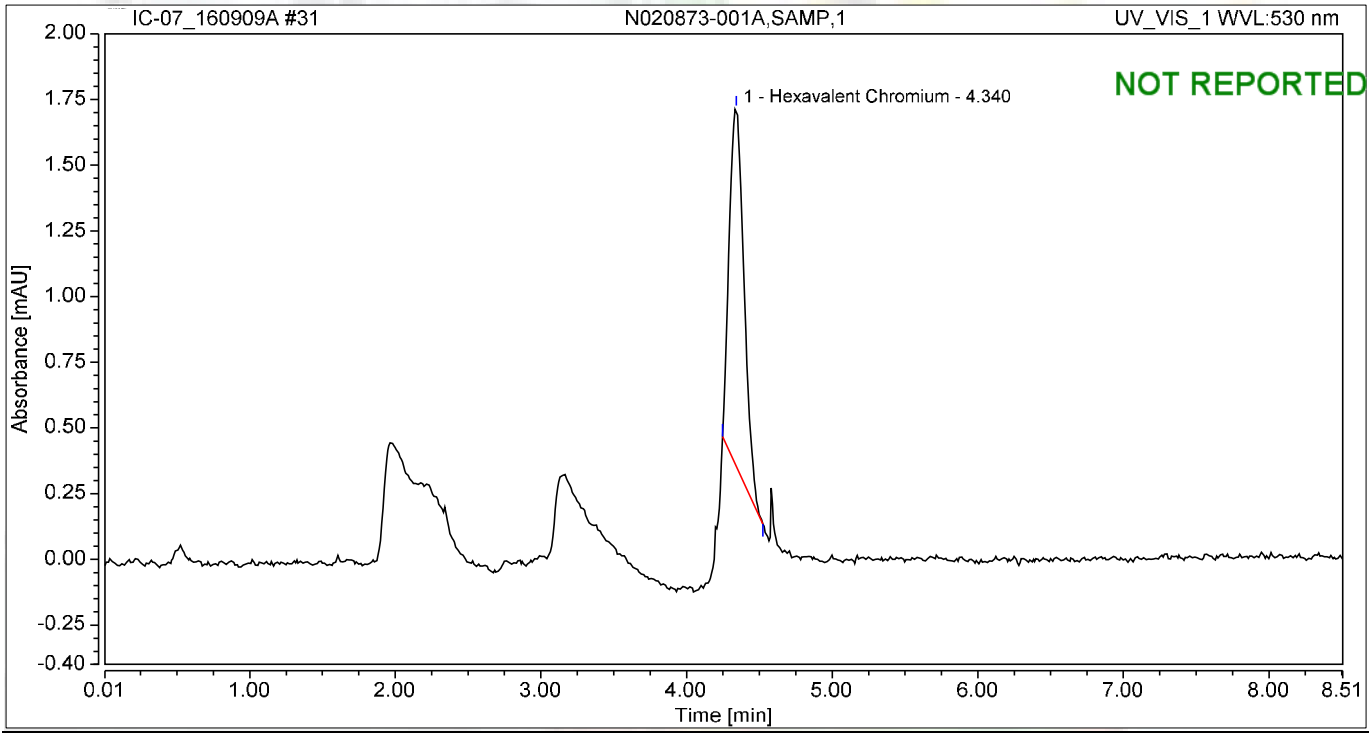
rba 9/14/2016

Chromatogram and Results

Injection Details

Injection Name:	**N020873-001A,SAMP,1**	*Run Time (min):*	**8.50**
Vial Number:	**20**	*Injection Volume:*	**1000.00**
Injection Type:	**Unknown**	*Channel:*	**UV_VIS_1**
Calibration Level:		*Wavelength:*	**n.a.**
Instrument Method:	**Hex Chrom 4 mm**	*Bandwidth:*	**n.a.**
Processing Method:	**160819_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**09/Sep/16 11:53**	*Sample Weight:*	**1.0000**

Chromatogram



Integration Results

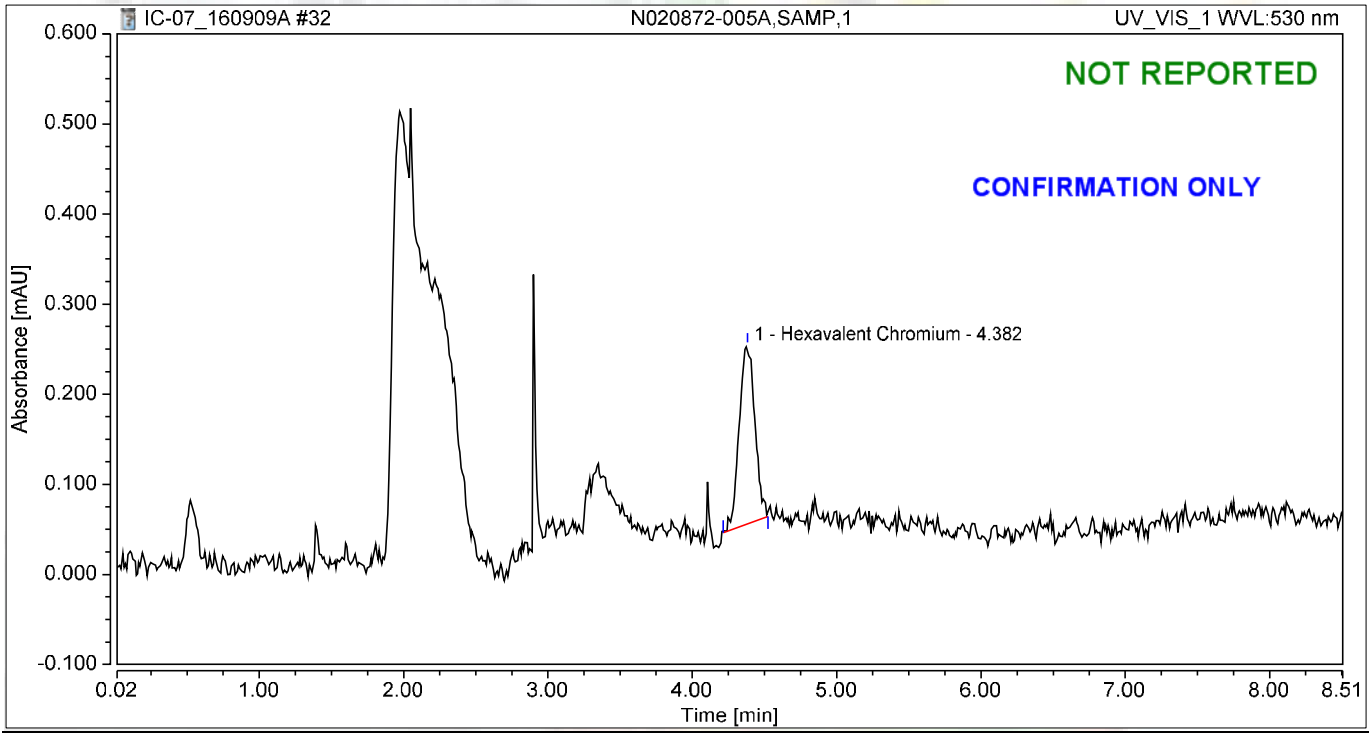
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.340	0.160	1.359	100.00	100.00	0.6435
Total:			**0.160**	**1.359**	**100.00**	**100.00**	

Chromatogram and Results

Injection Details

Injection Name:	**N020872-005A,SAMP,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:	**160819_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**09/Sep/16 12:02**	*Sample Weight:*	**1.0000**

Chromatogram



Integration Results

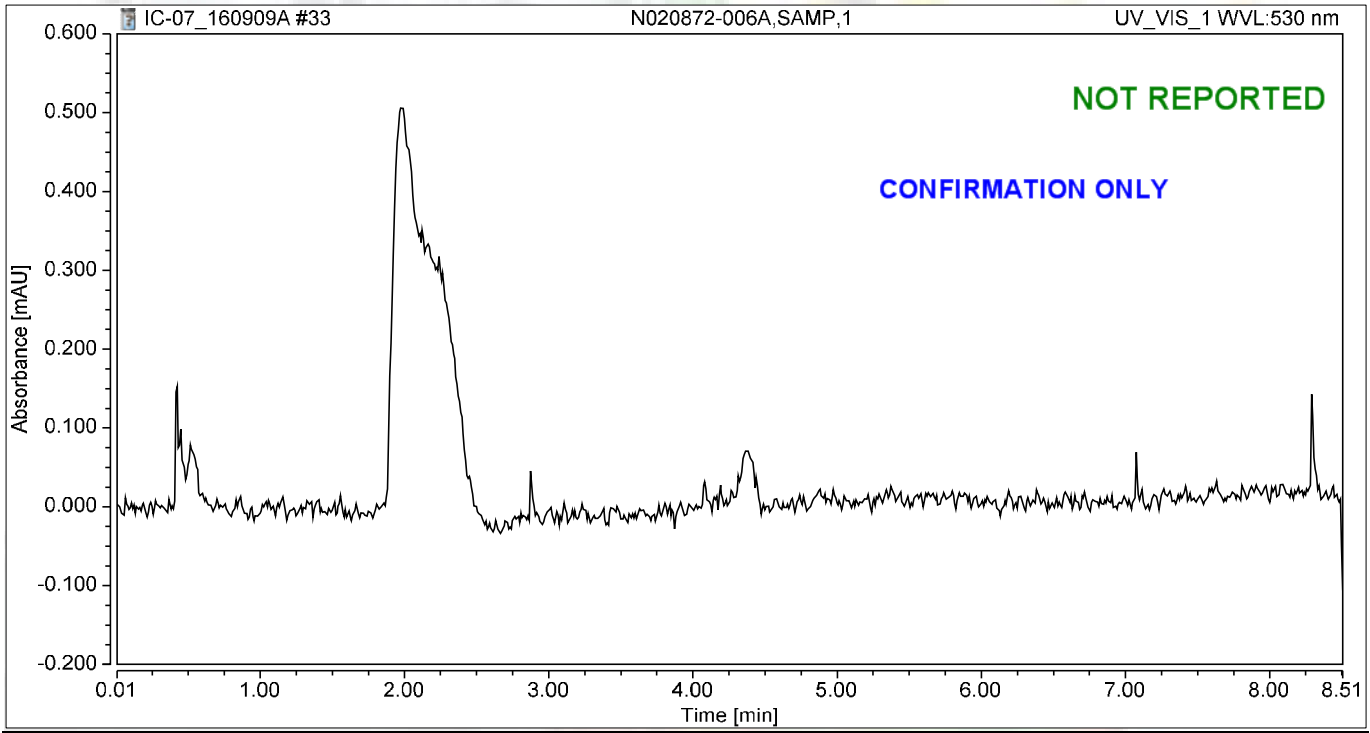
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.382	0.025	0.198	100.00	100.00	0.1005
Total:			**0.025**	**0.198**	**100.00**	**100.00**	

Chromatogram and Results

Injection Details

Injection Name:	**N020872-006A,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:	**160819_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**09/Sep/16 12:12**	*Sample Weight:*	**1.0000**

Chromatogram



Integration Results

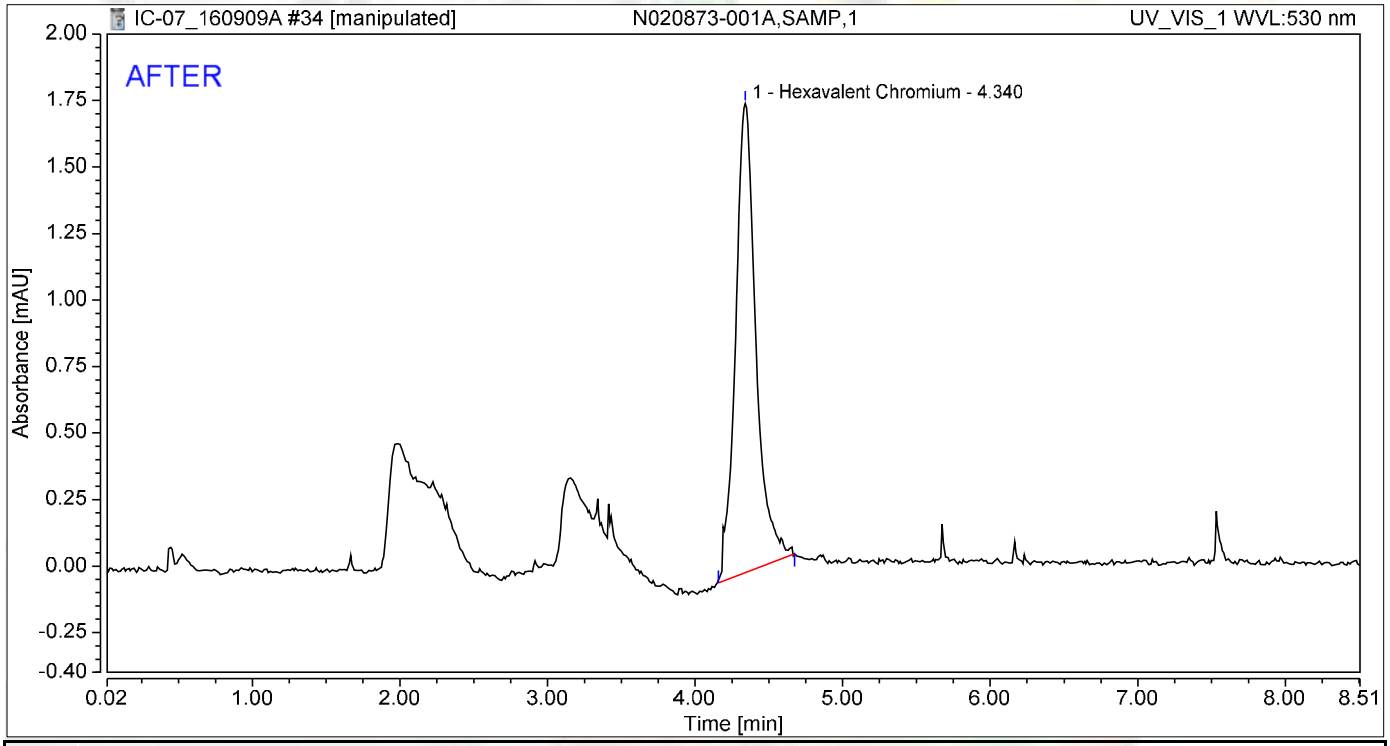
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
n.a.	Hexavalent Chromium	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Total:			**0.000**	**0.000**	**0.00**	**0.00**	

Chromatogram and Results

Injection Details

Injection Name:	**N020873-001A,SAMP,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:	**160819_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**09/Sep/16 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	Hexavalent Chromium	4.340	0.282	1.764	100.00	100.00	1.1341
Total:			**0.282**	**1.764**	**100.00**	**100.00**	

rba 9/14/2016

Reviewed by: Money 9/22/2016

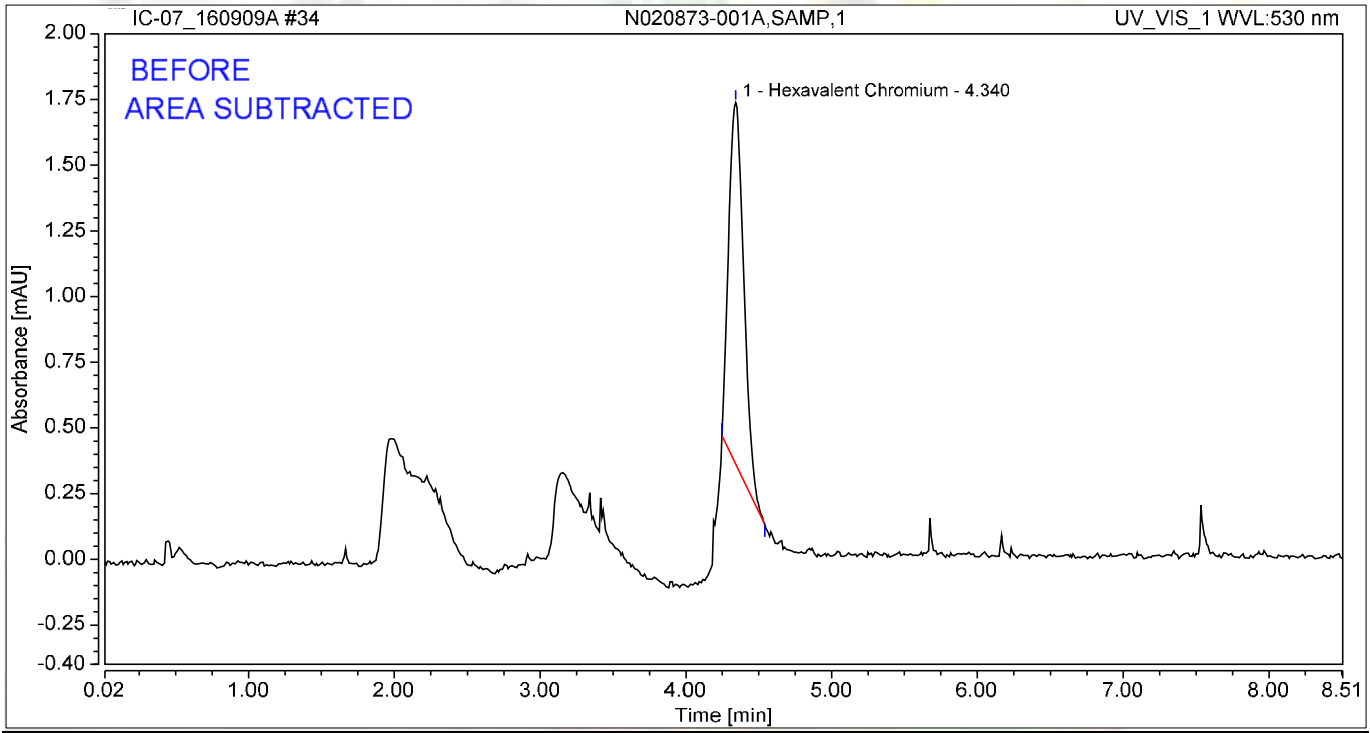
My first report integration

Chromatogram and Results

Injection Details

Injection Name:	**N020873-001A,SAMP,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:	**160819_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**09/Sep/16 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	Hexavalent Chromium	4.340	0.165	1.373	100.00	100.00	0.6624
Total:			**0.165**	**1.373**	**100.00**	**100.00**	

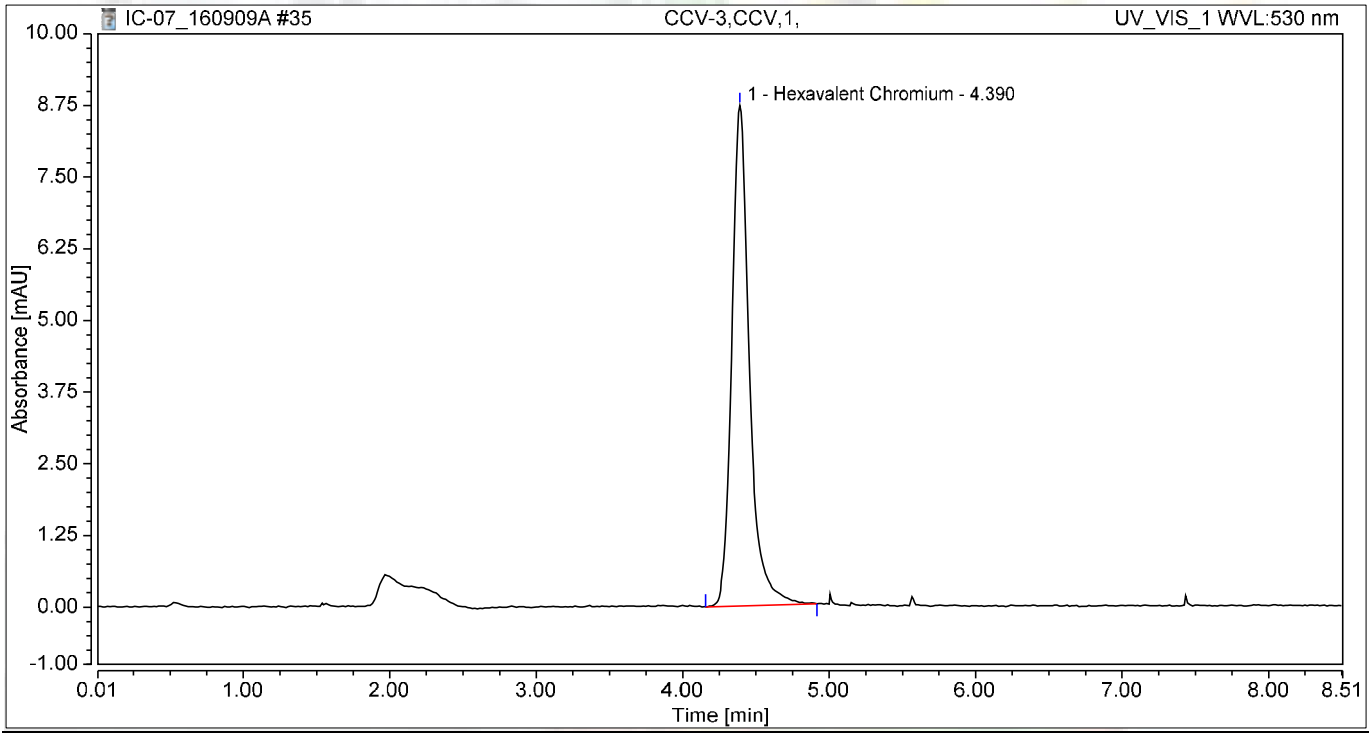
rba 9/14/2016

Chromatogram and Results

Injection Details

Injection Name:	**CCV-3,CCV,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:	**160819_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**09/Sep/16 14:32**	*Sample Weight:*	**1.0000**

Chromatogram



Integration Results

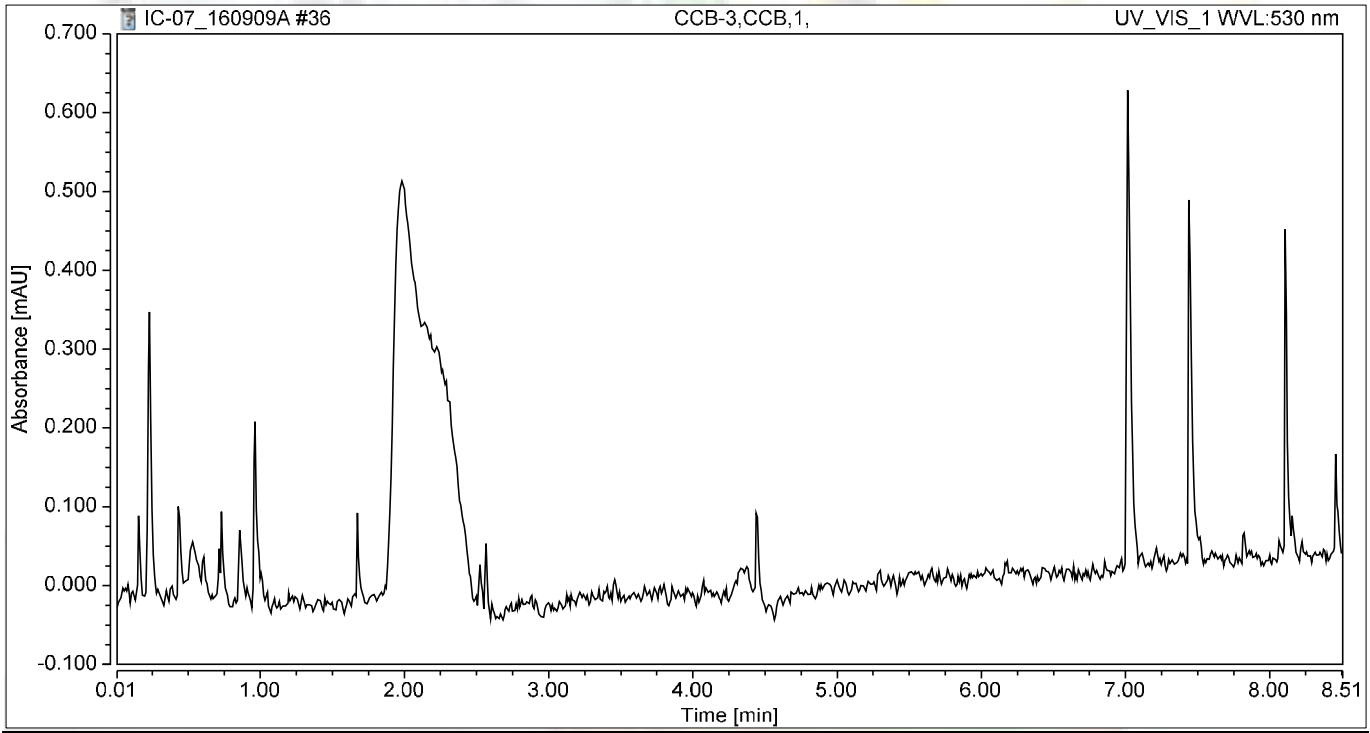
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.390	1.219	8.727	100.00	100.00	4.8969
Total:			**1.219**	**8.727**	**100.00**	**100.00**	

Chromatogram and Results

Injection Details

Injection Name:	**CCB-3,CCB,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:	**160819_IC-07_Cr6_218_6_HIGH**	*Dilution Factor:*	**1.0000**
Injection Date/Time:	**09/Sep/16 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
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**	

SM 2320B

Wet Chemistry Technical Batch Review Checklist (ARCUS02)

ASSET LABORATORIES - LAS VEGAS

FIRST LEVEL REVIEW:

QC Batch Number: R110486 **Analyst:** LSR

ASSET #: N020873 **Date Analyzed:** 9/9/2016

Method: EPA 2320

Initial Calibration	1st Level Review Y	1st Level Review N	1st Level Review N/A	2nd Level Review Y	2nd Level Review N	2nd Level Review 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:

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: 9/12/2016

2nd Level Reviewer: 9/22/2016 Date: —

SAMPLE CALCULATION

Sample ID: **N020873-001C @ pH 7.84**

A. Standardization of Sulfuric Acid (titrant):

Normality of acid = (A) (B)/ (53.00) (C)

Where:

A, grams weighed for Na_2CO_3 solution (Na_2CO_3 Standardization Solution)
B, mL Na2CO3 solution taken for titration, and
C, ml of sulfuric acid used to inflection point

Spike Standards

Na_2CO_3 Standardization Solution, ACS Grade (1.00 ml = 2500ug as $CaCO_3$): Dissolve 2.650 grams of Na_2CO_3 in distilled water and dilute to 1 liter.

LCS/MS/MSD Stock $NaHCO_3$, ACS Grade (1.00 ml = 5000 ug as $CaCO_3$): Dissolve 0.8398 grams of $NaHCO_3$ in distilled water and dilute to 1 liter.

Therefore,

Normality of Acid = (2.65g/L) (5mL) / (53.00) (11.225 mL)

= **0.02227 N**

B. CALCULATION OF ALKALINITY (for a 50 ml sample)

Total Alkalinity (as $CaCO_3$), mg/L = $M_{vol.}$ * N H_2SO_4 * DF * 1000

Where:

$M_{vol.}$ volume titrant used to reach pH 4.5, ml
N, Normality of H_2SO_4
DF, Dilution Factor = (50 ml) / (Vol. of Sample used)

Therefore,

Total Alkalinity (as $CaCO_3$), mg/L = (10.50) (0.02227 N) (1) * 1000

= 233.83.50 mg**/L**

Reporting results in two significant figures,

= **230 mg/L** as CaCO3

Julia Ramit 9/12/2016

C. SPECIATED ALKALINITY:

Phenolphthalein Alkalinity

P alkalinity, mg/L as $CaCO_3$ = $P_{vol.}$ * N H_2SO_4 * DF * 1000

= (0) (0.02227 N) (1) * 1000

= **0**

Total Alkalinity

T alkalinity, mg/L as $CaCO_3$ = $M_{vol.}$ * N H_2SO_4 * DF * 1000

= (10.50 mL) (0.02227) (1) * 1000

= 233.8350 **mg/L** as CaCO3

Where:

$P_{vol.}$ - Volume titrant used to reach pH 8.3, ml
$M_{vol.}$ - Volume titrant used to reach pH 4.5, ml
N - Normality of H_2SO_4
DF - Dilution Factor = (50 ml) / (Vol. of Sample used)

Then OH, CO_3, HCO_3 alkalinities as $CaCO_3$ will be calculated as follows:

Result of Titration	**OH Alkalinity as $CaCO_3$**	**CO_3 Alkalinity as $CaCO_3$**	**HCO_3 Alkalinity as $CaCO_3$**
P = 0	0	0	T
P < ½ T	0	2P	T – 2P
P = ½ T	0	2P	0
P > ½ T	2P – T	2(T – P)	0
P = T	T	0	0

Therefore,

OH Alkalinity as $CaCO_3$ = **0**

CO_3 Alkalinity as $CaCO_3$ = **0**

HCO_3 Alkalinity as $CaCO_3$ = **233.8350 mg/L**

Reporting results in two significant figures,

OH Alkalinity as $CaCO_3$ = **0**

CO_3 Alkalinity as $CaCO_3$ = **0**

HCO_3 Alkalinity as $CaCO_3$ = **230 mg/L**

LOGBOOK DATA, QUANTITATION REPORT and/or SPECTRA

SAMPLE	PH SAMPLE	AMOUNT	V@8.3	VT TO 4.5	Sample Type
MB-1	5.60	50	0.00	0.050	MBLK
LCS-1	8.71	50	0.05	4.40	LCS
N020873-001C	7.84	50	0.00	10.50	SAMP
N020873-002C	7.75	50	0.00	6.50	SAMP
N020873-001CDUP	7.91	50	0.00	10.60	DUP
N020873-002CMS	7.95	50	0.00	10.70	MS
N020873-002CMSD	8.01	50	0.00	10.80	MSD

Standardization:		
Spike amt:	**5**	ml
Titrant used:	**11.225**	ml
N H2SO4	**0.02227**	Normal
Date Analyzed:	**9/9/16**	
Time:	**1:45 PM**	
Analyzed By:	**LSR**	
Sodium Carbonate:	**CINV-160125B**	
Sodium Bicarbonate:	**CINV-150601A**	
Sulfuric Acid:	**R160811A**	

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Date Analyzed:	9/9/16		Reagents:					Standardization:					P = 0
Time Started:	1:45 PM			Sodium Carbonate:		CINV-160125B			Spike amt:	5	mL		P < 1/2 T
Analyzed By:	LSR			Hydrochloric Acid:		0			Titrant used:	11.225	mL		P = 1/2 T
				Sulfuric Acid:		R160811A							P > 1/2 T
									N H2SO4	0.02227	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	5.6				0.02227	0.00	0.05	0.05	1	0.00	1.11	
LCS-1	50	8.71				0.02227	0.05	4.35	4.40	1	1.11	98.00	
N020873-001C	50	7.84				0.02227	0.00	10.50	10.50	1	0.00	233.85	
N020873-002C	50	7.75				0.02227	0.00	6.50	6.50	1	0.00	144.77	
N020873-001CDU	50	7.91				0.02227	0.00	10.60	10.60	1	0.00	236.08	
N020873-002CMS	50	7.95				0.02227	0.00	10.70	10.70	1	0.00	238.31	
N020873-002CMS	50	8.01				0.02227	0.00	10.80	10.80	1	0.00	240.53	

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Speciated, Alkalinity as CaCO3

SM 2320B

Date Analyzed:	9/9/16
Time:	1:45 PM
Analyzed By:	LSR

SAMPLE ID	OH	CO3	HCO3	TOTAL	CHECK	COMMENT	REMARKS
MB-1	0.00	0.00	1.11	1.11	1.11		P = 0
LCS-1	0.00	2.23	95.77	98.00	98.00		P < 1/2 T
N020873-001C	0.00	0.00	233.85	233.85	233.85		P = 0
N020873-002C	0.00	0.00	144.77	144.77	144.77		P = 0
N020873-001CDUP	0.00	0.00	236.08	236.08	236.08		P = 0
N020873-002CMS	0.00	0.00	238.31	238.31	238.31		P = 0
N020873-002CMSD	0.00	0.00	240.53	240.53	240.53		P = 0

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Alkalinity Preparation and Runlog

Book #5

Matrix: H_2O

Date Extracted: 9/9/16
Time Extracted:
Extracted By: LSR

Date Analyzed: 9/9/16
Time Analyzed: 1345
Analyzed By: LSR

Reagent Lot # / Reagent ID
Sodium Carbonate: CINV-160125B
Hydrochloric Acid:
Sulfuric Acid: R160811A
$NaHCO_3$: CINV-150601A

pH meter CALIBRATION:
SLOPE: 94.7%
pH 4 - 4.01 - CINV-160715B
7 - 6.99 - 160718A
10 - 10.01 - 160609C

	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
	STANDARDIZATION											
	#1	50 mL	10.59	IWST160908A	5 mL	0.05N	-	-	11.20	50/50	N H_2SO_4 = (2.65 g/L)(5 mL)	= 0.022321428
	#2	↓	10.65	↓	↓	↓	-	-	11.25	↓	(53) (V titrant)	= 0.022222222
1)	MBLK	50 mL	5.60	-	-	-	0.02227	0	0.05	50/50		Ave: 0.02227
2)	LCS	↓	8.71	IWST160908B	1 mL	0.05N	↓	0.05	4.40	↓		
3)	NO2087B-00K	↓	7.84	-	-	-	↓	0	10.50	↓		
4)	2C	↓	7.75	-	-	-	↓	0	6.50	↓		
5)	1C DUP	↓	7.91	-	-	-	↓	0	10.60	↓		
6)	2C MS	↓	7.95	IWST160908B	1 mL	0.05N	↓	0	10.70	↓		
7)	2C MSD	↓	8.01	↓	↓	↓	↓	0	10.80	↓		
8)												
9)												
10)												
11)												
12)												
13)												
14)												
15)												
16)				$P = \frac{(V\ pH\ 8.3)(N\ H_2SO_4)(50{,}000)}{V_{sx}}$								
17)												
18)												
19)												
20)				$T = \frac{(V\ pH\ 4.5)(N\ H_2SO_4)(50{,}000)}{V_{sx}}$								
	MS											
	MSD											
	LCS											

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EPA 300.0

IC Technical Batch Review Checklist (ARCUS02)

ASSET LABORATORIES - LAS VEGAS

IC ARCUS
REV 2.0
011416

QC Batch Number: R110492
ASSET #: N020873

Instrument ID: IC-02
Analyst: RBA
Date Analyzed: 9/9/2016

Method:

[X] 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					
Continuing Calibration						
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			
Sample Information						
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			
QC Items						
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			
Raw Data and Miscellaneous Information						
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					
Preliminary Report						
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: 9/12/2016

2nd Level Reviewer: Nancy 9/22/2016 Date: —

SAMPLE CALCULATION

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:

Sulfate , mg/L = A * DF

where:

A = mg/L, IC calculated concentration
DF = dilution factor

For **N020873-001C** concentration in mg/L is calculated as follows:

Sulfate , mg/L = 7.5 * 50

= 375

Reporting result in two significant values,

Sulfate , mg/L = 380

ANALYSIS RUN LOG

DIONEX SCHEDULE - C:\DX\SCHEDULE\160829.SCH

Inj#	Sample Name	Method	Data File	Vol.	Dil.	Int.Std.
1	,BLANK,	..\160829.M	..\16082901.D01	1	1	1
2	,BLANK,	..\160829.M	..\16082901.D02	1	1	1
3	AUTOCAL1R	..\160829.M	..\16082901.D03	1	1	1
4	AUTOCAL2R	..\160829.M	..\16082901.D04	1	1	1
5	AUTOCAL3R	..\160829.M	..\16082901.D05	1	1	1
6	AUTOCAL4R	..\160829.M	..\16082901.D06	1	1	1
7	AUTOCAL5R	..\160829.M	..\16082901.D07	1	1	1
8	AUTOCAL6R	..\160829.M	..\16082901.D08	1	1	1
9	,ICV,ICV,1,	..\160829.M	..\16082901.D09	1	1	1
10	,ICB,ICB,1,	..\160829.M	..\16082901.D10	1	1	1
11	,MB-H2O,MBLK,1,	..\160829.M	..\16082901.D11	1	1	1
12	,LCS-H2O,LCS,1,	..\160829.M	..\16082901.D12	1	1	1
13	,N020748-012B,SAMP,	..\160829B.	..\16082901.D13	1	1	1
14	,N020748-013B,SAMP,	..\160829B.	..\16082901.D14	1	1	1
15	,N020748-014B,SAMP,	..\160829B.	..\16082901.D15	1	1	1
16	,N020748-012A,SAMP,	..\160829B.	..\16082901.D16	1	1	1
17	,N020748-012ADUP,DU	..\160829B.	..\16082901.D17	1	1	1
18	,N020748-013A,SAMP,	..\160829B.	..\16082901.D18	1	1	1
19	,N020748-013AMS,MS,	..\160829B.	..\16082901.D19	1	1	1
20	,N020748-013AMSD,MS	..\160829B.	..\16082901.D20	1	1	1
21	,CCV-1,CCV,1,	..\160829.M	..\16082901.D21	1	1	1
22	,CCB-1,CCB,1,	..\160829.M	..\16082901.D22	1	1	1
23	,N020748-014A,SAMP,	..\160829B.	..\16082901.D23	1	1	1
24	,N020748-012ADUP,DU	..\160829B.	..\16082901.D24	1	1	1
25	,LOD,LOD,1,	..\160829.M	..\16082901.D25	1	1	1
26	,PQL,PQL,1,	..\160829.M	..\16082901.D26	1	1	1
27	,PQL,PQL,1,	..\160829.M	..\16082901.D27	1	1	1
28	,CCV-2,CCV,1,	..\160829.M	..\16082901.D28	1	1	1
29	,CCB-2,CCB,1,	..\160829.M	..\16082901.D29	1	1	1
30	SHUTDOWN	..\SHUTDOWN		1	1	1

Comment:
Standard for IC-02 (Anions) = ICAL/CCV : ISST-160817A, B, C, D, E, F, G; ICV/LCS/MS/MSD: ISST160211F, G, H, I, J, K and L

rba 9/20/2016

DIONEX SCHEDULE - C:\DX\SCHEDULE\160909.SCH

Inj#	Sample Name	Method	Data File	Vol.	Dil.	Int.Std.	
1	,BLANK,	..\160829.M	..\16090901.D01	1	1	1	
2	,CCV-1,CCV,1,	..\160829.M	..\16090901.D02	1	1	1	
3	,CCB-1,CCB,1,	..\160829.M	..\16090901.D03	1	1	1	
4	,MB-H2O,MBLK,1,	..\160829.M	..\16090901.D04	1	1	1	
5	,LCS-H2O,LCS,1,	..\160829.M	..\16090901.D05	1	1	1	
6	,N020873-001C,SAMP,	..\160829.M	..\16090901.D06	1	1	1	
7	,N020873-002C,SAMP,	..\160829.M	..\16090901.D07	1	1	1	
8	,N020873-001CDUP,DU	..\160829.M	..\16090901.D08	1	1	1	
9	,N020873-002CMS,MS,	..\160829.M	..\16090901.D09	1	1	1	
10	,N020873-002CMSD,MS	..\160829.M	..\16090901.D10	1	1	1	
11	,N020873-001C,SAMP,	..\160829.M	..\16090901.D07	1	1	1	
12	,CCV-2,CCV,1,	..\160829.M	..\16090901.D07	1	1	1	
13	,CCB-2,CCB,1	..\160829.M	..\16090901.D13	1	1	1	
14	,N020873-002CMS,MS,	..\160829.M	..\16090901.D14	1	1	1	
15	,BLANK,	..\160829.M	..\16090901.D15	1	1	1	
16	,N020873-002CMS,MS,	..\160829.M	..\16090901.D16	1	1	1	N020873-002CMSD,MSD,100
17	,N020873-002CMSD,MS	..\160829.M	..\16090901.D17	1	1	1	N020873-001C,SAMP,200
18	,N020873-001C,SAMP,	..\160829.M	..\16090901.D18	1	1	1	N020873-001CDUP,DUP,200
19	,N020873-001CDUP,DU	..\160829.M	..\16090901.D19	1	1	1	
20	,BLANK,	..\160829.M	..\16090901.D20	1	1	1	
21	,N020873-002C,SAMP,	..\160829.M	..\16090901.D21	1	1	1	
22	,N020873-002CMS,MS,	..\160829.M	..\16090901.D22	1	1	1	
23	,N020873-002CMSD,MS	..\160829.M	..\16090901.D23	1	1	1	*Line 23 was not injected.
24	,N020873-002CMSD,MS	..\160829.M	..\16090901.D24	1	1	1	Autosampler skipped vial.
25	,CCV-3,CCV,1,	..\160829.M	..\16090901.D25	1	1	1	
26	,CCB-3,CCB,1,	..\160829.M	..\16090901.D26	1	1	1	
27	SHUTDOWN	..\SHUTDOWN		1	1	1	

Comment:
Standard for IC-02 (Anions) = ICAL/CCV : ISST-160817A, B, C, D, E, F, G; ICV/LCS/MS/MSD: ISST160211F, G, H, I, J, K and L

nba 9/12/2016

INITIAL CALIBRATION DATA SUMMARY

DIONEX METHOD PARAMETERS - 160829.MET

Method Comment:
Column ID:
Analyst ID:

System Parameters

System Name: ANIONS

Number of Detectors	1
Run Time (minutes)	13.00
Sampling Rate (seconds)	0.20
Detector 1 Type	COND
Detector 1 real time plot scale maximum (mV)	100.000
minimum	-10.000
Detector 1 Output Equivalent to 1 Volt (in mV)	100.00
Detector 1 ACI Analog Input Connection	DET1
Save Data File	Yes

Data File Name: C:\DX\DATA\14120201.D02

-- DETECTOR 1 PARAMETERS --

Report Options

Create ASCII Report File	No
Print Report	Yes
Print All Components	Yes
Print Components Found	No
Print Missing Components	No
Print All Peaks	Yes
Print Unknown Peaks	Yes
Print Chromatogram	Yes
Autoscale Chromatogram Maximum	Yes
Autoscale Maximum Value Delay (minutes)	0.0
Autoscale Chromatogram Minimum	Yes
Autoscale Minimum Value Delay (minutes)	0.0
Fill Peaks with Color	No
Draw Grid Lines on Chromatogram	No
Show Component Fraction Numbers	No
Label with Peak Number	No
Label with Retention Times on Chromatogram	No
Label with Component Name	Yes

Format File Name: C:\DX\METHOD\DEFAULT.PRF

Integration Parameters

Starting Peak Width (seconds)	5.0
Peak Threshold	0.500
Peak Area Reject	2000
Area Reject for Reference Peaks	3000

Data Events

Time	Description
0.50	Start peak detection
0.51	Force baseline at start of this peak
0.51	Split peak
0.51	Force common baseline following this peak
0.52	End peaks on baseline penetration

Calibration Parameters

Number Of Levels for Calibration	6
Force Calibration Curve Through Origin	No
Calibration Fit Type	Linear
Replace Or Average Calibrations	Replace
External or Internal Calibration	External
Calculate Unknowns by Area or Height	Area
Default Sample Volume	1.0
Default Dilution Factor	1.0
Default Response Factor for Unknown Peaks	0.0
Calibration Standard Volume	1.0
Internal Standard Amount in Samples	1.0
Amount Units	

Component Table -- Last Modified: 10:59 on Mon, 29 Aug 2016

Component # 1 Fluoride Retention Time 2.51
Reference Comp. Fluoride Window Size 0.10 min.
Amount = K0 + K1*Area
K0 = 2.81611E-002
K1 = 2.95935E-006

Level	Amount	Area	Height
1	0.00000E+000	0	0
2	5.00000E-002	20023	1637
3	5.00000E-001	145957	13061
4	1.00000E+000	320522	26380
5	2.50000E+000	828742	72225
6	5.00000E+000	1685767	153997

Component # 2 Chloride Retention Time 3.67
Reference Comp. Chloride Window Size 0.10 min.
Amount = K0 + K1*Area
K0 = 7.68614E-002
K1 = 3.77961E-006

Level	Amount	Area	Height
1	0.00000E+000	0	0
2	5.00000E-001	122324	11398
3	1.00000E+000	241086	22136
4	2.50000E+000	639631	57447
5	5.00000E+000	1252776	117937
6	1.00000E+001	2649148	256081

Component # 3 Nitrite Retention Time 4.45
Reference Comp. Nitrite Window Size 0.20 min.
Amount = K0 + K1*Area
K0 = 1.83473E-002
K1 = 2.19059E-006

Level	Amount	Area	Height
1	0.00000E+000	0	0
2	5.00000E-002	22214	1889
3	1.00000E-001	36575	3070
4	5.00000E-001	216443	15390
5	1.00000E+000	428065	31605
6	2.50000E+000	1140918	84213

Component # 4 Bromide Retention Time 5.36
Reference Comp. Bromide Window Size 0.20 min.
Amount = K0 + K1*Area
K0 = 3.12081E-002
K1 = 9.20024E-006

Level	Amount	Area	Height
1	0.00000E+000	0	0
2	2.00000E-001	22950	1627
3	5.00000E-001	52669	4285
4	1.00000E+000	102154	7856
5	2.50000E+000	255574	19479
6	5.00000E+000	546274	40390

Component # 5 Nitrate Retention Time 6.67
Reference Comp. Nitrate Window Size 0.20 min.
Amount = K0 + K1*Area
K0 = 1.12422E-002
K1 = 1.60951E-006

Level	Amount	Area	Height
1	0.00000E+000	0	0
2	5.00000E-002	28396	1983
3	1.00000E-001	60242	4398
4	5.00000E-001	304049	20312
5	1.00000E+000	587922	41569
6	2.50000E+000	1555913	109309

Component # 6 Phosphate Retention Time 7.66
Reference Comp. Phosphate Window Size 0.50 min.
Amount = K0 + K1*Area
K0 = -1.13752E-002
K1 = 4.45033E-006

Level	Amount	Area	Height
1	0.00000E+000	0	0
2	1.00000E-001	25880	1421
3	5.00000E-001	115090	6227
4	1.00000E+000	237434	12125
5	2.50000E+000	551652	30584
6	5.00000E+000	1130072	63249

Component # 7 Sulfate Retention Time 8.65
Reference Comp. Sulfate Window Size 0.50 min.
Amount = K0 + K1*Area
K0 = 1.25909E-001
K1 = 5.23333E-006

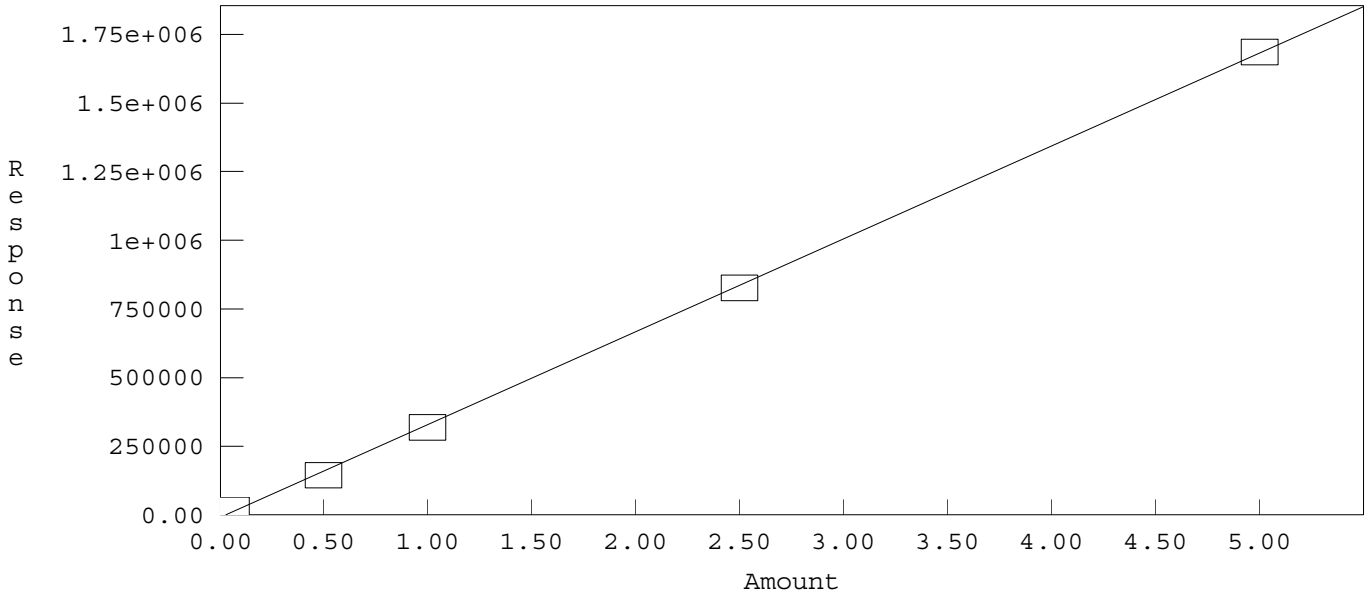
Level	Amount	Area	Height
1	0.00000E+000	0	0
2	5.00000E-001	86103	4827
3	2.00000E+000	371525	19904
4	5.00000E+000	917325	49877
5	1.00000E+001	1811351	102536
6	2.00000E+001	3834946	221163

Timed Events File: C:\DX\METHOD\AS4ASC2.TE

Step	Time	Description
Init		ACI Autosmp OFF
Init		ACI Autooff OFF
Init		ACI Pmpstrt ON
Init		ACI Inject OFF
Init		ACI OFF
Init		ACI OFF
Init		ACI OFF
Init		ACI OFF
Init		ACI OFF
Init		ACI OFF
1	0.0	ACI Autosmp ON
2	2.3	ACI Autosmp OFF
2	2.3	ACI Autooff ON
3	2.4	ACI Inject ON
3	2.4	Start Sampling

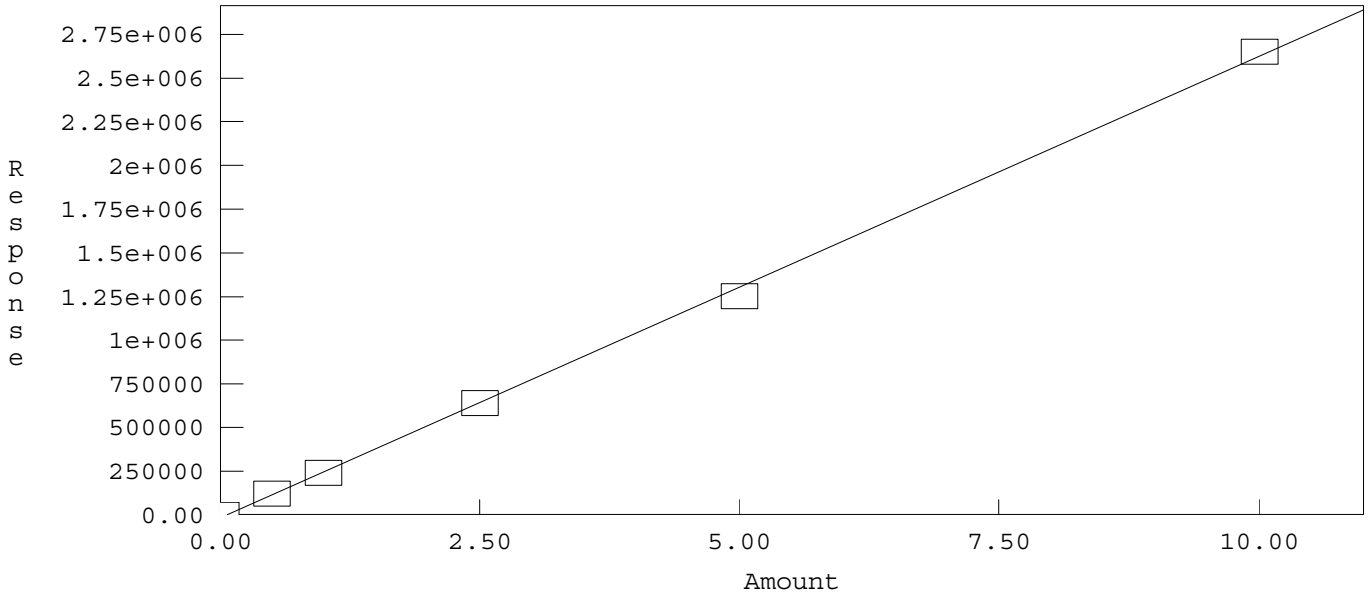
Method: 160829.MET - Last Updated: 10:59 on Mon, 29 Aug 2016

Component: Fluoride
Fit Type: Linear
r^2 = 0.999735
Amt = Resp * 2.959e-006 + 0.02816
Resp = Amt * 3.379e+005 + -9516
Standardization: External
Calibration: Area



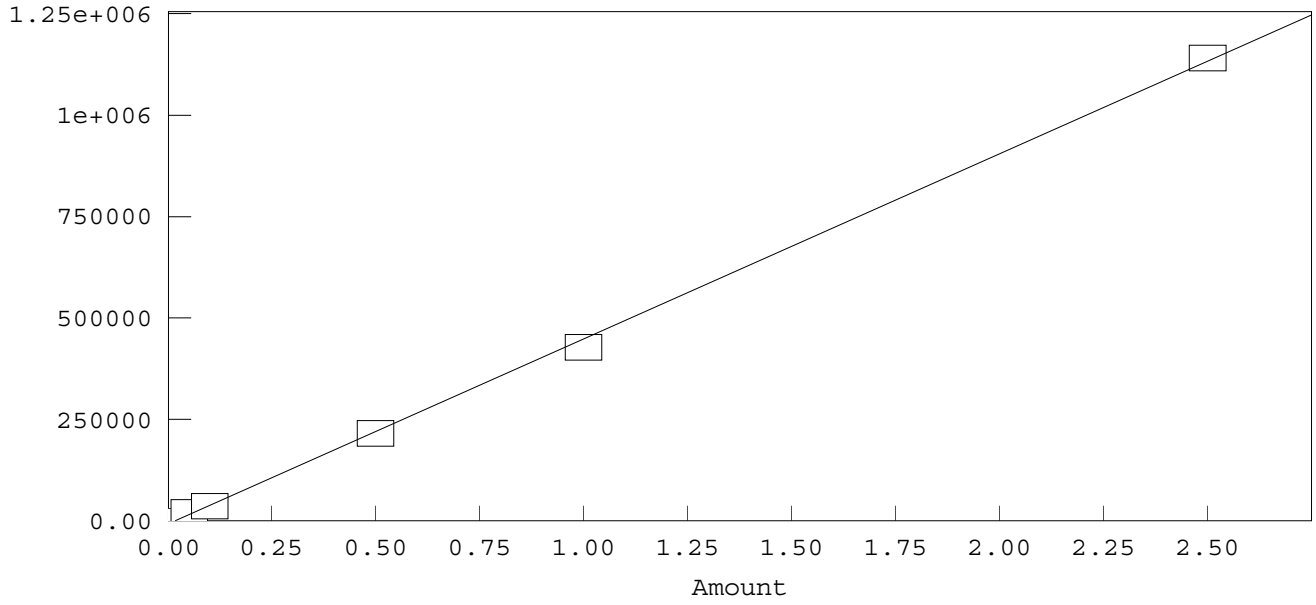
Method: C:\DX\METHOD\160829.MET

Component: Chloride
Fit Type: Linear
r^2 = 0.999294
Amt = Resp * 3.78e-006 + 0.07686
Resp = Amt * 2.646e+005 + -2.034e+004
Standardization: External
Calibration: Area



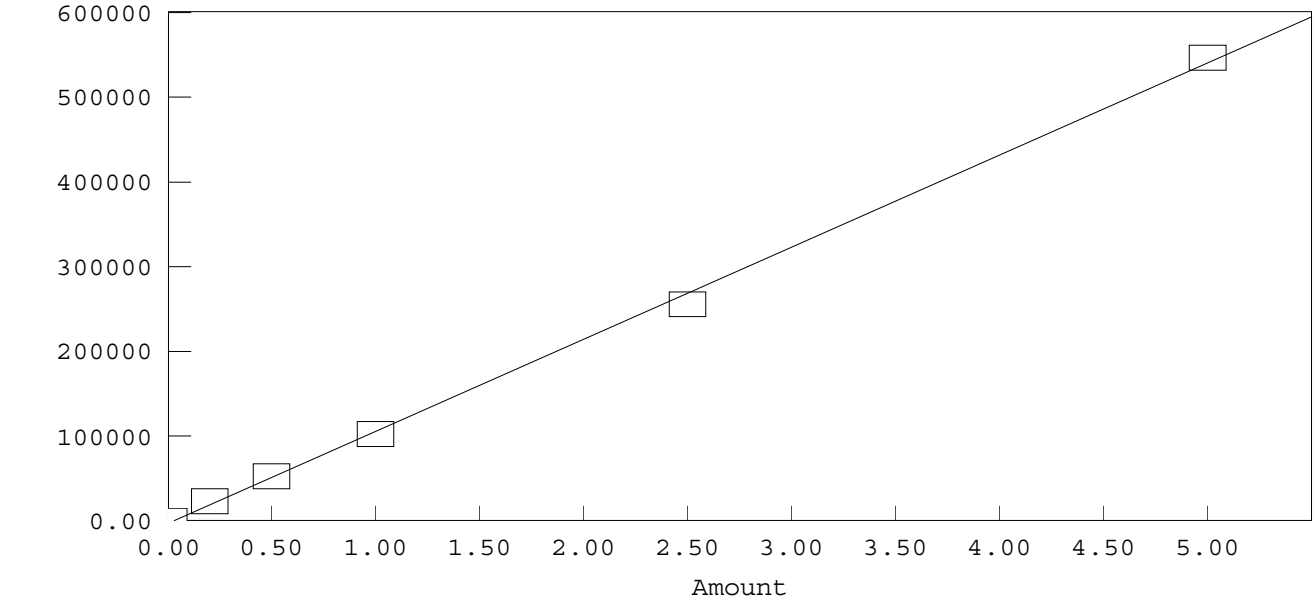
Method: C:\DX\METHOD\160829.MET

Component: Nitrite
Fit Type: Linear
r² = 0.999370
Amt = Resp * 2.191e-006 + 0.01835
Resp = Amt * 4.565e+005 + -8376
Standardization: External
Calibration: Area



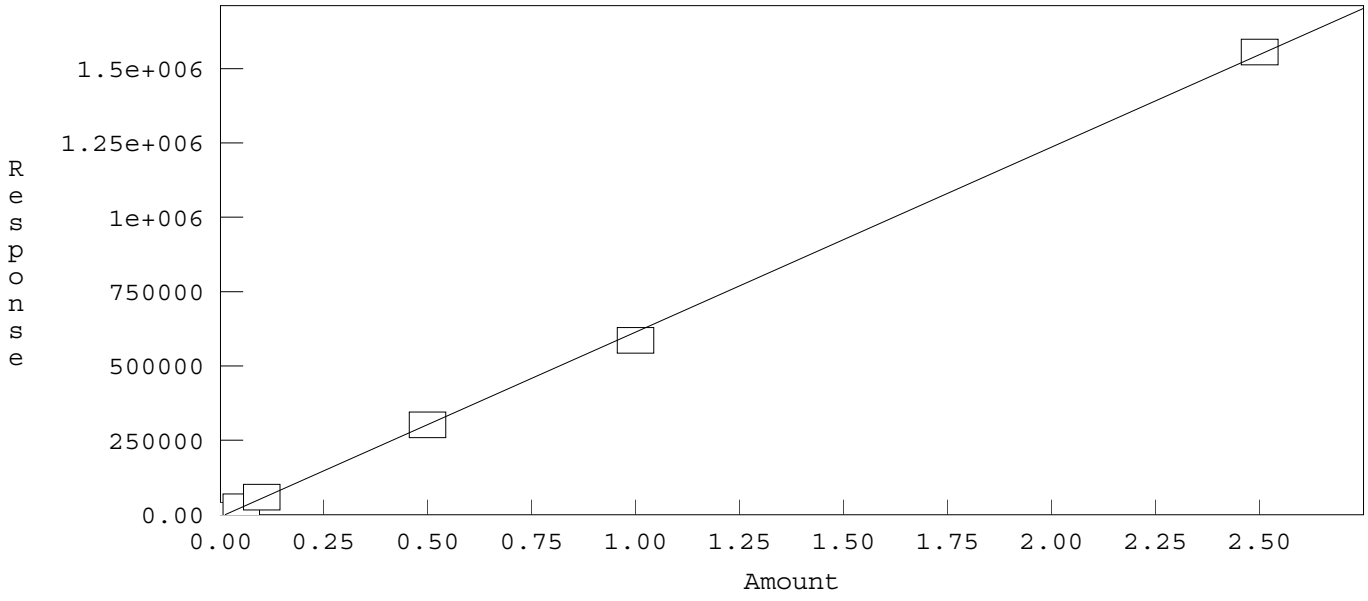
Method: C:\DX\METHOD\160829.MET

Component: Bromide
Fit Type: Linear
r² = 0.998866
Amt = Resp * 9.2e-006 + 0.03121
Resp = Amt * 1.087e+005 + -3392
Standardization: External
Calibration: Area



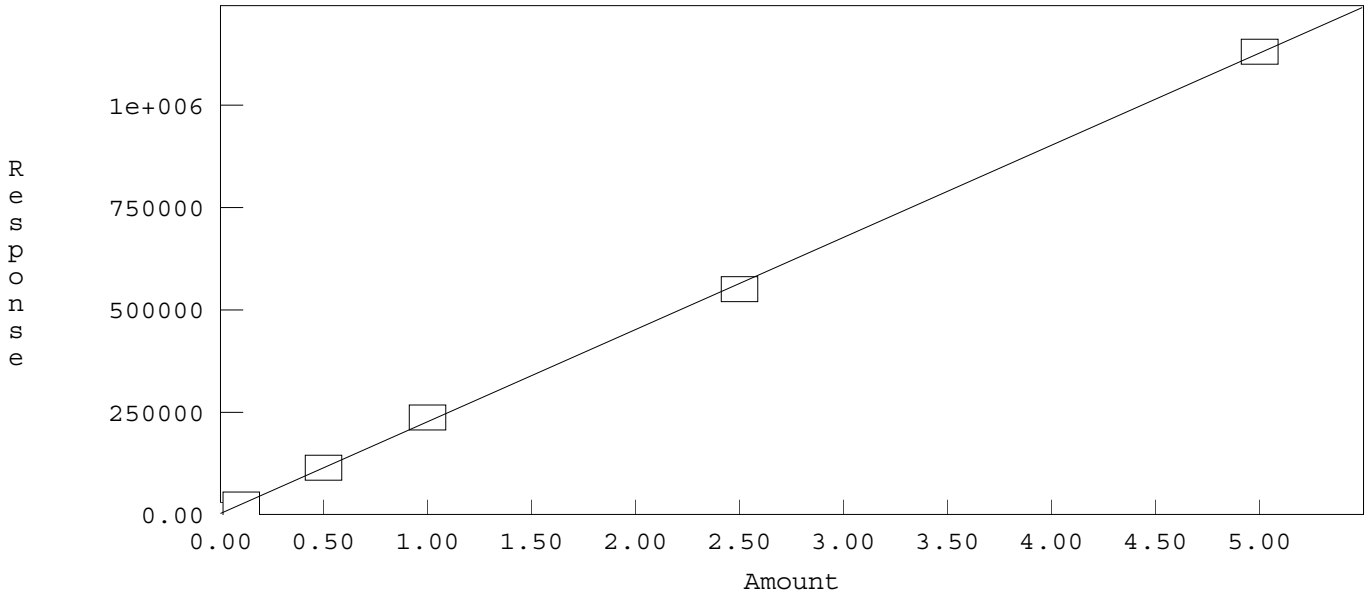
Method: C:\DX\METHOD\160829.MET

Component: Nitrate
Fit Type: Linear
r² = 0.999507
Amt = Resp * 1.61e-006 + 0.01124
Resp = Amt * 6.213e+005 + -6985
Standardization: External
Calibration: Area



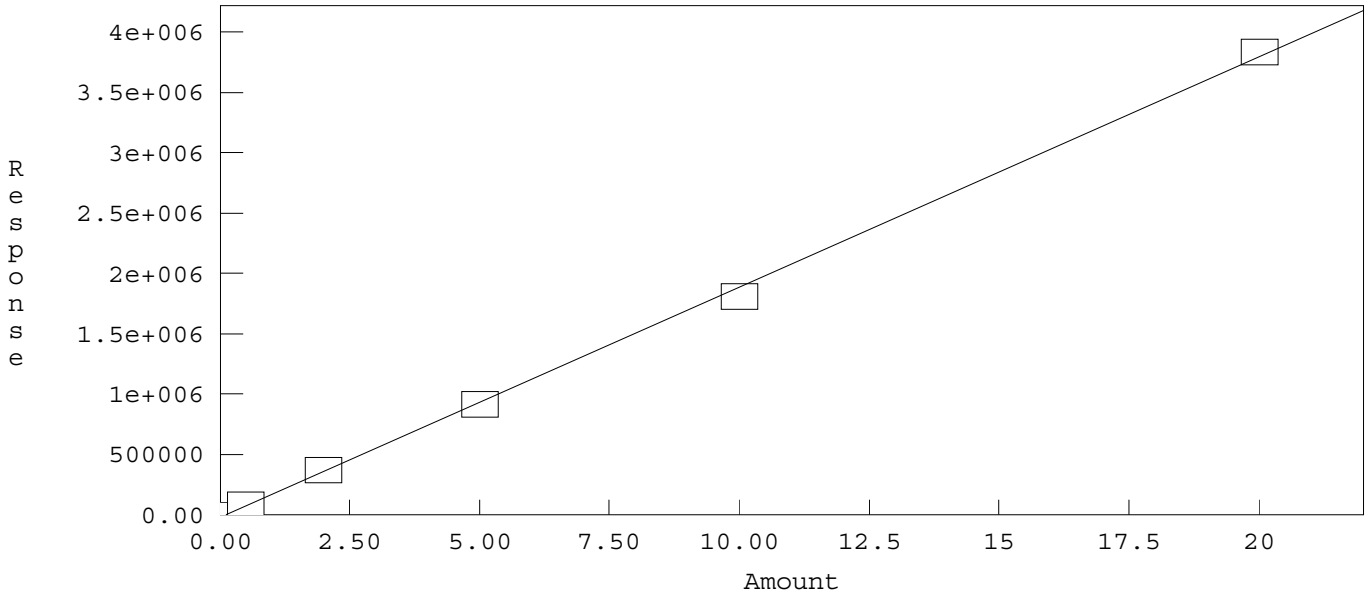
Method: C:\DX\METHOD\160829.MET

Component: Phosphate
Fit Type: Linear
r² = 0.999696
Amt = Resp * 4.45e-006 + -0.01138
Resp = Amt * 2.247e+005 + 2556
Standardization: External
Calibration: Area



Method: C:\DX\METHOD\160829.MET

Component: Sulfate
Fit Type: Linear
r^2 = 0.999234
Amt = Resp * 5.233e-006 + 0.1259
Resp = Amt * 1.911e+005 + -2.406e+004
Standardization: External
Calibration: Area



INITIAL CALIBRATION AND CONTINUING CALIBRATION VERIFICATION SUMMARY

CLIENT: ARCADIS U.S., Inc. - California
Work Order: N020873
Project: PG&E Topock - PMP, RC000753.801A

ANALYTICAL QC SUMMARY REPORT

TestCode: 300_W_CLPGE

Sample ID **ICV**	SampType: **ICV**	TestCode: **300_W_CLP**	Units: **mg/L**	Prep Date:	RunNo: **110492**
Client ID: **ICV**	Batch ID: **R110492**	TestNo: **EPA 300.0**		Analysis Date: **8/29/2016**	SeqNo: **2424602**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride	2.532	0.50	2.500	0	101	90	110				

Sample ID **CCV-1**	SampType: **CCV**	TestCode: **300_W_CLP**	Units: **mg/L**	Prep Date:	RunNo: **110492**
Client ID: **CCV**	Batch ID: **R110492**	TestNo: **EPA 300.0**		Analysis Date: **9/9/2016**	SeqNo: **2424604**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride	2.443	0.50	2.500	0	97.7	90	110				

Sample ID **CCV-2**	SampType: **CCV**	TestCode: **300_W_CLP**	Units: **mg/L**	Prep Date:	RunNo: **110492**
Client ID: **CCV**	Batch ID: **R110492**	TestNo: **EPA 300.0**		Analysis Date: **9/9/2016**	SeqNo: **2424608**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride	2.452	0.50	2.500	0	98.1	90	110				

Sample ID **CCV-3**	SampType: **CCV**	TestCode: **300_W_CLP**	Units: **mg/L**	Prep Date:	RunNo: **110492**
Client ID: **CCV**	Batch ID: **R110492**	TestNo: **EPA 300.0**		Analysis Date: **9/9/2016**	SeqNo: **2424634**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride	2.465	0.50	2.500	0	98.6	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: N020873
Project: PG&E Topock - PMP, RC000753.801A

ANALYTICAL QC SUMMARY REPORT

TestCode: 300_W_SO4PGE

Sample ID **ICV**	SampType: **ICV**	TestCode: **300_W_SO4P**	Units: **mg/L**	Prep Date:	RunNo: **110492**
Client ID: **ICV**	Batch ID: **R110492**	TestNo: **EPA 300.0**		Analysis Date: **8/29/2016**	SeqNo: **2424511**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Sulfate	4.932	0.50	5.000	0	98.6	90	110				

Sample ID **CCV-1**	SampType: **CCV**	TestCode: **300_W_SO4P**	Units: **mg/L**	Prep Date:	RunNo: **110492**
Client ID: **CCV**	Batch ID: **R110492**	TestNo: **EPA 300.0**		Analysis Date: **9/9/2016**	SeqNo: **2424513**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Sulfate	5.219	0.50	5.000	0	104	90	110				

Sample ID **CCV-2**	SampType: **CCV**	TestCode: **300_W_SO4P**	Units: **mg/L**	Prep Date:	RunNo: **110492**
Client ID: **CCV**	Batch ID: **R110492**	TestNo: **EPA 300.0**		Analysis Date: **9/9/2016**	SeqNo: **2424536**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Sulfate	5.066	0.50	5.000	0	101	90	110				

Sample ID **CCV-3**	SampType: **CCV**	TestCode: **300_W_SO4P**	Units: **mg/L**	Prep Date:	RunNo: **110492**
Client ID: **CCV**	Batch ID: **R110492**	TestNo: **EPA 300.0**		Analysis Date: **9/9/2016**	SeqNo: **2424600**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Sulfate	5.008	0.50	5.000	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

SUMMARY OF INSTRUMENT BLANKS

CLIENT: ARCADIS U.S., Inc. - California
Work Order: N020873
Project: PG&E Topock - PMP, RC000753.801A

ANALYTICAL QC SUMMARY REPORT

TestCode: 300_W_CLPGE

Sample ID **ICB**	SampType: **ICB**	TestCode: **300_W_CLP**	Units: **mg/L**	Prep Date:	RunNo: **110492**
Client ID: **ICB**	Batch ID: **R110492**	TestNo: **EPA 300.0**		Analysis Date: **8/29/2016**	SeqNo: **2424603**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride	ND	0.50									

Sample ID **CCB-1**	SampType: **CCB**	TestCode: **300_W_CLP**	Units: **mg/L**	Prep Date:	RunNo: **110492**
Client ID: **CCB**	Batch ID: **R110492**	TestNo: **EPA 300.0**		Analysis Date: **9/9/2016**	SeqNo: **2424605**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride	ND	0.50									

Sample ID **CCB-2**	SampType: **CCB**	TestCode: **300_W_CLP**	Units: **mg/L**	Prep Date:	RunNo: **110492**
Client ID: **CCB**	Batch ID: **R110492**	TestNo: **EPA 300.0**		Analysis Date: **9/9/2016**	SeqNo: **2424609**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride	ND	0.50									

Sample ID **CCB-3**	SampType: **CCB**	TestCode: **300_W_CLP**	Units: **mg/L**	Prep Date:	RunNo: **110492**
Client ID: **CCB**	Batch ID: **R110492**	TestNo: **EPA 300.0**		Analysis Date: **9/9/2016**	SeqNo: **2424635**

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
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: ARCADIS U.S., Inc. - California
Work Order: N020873
Project: PG&E Topock - PMP, RC000753.801A

ANALYTICAL QC SUMMARY REPORT

TestCode: 300_W_SO4PGE

Sample ID **ICB**	SampType: **ICB**	TestCode: **300_W_SO4P**	Units: **mg/L**	Prep Date:	RunNo: **110492**
Client ID: **ICB**	Batch ID: **R110492**	TestNo: **EPA 300.0**		Analysis Date: **8/29/2016**	SeqNo: **2424512**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Sulfate	ND	0.50									

Sample ID **CCB-1**	SampType: **CCB**	TestCode: **300_W_SO4P**	Units: **mg/L**	Prep Date:	RunNo: **110492**
Client ID: **CCB**	Batch ID: **R110492**	TestNo: **EPA 300.0**		Analysis Date: **9/9/2016**	SeqNo: **2424514**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Sulfate	ND	0.50									

Sample ID **CCB-2**	SampType: **CCB**	TestCode: **300_W_SO4P**	Units: **mg/L**	Prep Date:	RunNo: **110492**
Client ID: **CCB**	Batch ID: **R110492**	TestNo: **EPA 300.0**		Analysis Date: **9/9/2016**	SeqNo: **2424537**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Sulfate	ND	0.50									

Sample ID **CCB-3**	SampType: **CCB**	TestCode: **300_W_SO4P**	Units: **mg/L**	Prep Date:	RunNo: **110492**
Client ID: **CCB**	Batch ID: **R110492**	TestNo: **EPA 300.0**		Analysis Date: **9/9/2016**	SeqNo: **2424601**

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
- 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

RETENTION TIME (RT) SUMMARY

Instrument ID: IC-02

Analytical Sequence

Date Analyzed: 9/9/2016

Sample Name		Retention Time	Evaluation
CCV-1	Sulfate	8.58	
CCV-2	Sulfate	8.6	
CCV-3	Sulfate	8.51	
	Average	8.563	
	Lower Limit	8.363	
	Upper Limit	8.763	
MB-R110492_SO4	Sulfate	0	N.A
LCS-R110492_SO4	Sulfate	8.57	PASS
N020873-001C	Sulfate	8.48	PASS
N020873-002C	Sulfate	8.61	PASS
N020873-001CDUP	Sulfate	8.55	PASS
N020873-002CMS	Sulfate	8.61	PASS
N020873-002CMSD	Sulfate	8.59	PASS

RETENTION TIME (RT) SUMMARY

Instrument ID: IC-02

Analytical Sequence

Date Analyzed: 9/9/2016

Sample Name		Retention Time	Evaluation
CCV-1	Chloride	3.66	
CCV-2	Chloride	3.63	
CCV-3	Chloride	3.63	
	Average	3.640	
	Lower Limit	3.440	
	Upper Limit	3.840	
MB-R110492_CL	Chloride	0	N.A
LCS-R110492_CL	Chloride	3.65	PASS
N020873-001C	Chloride	3.6	PASS
N020873-001CDUP	Chloride	3.67	PASS
N020873-002C	Chloride	3.63	PASS
N020873-002CMS	Chloride	3.63	PASS
N020873-002CMSD	Chloride	3.62	PASS

MDL STUDY

METHOD DETECTION LIMIT 2016

Method Name: **INORGANIC IONS by Ion Chromatography (PG&E)**
Method Number: EPA 300.0
Analysis Date(s): 2/22/2016, 2/23/2016
Analyst/Technician: Quennie Manimtim

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

Instrument Name: **IC-02**

Acceptance Criteria: MDL < spike < 10XMDL

Analyte	#1	#2	#3	#4	#5	#6	#7	Spike Conc., mg/L	SD	MDL	LOD	PQL
Fluoride	0.072	0.081	0.065	0.068	0.074	0.069	0.066	0.020	0.0055	**0.0174**	0.035	0.10
Chloride	0.205	0.218	0.212	0.218	0.208	0.202	0.208	0.10	0.0062	**0.0194**	0.050	0.50
Nitrite	0.045	0.058	0.043	0.046	0.050	0.055	0.040	0.020	0.0065	**0.0205**	0.030	0.50
Bromide	0.073	0.076	0.085	0.094	0.073	0.070	0.058	0.040	0.0114	**0.0359**	0.100	0.20
Nitrate	0.052	0.063	0.062	0.061	0.058	0.056	0.063	0.020	0.0042	**0.0130**	0.030	0.50
Phosphate	0.057	0.054	0.074	0.045	0.048	0.047	0.063	0.050	0.0103	**0.0325**	0.050	0.10
Sulfate	0.285	0.238	0.238	0.264	0.249	0.241	0.284	0.10	0.0208	**0.0655**	0.150	0.50

MDL/LOD & PQL Verification 2016 (2nd Quarter)

Method Name: **Inorganic Ions by Ion Chromatography (Low Level)** Matrix: **WATER**
Method Number: EPA Method 300.0 Unit: mg/L
Analysis Date(s): 5/26/2016
Analyst: Quennie B. Manimtim

Instrument Name: **IC-02**

Compound	MDL	LOD Spike Conc., mg/L	LOD actual Conc., mg/L	PQL Spike Conc., mg/L	PQL actual Conc., mg/L	%Recovery
Fluoride	**0.0174**	0.035	0.072	0.100	0.122	**122**
Chloride	**0.0194**	0.050	0.146	0.500	0.538	**108**
Nitrite	**0.0205**	0.030	0.063	0.050	0.060	**120**
Bromide	**0.0359**	0.100	0.077	0.200	0.239	**120**
Nitrate	**0.0130**	0.030	0.061	0.050	0.066	**132**
Phosphate	**0.0325**	0.050	0.074	0.100	0.132	**132**
Sulfate	**0.0655**	0.150	0.269	0.500	0.662	**132**

SM 3500-Cr B

Wet Chemistry Technical Batch Review Checklist (ARCUS02)

ASSET LABORATORIES - LAS VEGAS

FIRST LEVEL REVIEW:

QC Batch Number: R110608 **Analyst:** QBM

ASSET #: N020873 **Date Analyzed:** 9/20/2016

Method: 3500

Initial Calibration	1st Level Review Y	N	N/A	2nd Level Review 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:

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 — Date: 9/20/2016

2nd Level Reviewer 9/22/2016 Date: —

SAMPLE CALCULATION

SAMPLE CALCULATION

METHOD: SM 3500-Cr B
TEST NAME: Hexavalent Chromium by Colorimetric Method
MATRIX: ~~Water~~ Groundwater

FORMULA:

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

Hexavalent Chromium, ug/L = A * DF

Where:

A= ug/L, UV-VIS Hexavalent Chromium calculated concentration

DF= dilution factor

For **N020873-002A,** concentration in ug/L is calculated as follows:

Hexavalent Chromium, ug/L = 120.985 * 5

= 604.925 ug/L

Reporting result in 2 significant figures,

Hexavalent Chromium, ug/L = 600

9/20/2016

INITIAL CALIBRATION DATA SUMMARY

THERMO SPECTRONIC ~ VISION32 SOFTWARE V1.25

Operator Name	(None Entered)		
Department	(None Entered)	Date of Report	9/20/2016
Organisation	(None Entered)	Time of Report	2:30:14
Information	(None Entered)		

Calibration - EPA 3500_CRB_09202016.fqc

Operator Name	(None Entered)
Instrument ID	152119

Calibration Method - EPA 3500_CRB_09202016.fqc

Description	Hexavalent Chromium by EPA 3500 (Colorimetric)		
Operator Name	QBM		
Quant Mode	Single Lambda	Standards	5
Lambda 1	540.0 nm	Replicates	1
Lambda 2	Off	Initial Curve Fit	Linear
Lambda 3	Off	Conc. Units	ug/L
Integ. Time	00:00:01	Conc. Dec. Places	3
Lamp Change	325.0 nm	Flier Detection	Off
Bandwidth	2.0 nm	Valid Until	9/20/2017
Method Status	Unlocked		

Standards Table - EPA 3500_CRB_09202016.fqc

Standard	Conc.	Use	540.0nm	Errors
Standard01				
	10.000	Yes	0.009	None
Standard02				
	50.000	Yes	0.043	None
Standard03				
	100.000	Yes	0.084	None
Standard04				
	250.000	Yes	0.210	None
Standard05				
	500.000	Yes	0.410	None

All calculations have been performed to double precision as defined by ANSI/IEEE STD 754-1985 but have been rounded for display purposes.

Errors Key

None	: No Errors Detected
I	: Invalid Data

Calibration Line / Curve Statistics

Equation A = 0.0008 x Conc + 0.0020

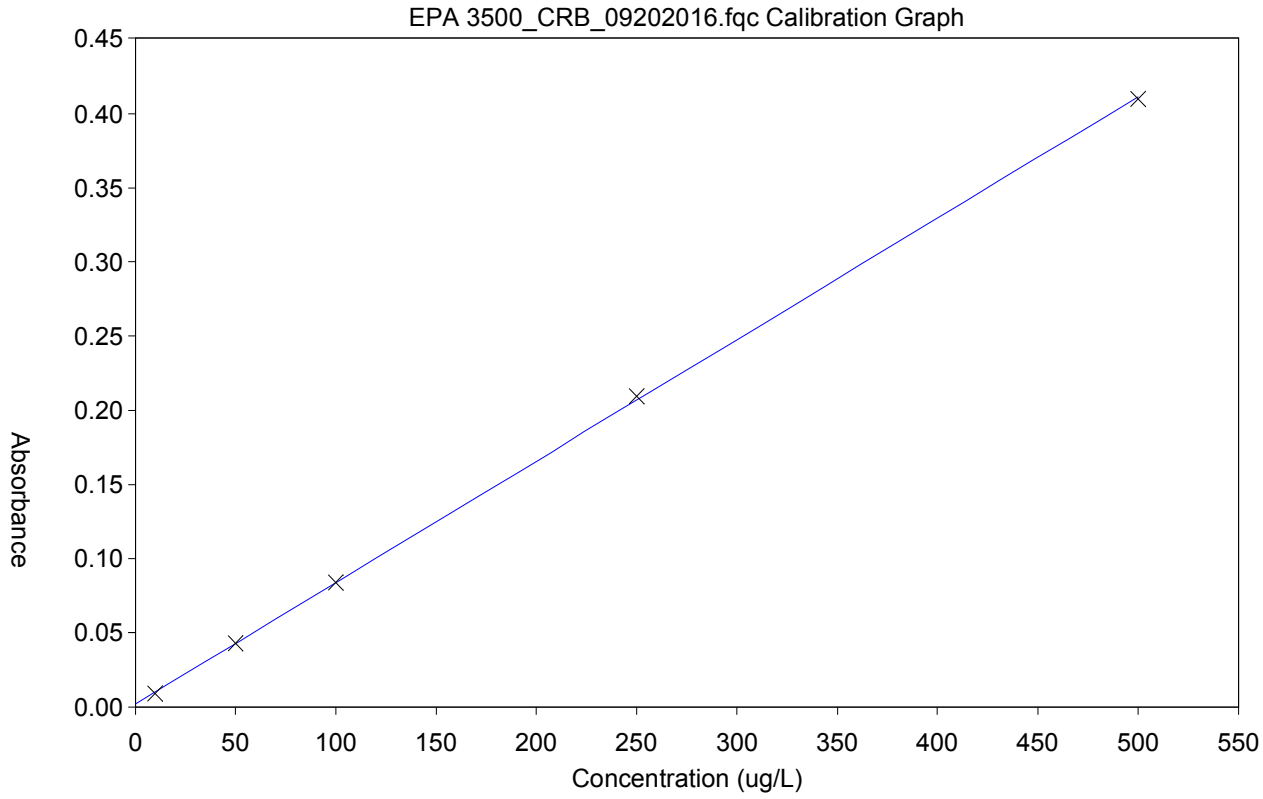
9/20/2016

THERMO SPECTRONIC ~ VISION32 SOFTWARE V1.25

Operator Name	(None Entered)		
Department	(None Entered)	Date of Report	9/20/2016
Organisation	(None Entered)	Time of Report	2:30:14
Information	(None Entered)		

Selected Fit	Linear
Coefficient	0.999897
Sum of Residuals	(<0.0001)

Calibration Graph



ICAL/CCV: IWST160920C
ICV/LCS/MS/MSD: IWST160920D
10% H2SO4: R160920A
1,5-Diphenylcarbazide Solution: R160920B

9/20/2016

INITIAL CALIBRATION AND CONTINUING CALIBRATON VERIFICATION SUMMARY

CLIENT: ARCADIS U.S., Inc. - California
Work Order: N020873
Project: PG&E Topock - PMP, RC000753.801A

ANALYTICAL QC SUMMARY REPORT

TestCode: 3500_CrBPGE

Sample ID **CCV-1**	SampType: **CCV**	TestCode: **3500_CrBPG**	Units: **µg/L**	Prep Date:	RunNo: **110608**
Client ID: **CCV**	Batch ID: **R110608**	TestNo: **SM 3500-Cr B**		Analysis Date: **9/20/2016**	SeqNo: **2428432**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium, Hexavalent	100.604	10	100.0	0	101	90	110				

Sample ID **ICV**	SampType: **ICV**	TestCode: **3500_CrBPG**	Units: **µg/L**	Prep Date:	RunNo: **110608**
Client ID: **ICV**	Batch ID: **R110608**	TestNo: **SM 3500-Cr B**		Analysis Date: **9/20/2016**	SeqNo: **2428434**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium, Hexavalent	253.800	10	250.0	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		

INITIAL CALIBRATION AND CONTINUING CALIBRATON BLANK SUMMARY

CLIENT: ARCADIS U.S., Inc. - California
Work Order: N020873
Project: PG&E Topock - PMP, RC000753.801A

ANALYTICAL QC SUMMARY REPORT

TestCode: 3500_CrBPGE

Sample ID **CCB-1**	SampType: **CCB**	TestCode: **3500_CrBPG**	Units: **µg/L**	Prep Date:	RunNo: **110608**
Client ID: **CCB**	Batch ID: **R110608**	TestNo: **SM 3500-Cr B**		Analysis Date: **9/20/2016**	SeqNo: **2428431**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium, Hexavalent	-1.697	10									

Sample ID **ICB**	SampType: **ICB**	TestCode: **3500_CrBPG**	Units: **µg/L**	Prep Date:	RunNo: **110608**
Client ID: **ICB**	Batch ID: **R110608**	TestNo: **SM 3500-Cr B**		Analysis Date: **9/20/2016**	SeqNo: **2428433**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium, Hexavalent	-1.877	10									

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis 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

Calibration Method - EPA 3500_CRB_09202016.fqc 9/20/2016 14:37

Description	Hexavalent Chromium by EPA 3500 (Colorimetric)		
Operator Name	QBM		
Quant Mode	Single Lambda	Standards	5
Lambda 1	540.0 nm	Replicates	1
Lambda 2	Off	Initial Curve Fit	Linear
Lambda 3	Off	Conc. Units	ug/L
Integ. Time	00:00:01	Conc. Dec. Places	3
Lamp Change	325.0 nm	Flier Detection	Off
Bandwidth	2.0 nm	Valid Until	9/20/2017
Method Status	Unlocked		

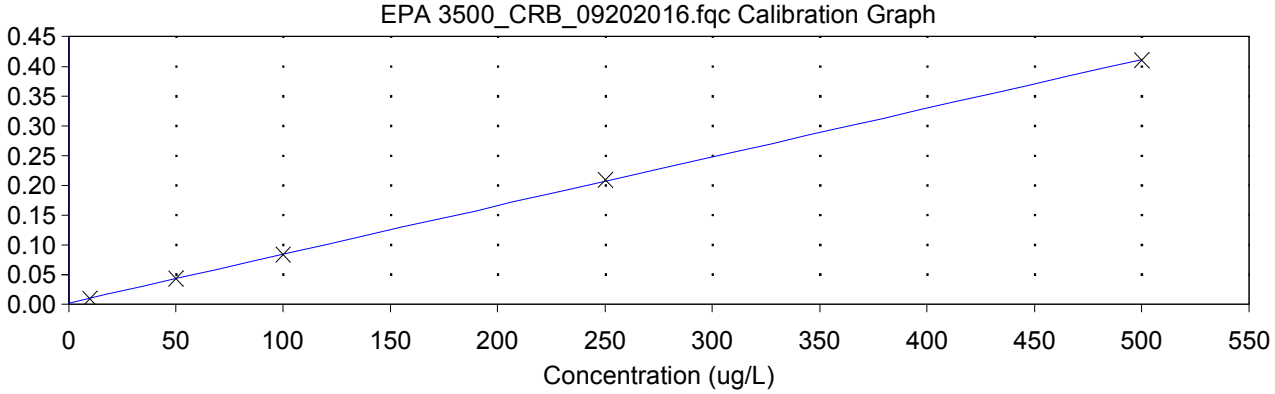
Calibration Line / Curve Statistics

Equation	A = 0.0008 x Conc + 0.0020
Selected Fit	Linear
Coefficient	0.999897
Sum of Residuals	(<0.0001)

Standard	Conc.	Use	540.0nm	Errors
Standard01	10.000	Yes	0.009	None
Standard02	50.000	Yes	0.043	None
Standard03	100.000	Yes	0.084	None
Standard04	250.000	Yes	0.210	None
Standard05	500.000	Yes	0.410	None

All calculations have been performed to double precision as defined by ANSI/IEEE STD 754-1985 but have been rounded for display purposes.

EPA 3500_CRB_09202016.fqc Calibration Graph



Batch : Hexavalent Chromium_09202016001.qre

	Sample	540.0nm	Conc.	Errors
1	,ICV,ICV,1,	0.210	253.800	None
2	,ICB,ICB,1,	0.000	-1.877	I
3	,MB-,MBLK,1,	0.000	-1.972	I
4	,LCS-,LCS,1,	0.084	100.536	None
5	,N020843-001D,SAMP,5,	0.101	121.415	None
6	,N020843-001DDUP,DUP,5,	0.102	121.741	None
7	,N020873-002A,SAMP,5,	0.101	120.985	None
8	,N020873-002AMS,MS,5,	0.183	221.207	None
9	,N020873-002AMSD,MSD,5,	0.184	221.976	None
10	,CCV-1,CCV,1,	0.084	100.604	None
11	,CCB-1,CCB,1,	0.001	-1.697	I

All calculations have been performed to double precision as defined by ANSI/IEEE STD 754-1985 but have been rounded for display purposes.

ICAL/CCV: IWST160920C
ICV/LCS/MS/MSD: IWST160920D
10% H2SO4: R160920A
1,5-Diphenylcarbazide Solution: R160920B

9/20/2016

SM 4500-NO3F

Wet Chemistry Technical Batch Review Checklist (ARCUS02)

ASSET LABORATORIES - LAS VEGAS

FIRST LEVEL REVIEW:

QC Batch Number: R110590 **Analyst:** REB

ASSET #: N020873 **Date Analyzed:** 9/17/2016

Method: 4500_NO3

Initial Calibration	1st Level Review Y	N	N/A	2nd Level Review 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:

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 Reb 09/19/2016 Date: —

2nd Level Reviewer Mary 9/22/2016 Date: —

SAMPLE CALCULATION

Sample Calculation

METHOD: EPA 4500NO3F
TEST NAME: Nitrate/Nitrite-N by Automated Cadmium Reduction
MATRIX: Water

FORMULA:

Calculate the Nitrate/Nitrite-N concentration, in mg/L, in the original sample as follows:

Nitrate/Nitrite-N, mg/L = A * DF

where:

A = mg/L, Nitrate/Nitrite-N instrument calculated concentration
DF = dilution factor

For **N020873-002D**, concentration in mg/L is calculated as follows:

Nitrate/Nitrite-N, mg/L = 0.5384*5

= 2.692 mg/L

Reporting results in two significant figures:

Nitrate/Nitrite-N, mg/L = 2.7

Reb 09/19/2016

INITIAL CALIBRATION DATA SUMMARY

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

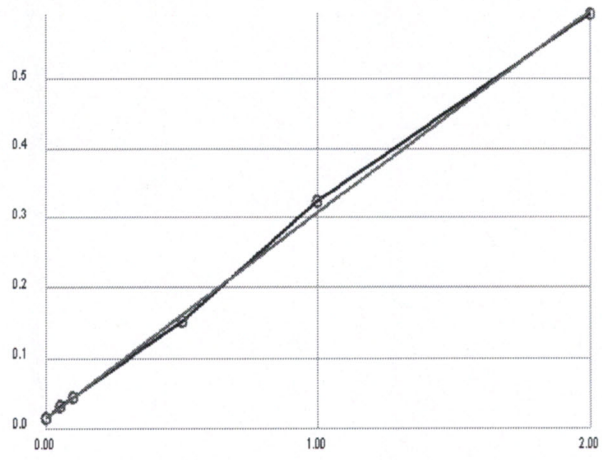
N.	Volume (µl)	Incubation time (sec)
1	200	102
2	300	663
3	0	0

QC

N.	Value	Tolerance
1	1	0.1

Calibration

Curve type	Linear (Calibrants)
Curve forced to zero	No
Blank inclusion	No



Formula	y = 0.2931x + 0.0151
Correlation	.999271

Calibrant	Energy	Set	Conc
1	0.0142	0.0000	-0.0032
2	0.0313	0.0500	0.0552
3	0.0433	0.1000	0.0961
4	0.1518	0.5000	0.4664
5	0.3240	1.0000	1.0540
6	0.5958	2.0000	1.9815

Notes:

2% CuSO4- R160916A
R1 Buffer- R160916B
R2 Coloring reagent- R160916C

STD 1°- ISST160211J
STD 2°- ISST150730E

Rob 09/19/2016

INITIAL CALIBRATION AND CONTINUING CALIBRATON VERIFICATION SUMMARY

CLIENT: ARCADIS U.S., Inc. - California
Work Order: N020873
Project: PG&E Topock - PMP, RC000753.801A

ANALYTICAL QC SUMMARY REPORT

TestCode: 4500N03F_W

Sample ID **ICV**	SampType: **ICV**	TestCode: **4500N03F_W**	Units: **mg/L**	Prep Date:	RunNo: **110590**
Client ID: **ICV**	Batch ID: **R110590**	TestNo: **SM4500-NO3**		Analysis Date: **9/17/2016**	SeqNo: **2427862**

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	97.0	90	110				

Sample ID **CCV-1**	SampType: **CCV**	TestCode: **4500N03F_W**	Units: **mg/L**	Prep Date:	RunNo: **110590**
Client ID: **CCV**	Batch ID: **R110590**	TestNo: **SM4500-NO3**		Analysis Date: **9/17/2016**	SeqNo: **2427875**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrate/Nitrite as N	0.498	0.050	0.5000	0	99.6	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 CALIBRATON BLANK SUMMARY

CLIENT: ARCADIS U.S., Inc. - California
Work Order: N020873
Project: PG&E Topock - PMP, RC000753.801A

ANALYTICAL QC SUMMARY REPORT

TestCode: 4500N03F_W

Sample ID **ICB**	SampType: **ICB**	TestCode: **4500N03F_W**	Units: **mg/L**	Prep Date:	RunNo: **110590**
Client ID: **ICB**	Batch ID: **R110590**	TestNo: **SM4500-NO3**		Analysis Date: **9/17/2016**	SeqNo: **2427863**

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 **CCB-1**	SampType: **CCB**	TestCode: **4500N03F_W**	Units: **mg/L**	Prep Date:	RunNo: **110590**
Client ID: **CCB**	Batch ID: **R110590**	TestNo: **SM4500-NO3**		Analysis Date: **9/17/2016**	SeqNo: **2427876**

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
DO	Surrogate Diluted Out		Calculations are based on raw values		

LOGBOOK DATA, QUANTITATION REPORT and/or SPECTRA

Advanced Technology Laboratories, Inc.

3151 W. Post Rd.
Las Vegas, NV. 89118
702-307-2659
702-307-2691
www.atl-labs.com

Time start: 09-17-2016 13:03
Time end: 09-17-2016 14:38

			EPA 353.2 NO3 as N		
			ppm	Flags	OD
1	<BLANK>	14:19:13	0.0091		0.0178
2	<BLANK>	14:20:08	-0.0001		0.0151
3	<CAL1>	14:21:09	-0.0032	[0]	0.0142
4	<CAL2>	14:22:03	0.0552	[0.05]	0.0313
5	<CAL3>	14:22:46	0.0961	[0.1]	0.0433
6	<CAL4>	14:23:34	0.4664	[0.5]	0.1518
7	<CAL5>	14:24:23	1.0540	[1]	0.3240
8	<CAL6>	14:25:07	1.9815	[2]	0.5958
9	,BLANK,BLANK,1,	14:25:49	0.0074		0.0173
10	,ICV,ICV,1,	14:26:38	0.4851		0.1573
11	,ICB,ICB,1,	14:27:20	-0.0032		0.0142
12	,MB-H2O,MBLK,1,	14:28:03	-0.0032		0.0142
13	,LCS-H2O,LCS,1,	14:28:51	0.4899		0.1587
14	,N020842-002D,SAMP,5,	14:29:35	0.5606		0.1794
15	,N020842-002DDUP,DUP,5,	14:30:24	0.5674		0.1814
16	,N020842-002DMS,MS,5,	14:31:06	1.0223		0.3147
17	,N020842-002DMSD,MSD,5,	14:31:49	1.1028		0.3383
18	,N020843-001C,SAMP,5,	14:32:37	0.5862		0.1869
19	,N020873-001D,SAMP,1,	14:33:21	0.0238		0.0221
20	,N020873-002D,SAMP,5,	14:34:03	0.5384		0.1729
21	,BLANK,BLANK,1	14:34:46	-0.0073		0.0130
22	,CCV-1,CCV,1,	14:35:34	0.4981		0.1611
23	,CCB-1,CCB,1,	14:36:17	-0.0076		0.0129

Reb 09/19/2016

Nitrate/Nitrite as N by Cadmium Reduction Preparation and Runlog

Matrix:

Method: SM 4500-NO3-F/ EPA 353.2
Insturument: Easy Chem Analyzer

Date Analyzed: 09/17/16
Time Analyzed: 01:03 PM
Analyzed By: REB

Reagent ID #
Ammonium Chloride reagent/Buffer: R160916B
Color reagent: R160916C
2% Copper Sulfate: R160916A
Ammonium Hydroxide: CINV-160607C

	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)
1)	N020842-002D		7.75						
2)	N020843-001C		8.67						
3)	N020873-001D		7.80						
4)	N020873-002D		8.94						
5)									
6)									
7)									
8)									
9)									
10)									
11)									
12)									
13)									
14)									
15)									
16)									
17)									
18)									
19)									
20)									
21)									
22)									
23)									

Reb 09/19/2016

Advanced Technology Laboratories, Inc.
Book # 1

EPA 6010B
Dissolved

Metals Technical Batch Review Checklist (ARCUS02)

ASSET LABORATORIES - LAS VEGAS

FIRST LEVEL REVIEW:

QC Batch Number: 59628
ASSET #: N020873

Instrument ID: ICP-02
Analyst: CEI
Date Analyzed: 9/12/2016

Method:

[X] EPA 6010B / 200.7
[ ] EPA 6020 / 200.8
[ ] EPA 7470A / 7471A/245.1
[ ] 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				
Interference Check						
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					
Continuing Calibration						
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 ICVand CCV analysis.	X					
11. Do all calibration blanks (ICB and CCBs) meet criteria? (< PQL)	X					
12 Is low level check twice during 8 hr period or at end within ± 30% of expected value? (ICP/ICPMS only)	X					
Sample Information						
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			
QC Items						
22. IS are within control limits (70-125% for ICPMS).	X					
23. Method blank values are below the PQL .	X					
24. LCS compounds within control limits.	X					
25. MS/MSD, RPD's are within control limits	X					
Raw Data and Miscellaneous Information						
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					
Preliminary Report						
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 LLICV failed, bias high. However samples have high concentration, thus reported.
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 9/22/2016 Date: —

2nd Level Reviewer 9/22/2016 Date: —

Metals Technical Batch Review Checklist (ARCUS02)

ASSET LABORATORIES - LAS VEGAS

FIRST LEVEL REVIEW:

QC Batch Number: 59628
ASSET #: N020873

Instrument ID: ICP-02
Analyst: CEI
Date Analyzed: 9/12/2016

Method:

[X] EPA 6010B / 200.7
[ ] EPA 6020 / 200.8
[ ] EPA 7470A / 7471A/245.1
[ ] Other _____

Initial Calibration and Initial Calibration Verification	1st Level Review Y	1st Level Review N	1st Level Review N/A	2nd Level Review Y	2nd Level Review N	2nd Level Review 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					
Interference Check						
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					
Continuing Calibration						
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 ICVand CCV analysis.	X					
11. Do all calibration blanks (ICB and CCBs) meet criteria? (< PQL)	X					
12 Is low level check twice during 8 hr period or at end within ± 30% of expected value? (ICP/ICPMS only)	X					
Sample Information						
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			
QC Items						
22. IS are within control limits (70-125% for ICPMS).	X					
23. Method blank values are below the PQL .	X					
24. LCS compounds within control limits.	X					
25. MS/MSD, RPD's are within control limits		X				
Raw Data and Miscellaneous Information						
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					
Preliminary Report						
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:

For Na run only.
%Rec of Na in N020873-002B PS/MS/MSD failed. However LCS & DT 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 9/22/2016 Date: —

2nd Level Reviewer 9/22/2016 Date: —

SAMPLE CALCULATION

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:

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 **N020873-002B** , the concentration ir ug/L is calculated as follows:

Iron , ug/L = 0.05458 * 1 * (25/25) * 1000

Iron , ug/L = 54.58

Reporting results in two significant figures,

Iron , ug/L = 55

% RSD SUMMARY

RSD SUMMARY: 160912B

Instrument ID: ICP-02

Sample Name	Type	DF	Analyte	Reported Conc	RSD	Criteria	Comment
CalBlk	IBLK	1	Ca	0	3.73	15	PASS
Standard1	ICAL	1	Ca	0.2	4.85	15	PASS
Standard2	ICAL	1	Ca	1	0.84	15	PASS
Standard3	ICAL	1	Ca	2	1.75	15	PASS
Standard4	ICAL	1	Ca	5	0.26	15	PASS
Standard5	ICAL	1	Ca	7.5	0.48	15	PASS
Standard6	ICAL	1	Ca	10	0.82	15	PASS
Standard7	ICAL	1	Ca	20	0.68	15	PASS
ICV	ICV	1	Ca	10	0.4	15	PASS
ICB	ICB	1	Ca	-0.017	42.47	15	<PQL
LLICV	CCV1	1	Ca	0.27	1.91	20	PASS
ICSA1	ICSA	1	Ca	508.34	0.026	15	PASS
ICSAB1	ICSAB	1	Ca	542.88	0.23	15	PASS
MB-59628	MBLK	1	Ca	-0.053	60.24	15	<PQL
LCS1-59628	LCS	1	Ca	9.36	0.4	15	PASS
N020873-001B	SAMP	1	Ca	123.9	0.21	15	PASS
N020873-001B	SAMP	5	Ca	27.12	0.49	15	PASS
N020873-001B-PS	PS	1	Ca	135.32	0.34	15	PASS
N020873-001B-MS1	MS	1	Ca	136.15	0.44	15	PASS
N020873-001B-MSD1	MSD	1	Ca	135.66	0.14	15	PASS
N020873-002B	SAMP	1	Ca	181.85	0.39	15	PASS
CCV1	CCV	1	Ca	9.82	0.87	15	PASS
CCB1	CCB	1	Ca	-0.02	83.83	15	<PQL
LLCCV1	CCV2	1	Ca	0.23	10.39	20	PASS
ICSA2	ICSA	1	Ca	496.37	0.099	15	PASS
ICSAB2	ICSAB	1	Ca	530.81	0.13	15	PASS
CalBlk	IBLK	1	Fe	0	25.53	15	<PQL
Standard1	ICAL	1	Fe	0.02	1.73	15	PASS
Standard2	ICAL	1	Fe	0.05	0.85	15	PASS
Standard3	ICAL	1	Fe	2	0.88	15	PASS
Standard4	ICAL	1	Fe	5	0.38	15	PASS
Standard5	ICAL	1	Fe	7.5	0.073	15	PASS
Standard6	ICAL	1	Fe	10	0.071	15	PASS
Standard7	ICAL	1	Fe	20	0.1	15	PASS
ICV	ICV	1	Fe	10.058	0.016	15	PASS
ICB	ICB	1	Fe	-0.0017	8.76	15	PASS
LLICV	CCV1	1	Fe	0.021	0.52	20	PASS
ICSA1	ICSA	1	Fe	190.7	0.15	15	PASS
ICSAB1	ICSAB	1	Fe	184.84	0.33	15	PASS
MB-59628	MBLK	1	Fe	-0.0013	32.099	15	<PQL
LCS1-59628	LCS	1	Fe	0.11	0.35	15	PASS
N020873-001B	SAMP	1	Fe	0.012	10.48	15	PASS

RSD SUMMARY: 160912B

Instrument ID: ICP-02

Sample Name	Type	DF	Analyte	Reported Conc	RSD	Criteria	Comment
N020873-001B	SAMP	5	Fe	0.001	48.24	15	<PQL
N020873-001B-PS	PS	1	Fe	0.11	0.24	15	PASS
N020873-001B-MS1	MS	1	Fe	0.1	0.076	15	PASS
N020873-001B-MSD1	MSD	1	Fe	0.099	0.64	15	PASS
N020873-002B	SAMP	1	Fe	0.055	1.26	15	PASS
CCV1	CCV	1	Fe	10.019	0.081	15	PASS
CCB1	CCB	1	Fe	-0.0011	34.98	15	<PQL
LLCCV1	CCV2	1	Fe	0.02	1.46	20	PASS
ICSA2	ICSA	1	Fe	190.02	0.14	15	PASS
ICSAB2	ICSAB	1	Fe	190.15	0.1	15	PASS
CalBlk	IBLK	1	Mg	0	23.36	15	<PQL
Standard1	ICAL	1	Mg	0.1	1.083	15	PASS
Standard2	ICAL	1	Mg	1	0.2	15	PASS
Standard3	ICAL	1	Mg	2	0.99	15	PASS
Standard4	ICAL	1	Mg	5	0.39	15	PASS
Standard5	ICAL	1	Mg	7.5	0.32	15	PASS
Standard6	ICAL	1	Mg	10	0.15	15	PASS
Standard7	ICAL	1	Mg	20	0.24	15	PASS
ICV	ICV	1	Mg	9.98	0.33	15	PASS
ICB	ICB	1	Mg	-0.0022	3.098	15	PASS
LLICV	CCV1	1	Mg	0.11	0.24	20	PASS
ICSA1	ICSA	1	Mg	482.63	0.23	15	PASS
ICSAB1	ICSAB	1	Mg	517.16	0.43	15	PASS
MB-59628	MBLK	1	Mg	0.0016	48.49	15	<PQL
LCS1-59628	LCS	1	Mg	10.11	0.39	15	PASS
N020873-001B	SAMP	1	Mg	28.19	0.19	15	PASS
N020873-001B	SAMP	5	Mg	6.38	0.14	15	PASS
N020873-001B-PS	PS	1	Mg	36.77	0.12	15	PASS
N020873-001B-MS1	MS	1	Mg	38.41	0.17	15	PASS
N020873-001B-MSD1	MSD	1	Mg	38.48	0.18	15	PASS
N020873-002B	SAMP	1	Mg	24.78	0.26	15	PASS
CCV1	CCV	1	Mg	9.94	0.019	15	PASS
CCB1	CCB	1	Mg	0.00074	107.1	15	<PQL
LLCCV1	CCV2	1	Mg	0.11	0.33	20	PASS
ICSA2	ICSA	1	Mg	481.15	0.14	15	PASS
ICSAB2	ICSAB	1	Mg	516.03	0.66	15	PASS

RSD SUMMARY: 160912C

Instrument ID: ICP-02

Sample Name	Type	DF	Analyte	Reported Conc	RSD	Criteria	Comment
CalBlk	IBLK	1	Na	0	8.66	15	PASS
Standard1	ICAL	1	Na	0.1	5.77	15	PASS
Standard2	ICAL	1	Na	1	0.47	15	PASS
Standard3	ICAL	1	Na	5	0.41	15	PASS
Standard4	ICAL	1	Na	10	0.25	15	PASS
Standard5	ICAL	1	Na	20	0.18	15	PASS
Standard6	ICAL	1	Na	40	0.36	15	PASS
ICV	ICV	1	Na	9.81	0.02	15	PASS
ICB	ICB	1	Na	-0.017	28.41	15	<PQL
ICSA1	ICSA	1	Na	-0.025	7.99	15	PASS
ICSAB1	ICSAB	1	Na	9.8	0.44	15	PASS
MB-59628	MBLK	1	Na	0.44	170.12	15	<PQL
LCS2-59628	LCS	1	Na	19.79	0.28	15	PASS
N020873-001B	SAMP	50	Na	15.013	0.29	15	PASS
N020873-002B	SAMP	50	Na	28.37	0.33	15	PASS
N020873-002B	SAMP	250	Na	5.72	0.28	15	PASS
N020873-002B-PS	PS	50	Na	28.46	0.71	15	PASS
N020873-002B-MS2	MS	50	Na	28.37	0.25	15	PASS
N020873-002B-MSD2	MSD	50	Na	28.41	0.29	15	PASS
MB-59628	MBLK	1	Na	-0.02	8.92	15	PASS
CCV1	CCV	1	Na	9.77	0.25	15	PASS
CCB1	CCB	1	Na	-0.037	17.51	15	<PQL
ICSA2	ICSA	1	Na	-0.036	5.16	15	PASS
ICSAB2	ICSAB	1	Na	9.74	0.057	15	PASS

ANALYSIS RUN LOG

INJECTION LOG: 160912B

Instrument ID: ICP-02

STANDARD CODE	
Standard1	MWST-160906A,0.5<50mL
Standard2	MWST-160906C
Standard3	MWST-160906E,5<50mL
Standard4	MWST-160906E,12.5<50mL
Standard5	MWST-160906E,15<40mL
Standard6	MWST-160906E,25<50mL
Standard7	MWST-160906E
ICV	MWST-160701B
CCV	MWST-160906E,25<50mL
ICSA/ICSAB	MWST-160906F/G
Int. Std. (Y)	MSST-160323C
PS Spike	MWST-160801C/-160801D;MWST-160531G

A/S Loc	Sample Name	Type	DF	Acq Date	Acq Time
1	CalBlk	IBLK	1	09/12/2016	11:01:21 AM
2	Standard1	ICAL	1	09/12/2016	11:06:32 AM
3	Standard2	ICAL	1	09/12/2016	11:12:12 AM
14	Standard3	ICAL	1	09/12/2016	11:17:53 AM
15	Standard4	ICAL	1	09/12/2016	11:23:33 AM
6	Standard5	ICAL	1	09/12/2016	11:29:17 AM
7	Standard6	ICAL	1	09/12/2016	11:34:30 AM
8	Standard7	ICAL	1	09/12/2016	11:39:43 AM
9	ICV	ICV	1	09/12/2016	11:45:58 AM
1	ICB	ICB	1	09/12/2016	11:52:13 AM
2	LLICV	CCV1	1	09/12/2016	11:57:21 AM
4	ICSA1	ICSA	1	09/12/2016	12:03:00 PM
5	ICSAB1	ICSAB	1	09/12/2016	12:09:51 PM
74	MB-59628	MBLK	1	09/12/2016	01:50:44 PM
75	LCS1-59628	LCS	1	09/12/2016	01:56:25 PM
76	N020873-001B	SAMP	1	09/12/2016	02:02:05 PM
77	N020873-001B	SAMP	5	09/12/2016	02:08:49 PM
78	N020873-001B-PS	PS	1	09/12/2016	02:14:30 PM
79	N020873-001B-MS1	MS	1	09/12/2016	02:20:44 PM
80	N020873-001B-MSD1	MSD	1	09/12/2016	02:27:27 PM
81	N020873-002B	SAMP	1	09/12/2016	02:33:42 PM
7	CCV1	CCV	1	09/12/2016	02:40:24 PM
1	CCB1	CCB	1	09/12/2016	02:45:37 PM
2	LLCCV1	CCV2	1	09/12/2016	02:50:46 PM
4	ICSA2	ICSA	1	09/12/2016	02:56:25 PM
5	ICSAB2	ICSAB	1	09/12/2016	03:03:16 PM

INJECTION LOG: 160912C

Instrument ID: ICP-02

STANDARD CODE	
Standard1	MWST-160608L,0.025<50mL
Standard2	MWST-160608L,0.25<50mL
Standard3	MWST-160608L,1.25<50mL
Standard4	MWST-160608L,2.5<50mL
Standard5	MWST-160608L,5<50mL
Standard6	MWST-160608L,10<50mL
ICV	MWST-160608M
CCV	MWST-160608L,2.5<50mL
ICSA/ICSAB	MWST-160523A/MWST-160608N
Int. Std. (Sc):	MSST-160323B
PS Spike	MSST-130329D/-111006A/-150717A

A/S Loc	Sample Name	Type	DF	Acq Date	Acq Time
1	CalBlk	IBLK	1	09/12/2016	03:38:19 PM
26	Standard1	ICAL	1	09/12/2016	03:41:37 PM
27	Standard2	ICAL	1	09/12/2016	03:44:55 PM
28	Standard3	ICAL	1	09/12/2016	03:48:43 PM
29	Standard4	ICAL	1	09/12/2016	03:52:33 PM
30	Standard5	ICAL	1	09/12/2016	03:56:23 PM
31	Standard6	ICAL	1	09/12/2016	04:00:17 PM
32	ICV	ICV	1	09/12/2016	04:04:11 PM
1	ICB	ICB	1	09/12/2016	04:08:03 PM
33	ICSA1	ICSA	1	09/12/2016	04:11:20 PM
34	ICSAB1	ICSAB	1	09/12/2016	04:14:38 PM
74	MB-59628	MBLK	1	09/12/2016	04:18:29 PM
86	LCS2-59628	LCS	1	09/12/2016	04:22:05 PM
88	N020873-001B	SAMP	50	09/12/2016	04:25:58 PM
89	N020873-002B	SAMP	50	09/12/2016	04:29:18 PM
90	N020873-002B	SAMP	250	09/12/2016	04:32:39 PM
91	N020873-002B-PS	PS	50	09/12/2016	04:36:00 PM
92	N020873-002B-MS2	MS	50	09/12/2016	04:39:20 PM
93	N020873-002B-MSD2	MSD	50	09/12/2016	04:42:40 PM
74	MB-59628	MBLK	1	09/12/2016	04:46:00 PM
29	CCV1	CCV	1	09/12/2016	04:49:19 PM
1	CCB1	CCB	1	09/12/2016	04:53:09 PM
33	ICSA2	ICSA	1	09/12/2016	04:56:27 PM
34	ICSAB2	ICSAB	1	09/12/2016	04:59:46 PM

SAMPLE PREPARATION LOG

ASSET Laboratories

PREP BATCH REPORT

Prep Start Date: **9/12/2016 8:00:11**
Prep End Date: **9/12/2016 12:30:00**
Prep Batch **59628** Prep Code: **3010_W_DISS**

Reviewed/ Date: _____
Initials/ Date: _____ 9/22/2016
Technician **Claire Ignacio**

Prep Factor Units
mL / mL

Sample ID	Matrix	pH	SampAmt	3 Replicates	Sol Added	Sol Recov	Fin Vol	factor	Clean Up Code	TURB Check
LCS1-59628	Aqueous		25	☐	0	0	25	1.000		
LCS2-59628	Aqueous		25	☐	0	0	25	1.000		
MB-59628	Aqueous		25	☐	0	0	25	1.000		
N020873-001B	Groundwater	<2	25	☐	0	0	25	1.000		
N020873-001B-MS	Groundwater	<2	25	☐	0	0	25	1.000		
N020873-001B-MS	Groundwater	<2	25	☐	0	0	25	1.000		
N020873-002B	Groundwater	<2	25	☐	0	0	25	1.000		
N020873-002B-MS	Groundwater	<2	25	☐	0	0	25	1.000		
N020873-002B-MS	Groundwater	<2	25	☐	0	0	25	1.000		

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

Number	Reagent Name
8558	NITRIC ACID
8565	HYDROCHLORIC ACID

Spk ID	Spike Name	SampType	AmtAdd
MSST-111006A	Potassium	LCS,MS,MSD	0.05
MSST-130329D	Sodium	LCS,MS,MSD	0.05
MSST-150717A	Strontium	LCS,MS,MSD	0.125
MWST-160531G	ICP Solution C	LCS,MS,MSD	0.5
MWST-160801C	ICP Solution A	LCS,MS,MSD	0.5
MWST-160801D	ICP Solution B	LCS,MS,MSD	0.5

INITIAL CALIBRATION DATA SUMMARY

INITIAL CALIBRATION SUMMARY: 160912B

Instrument ID: ICP-02

Sample ID	Date	Time	Elem	Wavelength	Corrected Intensity	Concentration	Units	R
Magnesium								
CalBlk	09/12/2016	11:01:21 AM	Mg	279.079	32	0.00	mg/L	
Standard1	09/12/2016	11:06:32 AM	Mg	279.079	1336	0.1000	mg/L	
Standard2	09/12/2016	11:12:12 AM	Mg	279.079	14287	1.000	mg/L	
Standard3	09/12/2016	11:17:53 AM	Mg	279.079	25906	2.000	mg/L	
Standard4	09/12/2016	11:23:33 AM	Mg	279.079	65993	5.000	mg/L	
Standard5	09/12/2016	11:29:17 AM	Mg	279.079	96166	7.500	mg/L	
Standard6	09/12/2016	11:34:30 AM	Mg	279.079	127493	10.000	mg/L	
Standard7	09/12/2016	11:39:43 AM	Mg	279.079	250914	20.000	mg/L	0.9999
Calcium								
CalBlk	09/12/2016	11:01:21 AM	Ca	227.546	-214	0.00	mg/L	
Standard1	09/12/2016	11:06:32 AM	Ca	227.546	91	0.2000	mg/L	
Standard2	09/12/2016	11:12:12 AM	Ca	227.546	370	1.000	mg/L	
Standard3	09/12/2016	11:17:53 AM	Ca	227.546	691	2.000	mg/L	
Standard4	09/12/2016	11:23:33 AM	Ca	227.546	1777	5.000	mg/L	
Standard5	09/12/2016	11:29:17 AM	Ca	227.546	2622	7.500	mg/L	
Standard6	09/12/2016	11:34:30 AM	Ca	227.546	3499	10.000	mg/L	
Standard7	09/12/2016	11:39:43 AM	Ca	227.546	6915	20.000	mg/L	1.0000
Iron								
CalBlk	09/12/2016	11:01:21 AM	Fe	273.953	-56	0.00	mg/L	
Standard1	09/12/2016	11:06:32 AM	Fe	273.953	698	0.0200	mg/L	
Standard2	09/12/2016	11:12:12 AM	Fe	273.953	2114	0.050	mg/L	
Standard3	09/12/2016	11:17:53 AM	Fe	273.953	64566	2.000	mg/L	
Standard4	09/12/2016	11:23:33 AM	Fe	273.953	165081	5.000	mg/L	
Standard5	09/12/2016	11:29:17 AM	Fe	273.953	239791	7.500	mg/L	
Standard6	09/12/2016	11:34:30 AM	Fe	273.953	318295	10.000	mg/L	
Standard7	09/12/2016	11:39:43 AM	Fe	273.953	624593	20.000	mg/L	0.9999

INITIAL CALIBRATION SUMMARY: 160912C

Instrument ID: ICP-02

Sample ID	Date	Time	Elem	Wavelength	Corrected Intensity	Concentration	Units	R
Sodium								
CalBlk	09/12/2016	03:38:19 PM	Na	589.594	224	0.00	mg/L	
Standard1	09/12/2016	03:41:37 PM	Na	589.594	267	0.1000	mg/L	
Standard2	09/12/2016	03:44:55 PM	Na	589.594	2795	1.000	mg/L	
Standard3	09/12/2016	03:48:43 PM	Na	589.594	14658	5.000	mg/L	
Standard4	09/12/2016	03:52:33 PM	Na	589.594	29221	10.000	mg/L	
Standard5	09/12/2016	03:56:23 PM	Na	589.594	59394	20.000	mg/L	
Standard6	09/12/2016	04:00:17 PM	Na	589.594	119081	40.000	mg/L	1.0000

INITIAL CALIBRATION AND CONTINUING CALIBRATION VERIFICATION SUMMARY

CLIENT: ARCADIS U.S., Inc. - California
Work Order: N020873
Project: PG&E Topock - PMP, RC000753.801A

ANALYTICAL QC SUMMARY REPORT

TestCode: 6010_WDPGEPPB

Sample ID **ICV** SampType: **ICV** TestCode: **6010_WDPG** Units: **ug/L** Prep Date: RunNo: **110509**
Client ID: **ICV** Batch ID: **R110509** TestNo: **EPA 6010B** Analysis Date: **9/12/2016** SeqNo: **2425440**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Calcium	9995.844	500	10000	0	100	90	110				
Iron	10057.502	20	10000	0	101	90	110				
Magnesium	9975.892	100	10000	0	99.8	90	110				

Sample ID **LLICV** SampType: **CCV1** TestCode: **6010_WDPG** Units: **ug/L** Prep Date: RunNo: **110509**
Client ID: **ZZZZZZ** Batch ID: **R110509** TestNo: **EPA 6010B** Analysis Date: **9/12/2016** SeqNo: **2425442**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Calcium	270.954	500	200.0	0	135	80	120				S
Iron	20.560	20	20.00	0	103	80	120				
Magnesium	108.697	100	100.0	0	109	80	120				

Sample ID **CCV1** SampType: **CCV** TestCode: **6010_WDPG** Units: **ug/L** Prep Date: RunNo: **110509**
Client ID: **CCV** Batch ID: **R110509** TestNo: **EPA 6010B** Analysis Date: **9/12/2016** SeqNo: **2425453**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Calcium	9815.201	500	10000	0	98.2	90	110				
Iron	10018.506	20	10000	0	100	90	110				
Magnesium	9944.480	100	10000	0	99.4	90	110				

Sample ID **LLCCV1** SampType: **CCV2** TestCode: **6010_WDPG** Units: **ug/L** Prep Date: RunNo: **110509**
Client ID: **ZZZZZZ** Batch ID: **R110509** TestNo: **EPA 6010B** Analysis Date: **9/12/2016** SeqNo: **2425455**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Calcium	232.114	500	200.0	0	116	70	130				
Iron	20.480	20	20.00	0	102	70	130				
Magnesium	109.946	100	100.0	0	110	70	130				

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis 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		

Ca on LLICV is biased high, however, samples for this analyte are greater than the regular CCV which passed QC criteria.

9/22/16

CLIENT: ARCADIS U.S., Inc. - California
Work Order: N020873
Project: PG&E Topock - PMP, RC000753.801A

ANALYTICAL QC SUMMARY REPORT

TestCode: 6010_WDPGEPPB

Sample ID **ICV**	SampType: **ICV**	TestCode: **6010_WDPG**	Units: **ug/L**	Prep Date:	RunNo: **110510**
Client ID: **ICV**	Batch ID: **R110510**	TestNo: **EPA 6010B**		Analysis Date: **9/12/2016**	SeqNo: **2425458**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Sodium	9810.582	500	10000	0	98.1	90	110				

Sample ID **CCV1**	SampType: **CCV**	TestCode: **6010_WDPG**	Units: **ug/L**	Prep Date:	RunNo: **110510**
Client ID: **CCV**	Batch ID: **R110510**	TestNo: **EPA 6010B**		Analysis Date: **9/12/2016**	SeqNo: **2425471**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Sodium	9773.298	500	10000	0	97.7	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
DO	Surrogate Diluted Out		Calculations are based on raw values		

SUMMARY OF INSTRUMENT BLANKS

CLIENT: ARCADIS U.S., Inc. - California
Work Order: N020873
Project: PG&E Topock - PMP, RC000753.801A

ANALYTICAL QC SUMMARY REPORT

TestCode: 6010_WDPGEPPB

Sample ID **ICB**	SampType: **ICB**	TestCode: **6010_WDPG**	Units: **ug/L**	Prep Date:	RunNo: **110509**
Client ID: **ICB**	Batch ID: **R110509**	TestNo: **EPA 6010B**		Analysis Date: **9/12/2016**	SeqNo: **2425441**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Calcium	-17.357882	500									
Iron	-1.734251	20									
Magnesium	-2.191558	100									

Sample ID **CCB1**	SampType: **CCB**	TestCode: **6010_WDPG**	Units: **ug/L**	Prep Date:	RunNo: **110509**
Client ID: **CCB**	Batch ID: **R110509**	TestNo: **EPA 6010B**		Analysis Date: **9/12/2016**	SeqNo: **2425454**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Calcium	-20.063623	500									
Iron	-1.073766	20									
Magnesium	0.744	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
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: ARCADIS U.S., Inc. - California
Work Order: N020873
Project: PG&E Topock - PMP, RC000753.801A

ANALYTICAL QC SUMMARY REPORT

TestCode: 6010_WDPGEPPB

Sample ID **ICB**	SampType: **ICB**	TestCode: **6010_WDPG**	Units: **ug/L**	Prep Date:	RunNo: **110510**
Client ID: **ICB**	Batch ID: **R110510**	TestNo: **EPA 6010B**		Analysis Date: **9/12/2016**	SeqNo: **2425459**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Sodium	-17.068924	500									

Sample ID **CCB1**	SampType: **CCB**	TestCode: **6010_WDPG**	Units: **ug/L**	Prep Date:	RunNo: **110510**
Client ID: **CCB**	Batch ID: **R110510**	TestNo: **EPA 6010B**		Analysis Date: **9/12/2016**	SeqNo: **2425472**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Sodium	-37.456754	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)

CLIENT: ARCADIS U.S., Inc. - California
Work Order: N020873
Project: PG&E Topock - PMP, RC000753.801A

ANALYTICAL QC SUMMARY REPORT

TestCode: 6010_WDPGEPPB

Sample ID **ICSA1**	SampType: **ICSA**	TestCode: **6010_WDPG**	Units: **ug/L**	Prep Date:	RunNo: **110509**
Client ID: **ICSA**	Batch ID: **R110509**	TestNo: **EPA 6010B**		Analysis Date: **9/12/2016**	SeqNo: **2425443**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aluminum	525141.566	50	500000	0	105	80	120				
Calcium	508336.901	500	500000	0	102	80	120				
Iron	190703.173	20	200000	0	95.4	80	120				
Magnesium	482626.227	100	500000	0	96.5	80	120				

Sample ID **ICSAB1**	SampType: **ICSAB**	TestCode: **6010_WDPG**	Units: **ug/L**	Prep Date:	RunNo: **110509**
Client ID: **ICSAB**	Batch ID: **R110509**	TestNo: **EPA 6010B**		Analysis Date: **9/12/2016**	SeqNo: **2425444**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aluminum	563338.000	50	500000	0	113	80	120				
Calcium	542878.736	500	500000	0	109	80	120				
Iron	184839.101	20	200000	0	92.4	80	120				
Magnesium	517157.555	100	500000	0	103	80	120				

Sample ID **ICSA2**	SampType: **ICSA**	TestCode: **6010_WDPG**	Units: **ug/L**	Prep Date:	RunNo: **110509**
Client ID: **ICSA**	Batch ID: **R110509**	TestNo: **EPA 6010B**		Analysis Date: **9/12/2016**	SeqNo: **2425456**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aluminum	526085.056	50	500000	0	105	80	120				
Calcium	496372.066	500	500000	0	99.3	80	120				
Iron	190016.768	20	200000	0	95.0	80	120				
Magnesium	481148.658	100	500000	0	96.2	80	120				

Sample ID **ICSAB2**	SampType: **ICSAB**	TestCode: **6010_WDPG**	Units: **ug/L**	Prep Date:	RunNo: **110509**
Client ID: **ICSAB**	Batch ID: **R110509**	TestNo: **EPA 6010B**		Analysis Date: **9/12/2016**	SeqNo: **2425457**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aluminum	564221.382	50	500000	0	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
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: ARCADIS U.S., Inc. - California
Work Order: N020873
Project: PG&E Topock - PMP, RC000753.801A

ANALYTICAL QC SUMMARY REPORT

TestCode: 6010_WDPGEPPB

Sample ID **ICSAB2**	SampType: **ICSAB**	TestCode: **6010_WDPG**	Units: **ug/L**	Prep Date:	RunNo: **110509**
Client ID: **ICSAB**	Batch ID: **R110509**	TestNo: **EPA 6010B**		Analysis Date: **9/12/2016**	SeqNo: **2425457**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Calcium	530814.035	500	500000	0	106	80	120				
Iron	190153.934	20	200000	0	95.1	80	120				
Magnesium	516033.464	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
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: ARCADIS U.S., Inc. - California
Work Order: N020873
Project: PG&E Topock - PMP, RC000753.801A

ANALYTICAL QC SUMMARY REPORT

TestCode: 6010_WDPGEPPB

Sample ID **ICSA1**	SampType: **ICSA**	TestCode: **6010_WDPG**	Units: **ug/L**	Prep Date:	RunNo: **110510**
Client ID: **ICSA**	Batch ID: **R110510**	TestNo: **EPA 6010B**		Analysis Date: **9/12/2016**	SeqNo: **2425460**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Sodium	-24.860641	500									

Sample ID **ICSAB1**	SampType: **ICSAB**	TestCode: **6010_WDPG**	Units: **ug/L**	Prep Date:	RunNo: **110510**
Client ID: **ICSAB**	Batch ID: **R110510**	TestNo: **EPA 6010B**		Analysis Date: **9/12/2016**	SeqNo: **2425461**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Sodium	9796.815	500	10000	0	98.0	80	120				

Sample ID **ICSA2**	SampType: **ICSA**	TestCode: **6010_WDPG**	Units: **ug/L**	Prep Date:	RunNo: **110510**
Client ID: **ICSA**	Batch ID: **R110510**	TestNo: **EPA 6010B**		Analysis Date: **9/12/2016**	SeqNo: **2425473**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Sodium	-36.326736	500									

Sample ID **ICSAB2**	SampType: **ICSAB**	TestCode: **6010_WDPG**	Units: **ug/L**	Prep Date:	RunNo: **110510**
Client ID: **ICSAB**	Batch ID: **R110510**	TestNo: **EPA 6010B**		Analysis Date: **9/12/2016**	SeqNo: **2425474**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Sodium	9735.998	500	10000	0	97.4	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		

INTERNAL STANDARD SUMMARY

INTERNAL STANDARD: 160912B

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	1.15	114.91	65-125	PASS
Standard2	ICAL	1	1.0063	100.63	65-125	PASS
Standard3	ICAL	1	1.0075	100.75	65-125	PASS
Standard4	ICAL	1	1.0026	100.26	65-125	PASS
Standard5	ICAL	1	1.054	105.35	65-125	PASS
Standard6	ICAL	1	0.99	99.49	65-125	PASS
Standard7	ICAL	1	0.98	98.43	65-125	PASS
ICV	ICV	1	1.018	101.77	65-125	PASS
ICB	ICB	1	1.011	101.12	65-125	PASS
LLICV	CCV1	1	1.15	115.23	65-125	PASS
ICSA1	ICSA	1	0.96	95.88	65-125	PASS
ICSAB1	ICSAB	1	0.88	88.44	65-125	PASS
MB-59628	MBLK	1	1.014	101.38	65-125	PASS
LCS1-59628	LCS	1	1.051	105.09	65-125	PASS
N020873-001B	SAMP	1	0.93	93.18	65-125	PASS
N020873-001B	SAMP	5	0.95	95.33	65-125	PASS
N020873-001B-PS	PS	1	0.93	93.36	65-125	PASS
N020873-001B-MS1	MS	1	0.93	93.089	65-125	PASS
N020873-001B-MSD1	MSD	1	0.94	93.61	65-125	PASS
N020873-002B	SAMP	1	0.89	89.012	65-125	PASS
CCV1	CCV	1	1.018	101.8	65-125	PASS
CCB1	CCB	1	1.02	102.04	65-125	PASS
LLCCV1	CCV2	1	1.17	116.55	65-125	PASS
ICSA2	ICSA	1	0.96	96.49	65-125	PASS
ICSAB2	ICSAB	1	0.9	89.53	65-125	PASS

INTERNAL STANDARD: 160912C

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	1.24	123.72	65-125	PASS
Standard2	ICAL	1	1.2	119.66	65-125	PASS
Standard3	ICAL	1	0.99	98.57	65-125	PASS
Standard4	ICAL	1	0.99	99.17	65-125	PASS
Standard5	ICAL	1	0.97	97.17	65-125	PASS
Standard6	ICAL	1	0.98	98.13	65-125	PASS
ICV	ICV	1	1.012	101.19	65-125	PASS
ICB	ICB	1	1	99.98	65-125	PASS
ICSA1	ICSA	1	1.03	103	65-125	PASS
ICSAB1	ICSAB	1	1.0036	100.36	65-125	PASS
MB-59628	MBLK	1	0.46	46.15	65-125	NR!
LCS2-59628	LCS	1	1.034	103.43	65-125	PASS
N020873-001B	SAMP	50	0.98	97.77	65-125	PASS
N020873-002B	SAMP	50	0.97	97.16	65-125	PASS
N020873-002B	SAMP	250	0.99	98.57	65-125	PASS
N020873-002B-PS	PS	50	0.97	97.07	65-125	PASS
N020873-002B-MS2	MS	50	0.97	97.26	65-125	PASS
N020873-002B-MSD2	MSD	50	0.97	97.22	65-125	PASS
MB-59628	MBLK	1	0.99	99.36	65-125	PASS
CCV1	CCV	1	0.98	98.48	65-125	PASS
CCB1	CCB	1	1	100	65-125	PASS
ICSA2	ICSA	1	1.026	102.55	65-125	PASS
ICSAB2	ICSAB	1	1	99.9	65-125	PASS

SERIAL DILUTION/
POST DIGESTION SPIKE

ASSET Laboratories

ICP-Metals in Water

Dilution Test Summary

Work Order No.: N020873
Test Method: EPA 6010B
Analysis Date: 9/12/2016

Matrix: Groundwater
Batch No.: 59628

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
N020873-001B DT 5X	Calcium	ug/L	135603.5	PASS	123902.9	9.44%	10
N020873-001B DT 5X	Iron	ug/L	0	NA	12.37599	100.00%	10
N020873-001B DT 5X	Magnesium	ug/L	31924.95	FAIL	28187.99	13.26%	10

Note: NA - Not applicable

ASSET Laboratories

ICP-Metals in Water

Dilution Test Summary

Work Order No.: N020873
Test Method: EPA 6010B
Analysis Date: 9/12/2016

Matrix: Groundwater
Batch No.: 59628

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

Comments:

Analyzed By: Mary Claire Ignacio

Sample ID	Analyte	Units	Calc Val	OQual	SAMPRefVal	%DIFF	%DIFFlimit
N020873-002B DT 250X	Sodium	ug/L	1430258	PASS	1418399	0.84%	10

Note: NA - Not applicable

CLIENT: ARCADIS U.S., Inc. - California
Work Order: N020873
Project: PG&E Topock - PMP, RC000753.801A

ANALYTICAL QC SUMMARY REPORT

TestCode: 6010_WDPGEPPB

Sample ID **N020873-001B-PS** SampType: **PS** TestCode: **6010_WDPG** Units: **ug/L** Prep Date: RunNo: **110509**
Client ID: **ZZZZZZ** Batch ID: **59628** TestNo: **EPA 6010B** **EPA 3010A** Analysis Date: **9/12/2016** SeqNo: **2425449**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Calcium	135323.868	500	10000	123900	114	80	120				
Iron	109.398	20	100.0	12.38	97.0	80	120				
Magnesium	36775.491	100	10000	28190	85.9	80	120				

Sample ID **N020873-002B-PS** SampType: **PS** TestCode: **6010_WDPG** Units: **ug/L** Prep Date: RunNo: **110510**
Client ID: **ZZZZZZ** Batch ID: **59628** TestNo: **EPA 6010B** **EPA 3010A** Analysis Date: **9/12/2016** SeqNo: **2425467**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Sodium	1422897.880	25000	20000	1418000	22.5	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
DO	Surrogate Diluted Out		Calculations are based on raw values		

MDL STUDY

METHOD DETECTION LIMIT 2016

Method Name: **Metals by ICP**
Method Number: EPA 200.7/ 6010
Analysis Date(s): 4/1/2016, 4/4/2016
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	0.0021	0.0020	0.0020	0.0020	0.0019	0.0020	0.0020	0.00125	0.00005062	**0.00016**	**0.0025**
Al	237.312	0.0272	0.0288	0.0288	0.0267	0.0269	0.0277	0.0276	0.025	0.00085451	**0.00269**	**0.050**
As	188.983	0.0054	0.0049	0.0037	0.0044	0.0060	0.0041	0.0048	0.005	0.00075065	**0.00236**	**0.010**
B	249.679	0.0735	0.0561	0.0463	0.0445	0.0396	0.0464	0.0398	0.05	0.01193786	**0.03752**	**0.10**
Ba	233.529	0.0007	0.0007	0.0006	0.0006	0.0006	0.0007	0.0007	0.000625	0.00003047	**0.00010**	**0.0025**
Be	313.104	0.0007	0.0006	0.0006	0.0006	0.0006	0.0006	0.0007	0.0005	0.00004386	**0.00014**	**0.0010**
Ca	227.546	0.0967	0.1086	0.0893	0.0864	0.0826	0.0978	0.0988	0.1	0.00880307	**0.02767**	**0.20**
Cd	214.437	0.0006	0.0006	0.0007	0.0006	0.0007	0.0006	0.0006	0.000313	0.00003910	**0.00012**	**0.0025**
Co	228.614	0.0011	0.0011	0.0010	0.0010	0.0009	0.0010	0.0011	0.00125	0.00005473	**0.00017**	**0.0025**
Cr	267.719	0.0004	0.0003	0.0004	0.0004	0.0004	0.0003	0.0004	0.0005	0.00004860	**0.00015**	**0.0010**
Cu	324.753	0.0013	0.0015	0.0015	0.0022	0.0022	0.0016	0.0015	0.0025	0.00034907	**0.00110**	**0.0050**
Fe	273.953	0.0115	0.0117	0.0112	0.0102	0.0105	0.0114	0.0114	0.01	0.00057502	**0.00181**	**0.020**
Mg	279.079	0.0227	0.0231	0.0204	0.0225	0.0221	0.0222	0.0250	0.025	0.00138863	**0.00436**	**0.10**
Mn	257.607	0.0013	0.0013	0.0013	0.0012	0.0012	0.0012	0.0012	0.00125	0.00004429	**0.00014**	**0.010**
Mo	202.03	0.0031	0.0032	0.0031	0.0030	0.0026	0.0029	0.0029	0.0025	0.00018274	**0.00057**	**0.0050**
Ni	231.604	0.0019	0.0020	0.0020	0.0022	0.0022	0.0021	0.0021	0.0025	0.00012429	**0.00039**	**0.0050**
Pb	220.351	0.0049	0.0049	0.0048	0.0044	0.0048	0.0048	0.0050	0.005	0.00018831	**0.00059**	**0.010**
Sb	206.836	0.0035	0.0038	0.0020	0.0034	0.0033	0.0032	0.0046	0.005	0.00076686	**0.00241**	**0.010**
Se	196.025	0.0017	0.0033	0.0025	0.0025	0.0015	0.0034	0.0025	0.005	0.00070697	**0.00222**	**0.010**
Sn	189.927	0.0051	0.0048	0.0052	0.0051	0.0044	0.0045	0.0050	0.005	0.00031282	**0.00098**	**0.010**
Ti	334.943	0.0011	0.0011	0.0011	0.0010	0.0011	0.0010	0.0010	0.00125	0.00005159	**0.00016**	**0.010**
Tl	190.794	0.0067	0.0060	0.0064	0.0047	0.0062	0.0067	0.0062	0.0075	0.00070505	**0.00222**	**0.015**
V	292.404	0.0007	0.0007	0.0007	0.0006	0.0006	0.0007	0.0007	0.00125	0.00006264	**0.00020**	**0.0025**
Zn	206.201	0.0024	0.0026	0.0024	0.0024	0.0024	0.0024	0.0033	0.0025	0.00034911	**0.00110**	**0.010**

LOD/PQL Verification 2016

Method Name: **Metals by ICP**
Method Number: EPA 200.7/ 6010
Analysis Date(s): 4/1/2016, 4/4/2016
Analyst: Mary Claire Ignacio

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

Instrument Name: **ICP-02**

Analyte	MDL	PQL	PQL VER	% REC	LOD	LOD VER
Ag	0.00016	0.0025	0.00223	89	0.0005	0.00080
Al	0.00269	0.050	0.05320	106	0.01	0.02090
As	0.00236	0.010	0.00834	83	0.0075	0.00617
B	0.03752	0.10	0.13977	140	0.05	0.05058
Ba	0.00010	0.0025	0.00265	106	0.00025	0.00104
Be	0.00014	0.0010	0.00106	106	0.0005	0.00046
Ca	0.02767	0.20	0.17684	88	0.1	0.08140
Cd	0.00012	0.0025	0.00262	105	0.00025	0.00104
Co	0.00017	0.0025	0.00263	105	0.0005	0.00101
Cr	0.00015	0.0010	0.00122	122	0.0005	0.00046
Cu	0.00110	0.0050	0.00436	87	0.0025	0.00144
Fe	0.00181	0.020	0.01970	99	0.005	0.00643
Mg	0.00436	0.10	0.09828	98	0.01	0.04118
Mn	0.00014	0.010	0.01016	102	0.0005	0.00426
Mo	0.00057	0.0050	0.00540	108	0.001	0.00241
Ni	0.00039	0.0050	0.00462	92	0.001	0.00156
Pb	0.00059	0.010	0.01026	103	0.001	0.00406
Sb	0.00241	0.010	0.00830	83	0.005	0.00305
Se	0.00222	0.010	0.01297	130	0.005	0.00721
Sn	0.00098	0.010	0.01092	109	0.0025	0.00442
Ti	0.00016	0.010	0.00996	100	0.0005	0.00384
Tl	0.00222	0.015	0.01485	99	0.005	0.00610
V	0.00020	0.0025	0.00246	98	0.0005	0.00089
Zn	0.00110	0.010	0.01092	109	0.0025	0.00412

EPA 6020
Dissolved

Metals Technical Batch Review Checklist (ARCUS02)

ASSET LABORATORIES - LAS VEGAS

FIRST LEVEL REVIEW:

QC Batch Number: 59626
ASSET #: N020873

Instrument ID: ICPMS-02
Analyst: CEI
Date Analyzed: 9/13/2016

Method:

[ ] EPA 6010B / 200.7
[X] EPA 6020 / 200.8
[ ] EPA 7470A / 7471A/245.1
[ ] 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					
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					
Interference Check						
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					
Continuing Calibration						
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 ICVand CCV analysis.	X					
11. Do all calibration blanks (ICB and CCBs) meet criteria? (< PQL)	X					
12 Is low level check twice during 8 hr period or at end within ± 30% of expected value? (ICP/ICPMS only)	X					
Sample Information						
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			
QC Items						
22. IS are within control limits (70-125% for ICPMS).	X					
23. Method blank values are below the PQL .	X					
24. LCS compounds within control limits.	X					
25. MS/MSD, RPD's are within control limits	X					
Raw Data and Miscellaneous Information						
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					
Preliminary Report						
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 Cr in N020867-001C PS failed. However LCS passed criteria.
Dilution test faield for Cr. However MS/MSD 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 9/22/2016 Date: —

2nd Level Reviewer 9/22/2016 Date: —

SAMPLE CALCULATION

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:

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 **N020873-001B** , the concentration in ug/L is calculated as follows:

Chromium , ug/L = 1.14633 * 1 * (25/25)

Chromium , ug/L = 1.14633

Reporting results in two significant figures,

Chromium , ug/L = 1.1

% RSD SUMMARY

PERCENT RSD SUMMARY: 160913B

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	19	15	<PQL	0.12	9.92	15	PASS
Std2-0.5/5 ppb	ICAL	1	0.49	4.77	15	PASS	0.55	4.85	15	PASS
Std3-5/50 ppb	ICAL	1	5.23	1.09	15	PASS	5.3	1.14	15	PASS
Std4-10/100 ppb	ICAL	1	10.5	2.53	15	PASS	10.44	0.77	15	PASS
Std5-20/200 ppb	ICAL	1	20.49	0.97	15	PASS	20.68	1.54	15	PASS
Std6-40/400 ppb	ICAL	1	41.1	0.96	15	PASS	41.2	0.56	15	PASS
Std7-100/1000 ppb	ICAL	1	100.67	0.49	15	PASS	100.69	0.68	15	PASS
Std8-200/2000 ppb	ICAL	1	199.36	1.17	15	PASS	199.32	0.72	15	PASS
ICV	ICV	1	10.2	2.48	15	PASS	95.33	1.41	15	PASS
ICB	ICB	1	<0.000	N/A	15	<PQL	0.03	14.008	15	PASS
LLICV	CCV1	1	1.026	0.96	20	PASS	0.56	0.76	20	PASS
ICSA1	ICSA	1	0.2	9.84	15	PASS	<0.000	N/A	15	<PQL
ICSAB1	ICSAB	1	20.34	0.92	15	PASS	16.76	1.97	15	PASS
MB-59626	MBLK	1	0.01	58.47	15	<PQL	<0.000	N/A	15	<PQL
LCS-59626	LCS	1	10.1	1.58	15	PASS	94.79	1.7	15	PASS
N020862-001C	SAMP	1	146.77	1.3	15	PASS	206.73	1.047	15	PASS
N020862-001C	SAMP	5	32.92	0.9	15	PASS	46.96	1.44	15	PASS
N020862-001C-PS	PS	1	149.37	0.56	15	PASS	283.39	0.2	15	PASS
N020862-001C-MS	MS	1	156.47	0.5	15	PASS	289.94	0.14	15	PASS
N020862-001C-MSD	MSD	1	156.24	0.91	15	PASS	291.6	0.76	15	PASS
N020872-001B	SAMP	1	7.71	1.49	15	PASS	0.11	53.41	15	<PQL
N020872-002B	SAMP	1	2.92	2.2	15	PASS	5.7	2.098	15	PASS
N020872-003B	SAMP	1	2.74	2.019	15	PASS	0.11	59.75	15	<PQL
CCV1	CCV	1	20.82	1.46	15	PASS	20.66	0.9	15	PASS
CCB1	CCB	1	<0.000	N/A	15	<PQL	0.0026	307.0003	15	<PQL
N020872-004B	SAMP	1	2.11	1.41	15	PASS	1.82	1.99	15	PASS
N020872-005B	SAMP	1	1.76	1.75	15	PASS	19.86	1.9	15	PASS
N020873-001B	SAMP	1	1.15	2.78	15	PASS	124.91	0.8	15	PASS
N020873-002B	SAMP	1	549.71	0.34	15	PASS	10.085	3.081	15	PASS
N020862-001C	SAMP	10	17.064	0.35	15	PASS	23.64	0.53	15	PASS
N020862-001C	SAMP	50	3.48	2.66	15	PASS	4.81	1.91	15	PASS
N020862-001C-PS	PS	10	17.18	0.95	15	PASS	32.36	1.63	15	PASS
N020862-001C-MS	MS	10	17.65	2.31	15	PASS	33.2	0.74	15	PASS
N020862-001C-MSD	MSD	10	18.19	0.27	15	PASS	32.68	1.11	15	PASS
N020873-002B	SAMP	5	116.0033	1.12	15	PASS	2.3	3.37	15	PASS
CCV2	CCV	1	20.68	0.86	15	PASS	20.55	1.82	15	PASS
CCB2	CCB	1	<0.000	N/A	15	<PQL	<0.000	N/A	15	<PQL
N020842-002E	SAMP	1	1.23	2.78	15	PASS	15.13	1.76	15	PASS
N020842-002C	SAMP	1	0.027	46.97	15	<PQL	1.12	5.17	15	PASS
CCV3	CCV	1	20.87	1.31	15	PASS	20.34	1.27	15	PASS

PERCENT RSD SUMMARY: 160913B

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	<0.000	N/A	15	<PQL	<0.000	N/A	15	<PQL
LLCCV1	CCV2	1	1.071	3.097	20	PASS	0.59	7.42	20	PASS
ICSA2	ICSA	1	0.2	10.12	15	PASS	<0.000	N/A	15	<PQL
ICSAB2	ICSAB	1	20.061	0.92	15	PASS	16.43	0.3	15	PASS

ANALYSIS RUN LOG

INJECTION LOG: 160913B

Instrument ID: ICPMS-02

Data File	Sample Name	Type	DF	Acq. Date-Time
B0913001.D	RINSE	RINSE	1	09/13/16 11:06 AM
B0913002.D	Cal Blank	IBLK	1	09/13/16 11:12 AM
B0913003.D	Std1-0.1/1 ppb	ICAL	1	09/13/16 11:17 AM
B0913004.D	Std2-0.5/5 ppb	ICAL	1	09/13/16 11:23 AM
B0913005.D	Std3-5/50 ppb	ICAL	1	09/13/16 11:28 AM
B0913006.D	Std4-10/100 ppb	ICAL	1	09/13/16 11:34 AM
B0913007.D	Std5-20/200 ppb	ICAL	1	09/13/16 11:40 AM
B0913008.D	Std6-40/400 ppb	ICAL	1	09/13/16 11:45 AM
B0913009.D	Std7-100/1000 ppb	ICAL	1	09/13/16 11:51 AM
B0913010.D	Std8-200/2000 ppb	ICAL	1	09/13/16 11:56 AM
B0913011.D	ICV	ICV	1	09/13/16 12:02 PM
B0913012.D	ICB	ICB	1	09/13/16 12:07 PM
B0913013.D	LLICV	CCV1	1	09/13/16 12:14 PM
B0913014.D	ICSA1	ICSA	1	09/13/16 12:19 PM
B0913015.D	ICSAB1	ICSAB	1	09/13/16 12:24 PM
B0913016.D	MB-59626	MBLK	1	09/13/16 12:30 PM
B0913017.D	LCS-59626	LCS	1	09/13/16 12:35 PM
B0913018.D	N020862-001C	SAMP	1	09/13/16 12:41 PM
B0913019.D	N020862-001C	SAMP	5	09/13/16 12:46 PM
B0913020.D	N020862-001C-PS	PS	1	09/13/16 12:52 PM
B0913021.D	N020862-001C-MS	MS	1	09/13/16 12:57 PM
B0913022.D	N020862-001C-MSD	MSD	1	09/13/16 1:03 PM
B0913023.D	N020872-001B	SAMP	1	09/13/16 1:08 PM
B0913024.D	N020872-002B	SAMP	1	09/13/16 1:14 PM
B0913025.D	N020872-003B	SAMP	1	09/13/16 1:20 PM
B0913026.D	CCV1	CCV	1	09/13/16 1:25 PM
B0913027.D	CCB1	CCB	1	09/13/16 1:31 PM
B0913028.D	N020872-004B	SAMP	1	09/13/16 1:36 PM
B0913029.D	N020872-005B	SAMP	1	09/13/16 1:42 PM
B0913030.D	N020873-001B	SAMP	1	09/13/16 1:48 PM
B0913031.D	N020873-002B	SAMP	1	09/13/16 1:53 PM
B0913032.D	N020862-001C	SAMP	10	09/13/16 1:59 PM
B0913033.D	N020862-001C	SAMP	50	09/13/16 2:04 PM
B0913034.D	N020862-001C-PS	PS	10	09/13/16 2:10 PM
B0913035.D	N020862-001C-MS	MS	10	09/13/16 2:15 PM
B0913036.D	N020862-001C-MSD	MSD	10	09/13/16 2:22 PM
B0913037.D	N020873-002B	SAMP	5	09/13/16 2:28 PM
B0913038.D	CCV2	CCV	1	09/13/16 2:32 PM
B0913039.D	CCB2	CCB	1	09/13/16 2:38 PM
B0913040.D	N020842-002E	SAMP	1	09/13/16 2:43 PM
B0913041.D	N020842-002C	SAMP	1	09/13/16 2:49 PM
B0913042.D	CCV3	CCV	1	09/13/16 2:55 PM

INJECTION LOG: 160913B

Instrument ID: ICPMS-02

Data File	Sample Name	Type	DF	Acq. Date-Time
B0913043.D	CCB3	CCB	1	09/13/16 3:00 PM
B0913044.D	LLCCV1	CCV2	1	09/13/16 3:06 PM
B0913045.D	ICSA2	ICSA	1	09/13/16 3:11 PM
B0913046.D	ICSAB2	ICSAB	1	09/13/16 3:17 PM

SAMPLE PREPARATION LOG

ASSET Laboratories

PREP BATCH REPORT

Prep Start Date: **9/12/2016 7:33:12**
Prep End Date: **9/12/2016 12:20:00**
Prep Batch **59626** Prep Code: **3010_W_MSDI**

Reviewed/ Date: _____
Initials/ Date: _____ 9/22/2016
Technician **Claire Ignacio**

Prep Factor Units	Temp. (°C):	Location:
mL / mL	**94.6**	**02-17**

Sample ID	Matrix	pH	SampAmt	3 Replicates	Sol Added	Sol Recov	Fin Vol	factor	Clean Up Code	TURB Check
LCS-59626	Aqueous		25	☐	0	0	25	1.000		
MB-59626	Aqueous		25	☐	0	0	25	1.000		
N020862-001C	Groundwater	<2	25	☐	0	0	25	1.000		
N020862-001C-MS	Groundwater	<2	25	☐	0	0	25	1.000		
N020862-001C-MS	Groundwater	<2	25	☐	0	0	25	1.000		
N020872-001B	Groundwater	<2	25	☐	0	0	25	1.000		
N020872-002B	Groundwater	<2	25	☐	0	0	25	1.000		
N020872-003B	Groundwater	<2	25	☐	0	0	25	1.000		
N020872-004B	Groundwater	<2	25	☐	0	0	25	1.000		
N020872-005B	Groundwater	<2	25	☐	0	0	25	1.000		
N020873-001B	Groundwater	<2	25	☐	0	0	25	1.000		
N020873-002B	Groundwater	<2	25	☐	0	0	25	1.000		

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

Number	Reagent Name
8441	HYDROCHLORIC ACID
8442	NITRIC ACID

Spk ID	Spike Name	SampType	AmtAdd
2MWST-160606	ICV/MS/MSD/LCS/LCSD Solution C		0.25
2MWST-160801	ICV/MS/MSD/LCS/LCSD Solution B		0.25
2MWST-160906	ICV/MS/MSD/LCS/LCSD Solution A		0.25

INSTRUMENT TUNING CHECK

QC Tune Report

Data File: C:\ICPMH\1\7500\QCTUNE.D
Date Acquired: 13 Sep 2016 08:02:12 am
Operator:
Misc Info:
Vial Number: 0
Current Method: C:\ICPMH\1\METHODS\TuneCHK.m

Minimum Response(CPS)

Element	Actual	Required	Flag
9 Be	87462.60	0.00	
24 Mg	498330.00	0.00	
25 Mg	65765.90	0.00	
26 Mg	77106.40	0.00	
59 Co	748691.00	0.00	
115 In	1532370.00	0.00	
206 Pb	339588.00	0.00	
207 Pb	293338.00	0.00	
208 Pb	724409.00	0.00	

RSD (%)

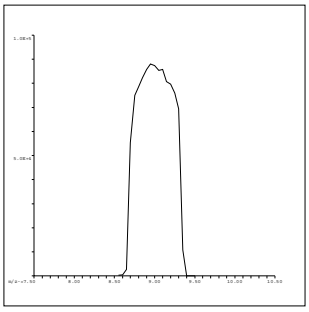
Element	Actual	Required	Flag
9 Be	0.96	5.00	
24 Mg	0.65	5.00	
25 Mg	0.78	5.00	
26 Mg	3.04	5.00	
59 Co	0.54	5.00	
115 In	1.37	5.00	
206 Pb	0.58	5.00	
207 Pb	0.45	5.00	
208 Pb	0.67	5.00	

Ion Ratio

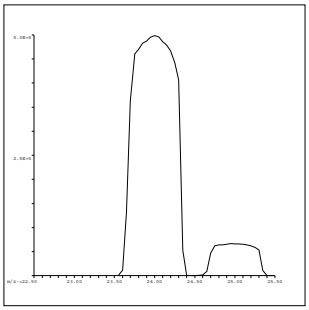
Element	Actual	Required	Flag
9 Be			
24 Mg			
25 Mg			
26 Mg			
59 Co			
115 In			
206 Pb			
207 Pb			
208 Pb			

Maximum Bkg. Count(CPS)

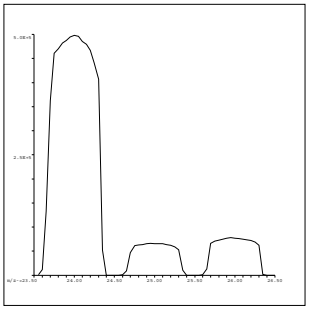
Element	Actual	Required	Flag



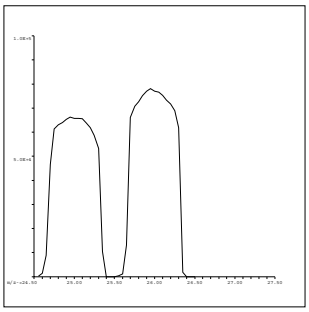
9 Be
Mass Calib.
Actual: 9.00
Required: 8.90-9.10
Flag:
Peak Width
Actual: 0.65
Required: 0.75
Flag:



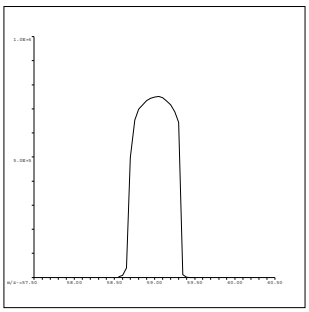
24 Mg
Mass Calib.
Actual: 24.00
Required: 23.90-24.10
Flag:
Peak Width
Actual: 0.70
Required: 0.75
Flag:



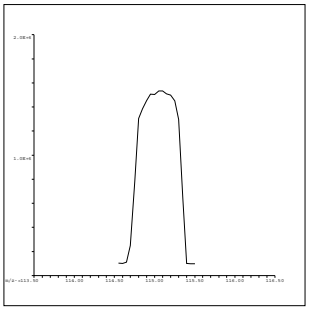
25 Mg
Mass Calib.
Actual: 25.00
Required: 24.90-25.10
Flag:
Peak Width
Actual: 0.70
Required: 0.75
Flag:



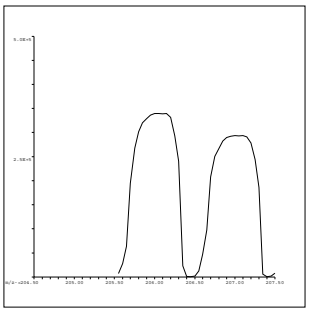
26 Mg
Mass Calib.
Actual: 26.00
Required: 25.90-26.10
Flag:
Peak Width
Actual: 0.65
Required: 0.75
Flag:



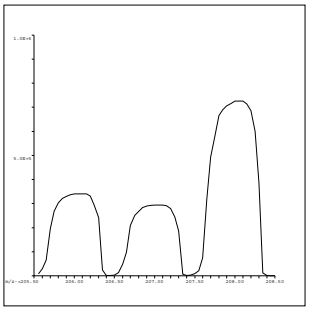
59 Co
Mass Calib.
Actual: 59.00
Required: 58.90-59.10
Flag:
Peak Width
Actual: 0.65
Required: 0.75
Flag:



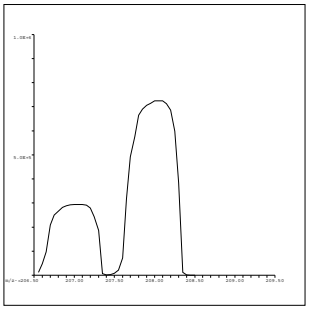
115 In
Mass Calib.
Actual: 115.05
Required: 114.90-115.10
Flag:
Peak Width
Actual: 0.65
Required: 0.75
Flag:



206 Pb
Mass Calib.
Actual: 206.05
Required: 205.90-206.10
Flag:
Peak Width
Actual: 0.75
Required: 0.75
Flag:



207 Pb
Mass Calib.
Actual: 207.05
Required: 206.90-207.10
Flag:
Peak Width
Actual: 0.70
Required: 0.75
Flag:



208 Pb
Mass Calib.
Actual: 208.05
Required: 207.90-208.10
Flag:
Peak Width
Actual: 0.70
Required: 0.75
Flag:

QC Tune Result:Pass

INITIAL CALIBRATION DATA SUMMARY

INITIAL CALIBRATION SUMMARY: 160913B

Instrument ID: ICPMS-02

Analyte	Data File	B0913002.D	B0913003.D	B0913004.D	B0913005.D	B0913006.D	B0913007.D	B0913008.D	B0913009.D	B0913010.D	
	Acq. Date-Time	09/13/2016 11:12 AM	09/13/2016 11:17 AM	09/13/2016 11:23 AM	09/13/2016 11:28 AM	09/13/2016 11:34 AM	09/13/2016 11:40 AM	09/13/2016 11:45 AM	09/13/2016 11:51 AM	09/13/2016 11:56 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	R
45 Sc (ISTD) [2]	CPS	74558.6		70371.5	70801.9	69222.5	70459.6	69766.6	70117.1	70873.6	
55 Mn [2]	CPS	83.1		1704.5	15961	30675.2	61777.6	121835.9	299098.4	598372.5	1.0000
52 Cr [2]	CPS	493.3		2992.5	27367.7	53242.4	105331.9	208778.6	513284.6	1026872.5	1.0000

Standard Code
ICAL: 2MSST-151207C
ICAL: 2MSST-151207D
ICAL: 2MWST-160606G
IS Mix: 2MWST-160606A

Calibration Acceptance Criteria: > 0.995 Correlation

INITIAL CALIBRATION AND CONTINUING CALIBRATION VERIFICATION SUMMARY

CLIENT: ARCADIS U.S., Inc. - California
Work Order: N020873
Project: PG&E Topock - PMP, RC000753.801A

ANALYTICAL QC SUMMARY REPORT

TestCode: 6020_DIS

Sample ID **ICV**	SampType: **ICV**	TestCode: **6020_DIS**	Units: **µg/L**	Prep Date:	RunNo: **110531**
Client ID: **ICV**	Batch ID: **R110531**	TestNo: **EPA 6020**		Analysis Date: **9/13/2016**	SeqNo: **2426128**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Manganese	95.329	0.50	100.0	0	95.3	90	110				

Sample ID **LLICV**	SampType: **CCV1**	TestCode: **6020_DIS**	Units: **µg/L**	Prep Date:	RunNo: **110531**
Client ID: **ZZZZZZ**	Batch ID: **R110531**	TestNo: **EPA 6020**		Analysis Date: **9/13/2016**	SeqNo: **2426130**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Manganese	0.556	0.50	0.5000	0	111	80	120				

Sample ID **CCV1**	SampType: **CCV**	TestCode: **6020_DIS**	Units: **µg/L**	Prep Date:	RunNo: **110531**
Client ID: **CCV**	Batch ID: **R110531**	TestNo: **EPA 6020**		Analysis Date: **9/13/2016**	SeqNo: **2426143**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Manganese	20.660	0.50	20.00	0	103	90	110				

Sample ID **CCV2**	SampType: **CCV**	TestCode: **6020_DIS**	Units: **µg/L**	Prep Date:	RunNo: **110531**
Client ID: **CCV**	Batch ID: **R110531**	TestNo: **EPA 6020**		Analysis Date: **9/13/2016**	SeqNo: **2426155**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Manganese	20.554	0.50	20.00	0	103	90	110				

Sample ID **CCV3**	SampType: **CCV**	TestCode: **6020_DIS**	Units: **µg/L**	Prep Date:	RunNo: **110531**
Client ID: **CCV**	Batch ID: **R110531**	TestNo: **EPA 6020**		Analysis Date: **9/13/2016**	SeqNo: **2426159**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Manganese	20.335	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

CLIENT: ARCADIS U.S., Inc. - California
Work Order: N020873
Project: PG&E Topock - PMP, RC000753.801A

ANALYTICAL QC SUMMARY REPORT

TestCode: 6020_DIS

Sample ID **LLCCV1**	SampType: **CCV2**	TestCode: **6020_DIS**	Units: **µg/L**	Prep Date:	RunNo: **110531**
Client ID: **ZZZZZZ**	Batch ID: **R110531**	TestNo: **EPA 6020**		Analysis Date: **9/13/2016**	SeqNo: **2426161**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Manganese	0.592	0.50	0.5000	0	118	70	130				

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis 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: N020873
Project: PG&E Topock - PMP, RC000753.801A

ANALYTICAL QC SUMMARY REPORT

TestCode: 6020DIS_CrPGE

Sample ID **ICV**	SampType: **ICV**	TestCode: **6020DIS_CrP**	Units: **µg/L**	Prep Date:	RunNo: **110531**
Client ID: **ICV**	Batch ID: **R110531**	TestNo: **EPA 6020**		Analysis Date: **9/13/2016**	SeqNo: **2426092**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium	10.196	1.0	10.00	0	102	90	110				

Sample ID **LLICV**	SampType: **CCV1**	TestCode: **6020DIS_CrP**	Units: **µg/L**	Prep Date:	RunNo: **110531**
Client ID: **ZZZZZZ**	Batch ID: **R110531**	TestNo: **EPA 6020**		Analysis Date: **9/13/2016**	SeqNo: **2426094**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium	1.026	1.0	1.000	0	103	80	120				

Sample ID **CCV1**	SampType: **CCV**	TestCode: **6020DIS_CrP**	Units: **µg/L**	Prep Date:	RunNo: **110531**
Client ID: **CCV**	Batch ID: **R110531**	TestNo: **EPA 6020**		Analysis Date: **9/13/2016**	SeqNo: **2426107**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium	20.819	1.0	20.00	0	104	90	110				

Sample ID **CCV2**	SampType: **CCV**	TestCode: **6020DIS_CrP**	Units: **µg/L**	Prep Date:	RunNo: **110531**
Client ID: **CCV**	Batch ID: **R110531**	TestNo: **EPA 6020**		Analysis Date: **9/13/2016**	SeqNo: **2426119**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium	20.679	1.0	20.00	0	103	90	110				

Sample ID **CCV3**	SampType: **CCV**	TestCode: **6020DIS_CrP**	Units: **µg/L**	Prep Date:	RunNo: **110531**
Client ID: **CCV**	Batch ID: **R110531**	TestNo: **EPA 6020**		Analysis Date: **9/13/2016**	SeqNo: **2426123**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium	20.871	1.0	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: N020873
Project: PG&E Topock - PMP, RC000753.801A

ANALYTICAL QC SUMMARY REPORT

TestCode: 6020DIS_CrPGE

Sample ID **LLCCV1**	SampType: **CCV2**	TestCode: **6020DIS_CrP**	Units: **µg/L**	Prep Date:	RunNo: **110531**
Client ID: **ZZZZZZ**	Batch ID: **R110531**	TestNo: **EPA 6020**		Analysis Date: **9/13/2016**	SeqNo: **2426125**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium	1.071	1.0	1.000	0	107	70	130				

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis 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

CLIENT: ARCADIS U.S., Inc. - California
Work Order: N020873
Project: PG&E Topock - PMP, RC000753.801A

ANALYTICAL QC SUMMARY REPORT

TestCode: 6020_DIS

Sample ID **ICB**	SampType: **ICB**	TestCode: **6020_DIS**	Units: **µg/L**	Prep Date:	RunNo: **110531**
Client ID: **ICB**	Batch ID: **R110531**	TestNo: **EPA 6020**		Analysis Date: **9/13/2016**	SeqNo: **2426129**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Manganese	ND	0.50									

Sample ID **CCB1**	SampType: **CCB**	TestCode: **6020_DIS**	Units: **µg/L**	Prep Date:	RunNo: **110531**
Client ID: **CCB**	Batch ID: **R110531**	TestNo: **EPA 6020**		Analysis Date: **9/13/2016**	SeqNo: **2426144**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Manganese	ND	0.50									

Sample ID **CCB2**	SampType: **CCB**	TestCode: **6020_DIS**	Units: **µg/L**	Prep Date:	RunNo: **110531**
Client ID: **CCB**	Batch ID: **R110531**	TestNo: **EPA 6020**		Analysis Date: **9/13/2016**	SeqNo: **2426156**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Manganese	ND	0.50									

Sample ID **CCB3**	SampType: **CCB**	TestCode: **6020_DIS**	Units: **µg/L**	Prep Date:	RunNo: **110531**
Client ID: **CCB**	Batch ID: **R110531**	TestNo: **EPA 6020**		Analysis Date: **9/13/2016**	SeqNo: **2426160**

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
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: ARCADIS U.S., Inc. - California
Work Order: N020873
Project: PG&E Topock - PMP, RC000753.801A

ANALYTICAL QC SUMMARY REPORT

TestCode: 6020DIS_CrPGE

Sample ID **ICB**	SampType: **ICB**	TestCode: **6020DIS_CrP**	Units: **µg/L**	Prep Date:	RunNo: **110531**
Client ID: **ICB**	Batch ID: **R110531**	TestNo: **EPA 6020**		Analysis Date: **9/13/2016**	SeqNo: **2426093**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium	ND	1.0									

Sample ID **CCB1**	SampType: **CCB**	TestCode: **6020DIS_CrP**	Units: **µg/L**	Prep Date:	RunNo: **110531**
Client ID: **CCB**	Batch ID: **R110531**	TestNo: **EPA 6020**		Analysis Date: **9/13/2016**	SeqNo: **2426108**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium	ND	1.0									

Sample ID **CCB2**	SampType: **CCB**	TestCode: **6020DIS_CrP**	Units: **µg/L**	Prep Date:	RunNo: **110531**
Client ID: **CCB**	Batch ID: **R110531**	TestNo: **EPA 6020**		Analysis Date: **9/13/2016**	SeqNo: **2426120**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium	ND	1.0									

Sample ID **CCB3**	SampType: **CCB**	TestCode: **6020DIS_CrP**	Units: **µg/L**	Prep Date:	RunNo: **110531**
Client ID: **CCB**	Batch ID: **R110531**	TestNo: **EPA 6020**		Analysis Date: **9/13/2016**	SeqNo: **2426124**

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
- 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 CHECK (ICSA & ICSAB)

CLIENT: ARCADIS U.S., Inc. - California
Work Order: N020873
Project: PG&E Topock - PMP, RC000753.801A

ANALYTICAL QC SUMMARY REPORT

TestCode: 6020_DIS

Sample ID **ICSA1**	SampType: **ICSA**	TestCode: **6020_DIS**	Units: **µg/L**	Prep Date:	RunNo: **110531**
Client ID: **ICSA**	Batch ID: **R110531**	TestNo: **EPA 6020**		Analysis Date: **9/13/2016**	SeqNo: **2426131**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Manganese	ND	0.50									

Sample ID **ICSAB1**	SampType: **ICSAB**	TestCode: **6020_DIS**	Units: **µg/L**	Prep Date:	RunNo: **110531**
Client ID: **ICSAB**	Batch ID: **R110531**	TestNo: **EPA 6020**		Analysis Date: **9/13/2016**	SeqNo: **2426132**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Manganese	16.760	0.50	20.00	0	83.8	80	120				

Sample ID **ICSA2**	SampType: **ICSA**	TestCode: **6020_DIS**	Units: **µg/L**	Prep Date:	RunNo: **110531**
Client ID: **ICSA**	Batch ID: **R110531**	TestNo: **EPA 6020**		Analysis Date: **9/13/2016**	SeqNo: **2426162**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Manganese	ND	0.50									

Sample ID **ICSAB2**	SampType: **ICSAB**	TestCode: **6020_DIS**	Units: **µg/L**	Prep Date:	RunNo: **110531**
Client ID: **ICSAB**	Batch ID: **R110531**	TestNo: **EPA 6020**		Analysis Date: **9/13/2016**	SeqNo: **2426163**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Manganese	16.433	0.50	20.00	0	82.2	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: N020873
Project: PG&E Topock - PMP, RC000753.801A

ANALYTICAL QC SUMMARY REPORT

TestCode: 6020DIS_CrPGE

Sample ID	ICSA1	SampType:	ICSA	TestCode:	6020DIS_CrP	Units:	µg/L	Prep Date:		RunNo:	110531
Client ID:	ICSA	Batch ID:	R110531	TestNo:	EPA 6020			Analysis Date:	9/13/2016	SeqNo:	2426095

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium	0.202	1.0									

Sample ID	ICSAB1	SampType:	ICSAB	TestCode:	6020DIS_CrP	Units:	µg/L	Prep Date:		RunNo:	110531
Client ID:	ICSAB	Batch ID:	R110531	TestNo:	EPA 6020			Analysis Date:	9/13/2016	SeqNo:	2426096

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				

Sample ID	ICSA2	SampType:	ICSA	TestCode:	6020DIS_CrP	Units:	µg/L	Prep Date:		RunNo:	110531
Client ID:	ICSA	Batch ID:	R110531	TestNo:	EPA 6020			Analysis Date:	9/13/2016	SeqNo:	2426126

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium	0.199	1.0									

Sample ID	ICSAB2	SampType:	ICSAB	TestCode:	6020DIS_CrP	Units:	µg/L	Prep Date:		RunNo:	110531
Client ID:	ICSAB	Batch ID:	R110531	TestNo:	EPA 6020			Analysis Date:	9/13/2016	SeqNo:	2426127

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium	20.061	1.0	20.00	0	100	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

INTERNAL STANDARD SUMMARY

INTERNAL STANDARD: 160913B

Instrument ID: ICPMS-02

Sample Name	Type	DF	45 Sc (ISTD) [2]				
			CPS	REF	%REC	Comment	Criteria
Cal Blank	IBLK	1	74558.6	74558.6	100	PASS	70-125
Std1-0.1/1 ppb	ICAL	1	71349.9	74558.6	95.7	PASS	70-125
Std2-0.5/5 ppb	ICAL	1	70371.5	74558.6	94.38	PASS	70-125
Std3-5/50 ppb	ICAL	1	70801.9	74558.6	94.96	PASS	70-125
Std4-10/100 ppb	ICAL	1	69222.5	74558.6	92.84	PASS	70-125
Std5-20/200 ppb	ICAL	1	70459.6	74558.6	94.5	PASS	70-125
Std6-40/400 ppb	ICAL	1	69766.6	74558.6	93.57	PASS	70-125
Std7-100/1000 ppb	ICAL	1	70117.1	74558.6	94.043	PASS	70-125
Std8-200/2000 ppb	ICAL	1	70873.6	74558.6	95.058	PASS	70-125
ICV	ICV	1	67164.9	74558.6	90.083	PASS	70-125
ICB	ICB	1	81885.8	74558.6	109.83	PASS	70-125
LLICV	CCV1	1	74064.3	74558.6	99.34	PASS	70-125
ICSA1	ICSA	1	89551.6	74558.6	120.11	PASS	70-125
ICSAB1	ICSAB	1	78134.6	74558.6	104.8	PASS	70-125
MB-59626	MBLK	1	78656.9	74558.6	105.5	PASS	70-125
LCS-59626	LCS	1	63050.2	74558.6	84.56	PASS	70-125
N020862-001C	SAMP	1	73102.9	74558.6	98.048	PASS	70-125
N020862-001C	SAMP	5	68522.7	74558.6	91.9	PASS	70-125
N020862-001C-PS	PS	1	68128	74558.6	91.38	PASS	70-125
N020862-001C-MS	MS	1	69184.7	74558.6	92.79	PASS	70-125
N020862-001C-MSD	MSD	1	70088.2	74558.6	94.004	PASS	70-125
N020872-001B	SAMP	1	67027.7	74558.6	89.9	PASS	70-125
N020872-002B	SAMP	1	65506.3	74558.6	87.86	PASS	70-125
N020872-003B	SAMP	1	64788	74558.6	86.9	PASS	70-125
CCV1	CCV	1	71248.5	74558.6	95.56	PASS	70-125
CCB1	CCB	1	66958.6	74558.6	89.81	PASS	70-125
N020872-004B	SAMP	1	66200.1	74558.6	88.79	PASS	70-125
N020872-005B	SAMP	1	66030.5	74558.6	88.56	PASS	70-125
N020873-001B	SAMP	1	68568.5	74558.6	91.97	PASS	70-125
N020873-002B	SAMP	1	67537.9	74558.6	90.58	PASS	70-125
N020862-001C	SAMP	10	72683.7	74558.6	97.49	PASS	70-125
N020862-001C	SAMP	50	69607.3	74558.6	93.36	PASS	70-125
N020862-001C-PS	PS	10	67826.8	74558.6	90.97	PASS	70-125
N020862-001C-MS	MS	10	65576.7	74558.6	87.95	PASS	70-125
N020862-001C-MSD	MSD	10	59217.4	74558.6	79.42	PASS	70-125
N020873-002B	SAMP	5	63912.7	74558.6	85.72	PASS	70-125
CCV2	CCV	1	64398.6	74558.6	86.37	PASS	70-125
CCB2	CCB	1	63385.8	74558.6	85.015	PASS	70-125
N020842-002E	SAMP	1	59476.1	74558.6	79.77	PASS	70-125
N020842-002C	SAMP	1	64619.6	74558.6	86.67	PASS	70-125
CCV3	CCV	1	77114.3	74558.6	103.43	PASS	70-125

INTERNAL STANDARD: 160913B

Instrument ID: ICPMS-02

Sample Name	Type	DF	45 Sc (ISTD) [2]				
			CPS	REF	%REC	Comment	Criteria
CCB3	CCB	1	74237.9	74558.6	99.57	PASS	70-125
LLCCV1	CCV2	1	68410	74558.6	91.75	PASS	70-125
ICSA2	ICSA	1	91416	74558.6	122.61	PASS	70-125
ICSAB2	ICSAB	1	81645.9	74558.6	109.51	PASS	70-125

SERIAL DILUTION/
POST DIGESTION SPIKE

ASSET Laboratories

ICP-MS-Metals in Water

Dilution Test Summary

Work Order No.: N020873
Test Method: EPA 6020
Analysis Date: 9/13/2016

Matrix: Groundwater
Batch No.: 59626

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

Comments:

Analyzed By: Mary Claire Ignacio

Dilution test failed for Cr.

Sample ID	Analyte	Units	Calc Val	OQual	SAMPRefVal	%DIFF	%DIFFlimit
N020867-001C DT 5X	Chromium	ug/L	164.5889	FAIL	146.766	12.14%	10
N020867-001C DT 50X	Manganese	ug/L	240.269	PASS	236.4455	1.62%	10

Note: NA - Not applicable

CLIENT: ARCADIS U.S., Inc. - California
Work Order: N020873
Project: PG&E Topock - PMP, RC000753.801A

ANALYTICAL QC SUMMARY REPORT

TestCode: 6020_DIS

Sample ID	**N020862-001C-PS**	SampType: **PS**	TestCode: **6020_DIS**	Units: **µg/L**	Prep Date:	RunNo: **110531**
Client ID:	**ZZZZZZ**	Batch ID: **59626**	TestNo: **EPA 6020**	**EPA 3010A**	Analysis Date: **9/13/2016**	SeqNo: **2426151**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Manganese	323.575	5.0	100.0	236.4	87.1	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: N020873
Project: PG&E Topock - PMP, RC000753.801A

ANALYTICAL QC SUMMARY REPORT

TestCode: 6020DIS_CrPGE

Sample ID	N020862-001C-PS	SampType:	PS	TestCode:	6020DIS_CrP	Units:	µg/L	Prep Date:		RunNo:	110531
Client ID:	ZZZZZZ	Batch ID:	59626	TestNo:	EPA 6020	EPA 3010A		Analysis Date:	9/13/2016	SeqNo:	2426101

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium	149.371	1.0	10.00	146.8	26.1	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
DO	Surrogate Diluted Out		Calculations are based on raw values		

MDL STUDY

METHOD DETECTION LIMIT 2016

Method Detection Limit
Analytical Method: EPA 6020 / 200.8
Digestion Method: EPA 3010A
Date of Analysis: 4/5/2016,4/6/2016
Digestion Date: 4/1/2016
Instrument Name: ICPMS2
Analysts: MEI

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

ACCEPTANCE CRITERIA: MDL<SPIKE<10XMDL

Analyte	AMT SPIKED, ppb	1	2	3	4	5	6	7	SD	MDL	MDL*10	LOD	ACTUAL LOD	PQL	ACTUAL PQL	% REC
ANTIMONY	0.100	0.091	0.078	0.067	0.089	0.069	0.088	0.087	0.0100	0.0313	0.3133	0.3000	0.187	0.50	0.515	103
ARSENIC	0.050	0.054	0.045	0.064	0.053	0.047	0.051	0.039	0.0079	0.0248	0.2485	0.3000	0.049	0.10	0.103	103
BARIUM	0.100	0.199	0.158	0.159	0.206	0.167	0.196	0.207	0.0222	0.0699	0.6986	0.3000	0.403	1.00	1.245	125
BERYLLIUM	0.100	0.090	0.089	0.072	0.104	0.077	0.103	0.107	0.0137	0.0430	0.4304	0.3000	0.185	0.50	0.524	105
CADMIUM	0.100	0.105	0.093	0.089	0.122	0.093	0.121	0.122	0.0151	0.0473	0.4734	0.3000	0.174	0.50	0.501	100
CHROMIUM	0.100	0.088	0.096	0.092	0.093	0.085	0.100	0.102	0.0061	0.0192	0.1925	0.3000	0.321	1.00	0.973	97
COBALT	0.100	0.102	0.088	0.084	0.096	0.085	0.104	0.100	0.0084	0.0263	0.2630	0.3000	0.163	0.50	0.475	95
COPPER	0.500	0.789	0.565	0.564	0.559	0.574	0.563	0.596	0.0836	0.2626	2.6262	0.3000	0.328	1.00	1.062	106
IRON	1.000	0.685	0.581	0.566	1.123	0.578	0.843	1.075	0.2394	0.7517	7.5170	0.3000	0.605	10.00	11.338	113
LEAD	0.100	0.108	0.098	0.088	0.116	0.089	0.113	0.112	0.0117	0.0367	0.3670	0.3000	0.343	1.00	1.018	102
MANGANESE	0.100	0.162	0.122	0.123	0.160	0.133	0.156	0.154	0.0177	0.0554	0.5543	0.3000	0.193	0.50	0.605	121
MOLYBDENUM	0.100	0.100	0.095	0.079	0.109	0.080	0.098	0.109	0.0123	0.0385	0.3853	0.3000	0.247	0.50	0.660	132
NICKEL	0.100	0.126	0.095	0.090	0.119	0.105	0.110	0.106	0.0126	0.0395	0.3954	0.3000	0.341	1.00	1.002	100
SELENIUM	0.100	0.113	0.104	0.091	0.104	0.092	0.110	0.110	0.0088	0.0276	0.2760	0.3000	0.170	0.50	0.502	100
SILVER	0.100	0.028	0.065	0.071	0.079	0.076	0.079	0.082	0.0188	0.0590	0.5899	0.3000	0.247	1.00	1.029	103
THALLIUM	0.100	0.084	0.076	0.067	0.091	0.070	0.088	0.087	0.0094	0.0296	0.2961	0.3000	0.186	0.50	0.549	110
URANIUM	0.100	0.099	0.090	0.082	0.104	0.083	0.105	0.106	0.0104	0.0327	0.3272	0.3000	0.181	0.50	0.533	107
VANADIUM	0.100	0.126	0.111	0.110	0.126	0.116	0.123	0.122	0.0068	0.0213	0.2133	0.3000	0.221	1.00	0.873	87
ZINC	0.500	0.930	0.695	0.905	0.781	0.765	0.744	0.810	0.0853	0.2678	2.6780	0.3000	3.286	10.00	10.085	101

Method Detection Limit 2016

Analytical Method: EPA 6020 / 200.8
Digestion Method: EPA 3010A
Date of Analysis: 4/5/2016,4/6/2016
Digestion Date: 4/1/2016
Instrument Name: ICPMS2
Analysts: MEI
Units: ug/L

Analyte	MDL	LOD	ACTUAL LOD	PQL	ACTUAL PQL	% REC
ANTIMONY	0.0314	0.100	0.187	0.50	0.515	103
ARSENIC	0.0249	0.050	0.049	0.10	0.103	103
BARIUM	0.0699	0.250	0.403	1.00	1.245	125
BERYLLIUM	0.0431	0.100	0.185	0.50	0.524	105
CADMIUM	0.0474	0.100	0.174	0.50	0.501	100
CHROMIUM	0.0193	0.075	0.321	1.00	0.973	97
COBALT	0.0263	0.100	0.163	0.50	0.475	95
COPPER	0.2629	0.500	0.328	1.00	1.062	106
IRON	0.7524	2.500	0.605	10.00	11.338	113
LEAD	0.0367	0.100	0.343	1.00	1.018	102
MANGANESE	0.0555	0.050	0.193	0.50	0.605	121
MOLYBDENUM	0.0386	0.050	0.247	0.50	0.660	132
NICKEL	0.0396	0.050	0.341	1.00	1.002	100
SELENIUM	0.0276	0.050	0.170	0.50	0.502	100
SILVER	0.0590	0.050	0.247	1.00	1.029	103
THALLIUM	0.0296	0.050	0.186	0.50	0.549	110
URANIUM	0.0328	0.050	0.181	0.50	0.533	107
VANADIUM	0.0213	0.050	0.221	1.00	0.873	87
ZINC	0.2681	0.500	3.286	10.00	10.085	101

October 13, 2016

Dan Bush
ARCADIS U.S., Inc. - California
1410 Rocky Ridge Dr #330
Roseville, CA 95661

TEL: (916) 786-3302
FAX:

Workorder No.: N021081

RE: PG&E Topock - GMP, RC000753.801A

Attention: Dan Bush

Enclosed are the results for sample(s) received on September 27, 2016 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 Liburdi for

Puri Romualdo
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.

CLIENT: ARCADIS U.S., Inc. - California
Project: PG&E Topock - GMP, RC000753.801A
Lab Order: N021081

CASE NARRATIVE

SAMPLE RECEIVING/GENERAL COMMENTS:

Samples were received intact with proper chain of custody documentation.

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

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

Samples were analyzed within method holding time.

Analytical Comments for EPA 6020_Dissolved:

Dilution was necessary on some analytes for sample and QC samples N021081-001B-MS, N021081-001B-MSD due to associated internal standard not meeting method criteria possibly due to matrix interference.Sample and QC 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) and Matrix Spike Duplicate (MSD) are outside recovery criteria for Manganese on QC samples N021081-001B-MS and N021081-001B-MSD- 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) is outside recovery criteria for Chromium on QC sample N021105-006B-MS possibly due to matrix interference. The associated Laboratory Control Sample (LCS) recovery was acceptable.

ASSET LABORATORIES
"Serving Clients with Passion and Professionalism"
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ORELAP/NELAP Cert 4046

ASSET Laboratories

Date: *13-Oct-16*

CLIENT: ARCADIS U.S., Inc. - California
Project: PG&E Topock - GMP, RC000753.801A
Lab Order: N021081
Contract No:

Work Order Sample Summary

Lab Sample ID	Client Sample ID	Matrix	Collection Date	Date Received	Date Reported
N021081-001A	MW-58BR-Q316	Groundwater	9/27/2016 11:20:00 AM	9/27/2016	10/13/2016
N021081-001B	MW-58BR-Q316	Groundwater	9/27/2016 11:20:00 AM	9/27/2016	10/13/2016
N021081-001C	MW-58BR-Q316	Groundwater	9/27/2016 11:20:00 AM	9/27/2016	10/13/2016
N021081-002A	MW-701-Q316	Groundwater	9/27/2016 4:15:00 PM	9/27/2016	10/13/2016

ASSET Laboratories

ANALYTICAL RESULTS

Print Date: *13-Oct-16*

CLIENT:	ARCADIS U.S., Inc. - California	**Client Sample ID:**	MW-58BR-Q316
Lab Order:	N021081	**Collection Date:**	9/27/2016 11:20:00 AM
Project:	PG&E Topock - GMP, RC000753.801A	**Matrix:**	GROUNDWATER
Lab ID:	N021081-001		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
HEXAVALENT CHROMIUM BY IC							
			EPA 218.6				
RunID: **IC7_160928A**	QC Batch: **R110783**			PrepDate			Analyst: **RAB**
Hexavalent Chromium	2.7	0.066	0.20		µg/L	1	9/28/2016 11:41 AM
DISSOLVED METALS BY ICP-MS							
	EPA 3010A		**EPA 6020**				
RunID: **ICP7_161004B**	QC Batch: **59838**			PrepDate	**10/3/2016**		Analyst: **CEI**
Chromium	2.7	0.019	1.0		µg/L	1	10/4/2016 04:57 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		

ASSET Laboratories

ANALYTICAL RESULTS

Print Date: *13-Oct-16*

CLIENT:	ARCADIS U.S., Inc. - California	**Client Sample ID:**	MW-701-Q316
Lab Order:	N021081	**Collection Date:**	9/27/2016 4:15:00 PM
Project:	PG&E Topock - GMP, RC000753.801A	**Matrix:**	GROUNDWATER
Lab ID:	N021081-002		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
HEXAVALENT CHROMIUM BY IC							
			EPA 218.6				
RunID: **IC7_160928A**	QC Batch: **R110783**			PrepDate			Analyst: **RAB**
Hexavalent Chromium	ND	0.066	0.20		µg/L	1	9/28/2016 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

CLIENT: ARCADIS U.S., Inc. - California
Work Order: N021081
Project: PG&E Topock - GMP, RC000753.801A

ANALYTICAL QC SUMMARY REPORT

TestCode: 218.6_WPGE

Sample ID	MB-R110783	SampType:	MBLK	TestCode:	218.6_WPGE	Units:	µg/L	Prep Date:		RunNo:	110783
Client ID:	PBW	Batch ID:	R110783	TestNo:	EPA 218.6			Analysis Date:	9/28/2016	SeqNo:	2434292

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	ND	0.20									

Sample ID	LCS-R110783	SampType:	LCS	TestCode:	218.6_WPGE	Units:	µg/L	Prep Date:		RunNo:	110783
Client ID:	LCSW	Batch ID:	R110783	TestNo:	EPA 218.6			Analysis Date:	9/28/2016	SeqNo:	2434293

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	4.988	0.20	5.000	0	99.8	90	110				

Sample ID	N021079-001ADUP	SampType:	DUP	TestCode:	218.6_WPGE	Units:	µg/L	Prep Date:		RunNo:	110783
Client ID:	ZZZZZZ	Batch ID:	R110783	TestNo:	EPA 218.6			Analysis Date:	9/28/2016	SeqNo:	2434295

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	1.712	0.20						1.680	1.93	20	

Sample ID	N021081-001AMS	SampType:	MS	TestCode:	218.6_WPGE	Units:	µg/L	Prep Date:		RunNo:	110783
Client ID:	ZZZZZZ	Batch ID:	R110783	TestNo:	EPA 218.6			Analysis Date:	9/28/2016	SeqNo:	2434297

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	3.740	0.20	1.000	2.714	103	90	110				

Sample ID	N021081-001AMSD	SampType:	MSD	TestCode:	218.6_WPGE	Units:	µg/L	Prep Date:		RunNo:	110783
Client ID:	ZZZZZZ	Batch ID:	R110783	TestNo:	EPA 218.6			Analysis Date:	9/28/2016	SeqNo:	2434298

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	3.662	0.20	1.000	2.714	94.9	90	110	3.740	2.09	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

CLIENT: ARCADIS U.S., Inc. - California
Work Order: N021081
Project: PG&E Topock - GMP, RC000753.801A

ANALYTICAL QC SUMMARY REPORT

TestCode: 218.6_WPGE

Sample ID	N021081-002AMS	SampType:	MS	TestCode:	218.6_WPGE	Units:	µg/L	Prep Date:		RunNo:	110783
Client ID:	ZZZZZZ	Batch ID:	R110783	TestNo:	EPA 218.6			Analysis Date:	9/28/2016	SeqNo:	2434300

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	1.021	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
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: ARCADIS U.S., Inc. - California
Work Order: N021081
Project: PG&E Topock - GMP, RC000753.801A

ANALYTICAL QC SUMMARY REPORT

TestCode: 6020DIS_CrPGE

Sample ID	MB-59838	SampType:	MBLK	TestCode:	6020DIS_CrP	Units:	µg/L	Prep Date:	10/3/2016	RunNo:	110930
Client ID:	PBW	Batch ID:	59838	TestNo:	EPA 6020	EPA 3010A		Analysis Date:	10/4/2016	SeqNo:	2441107

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium	ND	1.0									

Sample ID	LCS-59838	SampType:	LCS	TestCode:	6020DIS_CrP	Units:	µg/L	Prep Date:	10/3/2016	RunNo:	110930
Client ID:	LCSW	Batch ID:	59838	TestNo:	EPA 6020	EPA 3010A		Analysis Date:	10/4/2016	SeqNo:	2441108

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium	10.216	1.0	10.00	0	102	85	115				

Sample ID	N021081-001B-MS	SampType:	MS	TestCode:	6020DIS_CrP	Units:	µg/L	Prep Date:	10/3/2016	RunNo:	110930
Client ID:	ZZZZZZ	Batch ID:	59838	TestNo:	EPA 6020	EPA 3010A		Analysis Date:	10/4/2016	SeqNo:	2441114

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium	11.127	1.0	10.00	2.730	84.0	75	125				

Sample ID	N021081-001B-MSD	SampType:	MSD	TestCode:	6020DIS_CrP	Units:	µg/L	Prep Date:	10/3/2016	RunNo:	110930
Client ID:	ZZZZZZ	Batch ID:	59838	TestNo:	EPA 6020	EPA 3010A		Analysis Date:	10/4/2016	SeqNo:	2441116

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium	11.112	1.0	10.00	2.730	83.8	75	125	11.13	0.132	20	

Sample ID	N021105-006B-MS	SampType:	MS	TestCode:	6020DIS_CrP	Units:	µg/L	Prep Date:	10/3/2016	RunNo:	110930
Client ID:	ZZZZZZ	Batch ID:	59838	TestNo:	EPA 6020	EPA 3010A		Analysis Date:	10/4/2016	SeqNo:	2441146

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium	168.208	1.0	10.00	164.0	42.2	75	125				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
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT:	ARCADIS U.S., Inc. - California	**Client Sample ID:**	MW-58BR-Q316
Lab Order:	N021081	**Collection Date:**	9/27/2016 11:20:00 AM
Project:	PG&E Topock - GMP, RC000753.801A	**Matrix:**	GROUNDWATER
Lab ID:	N021081-001		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
NITRATE/NITRITE-N BY CADMIUM REDUCTION							
			SM4500-NO3F				
RunID: **WETCHEM_161005H**	QC Batch: **R110972**		PrepDate				Analyst: **RB**
Nitrate/Nitrite as N	0.42	0.022	0.050		mg/L	1	10/5/2016

Qualifiers:

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

CLIENT: ARCADIS U.S., Inc. - California
Work Order: N021081
Project: PG&E Topock - GMP, RC000753.801A

ANALYTICAL QC SUMMARY REPORT

TestCode: 4500N03F_W

Sample ID	MB-R110972	SampType:	MBLK	TestCode:	4500N03F_W	Units:	mg/L	Prep Date:		RunNo:	110972
Client ID:	PBW	Batch ID:	R110972	TestNo:	SM4500-NO3			Analysis Date:	10/5/2016	SeqNo:	2443272

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrate/Nitrite as N	0.022	0.050									

Sample ID	LCS-R110972	SampType:	LCS	TestCode:	4500N03F_W	Units:	mg/L	Prep Date:		RunNo:	110972
Client ID:	LCSW	Batch ID:	R110972	TestNo:	SM4500-NO3			Analysis Date:	10/5/2016	SeqNo:	2443273

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrate/Nitrite as N	0.560	0.050	0.5000	0	112	85	115				

Sample ID	N021040-001CDUP	SampType:	DUP	TestCode:	4500N03F_W	Units:	mg/L	Prep Date:		RunNo:	110972
Client ID:	ZZZZZZ	Batch ID:	R110972	TestNo:	SM4500-NO3			Analysis Date:	10/5/2016	SeqNo:	2443275

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrate/Nitrite as N	0.029	0.050						0.02840	0	20	

Sample ID	N021040-001CMS	SampType:	MS	TestCode:	4500N03F_W	Units:	mg/L	Prep Date:		RunNo:	110972
Client ID:	ZZZZZZ	Batch ID:	R110972	TestNo:	SM4500-NO3			Analysis Date:	10/5/2016	SeqNo:	2443276

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrate/Nitrite as N	0.508	0.050	0.5000	0.02840	96.0	75	125				

Sample ID	N021040-001CMSD	SampType:	MSD	TestCode:	4500N03F_W	Units:	mg/L	Prep Date:		RunNo:	110972
Client ID:	ZZZZZZ	Batch ID:	R110972	TestNo:	SM4500-NO3			Analysis Date:	10/5/2016	SeqNo:	2443277

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	0.02840	95.2	75	125	0.5082	0.731	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
DO	Surrogate Diluted Out		Calculations are based on raw values		

ASSET Laboratories

ANALYTICAL RESULTS

Print Date: *13-Oct-16*

CLIENT:	ARCADIS U.S., Inc. - California	**Client Sample ID:**	MW-58BR-Q316
Lab Order:	N021081	**Collection Date:**	9/27/2016 11:20:00 AM
Project:	PG&E Topock - GMP, RC000753.801A	**Matrix:**	GROUNDWATER
Lab ID:	N021081-001		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
DISSOLVED METALS BY ICP-MS							
	EPA 3010A			**EPA 6020**			
RunID: **ICP7_161004B**	QC Batch: **59838**			PrepDate	**10/3/2016**		Analyst: **CEI**
Arsenic	1.6	0.12	0.50		µg/L	5	10/4/2016 05:03 PM
Manganese	380	0.28	2.5		µg/L	5	10/4/2016 05:03 PM
Molybdenum	23	0.19	2.5		µg/L	5	10/4/2016 05:03 PM
Selenium	ND	0.14	2.5		µg/L	5	10/4/2016 05:03 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		

CLIENT: ARCADIS U.S., Inc. - California
Work Order: N021081
Project: PG&E Topock - GMP, RC000753.801A

ANALYTICAL QC SUMMARY REPORT

TestCode: 6020_DIS

Sample ID	MB-59838	SampType:	MBLK	TestCode:	6020_DIS	Units:	µg/L	Prep Date:	10/3/2016	RunNo:	110930
Client ID:	PBW	Batch ID:	59838	TestNo:	EPA 6020	EPA 3010A		Analysis Date:	10/4/2016	SeqNo:	2441214

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	LCS-59838	SampType:	LCS	TestCode:	6020_DIS	Units:	µg/L	Prep Date:	10/3/2016	RunNo:	110930
Client ID:	LCSW	Batch ID:	59838	TestNo:	EPA 6020	EPA 3010A		Analysis Date:	10/4/2016	SeqNo:	2441215

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	10.263	0.10	10.00	0	103	85	115				
Manganese	100.984	0.50	100.0	0	101	85	115				
Molybdenum	9.536	0.50	10.00	0	95.4	85	115				
Selenium	10.338	0.50	10.00	0	103	85	115				

Sample ID	N021081-001B-MS	SampType:	MS	TestCode:	6020_DIS	Units:	µg/L	Prep Date:	10/3/2016	RunNo:	110930
Client ID:	ZZZZZZ	Batch ID:	59838	TestNo:	EPA 6020	EPA 3010A		Analysis Date:	10/4/2016	SeqNo:	2441222

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	11.609	0.50	10.00	1.567	100	75	125				
Manganese	439.183	2.5	100.0	380.3	58.9	75	125				S
Molybdenum	33.175	2.5	10.00	23.39	97.9	75	125				
Selenium	10.381	2.5	10.00	1.620	87.6	75	125				

Sample ID	N021081-001B-MSD	SampType:	MSD	TestCode:	6020_DIS	Units:	µg/L	Prep Date:	10/3/2016	RunNo:	110930
Client ID:	ZZZZZZ	Batch ID:	59838	TestNo:	EPA 6020	EPA 3010A		Analysis Date:	10/4/2016	SeqNo:	2441226

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	12.033	0.50	10.00	1.567	105	75	125	11.61	3.59	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
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: ARCADIS U.S., Inc. - California
Work Order: N021081
Project: PG&E Topock - GMP, RC000753.801A

ANALYTICAL QC SUMMARY REPORT

TestCode: 6020_DIS

Sample ID	N021081-001B-MSD	SampType:	MSD	TestCode:	6020_DIS	Units:	µg/L	Prep Date:	10/3/2016	RunNo:	110930
Client ID:	ZZZZZZ	Batch ID:	59838	TestNo:	EPA 6020	EPA 3010A		Analysis Date:	10/4/2016	SeqNo:	2441226

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Manganese	442.175	2.5	100.0	380.3	61.9	75	125	439.2	0.679	20	S
Molybdenum	32.563	2.5	10.00	23.39	91.8	75	125	33.18	1.86	20	
Selenium	10.078	2.5	10.00	1.620	84.6	75	125	10.38	2.96	20	

Sample ID	N021105-006B-MS	SampType:	MS	TestCode:	6020_DIS	Units:	µg/L	Prep Date:	10/3/2016	RunNo:	110930
Client ID:	ZZZZZZ	Batch ID:	59838	TestNo:	EPA 6020	EPA 3010A		Analysis Date:	10/4/2016	SeqNo:	2441253

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	10.794	0.10	10.00	0.5363	103	75	125				
Manganese	99.815	0.50	100.0	12.35	87.5	75	125				
Molybdenum	48.106	0.50	10.00	36.85	113	75	125				
Selenium	15.979	0.50	10.00	7.382	86.0	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
DO	Surrogate Diluted Out		Calculations are based on raw values		

ASSET LABORATORIES
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

CHAIN OF CUSTODY RECORD

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 Y ✓ N
Address: Roseville, CA 95661	Email: dan.bush@arcadis.com; daniel.g.moore@pillsgen.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	P O #	Labspec / CalTrans / 3. Container Intact ✓
Submitted By: SEAN MAHER		Phone: 949-727-1400, ext 200	Fax	Others ✓ / LEVEL III / 4. Seal Present ✓
Title: ENV ENG II	Phone: 916-786-3302 Fax:			Specify: RWQCB / LEVEL IV / 5. IR number
Signature: Date: 9/27/16	Sampled By: Sarah McMinn			Global ID: / Regulatory / 6. Method of Cooling: 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				Specify State. / Sample Temp.: 3.1°C
Project Name: PG&E Topock - GMP	Signature: Date: 9/27/16			
Project Number: RC000753.801A				

Matrix: Ground Water x; Sediment; Potable Water; Soil; NPDES; Other Solid; Surface Water

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 250 mL poly	Cr(VI) FF (E218.6) (NH4)2, SO4, NH4, OH 2 X 250 mL poly	Metals Dissolved (6020AFF) As: HNO3 500 mL poly	Metals Dissolved (6020AFF) Mo: HNO3 500 mL poly	Metals Dissolved (6020AFF) Se: HNO3 500 mL poly	Metals Dissolved (6020AFF) Cr: HNO3 500 mL poly	Metals Dissolved (6020AFF) Mn: HNO3 500 mL poly	Nitrate/Nitrite (SM4500NO3): Nitrate: H2SO4 125 mL poly	Turn Around Time	No. of Container	Container Type	PRESERVATION	Remarks
1	N021081 - 01	MW-58BR-Q316	9/27/2016	1120		X		X	X	X	X	X	X	E	3	P	BNS	
2	- 02	MW-701-Q316	9/27/2016	1615		X								E	3	P	B	
3																		
4																		
5																		
6																		
7																		
8																		
9																		
10																		
11																		
12																		
13																		

Relinquished by (Signature and Printed Name):	Date/Time:	Relinquished by (Signature and Printed Name):	Date/Time:
	9/27/16 1620		9/27/16 @ 1620
Relinquished by (Signature and Printed Name):	Date/Time:	Relinquished by (Signature and Printed Name):	Date/Time:
	9/27/16 @ 1810	Joanna Rodriguez	9/27/16 18:14
Relinquished by (Signature and Printed Name):	Date/Time:	Relinquished by (Signature and Printed Name):	Date/Time:

Turn Around Time (TAT)

- [ ] A = < 24 Hrs or Same Day TAT
- [ ] B = Next Workday
- [ ] C = 2 Workdays
- [ ] D = 3 Workdays
- [X] E = Routine 5-7 Workdays

TAT Starts at 8 AM the following day if samples received after 3.00PM

Special Instruction:

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 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 analyses, TAT and Surcharges will vary

Preservatives:				Container Type:		
H=HCL	N=HNO_3	S=H_2SO_4	C=4°C	T=Tube	V=VOA	P=Pint
Z=Zn$(AC)_2$	O=NaOH	T=$Na_2S_2O_3$		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

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:	9/27/2016	Workorder:	N021081
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 ☑	No ☐	Not Present ☐
2. Custody seals intact, signed, dated on shippping container/cooler?	Yes ☐	No ☐	Not Present ☑
3. Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
4. Chain of custody present?	Yes ☑	No ☐	
5. Sampler's name present in COC?	Yes ☑	No ☐	
6. Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
7. Chain of custody agrees with sample labels?	Yes ☑	No ☐	
8. Samples in proper container/bottle?	Yes ☑	No ☐	
9. Sample containers intact?	Yes ☑	No ☐	
10. Sufficient sample volume for indicated test?	Yes ☑	No ☐	
11. All samples received within holding time?	Yes ☑	No ☐	
12. Temperature of rep sample or Temp Blank within acceptable limit?	Yes ☑	No ☐	NA ☐
13. Water - VOA vials have zero headspace?	Yes ☐	No ☐	NA ☑
14. Water - pH acceptable upon receipt? Example: pH > 12 for (CN,S); pH<2 for Metals	Yes ☑	No ☐	NA ☐
15. Did the bottle labels indicate correct preservatives used?	Yes ☑	No ☐	NA ☐
16. Were there Non-Conformance issues at login?	Yes ☐	No ☐	NA ☑
Was Client notified?	Yes ☐	No ☐	NA ☑

Comments:

Checklist Completed By: YR 9/28/2016

Reviewed By: 9/29/2016

ASSET Laboratories

WORK ORDER Summary

29-Sep-16

WorkOrder: N021081

Client ID: ARCUS02

Project: PG&E Topock - GMP, RC000753.801A **QC Level:** Level IV **Date Received:** 9/27/2016

Comments:

Sample ID	Client Sample ID	Date Collected	Date Due	Matrix	Test No	Test Name	Hld	MS	Sub	Storage
N021081-001A	MW-58BR-Q316	9/27/2016 11:20:00 AM	10/11/2016	Groundwater	EPA 218.6	Hexavalent Chromium by IC	☐	☐	☐	WW
N021081-001B			10/11/2016		EPA 3010A	AQPREP TOTAL METALS: ICP, FLAA	☐	☐	☐	WW
			10/11/2016		EPA 6020	DISSOLVED METALS BY ICP-MS	☐	☐	☐	WW
			10/11/2016		EPA 6020	DISSOLVED METALS BY ICP-MS	☐	☐	☐	WW
N021081-001C			10/11/2016		SM4500-NO3F	NITRATE/NITRITE-N BY CADMIUM REDUCTION	☐	☐	☐	WW
N021081-002A	MW-701-Q316	9/27/2016 4:15:00 PM	10/11/2016		EPA 218.6	Hexavalent Chromium by IC	☐	☐	☐	WW
N021081-003A	FOLDER		10/11/2016		EDD	RWQCB	☐	☐	☐	LAB
			10/11/2016		Folder	Folder	☐	☐	☐	LAB

October 15, 2016

Dan Bush
ARCADIS U.S., Inc. - California
1410 Rocky Ridge Dr #330
Roseville, CA 95661

TEL: (916) 786-3302
FAX:

Workorder No.: N021096

RE: PG&E Topock - GMP, RC000753.801A

Attention: Dan Bush

Enclosed are the results for sample(s) received on September 28, 2016 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 Litucas for

Puri Romualdo
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.

CLIENT: ARCADIS U.S., Inc. - California
Project: PG&E Topock - GMP, RC000753.801A
Lab Order: N021096

CASE NARRATIVE

SAMPLE RECEIVING/GENERAL COMMENTS:

Samples were received intact with proper chain of custody documentation.

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

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

Samples were analyzed within method holding time.

Analytical Comments for EPA 218.6:

Dilution was necessary for samples N021096-002, N021096-004 and N021096-005 due to matrix interference. Samples were analyzed at lower dilution however retention time criteria was 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 and QC samples N021081-001B-MS, N021081-001B-MSD due to associated internal standard not meeting method criteria possibly due to matrix interference.Samples and QC 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) and Matrix Spike Duplicate (MSD) are outside recovery criteria for Manganese on QC samples N021081-001B-MS and N021081-001B-MSD- 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) is outside recovery criteria for Chromium on QC sample N021105-006B-MS possibly due to matrix interference. The associated Laboratory Control Sample (LCS) recovery was acceptable.

ASSET LABORATORIES
"Serving Clients with Passion and Professionalism"
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ELAP Cert 2676 | NV Cert NV00922
ORELAP/NELAP Cert 4046

ASSET Laboratories

Date: *15-Oct-16*

CLIENT: ARCADIS U.S., Inc. - California
Project: PG&E Topock - GMP, RC000753.801A
Lab Order: N021096
Contract No:

Work Order Sample Summary

Lab Sample ID	Client Sample ID	Matrix	Collection Date	Date Received	Date Reported
N021096-001A	MW-72-080-Q316	Groundwater	9/28/2016 9:05:00 AM	9/28/2016	10/15/2016
N021096-001B	MW-72-080-Q316	Groundwater	9/28/2016 9:05:00 AM	9/28/2016	10/15/2016
N021096-001C	MW-72-080-Q316	Groundwater	9/28/2016 9:05:00 AM	9/28/2016	10/15/2016
N021096-002A	MW-72BR-200-Q316	Groundwater	9/28/2016 12:15:00 PM	9/28/2016	10/15/2016
N021096-002B	MW-72BR-200-Q316	Groundwater	9/28/2016 12:15:00 PM	9/28/2016	10/15/2016
N021096-002C	MW-72BR-200-Q316	Groundwater	9/28/2016 12:15:00 PM	9/28/2016	10/15/2016
N021096-003A	MW-73-080-Q316	Groundwater	9/28/2016 11:45:00 AM	9/28/2016	10/15/2016
N021096-003B	MW-73-080-Q316	Groundwater	9/28/2016 11:45:00 AM	9/28/2016	10/15/2016
N021096-003C	MW-73-080-Q316	Groundwater	9/28/2016 11:45:00 AM	9/28/2016	10/15/2016
N021096-004A	MW-64BR-Q316	Groundwater	9/28/2016 2:58:00 PM	9/28/2016	10/15/2016
N021096-004B	MW-64BR-Q316	Groundwater	9/28/2016 2:58:00 PM	9/28/2016	10/15/2016
N021096-004C	MW-64BR-Q316	Groundwater	9/28/2016 2:58:00 PM	9/28/2016	10/15/2016
N021096-005A	MW-62-110-Q316	Groundwater	9/28/2016 4:35:00 PM	9/28/2016	10/15/2016
N021096-005B	MW-62-110-Q316	Groundwater	9/28/2016 4:35:00 PM	9/28/2016	10/15/2016
N021096-005C	MW-62-110-Q316	Groundwater	9/28/2016 4:35:00 PM	9/28/2016	10/15/2016
N021096-006A	MW-702-Q316	Groundwater	9/28/2016 4:25:00 PM	9/28/2016	10/15/2016
N021096-007A	MW-62-065-Q316	Groundwater	9/28/2016 4:16:00 PM	9/28/2016	10/15/2016
N021096-007B	MW-62-065-Q316	Groundwater	9/28/2016 4:16:00 PM	9/28/2016	10/15/2016
N021096-007C	MW-62-065-Q316	Groundwater	9/28/2016 4:16:00 PM	9/28/2016	10/15/2016

ASSET Laboratories

ANALYTICAL RESULTS

Print Date: *15-Oct-16*

CLIENT:	ARCADIS U.S., Inc. - California	**Client Sample ID:**	MW-72-080-Q316
Lab Order:	N021096	**Collection Date:**	9/28/2016 9:05:00 AM
Project:	PG&E Topock - GMP, RC000753.801A	**Matrix:**	GROUNDWATER
Lab ID:	N021096-001		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
HEXAVALENT CHROMIUM BY IC							
EPA 218.6							
RunID: **IC7_160929A** QC Batch: **R110823** PrepDate							Analyst: **RAB**
Hexavalent Chromium	86	1.3	4.0		µg/L	20	9/29/2016 10:07 AM
DISSOLVED METALS BY ICP-MS							
EPA 3010A **EPA 6020**							
RunID: **ICP7_161004B** QC Batch: **59838** PrepDate **10/3/2016**							Analyst: **CEI**
Chromium	84	0.019	1.0		µg/L	1	10/4/2016 05:58 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

ASSET Laboratories

ANALYTICAL RESULTS

Print Date: *15-Oct-16*

CLIENT:	ARCADIS U.S., Inc. - California	**Client Sample ID:**	MW-72BR-200-Q316
Lab Order:	N021096	**Collection Date:**	9/28/2016 12:15:00 PM
Project:	PG&E Topock - GMP, RC000753.801A	**Matrix:**	GROUNDWATER
Lab ID:	N021096-002		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
HEXAVALENT CHROMIUM BY IC							
EPA 218.6							
RunID: **IC7_160929A** QC Batch: **R110823** PrepDate							Analyst: **RAB**
Hexavalent Chromium	4.2	0.33	1.0		µg/L	5	9/29/2016 12:38 PM
DISSOLVED METALS BY ICP-MS							
EPA 3010A **EPA 6020**							
RunID: **ICP7_161004B** QC Batch: **59838** PrepDate **10/3/2016**							Analyst: **CEI**
Chromium	4.3	0.019	1.0		µg/L	1	10/4/2016 06:09 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

CLIENT:	ARCADIS U.S., Inc. - California	**Client Sample ID:**	MW-73-080-Q316
Lab Order:	N021096	**Collection Date:**	9/28/2016 11:45:00 AM
Project:	PG&E Topock - GMP, RC000753.801A	**Matrix:**	GROUNDWATER
Lab ID:	N021096-003		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
HEXAVALENT CHROMIUM BY IC							
EPA 218.6							
RunID: **IC7_160929A** QC Batch: **R110823** PrepDate							Analyst: **RAB**
Hexavalent Chromium	23	0.33	1.0		µg/L	5	9/29/2016 10:35 AM
DISSOLVED METALS BY ICP-MS							
EPA 3010A **EPA 6020**							
RunID: **ICP7_161004B** QC Batch: **59838** PrepDate **10/3/2016**							Analyst: **CEI**
Chromium	22	0.019	1.0		µg/L	1	10/4/2016 06:20 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

CLIENT:	ARCADIS U.S., Inc. - California	**Client Sample ID:**	MW-64BR-Q316
Lab Order:	N021096	**Collection Date:**	9/28/2016 2:58:00 PM
Project:	PG&E Topock - GMP, RC000753.801A	**Matrix:**	GROUNDWATER
Lab ID:	N021096-004		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
HEXAVALENT CHROMIUM BY IC							
			EPA 218.6				
RunID: **IC7_160929A**	QC Batch: **R110823**			PrepDate			Analyst: **RAB**
Hexavalent Chromium	ND	0.33	1.0		µg/L	5	9/29/2016 02:06 PM
DISSOLVED METALS BY ICP-MS							
	EPA 3010A			**EPA 6020**			
RunID: **ICP7_161004B**	QC Batch: **59838**			PrepDate	**10/3/2016**		Analyst: **CEI**
Chromium	ND	0.019	1.0		µg/L	1	10/4/2016 06:31 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

CLIENT:	ARCADIS U.S., Inc. - California	**Client Sample ID:**	MW-62-110-Q316
Lab Order:	N021096	**Collection Date:**	9/28/2016 4:35:00 PM
Project:	PG&E Topock - GMP, RC000753.801A	**Matrix:**	GROUNDWATER
Lab ID:	N021096-005		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
HEXAVALENT CHROMIUM BY IC							
		EPA 218.6					
RunID: **IC7_160929A**	QC Batch: **R110823**			PrepDate			Analyst: **RAB**
Hexavalent Chromium	ND	0.33	1.0		µg/L	5	9/29/2016 02:24 PM
DISSOLVED METALS BY ICP-MS							
	EPA 3010A			**EPA 6020**			
RunID: **ICP7_161004B**	QC Batch: **59838**			PrepDate	**10/3/2016**		Analyst: **CEI**
Chromium	ND	0.019	1.0		µg/L	1	10/4/2016 06:42 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

CLIENT:	ARCADIS U.S., Inc. - California	**Client Sample ID:**	MW-702-Q316
Lab Order:	N021096	**Collection Date:**	9/28/2016 4:25:00 PM
Project:	PG&E Topock - GMP, RC000753.801A	**Matrix:**	GROUNDWATER
Lab ID:	N021096-006		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
HEXAVALENT CHROMIUM BY IC							
			EPA 218.6				
RunID: **IC7_160929A**	QC Batch: **R110823**			PrepDate			Analyst: **RAB**
Hexavalent Chromium	ND	0.066	0.20		µg/L	1	9/29/2016 09:39 AM

Qualifiers:

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

CLIENT:	ARCADIS U.S., Inc. - California	**Client Sample ID:**	MW-62-065-Q316
Lab Order:	N021096	**Collection Date:**	9/28/2016 4:16:00 PM
Project:	PG&E Topock - GMP, RC000753.801A	**Matrix:**	GROUNDWATER
Lab ID:	N021096-007		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
HEXAVALENT CHROMIUM BY IC							
			EPA 218.6				
RunID: **IC7_160929A**	QC Batch: **R110823**			PrepDate			Analyst: **RAB**
Hexavalent Chromium	350	6.6	20		µg/L	100	9/29/2016 10:54 AM
DISSOLVED METALS BY ICP-MS							
	EPA 3010A			**EPA 6020**			
RunID: **ICP7_161004B**	QC Batch: **59838**			PrepDate	**10/3/2016**		Analyst: **CEI**
Chromium	340	0.096	5.0		µg/L	5	10/4/2016 07:10 PM

Qualifiers:

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

CLIENT: ARCADIS U.S., Inc. - California
Work Order: N021096
Project: PG&E Topock - GMP, RC000753.801A

ANALYTICAL QC SUMMARY REPORT

TestCode: 218.6_WPGE

Sample ID	MB-R110823	SampType:	MBLK	TestCode:	218.6_WPGE	Units:	µg/L	Prep Date:		RunNo:	110823		
Client ID:	PBW	Batch ID:	R110823	TestNo:	EPA 218.6			Analysis Date:	9/29/2016	SeqNo:	2436353		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual		
Hexavalent Chromium	ND	0.20											

Sample ID	LCS-R110823	SampType:	LCS	TestCode:	218.6_WPGE	Units:	µg/L	Prep Date:		RunNo:	110823		
Client ID:	LCSW	Batch ID:	R110823	TestNo:	EPA 218.6			Analysis Date:	9/29/2016	SeqNo:	2436354		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual		
Hexavalent Chromium	4.985	0.20	5.000	0	99.7	90	110						

Sample ID	N021096-006AMS	SampType:	MS	TestCode:	218.6_WPGE	Units:	µg/L	Prep Date:		RunNo:	110823		
Client ID:	ZZZZZZ	Batch ID:	R110823	TestNo:	EPA 218.6			Analysis Date:	9/29/2016	SeqNo:	2436356		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual		
Hexavalent Chromium	1.064	0.20	1.000	0	106	90	110						

Sample ID	N021096-001AMS	SampType:	MS	TestCode:	218.6_WPGE	Units:	µg/L	Prep Date:		RunNo:	110823		
Client ID:	ZZZZZZ	Batch ID:	R110823	TestNo:	EPA 218.6			Analysis Date:	9/29/2016	SeqNo:	2436358		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual		
Hexavalent Chromium	185.932	4.0	100.0	86.39	99.5	90	110						

Sample ID	N021096-001AMSD	SampType:	MSD	TestCode:	218.6_WPGE	Units:	µg/L	Prep Date:		RunNo:	110823		
Client ID:	ZZZZZZ	Batch ID:	R110823	TestNo:	EPA 218.6			Analysis Date:	9/29/2016	SeqNo:	2436359		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual		
Hexavalent Chromium	186.094	4.0	100.0	86.39	99.7	90	110	185.9	0.0871	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
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: ARCADIS U.S., Inc. - California
Work Order: N021096
Project: PG&E Topock - GMP, RC000753.801A

ANALYTICAL QC SUMMARY REPORT

TestCode: 218.6_WPGE

Sample ID **N021096-003AMS**	SampType: **MS**	TestCode: **218.6_WPGE**	Units: **µg/L**	Prep Date:	RunNo: **110823**
Client ID: **ZZZZZZ**	Batch ID: **R110823**	TestNo: **EPA 218.6**		Analysis Date: **9/29/2016**	SeqNo: **2436361**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	47.623	1.0	25.00	22.62	100	90	110				

Sample ID **N021096-007AMS**	SampType: **MS**	TestCode: **218.6_WPGE**	Units: **µg/L**	Prep Date:	RunNo: **110823**
Client ID: **ZZZZZZ**	Batch ID: **R110823**	TestNo: **EPA 218.6**		Analysis Date: **9/29/2016**	SeqNo: **2436365**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	833.500	20	500.0	348.5	97.0	90	110				

Sample ID **N021096-002AMS**	SampType: **MS**	TestCode: **218.6_WPGE**	Units: **µg/L**	Prep Date:	RunNo: **110823**
Client ID: **ZZZZZZ**	Batch ID: **R110823**	TestNo: **EPA 218.6**		Analysis Date: **9/29/2016**	SeqNo: **2436375**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	9.041	1.0	5.000	4.184	97.1	90	110				

Sample ID **N021096-003ADUP**	SampType: **DUP**	TestCode: **218.6_WPGE**	Units: **µg/L**	Prep Date:	RunNo: **110823**
Client ID: **ZZZZZZ**	Batch ID: **R110823**	TestNo: **EPA 218.6**		Analysis Date: **9/29/2016**	SeqNo: **2436376**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	22.740	1.0						22.62	0.551	20	

Sample ID **N021096-004AMS**	SampType: **MS**	TestCode: **218.6_WPGE**	Units: **µg/L**	Prep Date:	RunNo: **110823**
Client ID: **ZZZZZZ**	Batch ID: **R110823**	TestNo: **EPA 218.6**		Analysis Date: **9/29/2016**	SeqNo: **2436378**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	4.958	1.0	5.000	0	99.2	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: N021096
Project: PG&E Topock - GMP, RC000753.801A

ANALYTICAL QC SUMMARY REPORT

TestCode: 218.6_WPGE

Sample ID	N021096-005AMS	SampType:	MS	TestCode:	218.6_WPGE	Units:	µg/L	Prep Date:		RunNo:	110823
Client ID:	ZZZZZZ	Batch ID:	R110823	TestNo:	EPA 218.6			Analysis Date:	9/29/2016	SeqNo:	2436380

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	5.758	1.0	5.000	0.7010	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		

CLIENT: ARCADIS U.S., Inc. - California
Work Order: N021096
Project: PG&E Topock - GMP, RC000753.801A

ANALYTICAL QC SUMMARY REPORT

TestCode: 6020DIS_CrPGE

Sample ID	MB-59838	SampType:	MBLK	TestCode:	6020DIS_CrP	Units:	µg/L	Prep Date:	10/3/2016	RunNo:	110930
Client ID:	PBW	Batch ID:	59838	TestNo:	EPA 6020	EPA 3010A		Analysis Date:	10/4/2016	SeqNo:	2441107

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium	ND	1.0									

Sample ID	LCS-59838	SampType:	LCS	TestCode:	6020DIS_CrP	Units:	µg/L	Prep Date:	10/3/2016	RunNo:	110930
Client ID:	LCSW	Batch ID:	59838	TestNo:	EPA 6020	EPA 3010A		Analysis Date:	10/4/2016	SeqNo:	2441108

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium	10.216	1.0	10.00	0	102	85	115				

Sample ID	N021081-001B-MS	SampType:	MS	TestCode:	6020DIS_CrP	Units:	µg/L	Prep Date:	10/3/2016	RunNo:	110930
Client ID:	ZZZZZZ	Batch ID:	59838	TestNo:	EPA 6020	EPA 3010A		Analysis Date:	10/4/2016	SeqNo:	2441114

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium	11.127	1.0	10.00	2.730	84.0	75	125				

Sample ID	N021081-001B-MSD	SampType:	MSD	TestCode:	6020DIS_CrP	Units:	µg/L	Prep Date:	10/3/2016	RunNo:	110930
Client ID:	ZZZZZZ	Batch ID:	59838	TestNo:	EPA 6020	EPA 3010A		Analysis Date:	10/4/2016	SeqNo:	2441116

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium	11.112	1.0	10.00	2.730	83.8	75	125	11.13	0.132	20	

Sample ID	N021105-006B-MS	SampType:	MS	TestCode:	6020DIS_CrP	Units:	µg/L	Prep Date:	10/3/2016	RunNo:	110930
Client ID:	ZZZZZZ	Batch ID:	59838	TestNo:	EPA 6020	EPA 3010A		Analysis Date:	10/4/2016	SeqNo:	2441146

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium	168.208	1.0	10.00	164.0	42.2	75	125				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
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT:	ARCADIS U.S., Inc. - California	**Client Sample ID:**	MW-72-080-Q316
Lab Order:	N021096	**Collection Date:**	9/28/2016 9:05:00 AM
Project:	PG&E Topock - GMP, RC000753.801A	**Matrix:**	GROUNDWATER
Lab ID:	N021096-001		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
NITRATE/NITRITE-N BY CADMIUM REDUCTION							
			SM4500-NO3F				
RunID: **WETCHEM_161005H**	QC Batch: **R110972**		PrepDate				Analyst: **RB**
Nitrate/Nitrite as N	0.70	0.022	0.050		mg/L	1	10/5/2016

Qualifiers:

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

CLIENT:	ARCADIS U.S., Inc. - California	**Client Sample ID:**	MW-72BR-200-Q316
Lab Order:	N021096	**Collection Date:**	9/28/2016 12:15:00 PM
Project:	PG&E Topock - GMP, RC000753.801A	**Matrix:**	GROUNDWATER
Lab ID:	N021096-002		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
NITRATE/NITRITE-N BY CADMIUM REDUCTION							
			SM4500-NO3F				
RunID: **WETCHEM_161005H**	QC Batch: **R110972**		PrepDate				Analyst: **RB**
Nitrate/Nitrite as N	0.14	0.022	0.050		mg/L	1	10/5/2016

Qualifiers:

B	Analyte detected in the associated Method Blank
H	Holding times for preparation or analysis exceeded
S	Spike/Surrogate outside of limits due to 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 RESULTS

Print Date: *15-Oct-16*

CLIENT:	ARCADIS U.S., Inc. - California	**Client Sample ID:**	MW-73-080-Q316
Lab Order:	N021096	**Collection Date:**	9/28/2016 11:45:00 AM
Project:	PG&E Topock - GMP, RC000753.801A	**Matrix:**	GROUNDWATER
Lab ID:	N021096-003		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
NITRATE/NITRITE-N BY CADMIUM REDUCTION							
			SM4500-NO3F				
RunID: **WETCHEM_161005H**	QC Batch: **R110972**		PrepDate				Analyst: **RB**
Nitrate/Nitrite as N	2.9	0.11	0.25		mg/L	5	10/5/2016

Qualifiers:

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

CLIENT:	ARCADIS U.S., Inc. - California	**Client Sample ID:**	MW-64BR-Q316
Lab Order:	N021096	**Collection Date:**	9/28/2016 2:58:00 PM
Project:	PG&E Topock - GMP, RC000753.801A	**Matrix:**	GROUNDWATER
Lab ID:	N021096-004		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
NITRATE/NITRITE-N BY CADMIUM REDUCTION							
			SM4500-NO3F				
RunID: **WETCHEM_161005H**	QC Batch: **R110972**		PrepDate				Analyst: **RB**
Nitrate/Nitrite as N	ND	0.022	0.050		mg/L	1	10/5/2016

Qualifiers:

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

CLIENT:	ARCADIS U.S., Inc. - California	**Client Sample ID:**	MW-62-110-Q316
Lab Order:	N021096	**Collection Date:**	9/28/2016 4:35:00 PM
Project:	PG&E Topock - GMP, RC000753.801A	**Matrix:**	GROUNDWATER
Lab ID:	N021096-005		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
NITRATE/NITRITE-N BY CADMIUM REDUCTION							
			SM4500-NO3F				
RunID: **WETCHEM_161005H**	QC Batch: **R110972**		PrepDate				Analyst: **RB**
Nitrate/Nitrite as N	ND	0.022	0.050		mg/L	1	10/5/2016

Qualifiers:

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

CLIENT:	ARCADIS U.S., Inc. - California	**Client Sample ID:**	MW-62-065-Q316
Lab Order:	N021096	**Collection Date:**	9/28/2016 4:16:00 PM
Project:	PG&E Topock - GMP, RC000753.801A	**Matrix:**	GROUNDWATER
Lab ID:	N021096-007		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
NITRATE/NITRITE-N BY CADMIUM REDUCTION							
			SM4500-NO3F				
RunID: **WETCHEM_161005H**	QC Batch: **R110972**		PrepDate				Analyst: **RB**
Nitrate/Nitrite as N	3.6	0.11	0.25		mg/L	5	10/5/2016

Qualifiers:

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

CLIENT: ARCADIS U.S., Inc. - California
Work Order: N021096
Project: PG&E Topock - GMP, RC000753.801A

ANALYTICAL QC SUMMARY REPORT

TestCode: 4500N03F_W

Sample ID	MB-R110972	SampType:	MBLK	TestCode:	4500N03F_W	Units:	mg/L	Prep Date:		RunNo:	110972
Client ID:	PBW	Batch ID:	R110972	TestNo:	SM4500-NO3			Analysis Date:	10/5/2016	SeqNo:	2443272

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrate/Nitrite as N	0.022	0.050									

Sample ID	LCS-R110972	SampType:	LCS	TestCode:	4500N03F_W	Units:	mg/L	Prep Date:		RunNo:	110972
Client ID:	LCSW	Batch ID:	R110972	TestNo:	SM4500-NO3			Analysis Date:	10/5/2016	SeqNo:	2443273

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrate/Nitrite as N	0.560	0.050	0.5000	0	112	85	115				

Sample ID	N021040-001CDUP	SampType:	DUP	TestCode:	4500N03F_W	Units:	mg/L	Prep Date:		RunNo:	110972
Client ID:	ZZZZZZ	Batch ID:	R110972	TestNo:	SM4500-NO3			Analysis Date:	10/5/2016	SeqNo:	2443275

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrate/Nitrite as N	0.029	0.050						0.02840	0	20	

Sample ID	N021040-001CMS	SampType:	MS	TestCode:	4500N03F_W	Units:	mg/L	Prep Date:		RunNo:	110972
Client ID:	ZZZZZZ	Batch ID:	R110972	TestNo:	SM4500-NO3			Analysis Date:	10/5/2016	SeqNo:	2443276

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrate/Nitrite as N	0.508	0.050	0.5000	0.02840	96.0	75	125				

Sample ID	N021040-001CMSD	SampType:	MSD	TestCode:	4500N03F_W	Units:	mg/L	Prep Date:		RunNo:	110972
Client ID:	ZZZZZZ	Batch ID:	R110972	TestNo:	SM4500-NO3			Analysis Date:	10/5/2016	SeqNo:	2443277

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	0.02840	95.2	75	125	0.5082	0.731	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
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: ARCADIS U.S., Inc. - California
Lab Order: N021096
Project: PG&E Topock - GMP, RC000753.801A
Lab ID: N021096-001

Client Sample ID: MW-72-080-Q316
Collection Date: 9/28/2016 9:05:00 AM
Matrix: GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
DISSOLVED METALS BY ICP-MS							
	EPA 3010A			**EPA 6020**			
RunID: **ICP7_161004B**	QC Batch: **59838**			PrepDate	**10/3/2016**	Analyst: **CEI**	
Arsenic	11	0.12	0.50		µg/L	5	10/4/2016 06:03 PM
Manganese	69	0.056	0.50		µg/L	1	10/4/2016 05:58 PM
Molybdenum	83	0.19	2.5		µg/L	5	10/4/2016 06:03 PM
Selenium	ND	0.14	2.5		µg/L	5	10/4/2016 06:03 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

CLIENT: ARCADIS U.S., Inc. - California
Lab Order: N021096
Project: PG&E Topock - GMP, RC000753.801A
Lab ID: N021096-002

Client Sample ID: MW-72BR-200-Q316
Collection Date: 9/28/2016 12:15:00 PM
Matrix: GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
DISSOLVED METALS BY ICP-MS							
	EPA 3010A			**EPA 6020**			
RunID: **ICP7_161004B**	QC Batch: **59838**			PrepDate	**10/3/2016**	Analyst: **CEI**	
Arsenic	16	0.12	0.50		µg/L	5	10/4/2016 06:14 PM
Manganese	7.2	0.056	0.50		µg/L	1	10/4/2016 06:09 PM
Molybdenum	83	0.19	2.5		µg/L	5	10/4/2016 06:14 PM
Selenium	ND	0.14	2.5		µg/L	5	10/4/2016 06:14 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

CLIENT:	ARCADIS U.S., Inc. - California	**Client Sample ID:**	MW-73-080-Q316
Lab Order:	N021096	**Collection Date:**	9/28/2016 11:45:00 AM
Project:	PG&E Topock - GMP, RC000753.801A	**Matrix:**	GROUNDWATER
Lab ID:	N021096-003		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
DISSOLVED METALS BY ICP-MS							
	EPA 3010A				**EPA 6020**		
RunID: **ICP7_161004B**	QC Batch: **59838**				PrepDate	**10/3/2016**	Analyst: **CEI**
Arsenic	2.3	0.025	0.10		µg/L	1	10/4/2016 06:20 PM
Manganese	37	0.056	0.50		µg/L	1	10/4/2016 06:20 PM
Molybdenum	24	0.19	2.5		µg/L	5	10/4/2016 06:25 PM
Selenium	3.1	0.14	2.5		µg/L	5	10/4/2016 06:25 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

CLIENT: ARCADIS U.S., Inc. - California
Lab Order: N021096
Project: PG&E Topock - GMP, RC000753.801A
Lab ID: N021096-004

Client Sample ID: MW-64BR-Q316
Collection Date: 9/28/2016 2:58:00 PM
Matrix: GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
DISSOLVED METALS BY ICP-MS							
	EPA 3010A			**EPA 6020**			
RunID: **ICP7_161004B**	QC Batch: **59838**			PrepDate	**10/3/2016**	Analyst: **CEI**	
Arsenic	4.0	0.12	0.50		µg/L	5	10/4/2016 06:36 PM
Manganese	1000	0.56	5.0		µg/L	10	10/5/2016 12:55 PM
Molybdenum	70	0.19	2.5		µg/L	5	10/4/2016 06:36 PM
Selenium	ND	0.14	2.5		µg/L	5	10/4/2016 06:36 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

CLIENT: ARCADIS U.S., Inc. - California
Lab Order: N021096
Project: PG&E Topock - GMP, RC000753.801A
Lab ID: N021096-005

Client Sample ID: MW-62-110-Q316
Collection Date: 9/28/2016 4:35:00 PM
Matrix: GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
DISSOLVED METALS BY ICP-MS							
	EPA 3010A			**EPA 6020**			
RunID: **ICP7_161004B**	QC Batch: **59838**			PrepDate	**10/3/2016**	Analyst: **CEI**	
Arsenic	5.0	0.12	0.50		µg/L	5	10/4/2016 06:59 PM
Manganese	120	0.056	0.50		µg/L	1	10/4/2016 06:42 PM
Molybdenum	54	0.19	2.5		µg/L	5	10/4/2016 06:59 PM
Selenium	ND	0.14	2.5		µg/L	5	10/4/2016 06:59 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

CLIENT:	ARCADIS U.S., Inc. - California	**Client Sample ID:**	MW-62-065-Q316
Lab Order:	N021096	**Collection Date:**	9/28/2016 4:16:00 PM
Project:	PG&E Topock - GMP, RC000753.801A	**Matrix:**	GROUNDWATER
Lab ID:	N021096-007		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
DISSOLVED METALS BY ICP-MS							
	EPA 3010A			**EPA 6020**			
RunID: **ICP7_161004B**	QC Batch: **59838**			PrepDate	**10/3/2016**	Analyst: **CEI**	
Arsenic	1.8	0.025	0.10		µg/L	1	10/4/2016 07:04 PM
Manganese	5.5	0.056	0.50		µg/L	1	10/4/2016 07:04 PM
Molybdenum	18	0.19	2.5		µg/L	5	10/4/2016 07:10 PM
Selenium	3.1	0.028	0.50		µg/L	1	10/4/2016 07:04 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

CLIENT: ARCADIS U.S., Inc. - California
Work Order: N021096
Project: PG&E Topock - GMP, RC000753.801A

ANALYTICAL QC SUMMARY REPORT

TestCode: 6020_DIS

Sample ID	MB-59838	SampType:	MBLK	TestCode:	6020_DIS	Units:	µg/L	Prep Date:	10/3/2016	RunNo:	110930
Client ID:	PBW	Batch ID:	59838	TestNo:	EPA 6020	EPA 3010A		Analysis Date:	10/4/2016	SeqNo:	2441214

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	LCS-59838	SampType:	LCS	TestCode:	6020_DIS	Units:	µg/L	Prep Date:	10/3/2016	RunNo:	110930
Client ID:	LCSW	Batch ID:	59838	TestNo:	EPA 6020	EPA 3010A		Analysis Date:	10/4/2016	SeqNo:	2441215

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	10.263	0.10	10.00	0	103	85	115				
Manganese	100.984	0.50	100.0	0	101	85	115				
Molybdenum	9.536	0.50	10.00	0	95.4	85	115				
Selenium	10.338	0.50	10.00	0	103	85	115				

Sample ID	N021081-001B-MS	SampType:	MS	TestCode:	6020_DIS	Units:	µg/L	Prep Date:	10/3/2016	RunNo:	110930
Client ID:	ZZZZZZ	Batch ID:	59838	TestNo:	EPA 6020	EPA 3010A		Analysis Date:	10/4/2016	SeqNo:	2441222

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	11.609	0.50	10.00	1.567	100	75	125				
Manganese	439.183	2.5	100.0	380.3	58.9	75	125				S
Molybdenum	33.175	2.5	10.00	23.39	97.9	75	125				
Selenium	10.381	2.5	10.00	1.620	87.6	75	125				

Sample ID	N021081-001B-MSD	SampType:	MSD	TestCode:	6020_DIS	Units:	µg/L	Prep Date:	10/3/2016	RunNo:	110930
Client ID:	ZZZZZZ	Batch ID:	59838	TestNo:	EPA 6020	EPA 3010A		Analysis Date:	10/4/2016	SeqNo:	2441226

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	12.033	0.50	10.00	1.567	105	75	125	11.61	3.59	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
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: ARCADIS U.S., Inc. - California
Work Order: N021096
Project: PG&E Topock - GMP, RC000753.801A

ANALYTICAL QC SUMMARY REPORT

TestCode: 6020_DIS

Sample ID	N021081-001B-MSD	SampType:	MSD	TestCode:	6020_DIS	Units:	µg/L	Prep Date:	10/3/2016	RunNo:	110930
Client ID:	ZZZZZZ	Batch ID:	59838	TestNo:	EPA 6020	EPA 3010A		Analysis Date:	10/4/2016	SeqNo:	2441226

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Manganese	442.175	2.5	100.0	380.3	61.9	75	125	439.2	0.679	20	S
Molybdenum	32.563	2.5	10.00	23.39	91.8	75	125	33.18	1.86	20	
Selenium	10.078	2.5	10.00	1.620	84.6	75	125	10.38	2.96	20	

Sample ID	N021105-006B-MS	SampType:	MS	TestCode:	6020_DIS	Units:	µg/L	Prep Date:	10/3/2016	RunNo:	110930
Client ID:	ZZZZZZ	Batch ID:	59838	TestNo:	EPA 6020	EPA 3010A		Analysis Date:	10/4/2016	SeqNo:	2441253

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	10.794	0.10	10.00	0.5363	103	75	125				
Manganese	99.815	0.50	100.0	12.35	87.5	75	125				
Molybdenum	48.106	0.50	10.00	36.85	113	75	125				
Selenium	15.979	0.50	10.00	7.382	86.0	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
DO	Surrogate Diluted Out		Calculations are based on raw values		

ASSET LABORATORIES
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
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CHAIN OF CUSTODY RECORD

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: Y
Address: Roseville, CA 95661	Email: dan.bush@arcadis.com; daniel.moore@arcadis.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	CalTrans	3. Container Intact
Submitted By: [signature]	Phone: 916-786-3302 Fax:	Phone: 949-727-1400. ext 200 Fax:	Others ✓	LEVEL III	4. Seal Present
Title: Sample tech		P.O.#	Specify: RWQCB	LEVEL IV	5. IR number
Signature: [signature] Date: 9-28-16	Sampled By: Sample Technician		Global ID:	Regulatory	6. Method of Cooling: 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			Specify State:	Sample Temp: 2-1C
Project Name: PG&E Topock - GMP	Signature: [signature] Date: 9/28/16	Matrix: Ground Water x; Potable Water; NPDES; Surface Water; Sediment; Soil; Other Solid			Courier:
Project Number: RC000753 801A					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 250 mL poly	Cr(VI) FF (E218.6) (NH4)2 SO4, NH4 OH 2 X 250 mL poly	Metals Dissolved (6020A FF) As, HNO3 500 mL poly	Metals Dissolved (6020A FF) Mo, HNO3 500 mL poly	Metals Dissolved (6020A FF) Se, HNO3 500 mL poly	Metals Dissolved (6020A FF) Cr, HNO3 500 mL poly	Metals Dissolved (6020A FF) Mn, HNO3 500 mL poly	Nitrate/Nitrite (SM4500N03) Nitrate, H2SO4 125 mL poly	Turn Around Time	No. of Container	Container Type	PRESERVATION	Remarks
1	N021096 - 01	MW-72-080-Q316	9/28/2016	0905		X		X	X	X	X	X	X	E	3	P	BNS	
2	- 02	MW-72BR-200-Q316	9/28/2016	1215		X		X	X	X	X	X	X	E	3	P	BNS	
2	- 03	MW-73-080-Q316	9/28/2016	1145		X		X	X	X	X	X	X	E	3	P	BNS	
3	- 04	MW-64BR-Q316	9/28/2016	1458		X		X	X	X	X	X	X	E	3	P	BNS	
4	- 05	MW-62-110-Q316	9/28/2016	1635		X		X	X	X	X	X	X	E	3	P	BNS	
5	- 06	MW-702-Q316	9/28/2016	1625		X								E	1	P	B	
6	- 07	MW-62-065-Q316	9/28/2016	1616		X		X	X	X	X	X	X	E	3	P	BNS	
7																		
8																		
9																		
10																		
11																		
12																		
13																		

Relinquished by (Signature and Printed Name)	Date/Time	Relinquished by (Signature and Printed Name)	Date/Time
[signature]	9/28/16 1650	[signature]	9/28/16 1650
[signature]	9/28/16 1650	[signature]	9/28/16 1650
[signature]		[signature]	

Turn Around Time (TAT)

	A	< 24 Hrs or Same Day TAT
	B	= Next Workday
	C	= 2 Workdays
	D	= 3 Workdays
X	E	= Routine 5-7 Workdays

TAT Starts at 8 AM the following day if samples received after 3:00PM.

Special Instruction:

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 5% 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:				Container Type:		
H=HCL	N=HNO_3	S=H_2SO_4	C=4°C	T=Tube	V=VOA	P=Pint
Z=Zn(AC)$_2$	O=NaOH	T=$Na_2S_2O_3$		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

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:	9/28/2016	Workorder:	N021096
Rep sample Temp (Deg C):	2.1	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 ☑	No ☐	Not Present ☐
2. Custody seals intact, signed, dated on shippping container/cooler?	Yes ☐	No ☐	Not Present ☑
3. Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
4. Chain of custody present?	Yes ☑	No ☐	
5. Sampler's name present in COC?	Yes ☑	No ☐	
6. Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
7. Chain of custody agrees with sample labels?	Yes ☑	No ☐	
8. Samples in proper container/bottle?	Yes ☑	No ☐	
9. Sample containers intact?	Yes ☑	No ☐	
10. Sufficient sample volume for indicated test?	Yes ☑	No ☐	
11. All samples received within holding time?	Yes ☑	No ☐	
12. Temperature of rep sample or Temp Blank within acceptable limit?	Yes ☑	No ☐	NA ☐
13. Water - VOA vials have zero headspace?	Yes ☐	No ☐	NA ☑
14. Water - pH acceptable upon receipt? Example: pH > 12 for (CN,S); pH<2 for Metals	Yes ☑	No ☐	NA ☐
15. Did the bottle labels indicate correct preservatives used?	Yes ☑	No ☐	NA ☐
16. Were there Non-Conformance issues at login?	Yes ☐	No ☐	NA ☑
Was Client notified?	Yes ☐	No ☐	NA ☑

Comments:

Checklist Completed By: YR 9/30/2016

Reviewed By: 10/3/2016

ASSET Laboratories

WORK ORDER Summary

03-Oct-16

WorkOrder: N021096

Client ID: ARCUS02

Project: PG&E Topock - GMP, RC000753.801A **QC Level:** Level IV **Date Received:** 9/28/2016

Comments:

Sample ID	Client Sample ID	Date Collected	Date Due	Matrix	Test No	Test Name	Hld	MS	Sub	Storage
N021096-001A	MW-72-080-Q316	9/28/2016 9:05:00 AM	10/12/2016	Groundwater	EPA 218.6	Hexavalent Chromium by IC	☐	☐	☐	WW
N021096-001B			10/12/2016		EPA 3010A	AQPREP TOTAL METALS: ICP, FLAA	☐	☐	☐	WW
			10/12/2016		EPA 6020	DISSOLVED METALS BY ICP-MS	☐	☐	☐	WW
			10/12/2016		EPA 6020	DISSOLVED METALS BY ICP-MS	☐	☐	☐	WW
N021096-001C			10/12/2016		SM4500-NO3F	NITRATE/NITRITE-N BY CADMIUM REDUCTION	☐	☐	☐	WW
N021096-002A	MW-72BR-200-Q316	9/28/2016 12:15:00 PM	10/12/2016		EPA 218.6	Hexavalent Chromium by IC	☐	☐	☐	WW
N021096-002B			10/12/2016		EPA 3010A	AQPREP TOTAL METALS: ICP, FLAA	☐	☐	☐	WW
			10/12/2016		EPA 6020	DISSOLVED METALS BY ICP-MS	☐	☐	☐	WW
			10/12/2016		EPA 6020	DISSOLVED METALS BY ICP-MS	☐	☐	☐	WW
N021096-002C			10/12/2016		SM4500-NO3F	NITRATE/NITRITE-N BY CADMIUM REDUCTION	☐	☐	☐	WW
N021096-003A	MW-73-080-Q316	9/28/2016 11:45:00 AM	10/12/2016		EPA 218.6	Hexavalent Chromium by IC	☐	☐	☐	WW
N021096-003B			10/12/2016		EPA 3010A	AQPREP TOTAL METALS: ICP, FLAA	☐	☐	☐	WW
			10/12/2016		EPA 6020	DISSOLVED METALS BY ICP-MS	☐	☐	☐	WW
			10/12/2016		EPA 6020	DISSOLVED METALS BY ICP-MS	☐	☐	☐	WW
N021096-003C			10/12/2016		SM4500-NO3F	NITRATE/NITRITE-N BY CADMIUM REDUCTION	☐	☐	☐	WW
N021096-004A	MW-64BR-Q316	9/28/2016 2:58:00 PM	10/12/2016		EPA 218.6	Hexavalent Chromium by IC	☐	☐	☐	WW
N021096-004B			10/12/2016		EPA 3010A	AQPREP TOTAL METALS: ICP, FLAA	☐	☐	☐	WW
			10/12/2016		EPA 6020	DISSOLVED METALS BY ICP-MS	☐	☐	☐	WW
			10/12/2016		EPA 6020	DISSOLVED METALS BY ICP-MS	☐	☐	☐	WW
N021096-004C			10/12/2016		SM4500-NO3F	NITRATE/NITRITE-N BY CADMIUM REDUCTION	☐	☐	☐	WW
N021096-005A	MW-62-110-Q316	9/28/2016 4:35:00 PM	10/12/2016		EPA 218.6	Hexavalent Chromium by IC	☐	☐	☐	WW

ASSET Laboratories

WORK ORDER Summary

03-Oct-16

WorkOrder: N021096

Client ID: ARCUS02

Project: PG&E Topock - GMP, RC000753.801A **QC Level:** Level IV **Date Received:** 9/28/2016

Comments:

Sample ID	Client Sample ID	Date Collected	Date Due	Matrix	Test No	Test Name	Hld	MS	Sub	Storage
N021096-005B	MW-62-110-Q316	9/28/2016 4:35:00 PM	10/12/2016	Groundwater	EPA 3010A	AQPREP TOTAL METALS: ICP, FLAA	☐	☐	☐	WW
			10/12/2016		EPA 6020	DISSOLVED METALS BY ICP-MS	☐	☐	☐	WW
			10/12/2016		EPA 6020	DISSOLVED METALS BY ICP-MS	☐	☐	☐	WW
N021096-005C			10/12/2016		SM4500-NO3F	NITRATE/NITRITE-N BY CADMIUM REDUCTION	☐	☐	☐	WW
N021096-006A	MW-702-Q316	9/28/2016 4:25:00 PM	10/12/2016		EPA 218.6	Hexavalent Chromium by IC	☐	☐	☐	WW
N021096-007A	MW-62-065-Q316	9/28/2016 4:16:00 PM	10/12/2016		EPA 218.6	Hexavalent Chromium by IC	☐	☐	☐	WW
N021096-007B			10/12/2016		EPA 3010A	AQPREP TOTAL METALS: ICP, FLAA	☐	☐	☐	WW
			10/12/2016		EPA 6020	DISSOLVED METALS BY ICP-MS	☐	☐	☐	WW
			10/12/2016		EPA 6020	DISSOLVED METALS BY ICP-MS	☐	☐	☐	WW
N021096-007C			10/12/2016		SM4500-NO3F	NITRATE/NITRITE-N BY CADMIUM REDUCTION	☐	☐	☐	WW
N021096-008A	FOLDER		10/12/2016		EDD	RWQCB	☐	☐	☐	LAB
			10/12/2016		Folder	Folder	☐	☐	☐	LAB

October 15, 2016

Dan Bush
ARCADIS U.S., Inc. - California
1410 Rocky Ridge Dr #330
Roseville, CA 95661

TEL: (916) 786-3302
FAX:

Workorder No.: N021105

RE: PG&E Topock - GMP, RC000753.801A

Attention: Dan Bush

Enclosed are the results for sample(s) received on September 29, 2016 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 Ribucas for

Puri Romualdo
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.

CLIENT: ARCADIS U.S., Inc. - California
Project: PG&E Topock - GMP, RC000753.801A
Lab Order: N021105

CASE NARRATIVE

SAMPLE RECEIVING/GENERAL COMMENTS:

Samples were received intact with proper chain of custody documentation.

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

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

Samples were analyzed within method holding time.

Analytical Comments for EPA 218.6:

Dilution was necessary for sample N021105-001 due to matrix interference. Sample was analyzed at lower dilution however retention time criteria and matrix spike 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.

Because the results for total dissolved chromium (37 ug/L) and hexavalent chromium (0 ug/L) for sample N021105-001 (MW-60BR-245-Q316) are discrepant, sample re-analysis and Matrix Spike protocol were performed and result confirmed initial analysis.

Because the results for total dissolved chromium (2.3 ug/L) and hexavalent chromium (0.99 ug/L) for sample N021105-004 (MW-38S-Q316) are discrepant, sample re-analysis and Matrix Spike protocol were performed and result confirmed initial analysis.

Because the results for total dissolved chromium (1.4 ug/L) and hexavalent chromium (0 ug/L) for sample N021105-005 (MW-38S-SMT-Q316) are discrepant, sample re-analysis and Matrix Spike protocol were performed and result confirmed initial analysis.

Because the results for total dissolved chromium (110 ug/L) and hexavalent chromium (87 ug/L) for sample N021105-007 (MW-65-225-Q316) are discrepant, Matrix Spike protocol was performed and recovery is within criteria.

Analytical Comments for EPA 6020_Dissolved:

Dilution was necessary on some analytes for samples N021105-001 and N021105-007 and QC samples

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ORELAP/NELAP Cert 4046

N021081-001B-MS, N021081-001B-MSD due to associated internal standard not meeting method criteria possibly due to matrix interference.Samples and QC 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) and Matrix Spike Duplicate (MSD) are outside recovery criteria for Manganese on QC samples N021081-001B-MS and N021081-001B-MSD- 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) is outside recovery criteria for Chromium on QC sample N021105-006B-MS possibly due to matrix interference. The associated Laboratory Control Sample (LCS) recovery was acceptable.

Because the results for total dissolved chromium (37 ug/L) and hexavalent chromium (0 ug/L) for sample N021105-001 (MW-60BR-245-Q316) 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 40 and 35 ug/L, respectively. Since these data confirmed the original result for total dissolved chromium, the original result is reported.

Because the results for total dissolved chromium (2.3 ug/L) and hexavalent chromium (0.99 ug/L) for sample N021105-004 (MW-38S-Q316) 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 2.6 and 1.3 ug/L, respectively. Since these data confirmed the original result for total dissolved chromium, the original result is reported.

Because the results for total dissolved chromium (1.4 ug/L) and hexavalent chromium (0 ug/L) for sample N021105-005 (MW-38S-SMT-Q316) 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 1.2 and 0.63 ug/L, respectively. Since these data confirmed the original result for total dissolved chromium, the original result is reported.

Because the results for total dissolved chromium (110 ug/L) and hexavalent chromium (87 ug/L) for sample N021105-007 (MW-65-225-Q316) 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 114 and 107 ug/L, respectively. Since these data confirmed the original result for total dissolved chromium, the original result is reported.

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ORELAP/NELAP Cert 4046

ASSET Laboratories

Date: *15-Oct-16*

CLIENT: ARCADIS U.S., Inc. - California
Project: PG&E Topock - GMP, RC000753.801A
Lab Order: N021105
Contract No:

Work Order Sample Summary

Lab Sample ID	Client Sample ID	Matrix	Collection Date	Date Received	Date Reported
N021105-001A	MW-60BR-245-Q316	Groundwater	9/29/2016 3:45:00 PM	9/29/2016	10/15/2016
N021105-001B	MW-60BR-245-Q316	Groundwater	9/29/2016 3:45:00 PM	9/29/2016	10/15/2016
N021105-001C	MW-60BR-245-Q316	Groundwater	9/29/2016 3:45:00 PM	9/29/2016	10/15/2016
N021105-002A	MW-68-180-Q316	Groundwater	9/29/2016 9:05:00 AM	9/29/2016	10/15/2016
N021105-002B	MW-68-180-Q316	Groundwater	9/29/2016 9:05:00 AM	9/29/2016	10/15/2016
N021105-002C	MW-68-180-Q316	Groundwater	9/29/2016 9:05:00 AM	9/29/2016	10/15/2016
N021105-003A	MW-69-195-Q316	Groundwater	9/29/2016 10:51:00 AM	9/29/2016	10/15/2016
N021105-003B	MW-69-195-Q316	Groundwater	9/29/2016 10:51:00 AM	9/29/2016	10/15/2016
N021105-003C	MW-69-195-Q316	Groundwater	9/29/2016 10:51:00 AM	9/29/2016	10/15/2016
N021105-004A	MW-38S-Q316	Groundwater	9/29/2016 3:06:00 PM	9/29/2016	10/15/2016
N021105-004B	MW-38S-Q316	Groundwater	9/29/2016 3:06:00 PM	9/29/2016	10/15/2016
N021105-004C	MW-38S-Q316	Groundwater	9/29/2016 3:06:00 PM	9/29/2016	10/15/2016
N021105-005A	MW-38S-SMT-Q316	Groundwater	9/29/2016 2:47:00 PM	9/29/2016	10/15/2016
N021105-005B	MW-38S-SMT-Q316	Groundwater	9/29/2016 2:47:00 PM	9/29/2016	10/15/2016
N021105-005C	MW-38S-SMT-Q316	Groundwater	9/29/2016 2:47:00 PM	9/29/2016	10/15/2016
N021105-006A	MW-65-160-Q316	Groundwater	9/29/2016 1:43:00 PM	9/29/2016	10/15/2016
N021105-006B	MW-65-160-Q316	Groundwater	9/29/2016 1:43:00 PM	9/29/2016	10/15/2016
N021105-006C	MW-65-160-Q316	Groundwater	9/29/2016 1:43:00 PM	9/29/2016	10/15/2016
N021105-007A	MW-65-225-Q316	Groundwater	9/29/2016 12:27:00 PM	9/29/2016	10/15/2016
N021105-007B	MW-65-225-Q316	Groundwater	9/29/2016 12:27:00 PM	9/29/2016	10/15/2016
N021105-007C	MW-65-225-Q316	Groundwater	9/29/2016 12:27:00 PM	9/29/2016	10/15/2016
N021105-008A	MW-703-Q316	Groundwater	9/29/2016 3:15:00 PM	9/29/2016	10/15/2016

ASSET Laboratories

ANALYTICAL RESULTS

Print Date: *15-Oct-16*

CLIENT:	ARCADIS U.S., Inc. - California	**Client Sample ID:**	MW-60BR-245-Q316
Lab Order:	N021105	**Collection Date:**	9/29/2016 3:45:00 PM
Project:	PG&E Topock - GMP, RC000753.801A	**Matrix:**	GROUNDWATER
Lab ID:	N021105-001		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
HEXAVALENT CHROMIUM BY IC							
			EPA 218.6				
RunID: **IC7_160930A**	QC Batch: **R110846**			PrepDate			Analyst: **RAB**
Hexavalent Chromium	ND	0.33	1.0		µg/L	5	9/30/2016 12:57 PM
DISSOLVED METALS BY ICP-MS							
	EPA 3010A			**EPA 6020**			
RunID: **ICP7_161004B**	QC Batch: **59838**			PrepDate	**10/3/2016**		Analyst: **CEI**
Chromium	37	0.019	1.0		µg/L	1	10/4/2016 07:15 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

CLIENT:	ARCADIS U.S., Inc. - California	**Client Sample ID:**	MW-68-180-Q316
Lab Order:	N021105	**Collection Date:**	9/29/2016 9:05:00 AM
Project:	PG&E Topock - GMP, RC000753.801A	**Matrix:**	GROUNDWATER
Lab ID:	N021105-002		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
HEXAVALENT CHROMIUM BY IC							
			EPA 218.6				
RunID: **IC7_160930A**	QC Batch: **R110846**			PrepDate			Analyst: **RAB**
Hexavalent Chromium	31000	330	1000		µg/L	5000	9/30/2016 01:56 PM
DISSOLVED METALS BY ICP-MS							
	EPA 3010A		**EPA 6020**				
RunID: **ICP7_161005B**	QC Batch: **59838**			PrepDate	**10/3/2016**		Analyst: **CEI**
Chromium	34000	9.6	500		µg/L	500	10/5/2016 12:49 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

CLIENT:	ARCADIS U.S., Inc. - California	**Client Sample ID:**	MW-69-195-Q316
Lab Order:	N021105	**Collection Date:**	9/29/2016 10:51:00 AM
Project:	PG&E Topock - GMP, RC000753.801A	**Matrix:**	GROUNDWATER
Lab ID:	N021105-003		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
HEXAVALENT CHROMIUM BY IC							
			EPA 218.6				
RunID: **IC7_160930A**	QC Batch: **R110846**			PrepDate			Analyst: **RAB**
Hexavalent Chromium	640	6.6	20		µg/L	100	9/30/2016 11:41 AM
DISSOLVED METALS BY ICP-MS							
	EPA 3010A		**EPA 6020**				
RunID: **ICP7_161004B**	QC Batch: **59838**			PrepDate	**10/3/2016**		Analyst: **CEI**
Chromium	680	0.096	5.0		µg/L	5	10/4/2016 07:43 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

CLIENT:	ARCADIS U.S., Inc. - California	**Client Sample ID:**	MW-38S-Q316
Lab Order:	N021105	**Collection Date:**	9/29/2016 3:06:00 PM
Project:	PG&E Topock - GMP, RC000753.801A	**Matrix:**	GROUNDWATER
Lab ID:	N021105-004		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
HEXAVALENT CHROMIUM BY IC							
EPA 218.6							
RunID: **IC7_160930A**	QC Batch: **R110846**			PrepDate			Analyst: **RAB**
Hexavalent Chromium	0.99	0.066	0.20		µg/L	1	9/30/2016 10:05 AM
DISSOLVED METALS BY ICP-MS							
EPA 3010A			**EPA 6020**				
RunID: **ICP7_161004B**	QC Batch: **59838**			PrepDate	**10/3/2016**		Analyst: **CEI**
Chromium	2.3	0.019	1.0		µg/L	1	10/4/2016 07:48 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

CLIENT:	ARCADIS U.S., Inc. - California	**Client Sample ID:**	MW-38S-SMT-Q316
Lab Order:	N021105	**Collection Date:**	9/29/2016 2:47:00 PM
Project:	PG&E Topock - GMP, RC000753.801A	**Matrix:**	GROUNDWATER
Lab ID:	N021105-005		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
HEXAVALENT CHROMIUM BY IC							
			EPA 218.6				
RunID: **IC7_160930A**	QC Batch: **R110846**			PrepDate			Analyst: **RAB**
Hexavalent Chromium	ND	0.066	0.20		µg/L	1	9/30/2016 10:26 AM
DISSOLVED METALS BY ICP-MS							
	EPA 3010A			**EPA 6020**			
RunID: **ICP7_161004B**	QC Batch: **59838**			PrepDate	**10/3/2016**		Analyst: **CEI**
Chromium	1.4	0.019	1.0		µg/L	1	10/4/2016 08:32 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

CLIENT:	ARCADIS U.S., Inc. - California	**Client Sample ID:**	MW-65-160-Q316
Lab Order:	N021105	**Collection Date:**	9/29/2016 1:43:00 PM
Project:	PG&E Topock - GMP, RC000753.801A	**Matrix:**	GROUNDWATER
Lab ID:	N021105-006		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
HEXAVALENT CHROMIUM BY IC							
			EPA 218.6				
RunID: **IC7_160930A**	QC Batch: **R110846**			PrepDate			Analyst: **RAB**
Hexavalent Chromium	150	1.3	4.0		µg/L	20	9/30/2016 12:10 PM
DISSOLVED METALS BY ICP-MS							
	EPA 3010A		**EPA 6020**				
RunID: **ICP7_161004B**	QC Batch: **59838**			PrepDate	**10/3/2016**		Analyst: **CEI**
Chromium	160	0.019	1.0		µg/L	1	10/4/2016 08:10 PM

Qualifiers:

B	Analyte detected in the associated Method Blank
H	Holding times for preparation or analysis exceeded
S	Spike/Surrogate outside of limits due to 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 RESULTS

Print Date: *15-Oct-16*

CLIENT:	ARCADIS U.S., Inc. - California	**Client Sample ID:**	MW-65-225-Q316
Lab Order:	N021105	**Collection Date:**	9/29/2016 12:27:00 PM
Project:	PG&E Topock - GMP, RC000753.801A	**Matrix:**	GROUNDWATER
Lab ID:	N021105-007		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
HEXAVALENT CHROMIUM BY IC							
EPA 218.6							
RunID: **IC7_160930A** QC Batch: **R110846** PrepDate Analyst: **RAB**							
Hexavalent Chromium	87	1.3	4.0		µg/L	20	9/30/2016 12:38 PM
DISSOLVED METALS BY ICP-MS							
EPA 3010A **EPA 6020**							
RunID: **ICP7_161004B** QC Batch: **59838** PrepDate **10/3/2016** Analyst: **CEI**							
Chromium	110	0.019	1.0		µg/L	1	10/4/2016 08:43 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

ASSET Laboratories

ANALYTICAL RESULTS

Print Date: *15-Oct-16*

CLIENT:	ARCADIS U.S., Inc. - California	**Client Sample ID:**	MW-703-Q316
Lab Order:	N021105	**Collection Date:**	9/29/2016 3:15:00 PM
Project:	PG&E Topock - GMP, RC000753.801A	**Matrix:**	GROUNDWATER
Lab ID:	N021105-008		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
HEXAVALENT CHROMIUM BY IC							
			EPA 218.6				
RunID: **IC7_160930A**	QC Batch: **R110846**			PrepDate			Analyst: **RAB**
Hexavalent Chromium	ND	0.066	0.20		µg/L	1	9/30/2016 10:44 AM

Qualifiers:

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

CLIENT: ARCADIS U.S., Inc. - California
Work Order: N021105
Project: PG&E Topock - GMP, RC000753.801A

ANALYTICAL QC SUMMARY REPORT

TestCode: 218.6_WPGE

Sample ID **MB-R110846**	SampType: **MBLK**	TestCode: **218.6_WPGE**	Units: **µg/L**	Prep Date:	RunNo: **110846**
Client ID: **PBW**	Batch ID: **R110846**	TestNo: **EPA 218.6**		Analysis Date: **9/30/2016**	SeqNo: **2437304**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	ND	0.20									

Sample ID **LCS-R110846**	SampType: **LCS**	TestCode: **218.6_WPGE**	Units: **µg/L**	Prep Date:	RunNo: **110846**
Client ID: **LCSW**	Batch ID: **R110846**	TestNo: **EPA 218.6**		Analysis Date: **9/30/2016**	SeqNo: **2437305**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	4.886	0.20	5.000	0	97.7	90	110				

Sample ID **N021105-004AMS**	SampType: **MS**	TestCode: **218.6_WPGE**	Units: **µg/L**	Prep Date:	RunNo: **110846**
Client ID: **ZZZZZZ**	Batch ID: **R110846**	TestNo: **EPA 218.6**		Analysis Date: **9/30/2016**	SeqNo: **2437307**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	2.010	0.20	1.000	0.9928	102	90	110				

Sample ID **N021105-005AMS**	SampType: **MS**	TestCode: **218.6_WPGE**	Units: **µg/L**	Prep Date:	RunNo: **110846**
Client ID: **ZZZZZZ**	Batch ID: **R110846**	TestNo: **EPA 218.6**		Analysis Date: **9/30/2016**	SeqNo: **2437309**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	0.999	0.20	1.000	0	99.9	90	110				

Sample ID **N021105-008AMS**	SampType: **MS**	TestCode: **218.6_WPGE**	Units: **µg/L**	Prep Date:	RunNo: **110846**
Client ID: **ZZZZZZ**	Batch ID: **R110846**	TestNo: **EPA 218.6**		Analysis Date: **9/30/2016**	SeqNo: **2437311**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	1.014	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
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: ARCADIS U.S., Inc. - California
Work Order: N021105
Project: PG&E Topock - GMP, RC000753.801A

ANALYTICAL QC SUMMARY REPORT

TestCode: 218.6_WPGE

Sample ID **N021105-003AMS**	SampType: **MS**	TestCode: **218.6_WPGE**	Units: **µg/L**	Prep Date:	RunNo: **110846**
Client ID: **ZZZZZZ**	Batch ID: **R110846**	TestNo: **EPA 218.6**		Analysis Date: **9/30/2016**	SeqNo: **2437315**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	1121.400	20	500.0	635.0	97.3	90	110				

Sample ID **N021105-003AMSD**	SampType: **MSD**	TestCode: **218.6_WPGE**	Units: **µg/L**	Prep Date:	RunNo: **110846**
Client ID: **ZZZZZZ**	Batch ID: **R110846**	TestNo: **EPA 218.6**		Analysis Date: **9/30/2016**	SeqNo: **2437316**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	1124.360	20	500.0	635.0	97.9	90	110	1121	0.264	20	

Sample ID **N021105-006AMS**	SampType: **MS**	TestCode: **218.6_WPGE**	Units: **µg/L**	Prep Date:	RunNo: **110846**
Client ID: **ZZZZZZ**	Batch ID: **R110846**	TestNo: **EPA 218.6**		Analysis Date: **9/30/2016**	SeqNo: **2437318**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	250.304	4.0	100.0	154.0	96.3	90	110				

Sample ID **N021105-006ADUP**	SampType: **DUP**	TestCode: **218.6_WPGE**	Units: **µg/L**	Prep Date:	RunNo: **110846**
Client ID: **ZZZZZZ**	Batch ID: **R110846**	TestNo: **EPA 218.6**		Analysis Date: **9/30/2016**	SeqNo: **2437319**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	151.186	4.0						154.0	1.86	20	

Sample ID **N021105-007AMS**	SampType: **MS**	TestCode: **218.6_WPGE**	Units: **µg/L**	Prep Date:	RunNo: **110846**
Client ID: **ZZZZZZ**	Batch ID: **R110846**	TestNo: **EPA 218.6**		Analysis Date: **9/30/2016**	SeqNo: **2437321**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	187.492	4.0	100.0	87.38	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: N021105
Project: PG&E Topock - GMP, RC000753.801A

ANALYTICAL QC SUMMARY REPORT

TestCode: 218.6_WPGE

Sample ID	N021105-001AMS	SampType:	MS	TestCode:	218.6_WPGE	Units:	µg/L	Prep Date:		RunNo:	110846
Client ID:	ZZZZZZ	Batch ID:	R110846	TestNo:	EPA 218.6			Analysis Date:	9/30/2016	SeqNo:	2437323

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	4.883	1.0	5.000	0	97.6	90	110				

Sample ID	N021105-002AMS	SampType:	MS	TestCode:	218.6_WPGE	Units:	µg/L	Prep Date:		RunNo:	110846
Client ID:	ZZZZZZ	Batch ID:	R110846	TestNo:	EPA 218.6			Analysis Date:	9/30/2016	SeqNo:	2437326

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	56064.500	1000	25000	31130	99.7	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
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: ARCADIS U.S., Inc. - California
Work Order: N021105
Project: PG&E Topock - GMP, RC000753.801A

ANALYTICAL QC SUMMARY REPORT

TestCode: 6020DIS_CrPGE

Sample ID	MB-59838	SampType:	MBLK	TestCode:	6020DIS_CrP	Units:	µg/L	Prep Date:	10/3/2016	RunNo:	110930
Client ID:	PBW	Batch ID:	59838	TestNo:	EPA 6020	EPA 3010A		Analysis Date:	10/4/2016	SeqNo:	2441107

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium	ND	1.0									

Sample ID	LCS-59838	SampType:	LCS	TestCode:	6020DIS_CrP	Units:	µg/L	Prep Date:	10/3/2016	RunNo:	110930
Client ID:	LCSW	Batch ID:	59838	TestNo:	EPA 6020	EPA 3010A		Analysis Date:	10/4/2016	SeqNo:	2441108

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium	10.216	1.0	10.00	0	102	85	115				

Sample ID	N021081-001B-MS	SampType:	MS	TestCode:	6020DIS_CrP	Units:	µg/L	Prep Date:	10/3/2016	RunNo:	110930
Client ID:	ZZZZZZ	Batch ID:	59838	TestNo:	EPA 6020	EPA 3010A		Analysis Date:	10/4/2016	SeqNo:	2441114

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium	11.127	1.0	10.00	2.730	84.0	75	125				

Sample ID	N021081-001B-MSD	SampType:	MSD	TestCode:	6020DIS_CrP	Units:	µg/L	Prep Date:	10/3/2016	RunNo:	110930
Client ID:	ZZZZZZ	Batch ID:	59838	TestNo:	EPA 6020	EPA 3010A		Analysis Date:	10/4/2016	SeqNo:	2441116

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium	11.112	1.0	10.00	2.730	83.8	75	125	11.13	0.132	20	

Sample ID	N021105-006B-MS	SampType:	MS	TestCode:	6020DIS_CrP	Units:	µg/L	Prep Date:	10/3/2016	RunNo:	110930
Client ID:	ZZZZZZ	Batch ID:	59838	TestNo:	EPA 6020	EPA 3010A		Analysis Date:	10/4/2016	SeqNo:	2441146

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium	168.208	1.0	10.00	164.0	42.2	75	125				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
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT:	ARCADIS U.S., Inc. - California	**Client Sample ID:**	MW-60BR-245-Q316
Lab Order:	N021105	**Collection Date:**	9/29/2016 3:45:00 PM
Project:	PG&E Topock - GMP, RC000753.801A	**Matrix:**	GROUNDWATER
Lab ID:	N021105-001		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
NITRATE/NITRITE-N BY CADMIUM REDUCTION							
			SM4500-NO3F				
RunID: **WETCHEM_161005H**	QC Batch: **R110972**		PrepDate				Analyst: **RB**
Nitrate/Nitrite as N	0.14	0.022	0.050		mg/L	1	10/5/2016

Qualifiers:

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

CLIENT:	ARCADIS U.S., Inc. - California	**Client Sample ID:**	MW-68-180-Q316
Lab Order:	N021105	**Collection Date:**	9/29/2016 9:05:00 AM
Project:	PG&E Topock - GMP, RC000753.801A	**Matrix:**	GROUNDWATER
Lab ID:	N021105-002		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
NITRATE/NITRITE-N BY CADMIUM REDUCTION							
			SM4500-NO3F				
RunID: **WETCHEM_161005H**	QC Batch: **R110972**		PrepDate				Analyst: **RB**
Nitrate/Nitrite as N	23	0.44	1.0		mg/L	20	10/5/2016

Qualifiers:

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

CLIENT:	ARCADIS U.S., Inc. - California	**Client Sample ID:**	MW-69-195-Q316
Lab Order:	N021105	**Collection Date:**	9/29/2016 10:51:00 AM
Project:	PG&E Topock - GMP, RC000753.801A	**Matrix:**	GROUNDWATER
Lab ID:	N021105-003		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
NITRATE/NITRITE-N BY CADMIUM REDUCTION							
			SM4500-NO3F				
RunID: **WETCHEM_161005H**	QC Batch: **R110972**		PrepDate				Analyst: **RB**
Nitrate/Nitrite as N	18	0.44	1.0		mg/L	20	10/5/2016

Qualifiers:

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

CLIENT:	ARCADIS U.S., Inc. - California	**Client Sample ID:**	MW-38S-Q316
Lab Order:	N021105	**Collection Date:**	9/29/2016 3:06:00 PM
Project:	PG&E Topock - GMP, RC000753.801A	**Matrix:**	GROUNDWATER
Lab ID:	N021105-004		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
NITRATE/NITRITE-N BY CADMIUM REDUCTION							
			SM4500-NO3F				
RunID: **WETCHEM_161005H**	QC Batch: **R110972**		PrepDate				Analyst: **RB**
Nitrate/Nitrite as N	0.78	0.022	0.050		mg/L	1	10/5/2016

Qualifiers:

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

CLIENT:	ARCADIS U.S., Inc. - California	**Client Sample ID:**	MW-38S-SMT-Q316
Lab Order:	N021105	**Collection Date:**	9/29/2016 2:47:00 PM
Project:	PG&E Topock - GMP, RC000753.801A	**Matrix:**	GROUNDWATER
Lab ID:	N021105-005		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
NITRATE/NITRITE-N BY CADMIUM REDUCTION							
			SM4500-NO3F				
RunID: **WETCHEM_161005H**	QC Batch: **R110972**		PrepDate				Analyst: **RB**
Nitrate/Nitrite as N	1.0	0.022	0.050		mg/L	1	10/5/2016

Qualifiers:

B	Analyte detected in 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		

CLIENT:	ARCADIS U.S., Inc. - California	**Client Sample ID:**	MW-65-160-Q316
Lab Order:	N021105	**Collection Date:**	9/29/2016 1:43:00 PM
Project:	PG&E Topock - GMP, RC000753.801A	**Matrix:**	GROUNDWATER
Lab ID:	N021105-006		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
NITRATE/NITRITE-N BY CADMIUM REDUCTION							
			SM4500-NO3F				
RunID: **WETCHEM_161005H**	QC Batch: **R110972**		PrepDate				Analyst: **RB**
Nitrate/Nitrite as N	11	0.44	1.0		mg/L	20	10/5/2016

Qualifiers:

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

CLIENT:	ARCADIS U.S., Inc. - California	**Client Sample ID:**	MW-65-225-Q316
Lab Order:	N021105	**Collection Date:**	9/29/2016 12:27:00 PM
Project:	PG&E Topock - GMP, RC000753.801A	**Matrix:**	GROUNDWATER
Lab ID:	N021105-007		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
NITRATE/NITRITE-N BY CADMIUM REDUCTION							
			SM4500-NO3F				
RunID: **WETCHEM_161005H**	QC Batch: **R110972**		PrepDate				Analyst: **RB**
Nitrate/Nitrite as N	1.8	0.11	0.25		mg/L	5	10/5/2016

Qualifiers:

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

CLIENT: ARCADIS U.S., Inc. - California
Work Order: N021105
Project: PG&E Topock - GMP, RC000753.801A

ANALYTICAL QC SUMMARY REPORT

TestCode: 4500N03F_W

Sample ID	MB-R110972	SampType:	MBLK	TestCode:	4500N03F_W	Units:	mg/L	Prep Date:		RunNo:	110972
Client ID:	PBW	Batch ID:	R110972	TestNo:	SM4500-NO3			Analysis Date:	10/5/2016	SeqNo:	2443272

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrate/Nitrite as N	0.022	0.050									

Sample ID	LCS-R110972	SampType:	LCS	TestCode:	4500N03F_W	Units:	mg/L	Prep Date:		RunNo:	110972
Client ID:	LCSW	Batch ID:	R110972	TestNo:	SM4500-NO3			Analysis Date:	10/5/2016	SeqNo:	2443273

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrate/Nitrite as N	0.560	0.050	0.5000	0	112	85	115				

Sample ID	N021040-001CDUP	SampType:	DUP	TestCode:	4500N03F_W	Units:	mg/L	Prep Date:		RunNo:	110972
Client ID:	ZZZZZZ	Batch ID:	R110972	TestNo:	SM4500-NO3			Analysis Date:	10/5/2016	SeqNo:	2443275

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrate/Nitrite as N	0.029	0.050						0.02840	0	20	

Sample ID	N021040-001CMS	SampType:	MS	TestCode:	4500N03F_W	Units:	mg/L	Prep Date:		RunNo:	110972
Client ID:	ZZZZZZ	Batch ID:	R110972	TestNo:	SM4500-NO3			Analysis Date:	10/5/2016	SeqNo:	2443276

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrate/Nitrite as N	0.508	0.050	0.5000	0.02840	96.0	75	125				

Sample ID	N021040-001CMSD	SampType:	MSD	TestCode:	4500N03F_W	Units:	mg/L	Prep Date:		RunNo:	110972
Client ID:	ZZZZZZ	Batch ID:	R110972	TestNo:	SM4500-NO3			Analysis Date:	10/5/2016	SeqNo:	2443277

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	0.02840	95.2	75	125	0.5082	0.731	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
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: ARCADIS U.S., Inc. - California
Lab Order: N021105
Project: PG&E Topock - GMP, RC000753.801A
Lab ID: N021105-001

Client Sample ID: MW-60BR-245-Q316
Collection Date: 9/29/2016 3:45:00 PM
Matrix: GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
DISSOLVED METALS BY ICP-MS							
	EPA 3010A			**EPA 6020**			
RunID: **ICP7_161004B**	QC Batch: **59838**			PrepDate	**10/3/2016**	Analyst: **CEI**	
Arsenic	7.7	0.12	0.50		µg/L	5	10/4/2016 07:21 PM
Manganese	14	0.056	0.50		µg/L	1	10/4/2016 07:15 PM
Molybdenum	64	0.19	2.5		µg/L	5	10/4/2016 07:21 PM
Selenium	ND	0.14	2.5		µg/L	5	10/4/2016 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

CLIENT:	ARCADIS U.S., Inc. - California	**Client Sample ID:**	MW-68-180-Q316
Lab Order:	N021105	**Collection Date:**	9/29/2016 9:05:00 AM
Project:	PG&E Topock - GMP, RC000753.801A	**Matrix:**	GROUNDWATER
Lab ID:	N021105-002		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
DISSOLVED METALS BY ICP-MS							
	EPA 3010A				**EPA 6020**		
RunID: **ICP7_161004B**	QC Batch: **59838**				PrepDate	**10/3/2016**	Analyst: **CEI**
Arsenic	3.1	0.025	0.10		µg/L	1	10/4/2016 07:26 PM
Manganese	6.6	0.056	0.50		µg/L	1	10/4/2016 07:26 PM
Molybdenum	48	0.039	0.50		µg/L	1	10/4/2016 07:26 PM
Selenium	15	0.028	0.50		µg/L	1	10/4/2016 07:26 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		

CLIENT:	ARCADIS U.S., Inc. - California	**Client Sample ID:**	MW-69-195-Q316
Lab Order:	N021105	**Collection Date:**	9/29/2016 10:51:00 AM
Project:	PG&E Topock - GMP, RC000753.801A	**Matrix:**	GROUNDWATER
Lab ID:	N021105-003		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
DISSOLVED METALS BY ICP-MS							
	EPA 3010A				**EPA 6020**		
RunID: **ICP7_161004B**	QC Batch: **59838**				PrepDate	**10/3/2016**	Analyst: **CEI**
Arsenic	2.5	0.025	0.10		µg/L	1	10/4/2016 07:37 PM
Manganese	1.3	0.056	0.50		µg/L	1	10/4/2016 07:37 PM
Molybdenum	98	0.039	0.50		µg/L	1	10/4/2016 07:37 PM
Selenium	10	0.028	0.50		µg/L	1	10/4/2016 07:37 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		

CLIENT:	ARCADIS U.S., Inc. - California	**Client Sample ID:**	MW-38S-Q316
Lab Order:	N021105	**Collection Date:**	9/29/2016 3:06:00 PM
Project:	PG&E Topock - GMP, RC000753.801A	**Matrix:**	GROUNDWATER
Lab ID:	N021105-004		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
DISSOLVED METALS BY ICP-MS							
	EPA 3010A			**EPA 6020**			
RunID: **ICP7_161004B**	QC Batch: **59838**			PrepDate	**10/3/2016**		Analyst: **CEI**
Arsenic	9.8	0.025	0.10		µg/L	1	10/4/2016 07:48 PM
Manganese	170	0.056	0.50		µg/L	1	10/4/2016 07:48 PM
Molybdenum	44	0.039	0.50		µg/L	1	10/4/2016 07:48 PM
Selenium	ND	0.028	0.50		µg/L	1	10/4/2016 07:48 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

CLIENT:	ARCADIS U.S., Inc. - California	**Client Sample ID:**	MW-38S-SMT-Q316
Lab Order:	N021105	**Collection Date:**	9/29/2016 2:47:00 PM
Project:	PG&E Topock - GMP, RC000753.801A	**Matrix:**	GROUNDWATER
Lab ID:	N021105-005		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
DISSOLVED METALS BY ICP-MS							
	EPA 3010A			**EPA 6020**			
RunID: **ICP7_161004B**	QC Batch: **59838**			PrepDate	**10/3/2016**		Analyst: **CEI**
Arsenic	11	0.025	0.10		µg/L	1	10/4/2016 08:32 PM
Manganese	190	0.28	2.5		µg/L	5	10/4/2016 08:16 PM
Molybdenum	44	0.039	0.50		µg/L	1	10/4/2016 08:32 PM
Selenium	ND	0.028	0.50		µg/L	1	10/4/2016 08:32 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

CLIENT:	ARCADIS U.S., Inc. - California	**Client Sample ID:**	MW-65-160-Q316
Lab Order:	N021105	**Collection Date:**	9/29/2016 1:43:00 PM
Project:	PG&E Topock - GMP, RC000753.801A	**Matrix:**	GROUNDWATER
Lab ID:	N021105-006		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
DISSOLVED METALS BY ICP-MS							
	EPA 3010A			**EPA 6020**			
RunID: **ICP7_161004B**	QC Batch: **59838**			PrepDate	**10/3/2016**		Analyst: **CEI**
Arsenic	0.54	0.025	0.10		µg/L	1	10/4/2016 08:10 PM
Manganese	12	0.056	0.50		µg/L	1	10/4/2016 08:10 PM
Molybdenum	37	0.039	0.50		µg/L	1	10/4/2016 08:10 PM
Selenium	7.4	0.028	0.50		µg/L	1	10/4/2016 08:10 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		

CLIENT:	ARCADIS U.S., Inc. - California	**Client Sample ID:**	MW-65-225-Q316
Lab Order:	N021105	**Collection Date:**	9/29/2016 12:27:00 PM
Project:	PG&E Topock - GMP, RC000753.801A	**Matrix:**	GROUNDWATER
Lab ID:	N021105-007		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
DISSOLVED METALS BY ICP-MS							
	EPA 3010A			**EPA 6020**			
RunID: **ICP7_161004B**	QC Batch: **59838**			PrepDate	**10/3/2016**	Analyst: **CEI**	
Arsenic	4.1	0.12	0.50		µg/L	5	10/4/2016 08:49 PM
Manganese	460	0.28	2.5		µg/L	5	10/4/2016 08:49 PM
Molybdenum	62	0.19	2.5		µg/L	5	10/4/2016 08:49 PM
Selenium	ND	0.14	2.5		µg/L	5	10/4/2016 08:49 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

CLIENT: ARCADIS U.S., Inc. - California
Work Order: N021105
Project: PG&E Topock - GMP, RC000753.801A

ANALYTICAL QC SUMMARY REPORT

TestCode: 6020_DIS

Sample ID **MB-59838**	SampType: **MBLK**	TestCode: **6020_DIS**	Units: **µg/L**	Prep Date: **10/3/2016**	RunNo: **110930**
Client ID: **PBW**	Batch ID: **59838**	TestNo: **EPA 6020**	**EPA 3010A**	Analysis Date: **10/4/2016**	SeqNo: **2441214**

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 **LCS-59838**	SampType: **LCS**	TestCode: **6020_DIS**	Units: **µg/L**	Prep Date: **10/3/2016**	RunNo: **110930**
Client ID: **LCSW**	Batch ID: **59838**	TestNo: **EPA 6020**	**EPA 3010A**	Analysis Date: **10/4/2016**	SeqNo: **2441215**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	10.263	0.10	10.00	0	103	85	115				
Manganese	100.984	0.50	100.0	0	101	85	115				
Molybdenum	9.536	0.50	10.00	0	95.4	85	115				
Selenium	10.338	0.50	10.00	0	103	85	115				

Sample ID **N021081-001B-MS**	SampType: **MS**	TestCode: **6020_DIS**	Units: **µg/L**	Prep Date: **10/3/2016**	RunNo: **110930**
Client ID: **ZZZZZZ**	Batch ID: **59838**	TestNo: **EPA 6020**	**EPA 3010A**	Analysis Date: **10/4/2016**	SeqNo: **2441222**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	11.609	0.50	10.00	1.567	100	75	125				
Manganese	439.183	2.5	100.0	380.3	58.9	75	125				S
Molybdenum	33.175	2.5	10.00	23.39	97.9	75	125				
Selenium	10.381	2.5	10.00	1.620	87.6	75	125				

Sample ID **N021081-001B-MSD**	SampType: **MSD**	TestCode: **6020_DIS**	Units: **µg/L**	Prep Date: **10/3/2016**	RunNo: **110930**
Client ID: **ZZZZZZ**	Batch ID: **59838**	TestNo: **EPA 6020**	**EPA 3010A**	Analysis Date: **10/4/2016**	SeqNo: **2441226**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	12.033	0.50	10.00	1.567	105	75	125	11.61	3.59	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
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: ARCADIS U.S., Inc. - California
Work Order: N021105
Project: PG&E Topock - GMP, RC000753.801A

ANALYTICAL QC SUMMARY REPORT

TestCode: 6020_DIS

Sample ID	N021081-001B-MSD	SampType:	MSD	TestCode:	6020_DIS	Units:	µg/L	Prep Date:	10/3/2016	RunNo:	110930
Client ID:	ZZZZZZ	Batch ID:	59838	TestNo:	EPA 6020	EPA 3010A		Analysis Date:	10/4/2016	SeqNo:	2441226

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Manganese	442.175	2.5	100.0	380.3	61.9	75	125	439.2	0.679	20	S
Molybdenum	32.563	2.5	10.00	23.39	91.8	75	125	33.18	1.86	20	
Selenium	10.078	2.5	10.00	1.620	84.6	75	125	10.38	2.96	20	

Sample ID	N021105-006B-MS	SampType:	MS	TestCode:	6020_DIS	Units:	µg/L	Prep Date:	10/3/2016	RunNo:	110930
Client ID:	ZZZZZZ	Batch ID:	59838	TestNo:	EPA 6020	EPA 3010A		Analysis Date:	10/4/2016	SeqNo:	2441253

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	10.794	0.10	10.00	0.5363	103	75	125				
Manganese	99.815	0.50	100.0	12.35	87.5	75	125				
Molybdenum	48.106	0.50	10.00	36.85	113	75	125				
Selenium	15.979	0.50	10.00	7.382	86.0	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
DO	Surrogate Diluted Out		Calculations are based on raw values		

ASSET LABORATORIES
ANALYTICAL SUPPORT SERVICES FOR ENVIRONMENTAL TECHNOLOGIES

Contact us:
Nevada: 3151 W. Post Road, Las Vegas, NV 89118
P: 702.307.2659 F: 702.307.2693
California: 11060 Artesia Blvd., Ste C, Cerritos, CA 90703
P: 562.219.7435 F:562.219.7436
www.assetlaboratories.com

CHAIN OF CUSTODY RECORD

Page 1 of 1

Client: Arcadis	Report to: Dan Bush	Bill to: Marty Bloes	EDD Requirement: Excel EDD; Geotracker; Labspec; Others ✓; Specify: RWQCB; Global ID:
Address: 1410 Rocky Ridge Dr # 330	Company: Arcadis	Address:	QA/QC: RTNE; RWQCB ✓; CalTrans; LEVEL III; LEVEL IV; Regulatory; Specify State:
Address: Roseville, CA 95661	Email: dan.bush@arcadis.com; daniel.moore@contsen.com	Address	
Phone: 916-786-3302 Fax:	Address: 1410 Rocky Ridge Dr # 330, Roseville, CA 95661	Email to: mbloes@pivox.com P.O.#	
Submitted By: Jacob Mahung		Phone: 949-727-1400, ext 200 Fax	
Title: Sample Tech	Phone: 916-786-3302 Fax:		
Signature: Date: 9/29/16	Sampled By: Jacob Mahung		
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		
Project Name: PG&E Topock - GMP	Signature: Date: 9/29/16		
Project Number: RC000753.801A			

Sample Receipt Condition

	Y	N
1. Chilled	✓	
2. Headspace		
3. Container Intact		
4. Seal Present		
5. IR number		
6. Method of Cooling:	ice	
Sample Temp	2.4c	

Courier:

Tracking No:

Matrix: Ground Water x; Potable Water; NPDES; Surface Water; Sediment; Soil; Other Solid

Item No.	Laboratory Work Order No.	Sample ID/Location	Sample Date	Sample Time	Others	Cr(VI) FF (E218.6) (NH4)2 SO4, NH4, OH 250 mL poly	Cr(VI) FF (E218.6) (NH4)2 SO4, NH4, OH 2 X 250 mL poly	Metals Dissolved (6020AFF) As, HNO3 500 mL poly	Metals Dissolved (6020AFF) Mo, HNO3 600 mL poly	Metals Dissolved (6020AFF) Se, HNO3 500 mL poly	Metals Dissolved (6020AFF) Cr, HNO3 500 mL poly	Metals Dissolved (6020AFF) Mn, HNO3 500 mL poly	Nitrate/Nitrite (SM4500N03) Nitrate, H2SO4 125 mL poly	Turn Around Time	No. of Container	Container Type	PRESERVATION	Remarks
1	N021105 - 01	MW-60BR-245-Q316	9/29/2016	1545		X		X	X	X	X	X	X	E	3	P	BNS	
2	- 02	MW-68-180-Q316	9/29/2016	0905		X		X	X	X	X	X	X	E	3	P	BNS	
2	- 03	MW-69-195-Q316	9/29/2016	1051		X		X	X	X	X	X	X	E	3	P	BNS	
3	- 04	MW-38S-Q316	9/29/2016	1506		X		X	X	X	X	X	X	E	3	P	BNS	
4	- 05	MW-38S-SMT-Q316	9/29/2016	1447		X		X	X	X	X	X	X	E	3	P	BNS	
5	- 06	MW-65-160-Q316	9/29/2016	1343		X		X	X	X	X	X	X	E	3	P	BNS	
6	- 07	MW-65-225-Q316	9/29/2016	1227		X		X	X	X	X	X	X	E	3	P	BNS	
7	- 08	MW-703-Q316	9/29/2016	1515		X								E	1	P	B	
8																		
9																		
10																		
11																		
12																		
13																		

Relinquished by (Signature and Printed Name)	Date/Time	Relinquished by (Signature and Printed Name)	Date/Time
	9/29/16 1600		9/29/16 1600
	9/29/16 1600		9/29/16 1717

Turn Around Time (TAT)

	A	< 24 Hrs or Same Day TAT
	B	= Next Workday
	C	= 2 Workdays
	D	= 3 Workdays
X	E	= Routine 5-7 Workdays

TAT Starts at 8 AM the following day if samples received after 3:00PM

Special Instruction:

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 Days 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:				Container Type:		
H=HCL	N=HNO_3	S=H_2SO_4	C=4°C	T=Tube	V=VOA	P=Pint
Z=$Zn(AC)_2$	O=NaOH	T=$Na_2S_2O_3$		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

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:	9/29/2016	Workorder:	N021105
Rep sample Temp (Deg C):	2.4	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 ☑	No ☐	Not Present ☐
2. Custody seals intact, signed, dated on shippping container/cooler?	Yes ☐	No ☐	Not Present ☑
3. Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
4. Chain of custody present?	Yes ☑	No ☐	
5. Sampler's name present in COC?	Yes ☑	No ☐	
6. Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
7. Chain of custody agrees with sample labels?	Yes ☑	No ☐	
8. Samples in proper container/bottle?	Yes ☑	No ☐	
9. Sample containers intact?	Yes ☑	No ☐	
10. Sufficient sample volume for indicated test?	Yes ☑	No ☐	
11. All samples received within holding time?	Yes ☑	No ☐	
12. Temperature of rep sample or Temp Blank within acceptable limit?	Yes ☑	No ☐	NA ☐
13. Water - VOA vials have zero headspace?	Yes ☐	No ☐	NA ☑
14. Water - pH acceptable upon receipt? Example: pH > 12 for (CN,S); pH<2 for Metals	Yes ☑	No ☐	NA ☐
15. Did the bottle labels indicate correct preservatives used?	Yes ☑	No ☐	NA ☐
16. Were there Non-Conformance issues at login?	Yes ☐	No ☐	NA ☑
Was Client notified?	Yes ☐	No ☐	NA ☑

Comments:

Checklist Completed By: YR 9/30/2016

Reviewed By: 9/30/2016

ASSET Laboratories

WORK ORDER Summary

03-Oct-16

WorkOrder: N021105

Client ID: ARCUS02

Project: PG&E Topock - GMP, RC000753.801A **QC Level:** Level IV **Date Received:** 9/29/2016

Comments:

Sample ID	Client Sample ID	Date Collected	Date Due	Matrix	Test No	Test Name	Hld	MS	Sub	Storage
N021105-001A	MW-60BR-245-Q316	9/29/2016 3:45:00 PM	10/13/2016	Groundwater	EPA 218.6	Hexavalent Chromium by IC	☐	☐	☐	WW
N021105-001B			10/13/2016		EPA 3010A	AQPREP TOTAL METALS: ICP, FLAA	☐	☐	☐	WW
			10/13/2016		EPA 6020	DISSOLVED METALS BY ICP-MS	☐	☐	☐	WW
			10/13/2016		EPA 6020	DISSOLVED METALS BY ICP-MS	☐	☐	☐	WW
N021105-001C			10/13/2016		SM4500-NO3F	NITRATE/NITRITE-N BY CADMIUM REDUCTION	☐	☐	☐	WW
N021105-002A	MW-68-180-Q316	9/29/2016 9:05:00 AM	10/13/2016		EPA 218.6	Hexavalent Chromium by IC	☐	☐	☐	WW
N021105-002B			10/13/2016		EPA 3010A	AQPREP TOTAL METALS: ICP, FLAA	☐	☐	☐	WW
			10/13/2016		EPA 6020	DISSOLVED METALS BY ICP-MS	☐	☐	☐	WW
			10/13/2016		EPA 6020	DISSOLVED METALS BY ICP-MS	☐	☐	☐	WW
N021105-002C			10/13/2016		SM4500-NO3F	NITRATE/NITRITE-N BY CADMIUM REDUCTION	☐	☐	☐	WW
N021105-003A	MW-69-195-Q316	9/29/2016 10:51:00 AM	10/13/2016		EPA 218.6	Hexavalent Chromium by IC	☐	☐	☐	WW
N021105-003B			10/13/2016		EPA 3010A	AQPREP TOTAL METALS: ICP, FLAA	☐	☐	☐	WW
			10/13/2016		EPA 6020	DISSOLVED METALS BY ICP-MS	☐	☐	☐	WW
			10/13/2016		EPA 6020	DISSOLVED METALS BY ICP-MS	☐	☐	☐	WW
N021105-003C			10/13/2016		SM4500-NO3F	NITRATE/NITRITE-N BY CADMIUM REDUCTION	☐	☐	☐	WW
N021105-004A	MW-38S-Q316	9/29/2016 3:06:00 PM	10/13/2016		EPA 218.6	Hexavalent Chromium by IC	☐	☐	☐	WW
N021105-004B			10/13/2016		EPA 3010A	AQPREP TOTAL METALS: ICP, FLAA	☐	☐	☐	WW
			10/13/2016		EPA 6020	DISSOLVED METALS BY ICP-MS	☐	☐	☐	WW
			10/13/2016		EPA 6020	DISSOLVED METALS BY ICP-MS	☐	☐	☐	WW
N021105-004C			10/13/2016		SM4500-NO3F	NITRATE/NITRITE-N BY CADMIUM REDUCTION	☐	☐	☐	WW
N021105-005A	MW-38S-SMT-Q316	9/29/2016 2:47:00 PM	10/13/2016		EPA 218.6	Hexavalent Chromium by IC	☐	☐	☐	WW

ASSET Laboratories

WORK ORDER Summary

03-Oct-16

WorkOrder: N021105

Client ID: ARCUS02

Project: PG&E Topock - GMP, RC000753.801A **QC Level:** Level IV **Date Received:** 9/29/2016

Comments:

Sample ID	Client Sample ID	Date Collected	Date Due	Matrix	Test No	Test Name	Hld	MS	Sub	Storage
N021105-005B	MW-38S-SMT-Q316	9/29/2016 2:47:00 PM	10/13/2016	Groundwater	EPA 3010A	AQPREP TOTAL METALS: ICP, FLAA	☐	☐	☐	WW
			10/13/2016		EPA 6020	DISSOLVED METALS BY ICP-MS	☐	☐	☐	WW
			10/13/2016		EPA 6020	DISSOLVED METALS BY ICP-MS	☐	☐	☐	WW
N021105-005C			10/13/2016		SM4500-NO3F	NITRATE/NITRITE-N BY CADMIUM REDUCTION	☐	☐	☐	WW
N021105-006A	MW-65-160-Q316	9/29/2016 1:43:00 PM	10/13/2016		EPA 218.6	Hexavalent Chromium by IC	☐	☐	☐	WW
N021105-006B			10/13/2016		EPA 3010A	AQPREP TOTAL METALS: ICP, FLAA	☐	☐	☐	WW
			10/13/2016		EPA 6020	DISSOLVED METALS BY ICP-MS	☐	☐	☐	WW
			10/13/2016		EPA 6020	DISSOLVED METALS BY ICP-MS	☐	☐	☐	WW
N021105-006C			10/13/2016		SM4500-NO3F	NITRATE/NITRITE-N BY CADMIUM REDUCTION	☐	☐	☐	WW
N021105-007A	MW-65-225-Q316	9/29/2016 12:27:00 PM	10/13/2016		EPA 218.6	Hexavalent Chromium by IC	☐	☐	☐	WW
N021105-007B			10/13/2016		EPA 3010A	AQPREP TOTAL METALS: ICP, FLAA	☐	☐	☐	WW
			10/13/2016		EPA 6020	DISSOLVED METALS BY ICP-MS	☐	☐	☐	WW
			10/13/2016		EPA 6020	DISSOLVED METALS BY ICP-MS	☐	☐	☐	WW
N021105-007C			10/13/2016		SM4500-NO3F	NITRATE/NITRITE-N BY CADMIUM REDUCTION	☐	☐	☐	WW
N021105-008A	MW-703-Q316	9/29/2016 3:15:00 PM	10/13/2016		EPA 218.6	Hexavalent Chromium by IC	☐	☐	☐	WW
N021105-009A	FOLDER		10/13/2016		EDD	RWQCB	☐	☐	☐	LAB
			10/13/2016		Folder	Folder	☐	☐	☐	LAB

October 17, 2016

Dan Bush
ARCADIS U.S., Inc. - California
1410 Rocky Ridge Dr #330
Roseville, CA 95661

TEL: (916) 786-3302
FAX:

Workorder No.: N021118

RE: PG&E Topock - GMP, RC000753.801A

Attention: Dan Bush

Enclosed are the results for sample(s) received on September 30, 2016 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 Ribucas for

Puri Romualdo
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.

SAMPLE RECEIVING/GENERAL COMMENTS:

Samples were received intact with proper chain of custody documentation.

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

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

Samples were analyzed within method holding time.

Analytical Comments for EPA 6020_Dissolved:

Dilution was necessary on some analytes for all samples and QC samples N021081-001B-MS, N021081-001B-MSD due to associated internal standard not meeting method criteria possibly due to matrix interference.Samples and QC 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) and Matrix Spike Duplicate (MSD) are outside recovery criteria for Manganese on QC samples N021081-001B-MS and N021081-001B-MSD- 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) is outside recovery criteria for Chromium on QC sample N021105-006B-MS possibly due to matrix interference. The associated Laboratory Control Sample (LCS) recovery was acceptable.

ASSET LABORATORIES
"Serving Clients with Passion and Professionalism"
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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
ORELAP/NELAP Cert 4046

ASSET Laboratories

Date: *17-Oct-16*

CLIENT: ARCADIS U.S., Inc. - California
Project: PG&E Topock - GMP, RC000753.801A
Lab Order: N021118
Contract No:

Work Order Sample Summary

Lab Sample ID	Client Sample ID	Matrix	Collection Date	Date Received	Date Reported
N021118-001A	MW-63-065-Q316	Groundwater	9/30/2016 8:49:00 AM	9/30/2016	10/17/2016
N021118-001B	MW-63-065-Q316	Groundwater	9/30/2016 8:49:00 AM	9/30/2016	10/17/2016
N021118-001C	MW-63-065-Q316	Groundwater	9/30/2016 8:49:00 AM	9/30/2016	10/17/2016
N021118-002A	MW-902-Q316	Groundwater	9/30/2016 8:55:00 AM	9/30/2016	10/17/2016
N021118-002B	MW-902-Q316	Groundwater	9/30/2016 8:55:00 AM	9/30/2016	10/17/2016
N021118-002C	MW-902-Q316	Groundwater	9/30/2016 8:55:00 AM	9/30/2016	10/17/2016
N021118-003A	MW-704-Q316	Groundwater	9/30/2016 10:00:00 AM	9/30/2016	10/17/2016

CLIENT:	ARCADIS U.S., Inc. - California	**Client Sample ID:**	MW-63-065-Q316
Lab Order:	N021118	**Collection Date:**	9/30/2016 8:49:00 AM
Project:	PG&E Topock - GMP, RC000753.801A	**Matrix:**	GROUNDWATER
Lab ID:	N021118-001		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
HEXAVALENT CHROMIUM BY IC							
			EPA 218.6				
RunID: **IC7_161003A**	QC Batch: **R110880**			PrepDate			Analyst: **RAB**
Hexavalent Chromium	1.4	0.066	0.20		µg/L	1	10/3/2016 03:17 PM
DISSOLVED METALS BY ICP-MS							
	EPA 3010A		**EPA 6020**				
RunID: **ICP7_161004B**	QC Batch: **59838**			PrepDate	**10/3/2016**		Analyst: **CEI**
Chromium	1.7	0.019	1.0		µg/L	1	10/4/2016 08:54 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

CLIENT:	ARCADIS U.S., Inc. - California	**Client Sample ID:**	MW-902-Q316
Lab Order:	N021118	**Collection Date:**	9/30/2016 8:55:00 AM
Project:	PG&E Topock - GMP, RC000753.801A	**Matrix:**	GROUNDWATER
Lab ID:	N021118-002		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
HEXAVALENT CHROMIUM BY IC							
EPA 218.6							
RunID: **IC7_161003A** QC Batch: **R110880** PrepDate							Analyst: **RAB**
Hexavalent Chromium	1.3	0.066	0.20		µg/L	1	10/3/2016 12:25 PM
DISSOLVED METALS BY ICP-MS							
EPA 3010A **EPA 6020**							
RunID: **ICP7_161004B** QC Batch: **59838** PrepDate **10/3/2016**							Analyst: **CEI**
Chromium	1.7	0.019	1.0		µg/L	1	10/4/2016 09:33 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

ASSET Laboratories

ANALYTICAL RESULTS

Print Date: *17-Oct-16*

CLIENT:	ARCADIS U.S., Inc. - California	**Client Sample ID:**	MW-704-Q316
Lab Order:	N021118	**Collection Date:**	9/30/2016 10:00:00 AM
Project:	PG&E Topock - GMP, RC000753.801A	**Matrix:**	GROUNDWATER
Lab ID:	N021118-003		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
HEXAVALENT CHROMIUM BY IC							
			EPA 218.6				
RunID: **IC7_161003A**	QC Batch: **R110880**			PrepDate			Analyst: **RAB**
Hexavalent Chromium	ND	0.066	0.20		µg/L	1	10/3/2016 12:53 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

CLIENT: ARCADIS U.S., Inc. - California
Work Order: N021118
Project: PG&E Topock - GMP, RC000753.801A

ANALYTICAL QC SUMMARY REPORT

TestCode: 218.6_WPGE

Sample ID	MB-R110880	SampType:	MBLK	TestCode:	218.6_WPGE	Units:	µg/L	Prep Date:		RunNo:	110880		
Client ID:	PBW	Batch ID:	R110880	TestNo:	EPA 218.6			Analysis Date:	10/3/2016	SeqNo:	2439079		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual		
Hexavalent Chromium	ND	0.20											

Sample ID	LCS-R110880	SampType:	LCS	TestCode:	218.6_WPGE	Units:	µg/L	Prep Date:		RunNo:	110880		
Client ID:	LCSW	Batch ID:	R110880	TestNo:	EPA 218.6			Analysis Date:	10/3/2016	SeqNo:	2439080		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual		
Hexavalent Chromium	4.871	0.20	5.000	0	97.4	90	110						

Sample ID	N021118-001AMS	SampType:	MS	TestCode:	218.6_WPGE	Units:	µg/L	Prep Date:		RunNo:	110880		
Client ID:	ZZZZZZ	Batch ID:	R110880	TestNo:	EPA 218.6			Analysis Date:	10/3/2016	SeqNo:	2439082		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual		
Hexavalent Chromium	2.371	0.20	1.000	1.375	99.6	90	110						

Sample ID	N021118-001AMSD	SampType:	MSD	TestCode:	218.6_WPGE	Units:	µg/L	Prep Date:		RunNo:	110880		
Client ID:	ZZZZZZ	Batch ID:	R110880	TestNo:	EPA 218.6			Analysis Date:	10/3/2016	SeqNo:	2439083		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual		
Hexavalent Chromium	2.349	0.20	1.000	1.375	97.4	90	110	2.371	0.945	20			

Sample ID	N021118-002ADUP	SampType:	DUP	TestCode:	218.6_WPGE	Units:	µg/L	Prep Date:		RunNo:	110880		
Client ID:	ZZZZZZ	Batch ID:	R110880	TestNo:	EPA 218.6			Analysis Date:	10/3/2016	SeqNo:	2439085		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual		
Hexavalent Chromium	1.391	0.20						1.345	3.34	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
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: ARCADIS U.S., Inc. - California
Work Order: N021118
Project: PG&E Topock - GMP, RC000753.801A

ANALYTICAL QC SUMMARY REPORT

TestCode: 218.6_WPGE

Sample ID	N021118-002AMS	SampType:	MS	TestCode:	218.6_WPGE	Units:	µg/L	Prep Date:		RunNo:	110880
Client ID:	ZZZZZZ	Batch ID:	R110880	TestNo:	EPA 218.6			Analysis Date:	10/3/2016	SeqNo:	2439086

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	2.335	0.20	1.000	1.345	99.0	90	110				

Sample ID	N021118-003AMS	SampType:	MS	TestCode:	218.6_WPGE	Units:	µg/L	Prep Date:		RunNo:	110880
Client ID:	ZZZZZZ	Batch ID:	R110880	TestNo:	EPA 218.6			Analysis Date:	10/3/2016	SeqNo:	2439088

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	1.027	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
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: ARCADIS U.S., Inc. - California
Work Order: N021118
Project: PG&E Topock - GMP, RC000753.801A

ANALYTICAL QC SUMMARY REPORT

TestCode: 6020DIS_CrPGE

Sample ID	MB-59838	SampType:	MBLK	TestCode:	6020DIS_CrP	Units:	µg/L	Prep Date:	10/3/2016	RunNo:	110930
Client ID:	PBW	Batch ID:	59838	TestNo:	EPA 6020	EPA 3010A		Analysis Date:	10/4/2016	SeqNo:	2441107

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium	ND	1.0									

Sample ID	LCS-59838	SampType:	LCS	TestCode:	6020DIS_CrP	Units:	µg/L	Prep Date:	10/3/2016	RunNo:	110930
Client ID:	LCSW	Batch ID:	59838	TestNo:	EPA 6020	EPA 3010A		Analysis Date:	10/4/2016	SeqNo:	2441108

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium	10.216	1.0	10.00	0	102	85	115				

Sample ID	N021081-001B-MS	SampType:	MS	TestCode:	6020DIS_CrP	Units:	µg/L	Prep Date:	10/3/2016	RunNo:	110930
Client ID:	ZZZZZZ	Batch ID:	59838	TestNo:	EPA 6020	EPA 3010A		Analysis Date:	10/4/2016	SeqNo:	2441114

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium	11.127	1.0	10.00	2.730	84.0	75	125				

Sample ID	N021081-001B-MSD	SampType:	MSD	TestCode:	6020DIS_CrP	Units:	µg/L	Prep Date:	10/3/2016	RunNo:	110930
Client ID:	ZZZZZZ	Batch ID:	59838	TestNo:	EPA 6020	EPA 3010A		Analysis Date:	10/4/2016	SeqNo:	2441116

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium	11.112	1.0	10.00	2.730	83.8	75	125	11.13	0.132	20	

Sample ID	N021105-006B-MS	SampType:	MS	TestCode:	6020DIS_CrP	Units:	µg/L	Prep Date:	10/3/2016	RunNo:	110930
Client ID:	ZZZZZZ	Batch ID:	59838	TestNo:	EPA 6020	EPA 3010A		Analysis Date:	10/4/2016	SeqNo:	2441146

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium	168.208	1.0	10.00	164.0	42.2	75	125				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
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT:	ARCADIS U.S., Inc. - California	**Client Sample ID:**	MW-63-065-Q316
Lab Order:	N021118	**Collection Date:**	9/30/2016 8:49:00 AM
Project:	PG&E Topock - GMP, RC000753.801A	**Matrix:**	GROUNDWATER
Lab ID:	N021118-001		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
NITRATE/NITRITE-N BY CADMIUM REDUCTION							
			SM4500-NO3F				
RunID: **WETCHEM_161005H**	QC Batch: **R110972**		PrepDate				Analyst: **RB**
Nitrate/Nitrite as N	0.96	0.022	0.050		mg/L	1	10/5/2016

Qualifiers:

B	Analyte detected in the associated Method Blank
H	Holding times for preparation or analysis exceeded
S	Spike/Surrogate outside of limits due to 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 RESULTS

Print Date: *17-Oct-16*

CLIENT:	ARCADIS U.S., Inc. - California	**Client Sample ID:**	MW-902-Q316
Lab Order:	N021118	**Collection Date:**	9/30/2016 8:55:00 AM
Project:	PG&E Topock - GMP, RC000753.801A	**Matrix:**	GROUNDWATER
Lab ID:	N021118-002		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
NITRATE/NITRITE-N BY CADMIUM REDUCTION							
			SM4500-NO3F				
RunID: **NV00922-WC_161012D**	QC Batch: **R111089**		PrepDate				Analyst: **RB**
Nitrate/Nitrite as N	1.1	0.022	0.050		mg/L	1	10/12/2016

Qualifiers:

B	Analyte detected in 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		

CLIENT: ARCADIS U.S., Inc. - California
Work Order: N021118
Project: PG&E Topock - GMP, RC000753.801A

ANALYTICAL QC SUMMARY REPORT

TestCode: 4500N03F_W

Sample ID	MB-R110972	SampType:	MBLK	TestCode:	4500N03F_W	Units:	mg/L	Prep Date:		RunNo:	110972
Client ID:	PBW	Batch ID:	R110972	TestNo:	SM4500-NO3			Analysis Date:	10/5/2016	SeqNo:	2443272

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrate/Nitrite as N	0.022	0.050									

Sample ID	LCS-R110972	SampType:	LCS	TestCode:	4500N03F_W	Units:	mg/L	Prep Date:		RunNo:	110972
Client ID:	LCSW	Batch ID:	R110972	TestNo:	SM4500-NO3			Analysis Date:	10/5/2016	SeqNo:	2443273

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrate/Nitrite as N	0.560	0.050	0.5000	0	112	85	115				

Sample ID	N021040-001CDUP	SampType:	DUP	TestCode:	4500N03F_W	Units:	mg/L	Prep Date:		RunNo:	110972
Client ID:	ZZZZZZ	Batch ID:	R110972	TestNo:	SM4500-NO3			Analysis Date:	10/5/2016	SeqNo:	2443275

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrate/Nitrite as N	0.029	0.050						0.02840	0	20	

Sample ID	N021040-001CMS	SampType:	MS	TestCode:	4500N03F_W	Units:	mg/L	Prep Date:		RunNo:	110972
Client ID:	ZZZZZZ	Batch ID:	R110972	TestNo:	SM4500-NO3			Analysis Date:	10/5/2016	SeqNo:	2443276

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrate/Nitrite as N	0.508	0.050	0.5000	0.02840	96.0	75	125				

Sample ID	N021040-001CMSD	SampType:	MSD	TestCode:	4500N03F_W	Units:	mg/L	Prep Date:		RunNo:	110972
Client ID:	ZZZZZZ	Batch ID:	R110972	TestNo:	SM4500-NO3			Analysis Date:	10/5/2016	SeqNo:	2443277

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	0.02840	95.2	75	125	0.5082	0.731	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
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: ARCADIS U.S., Inc. - California
Work Order: N021118
Project: PG&E Topock - GMP, RC000753.801A

ANALYTICAL QC SUMMARY REPORT

TestCode: 4500N03F_W

Sample ID	MB-R111089	SampType:	MBLK	TestCode:	4500N03F_W	Units:	mg/L	Prep Date:		RunNo:	111089
Client ID:	PBW	Batch ID:	R111089	TestNo:	SM4500-NO3			Analysis Date:	10/12/2016	SeqNo:	2449679

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrate/Nitrite as N	0.025	0.050									

Sample ID	LCS-R11089	SampType:	LCS	TestCode:	4500N03F_W	Units:	mg/L	Prep Date:		RunNo:	111089
Client ID:	LCSW	Batch ID:	R111089	TestNo:	SM4500-NO3			Analysis Date:	10/12/2016	SeqNo:	2449680

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	96.9	85	115				

Sample ID	N021156-001CDUP	SampType:	DUP	TestCode:	4500N03F_W	Units:	mg/L	Prep Date:		RunNo:	111089
Client ID:	ZZZZZZ	Batch ID:	R111089	TestNo:	SM4500-NO3			Analysis Date:	10/12/2016	SeqNo:	2449682

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						0.04220	0	20	

Sample ID	N021156-001CMS	SampType:	MS	TestCode:	4500N03F_W	Units:	mg/L	Prep Date:		RunNo:	111089
Client ID:	ZZZZZZ	Batch ID:	R111089	TestNo:	SM4500-NO3			Analysis Date:	10/12/2016	SeqNo:	2449683

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrate/Nitrite as N	0.511	0.050	0.5000	0.04220	93.8	75	125				

Sample ID	N021156-001CMSD	SampType:	MSD	TestCode:	4500N03F_W	Units:	mg/L	Prep Date:		RunNo:	111089
Client ID:	ZZZZZZ	Batch ID:	R111089	TestNo:	SM4500-NO3			Analysis Date:	10/12/2016	SeqNo:	2449684

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrate/Nitrite as N	0.526	0.050	0.5000	0.04220	96.7	75	125	0.5113	2.82	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

CLIENT:	ARCADIS U.S., Inc. - California	**Client Sample ID:**	MW-63-065-Q316
Lab Order:	N021118	**Collection Date:**	9/30/2016 8:49:00 AM
Project:	PG&E Topock - GMP, RC000753.801A	**Matrix:**	GROUNDWATER
Lab ID:	N021118-001		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
DISSOLVED METALS BY ICP-MS							
	EPA 3010A			**EPA 6020**			
RunID: **ICP7_161004B**	QC Batch: **59838**			PrepDate	**10/3/2016**		Analyst: **CEI**
Arsenic	1.5	0.025	0.10		µg/L	1	10/4/2016 08:54 PM
Manganese	3.7	0.056	0.50		µg/L	1	10/4/2016 08:54 PM
Molybdenum	16	0.19	2.5		µg/L	5	10/17/2016 11:48 AM
Selenium	0.85	0.028	0.50		µg/L	1	10/4/2016 08:54 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

CLIENT:	ARCADIS U.S., Inc. - California	**Client Sample ID:**	MW-902-Q316
Lab Order:	N021118	**Collection Date:**	9/30/2016 8:55:00 AM
Project:	PG&E Topock - GMP, RC000753.801A	**Matrix:**	GROUNDWATER
Lab ID:	N021118-002		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
DISSOLVED METALS BY ICP-MS							
	EPA 3010A			**EPA 6020**			
RunID: **ICP7_161004B**	QC Batch: **59838**			PrepDate	**10/3/2016**		Analyst: **CEI**
Arsenic	1.4	0.025	0.10		µg/L	1	10/4/2016 09:33 PM
Manganese	3.3	0.056	0.50		µg/L	1	10/4/2016 09:33 PM
Molybdenum	18	0.19	2.5		µg/L	5	10/5/2016 01:01 PM
Selenium	ND	0.14	2.5		µg/L	5	10/4/2016 09:39 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

CLIENT: ARCADIS U.S., Inc. - California
Work Order: N021118
Project: PG&E Topock - GMP, RC000753.801A

ANALYTICAL QC SUMMARY REPORT

TestCode: 6020_DIS

Sample ID **MB-59838**	SampType: **MBLK**	TestCode: **6020_DIS**	Units: **µg/L**	Prep Date: **10/3/2016**	RunNo: **110930**
Client ID: **PBW**	Batch ID: **59838**	TestNo: **EPA 6020**	**EPA 3010A**	Analysis Date: **10/4/2016**	SeqNo: **2441214**

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 **LCS-59838**	SampType: **LCS**	TestCode: **6020_DIS**	Units: **µg/L**	Prep Date: **10/3/2016**	RunNo: **110930**
Client ID: **LCSW**	Batch ID: **59838**	TestNo: **EPA 6020**	**EPA 3010A**	Analysis Date: **10/4/2016**	SeqNo: **2441215**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	10.263	0.10	10.00	0	103	85	115				
Manganese	100.984	0.50	100.0	0	101	85	115				
Molybdenum	9.536	0.50	10.00	0	95.4	85	115				
Selenium	10.338	0.50	10.00	0	103	85	115				

Sample ID **N021081-001B-MS**	SampType: **MS**	TestCode: **6020_DIS**	Units: **µg/L**	Prep Date: **10/3/2016**	RunNo: **110930**
Client ID: **ZZZZZZ**	Batch ID: **59838**	TestNo: **EPA 6020**	**EPA 3010A**	Analysis Date: **10/4/2016**	SeqNo: **2441222**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	11.609	0.50	10.00	1.567	100	75	125				
Manganese	439.183	2.5	100.0	380.3	58.9	75	125				S
Molybdenum	33.175	2.5	10.00	23.39	97.9	75	125				
Selenium	10.381	2.5	10.00	1.620	87.6	75	125				

Sample ID **N021081-001B-MSD**	SampType: **MSD**	TestCode: **6020_DIS**	Units: **µg/L**	Prep Date: **10/3/2016**	RunNo: **110930**
Client ID: **ZZZZZZ**	Batch ID: **59838**	TestNo: **EPA 6020**	**EPA 3010A**	Analysis Date: **10/4/2016**	SeqNo: **2441226**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	12.033	0.50	10.00	1.567	105	75	125	11.61	3.59	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
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: ARCADIS U.S., Inc. - California
Work Order: N021118
Project: PG&E Topock - GMP, RC000753.801A

ANALYTICAL QC SUMMARY REPORT

TestCode: 6020_DIS

Sample ID	N021081-001B-MSD	SampType:	MSD	TestCode:	6020_DIS	Units:	µg/L	Prep Date:	10/3/2016	RunNo:	110930
Client ID:	ZZZZZZ	Batch ID:	59838	TestNo:	EPA 6020	EPA 3010A		Analysis Date:	10/4/2016	SeqNo:	2441226

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Manganese	442.175	2.5	100.0	380.3	61.9	75	125	439.2	0.679	20	S
Molybdenum	32.563	2.5	10.00	23.39	91.8	75	125	33.18	1.86	20	
Selenium	10.078	2.5	10.00	1.620	84.6	75	125	10.38	2.96	20	

Sample ID	N021105-006B-MS	SampType:	MS	TestCode:	6020_DIS	Units:	µg/L	Prep Date:	10/3/2016	RunNo:	110930
Client ID:	ZZZZZZ	Batch ID:	59838	TestNo:	EPA 6020	EPA 3010A		Analysis Date:	10/4/2016	SeqNo:	2441253

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	10.794	0.10	10.00	0.5363	103	75	125				
Manganese	99.815	0.50	100.0	12.35	87.5	75	125				
Molybdenum	48.106	0.50	10.00	36.85	113	75	125				
Selenium	15.979	0.50	10.00	7.382	86.0	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
DO	Surrogate Diluted Out		Calculations are based on raw values		

ASSET LABORATORIES
ANALYTICAL SUPPORT SERVICES FOR ENVIRONMENTAL TECHNOLOGIES

Contact us: N021118
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

CHAIN OF CUSTODY RECORD

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	
Address: Roseville, CA 95661	Email: dan.bush@arcadis.com; daniel.moore@cbibgen.com	Address:	Geotracker	RWQCB ✓	1. Chilled
Phone: 916-786-3302 Fax:	Address: 1410 Rocky Ridge Dr # 330 Roseville, CA 95661	Email to: mbloes@pivox.com P.O.#	Labspec	CalTrans	2. Headspace
Submitted By: Jacob Mahling	Phone: 916-786-3302 Fax:	Phone: 949-727-1400, ext 200 Fax:	Others ✓	LEVEL III	3. Container Intact
Title: Sample Tech			Specify: RWQCB	LEVEL IV	4. Seal Present
Signature: Date: 9/30/16	Sampled By: Jacob Mahling		Global ID	Regulatory	5. IR number
I verify authority for 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 Water x Sediment; Potable Water Soil; NPDES Other Solid; Surface Water		Specify State:	6. Method of Cooling: ice
Project Name: PG&E Topock - GMP	Signature: Date: 9/30/16				Sample Temp 2.2°C
Project Number: RC000753.801A					Couner / 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 250 mL poly	Cr(VI) FF (E218.6) (NH4)2 SO4, NH4 OH 2 X 250 mL poly	Metals Dissolved (6020AFF) As, HNO3 500 mL poly	Metals Dissolved (6020AFF) Mo, HNO3 500 mL poly	Metals Dissolved (6020AFF) Se, HNO3 500 mL poly	Metals Dissolved (6020AFF) Cr, HNO3 500 mL poly	Metals Dissolved (6020AFF) Mn, HNO3 500 mL poly	Nitrate/Nitrite (SM4500NO3) Nitrate, H2SO4 125 mL poly	Turn Around Time	No. of Container	Container Type	PRESERVATION	Remarks
1	N021118 - 01	MW-63-065-Q316	9/30/2016	0849		X		X	X	X	X	X	X	E	3	P	BNS	
2	- 02	MW-902-Q316	9/30/2016	0855		X		X	X	X	X	X	X	E	3	P	BNS	
2	- 03	MW-704-Q316	9/30/2016	1000		X								E	1	P	B	
3																		
4																		
5																		
6																		
7																		
8																		
9																		
10																		
11																		
12																		
13																		

Relinquished by (Signature and Printed Name):	Date/Time:	Relinquished by (Signature and Printed Name):	Date/Time:
	9/30/16 1010	Jacob Mahling	9/30/16 1010
Jacob Mahling	9/30/16 1600	Jacob Mahling	9/30/16 1605
	Date/Time:		Date/Time:

Turn Around Time (TAT)

- [ ] A = < 24 Hrs or Same Day TAT
- [ ] B = Next Workday
- [ ] C = 2 Workdays
- [ ] D = 3 Workdays
- [x] E = Routine 5-7 Workdays

TAT Starts at 8 AM the following day if samples received after 3:00PM

Special Instruction:

Terms
1 All samples will be disposed of 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=25%
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 analyses, TAT and Surcharges will vary

Preservatives:				Container Type:		
H=HCL	N=HNO_3	S=H_2SO_4	C=4°C	T=Tube	V=VOA	P=Pint
Z=$Zn(AC)_2$	O=NaOH	T=$Na_2S_2O_3$		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

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:	9/30/2016	Workorder:	N021118
Rep sample Temp (Deg C):	2.9	IR Gun ID:	1

Temp Blank: ☑ Yes ☐ No

Carrier name: ASSET

Last 4 digits of Tracking No.: NA Packing Material Used: Bubble Wrap

Cooling process: ☑ Ice ☐ Ice Pack ☐ Dry Ice ☐ Other ☐ None

Sample Receipt Checklist

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

Comments:

Checklist Completed By: YR 10/1/2016

Reviewed By: 10/3/16

ASSET Laboratories

WORK ORDER Summary

02-Oct-16

WorkOrder: N021118

Client ID: ARCUS02

Project: PG&E Topock - GMP, RC000753.801A **QC Level:** Level IV **Date Received:** 9/30/2016

Comments:

Sample ID	Client Sample ID	Date Collected	Date Due	Matrix	Test No	Test Name	Hld	MS	Sub	Storage
N021118-001A	MW-63-065-Q316	9/30/2016 8:49:00 AM	10/14/2016	Groundwater	EPA 218.6	Hexavalent Chromium by IC	☐	☐	☐	WW
N021118-001B			10/14/2016		EPA 3010A	AQPREP TOTAL METALS: ICP, FLAA	☐	☐	☐	WW
			10/14/2016		EPA 6020	DISSOLVED METALS BY ICP-MS	☐	☐	☐	WW
			10/14/2016		EPA 6020	DISSOLVED METALS BY ICP-MS	☐	☐	☐	WW
N021118-001C			10/14/2016		SM4500-NO3F	NITRATE/NITRITE-N BY CADMIUM REDUCTION	☐	☐	☐	WW
N021118-002A	MW-902-Q316	9/30/2016 8:55:00 AM	10/14/2016		EPA 218.6	Hexavalent Chromium by IC	☐	☐	☐	WW
N021118-002B			10/14/2016		EPA 3010A	AQPREP TOTAL METALS: ICP, FLAA	☐	☐	☐	WW
			10/14/2016		EPA 6020	DISSOLVED METALS BY ICP-MS	☐	☐	☐	WW
			10/14/2016		EPA 6020	DISSOLVED METALS BY ICP-MS	☐	☐	☐	WW
N021118-002C			10/14/2016		SM4500-NO3F	NITRATE/NITRITE-N BY CADMIUM REDUCTION	☐	☐	☐	WW
N021118-003A	MW-704-Q316	9/30/2016 10:00:00 AM	10/14/2016		EPA 218.6	Hexavalent Chromium by IC	☐	☐	☐	WW
N021118-004A	FOLDER		10/14/2016		EDD	RWQCB	☐	☐	☐	LAB
			10/14/2016		Folder	Folder	☐	☐	☐	LAB

October 27, 2016

Dan Bush
ARCADIS U.S., Inc. - California
1410 Rocky Ridge Dr #330
Roseville, CA 95661

TEL: (916) 786-3302
FAX:

Workorder No.: N021120

RE: PG&E Topock - AZ GMP, RC000753.801A

Attention: Dan Bush

Enclosed are the results for sample(s) received on September 30, 2016 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.

The attached report is the final hard copy pertaining to the subcontracted tests for the above project.

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 Ribucan for

Puri Romualdo
Laboratory Director

This cover letter is an integral part of this analytical report.

ASSET Laboratories

Date: *27-Oct-16*

CLIENT: ARCADIS U.S., Inc. - California
Project: PG&E Topock - AZ GMP, RC000753.801A
Lab Order: N021120
Contract No:

Work Order Sample Summary

Lab Sample ID	Client Sample ID	Matrix	Collection Date	Date Received	Date Reported
N021120-001A	MW-55-120-Q316	Groundwater	9/30/2016 9:57:00 AM	9/30/2016	10/27/2016
N021120-001B	MW-55-120-Q316	Groundwater	9/30/2016 9:57:00 AM	9/30/2016	10/27/2016
N021120-002A	MW-55-120-EB-Q316	Groundwater	9/30/2016 9:20:00 AM	9/30/2016	10/27/2016
N021120-002B	MW-55-120-EB-Q316	Groundwater	9/30/2016 9:20:00 AM	9/30/2016	10/27/2016

ASSET LABORATORIES
ANALYTICAL SUPPORT SERVICES FOR ENVIRONMENTAL TECHNOLOGIES

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

CHAIN OF CUSTODY RECORD

N021120

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; daniel.moore@rubicon.com	Address:	Geotracker	RWQCB ✓	1 Chilled
Phone: 916-786-3302 Fax:	Address: 1410 Rocky Ridge Dr # 330 Roseville, CA 95661	Email to: mbloes@pivox.com	Labspec	CalTrans	2 Headspace
Submitted By: Jacob Mahney		Phone: 949-727-1400, ext 200 Fax:	Others ✓	LEVEL III	3 Container Intact
Title: Sample Tech	Phone: 916-786-3302 Fax:	P.O.#	Specify: RWQCB	LEVEL IV	4 Seal Present
Signature: Date: 9/30/16	Sampled By: Jacob Mahney	Global ID:		Regulatory	5 IR number
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			Specify State:	6 Method of Cooling: Ice
Project Name: PG&E Topock - AZ GMP	Signature: Date: 9/30/16				Sample Temp: 2.9c
Project Number: RC000753.601A					Courier: Tracking No.

Matrix: Ground x Sediment; Potable; Soil; 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 250 mL poly	Cr(VI) FF (E218.6) (NH4)2, SO4, NH4, OH 2 X 250 mL poly	Metals Dissolved (6020AFF) As, HNO3 500 mL poly	Metals Dissolved (6020AFF) Mo, HNO3 500 mL poly	Metals Dissolved (6020AFF) Se, HNO3 500 mL poly	Metals Dissolved (6020AFF) Cr, HNO3 501 mL poly	Metals Dissolved (6020AFF) Mn, HNO3 502 mL poly	Nitrate/Nitrite as Nitrogen (SM4500N03): H2SO4 125 mL poly	Turn Around Time	No. of Container	Container Type	PRESERVATION	Remarks
1	N021120 - 01	MW-55-120-Q316	9/30/2016	0957		X					X			E	2	P	BN	Send to APPL
2	- 02	MW-55-120-EB-Q316	9/30/2016	0920			X				X			E	3	P	BN	Send to APPL
3																		
4																		
5																		
6																		
7																		
8																		
9																		
10																		
11																		
12																		
13																		

Relinquished by (Signature and Printed Name)	Date/Time	Relinquished by (Signature and Printed Name)	Date/Time
	9/30/16 1010		9/30/16 1010
	9/30/16 1008		9/30/16 1008

Turn Around Time (TAT)

- [ ] A = < 24 Hrs or Same Day TAT
- [ ] B = Next Workday
- [ ] C = 2 Workdays
- [ ] D = 3 Workdays
- [x] E = Routine 5-7 Workdays

TAT Starts at 8 AM the following day if samples received after 3:00PM

Special Instruction:

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 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=HNO_3	S=H_2SO_4	C=4°C	T=Tube	V=VOA	P=Pint
Z=$Zn(AC)_2$	O=NaOH	T=$Na_2S_2O_3$		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

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:	9/30/2016	Workorder:	N021120
Rep sample Temp (Deg C):	2.9	IR Gun ID:	1

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

Comments:

Checklist Completed By: YR 10/1/2016

Reviewed By: 10/3/2016

ASSET Laboratories

WORK ORDER Summary

02-Oct-16

WorkOrder: N021120

Client ID: ARCUS02

Project: PG&E Topock - AZ GMP, RC000753.801A **QC Level:** Level IV **Date Received:** 9/30/2016

Comments: RWQCB

Sample ID	Client Sample ID	Date Collected	Date Due	Matrix	Test No	Test Name	Hld	MS	Sub	Storage
N021120-001A	MW-55-120-Q316	9/30/2016 9:57:00 AM	10/14/2016	Groundwater	EPA 218.6	Hexavalent Chromium by IC	☐	☐	☑	SUB
N021120-001B			10/14/2016		EPA 6020	DISSOLVED METALS BY ICP-MS	☐	☐	☑	SUB
N021120-002A	MW-55-120-EB-Q316	9/30/2016 9:20:00 AM	10/14/2016		EPA 218.6	Hexavalent Chromium by IC	☐	☐	☑	SUB
N021120-002B			10/14/2016		EPA 6020	DISSOLVED METALS BY ICP-MS	☐	☐	☑	SUB
N021120-003A	FOLDER		10/14/2016		EDD	RWQCB	☐	☐	☐	LAB
			10/14/2016		Folder	Folder	☐	☐	☐	LAB

ASSET Laboratories
3151-3153 W Post Rd., Las Vegas, NV 89118
www.atl-labs.com
TEL: 7023072659 FAX: 7023072691

CHAIN-OF-CUSTODY RECORD

QC Level: Level IV

Subcontractor:

EMAX Laboratories
1835 205th Street
Torrance, CA 90501

TEL: (310) 618-8889
FAX: (310) 618-0818
Acct #:

Field Sampler:

01-Oct-16

Sample ID	Matrix	Date Collected	Bottle Type	Requested Tests		
				EPA 218.6	EPA 6020	Folder
N021120-001A / MW-55-120-Q316	Groundwater	9/30/2016 9:57:00 AM	8OZP	1		
N021120-001B / MW-55-120-Q316	Groundwater	9/30/2016 9:57:00 AM	16OZP		1	
N021120-002A / MW-55-120-EB-Q316	Groundwater	9/30/2016 9:20:00 AM	8OZP	1		
N021120-002B / MW-55-120-EB-Q316	Groundwater	9/30/2016 9:20:00 AM	16OZP		1	
N021120-003A / FOLDER						1

General Comments: Please email sample receipt acknowledgement to the PM.

Please use PO#:N21120A Please email Invoices and Account Receivable Statements to AssetAP@assetlaboratories.com. For questions, call Marlon at (702)-307-2659. Please e-mail results to reports.lv@assetlaboratories.com by: Normal TAT.

Please analyze for Cr (VI) by 218.6 and Disssolved Cr by 6020AFF. Needs AZ certification.

		Date/Time			Date/Time
Relinquished by:	[signature]	1700	Received by:	650 # 533504865	
Relinquished by:	10/1/2016		Received by:		

TABLE OF CONTENTS

CLIENT: **ASSET LABS**

PROJECT: **PG&E HINKLEY**

SDG: **16J012**

SECTION		PAGE
Cover Letter, COC/Sample Receipt Form		1000 – 1004
GC/MS-VOA	**	2000 –
GC/MS-SVOA	**	3000 –
GC-VOA	**	4000 –
GC-SVOA	**	5000 –
HPLC	**	6000 –
METALS	METHOD SW6020A	7000 – 7100
WET	METHOD E218.6	8000 – 8051
OTHERS	**	9000 –

** - Not Requested

LABORATORIES, INC.
1835 W. 205th Street
Torrance, CA 90501
Tel: (310) 618-8889
Fax: (310) 618-0818

Date: 10-19-2016
EMAX Batch No.: 16J012

Attn: Marlon Cartin

Asset Labs
3151 W. Post Road
Las Vegas NV 89118

Subject: Laboratory Report
Project: PG&E HINKLEY

Enclosed is the Laboratory report for samples received on 10/04/16.
The data reported relate only to samples listed below :

Sample ID	Control #	Col Date	Matrix	Analysis
MW-55-120-Q316	J012-01	09/30/16	WATER	CHROMIUM HEXAVALENT BY IC
				DISSOLVED CHROMIUM
MW-55-120-EB-Q316	J012-02	09/30/16	WATER	CHROMIUM HEXAVALENT BY IC
				DISSOLVED CHROMIUM

The results are summarized on the following pages.

Please feel free to call if you have any questions concerning
these results.

Sincerely yours,

Caspar J. Pang
Laboratory Director

This report is confidential and intended solely for the use of the individual or entity to whom it is addressed. This report shall not be reproduced except in full or without the written approval of EMAX.

EMAX certifies that results included in this report meets all NELAC & DOD requirements unless noted in the Case Narrative.

NELAP Accredited Certificate Number E871112
L-A-B Accredited DoD ELAP and ISO/IEC 17025 Certificate Number L2278 Testing
California ELAP Accredited Certificate Number 2672

163012

ASSET Laboratories
3151-3153 W Post Rd., Las Vegas, NV 89118
www.atl-labs.com
TEL: 7023072659 *FAX: 7023072691*

CHAIN-OF-CUSTODY RECORD

QC Level: Level IV

Subcontractor:

EMAX Laboratories
1835 205th Street
Torrance, CA 90501

TEL: (310) 618-8889
FAX: (310) 618-0818
Acct #:

Field Sampler:

01-Oct-16

Sample ID	Matrix	Date Collected	Bottle Type	Requested Tests EPA 218.6	EPA 6020	Folder
N021120-001A / MW-55-120-Q316	Groundwater	9/30/2016 9:57:00 AM	8OZP	1		
N021120-001B / MW-55-120-Q316	Groundwater	9/30/2016 9:57:00 AM	16OZP		1	
N021120-002A / MW-55-120-EB-Q316	Groundwater	9/30/2016 9:20:00 AM	8OZP	1		
N021120-002B / MW-55-120-EB-Q316	Groundwater	9/30/2016 9:20:00 AM	16OZP		1	
N021120-003A / FOLDER						1

(1) (2)

→ 2 CONTAINERS

General Comments: Please email sample receipt acknowledgement to the PM.

Please use PO#:N21120A Please email Invoices and Account Receivable Statements to AssetAP@assetlaboratories.com. For questions, call Marlon at (702)-307-2659. Please e-mail results to reports.lv@assetlaboratories.com by: Normal TAT.

Please analyze for Cr (VI) by 218.6 and Disssolved Cr by 6020AFF. Needs AZ certification.

		Date/Time			Date/Time
Relinquished by:		1700	**Received by:**	650 # 533504865	
Relinquished by:	10/1/2016		**Received by:**		10/4/16 0911

3.4°

SAMPLE RECEIPT FORM 1

Reference Number: SM02.7.3

Type of Delivery	Airbill / Tracking Number	ECN 163012
☑ Fedex ☐ UPS ☐ GSO ☐ Others	533504881	Recipient CHAN
☐ EMAX Courier ☐ Client Delivery		Date 10/4/16 Time 0911

COC INSPECTION

☑ Client Name	☐ Client PM/FC	☐ Sampler Name	☑ Sampling Date/Time	☑ Sample ID	☑ Matrix
☑ Address	☑ Tel # / Fax #	☐ Courier Signature	☑ Analysis Required	☐ Preservative (if any)	☐ TAT
Safety Issues (if any)	☐ High concentrations expected	☐ From Superfund Site	☐ Rad screening required		

Note: _____

PACKAGING INSPECTION

Container	☑ Cooler	☐ Box	☐ Other		
Condition	☐ Custody Seal	☑ Intact	☐ Damaged		
Packaging	☐ Bubble Pack	☐ Styrofoam	☐ Popcorn	☐ Insufficient	☑ plastic bag
Temperatures (Cool, ≤6 °C but not frozen)	☑ Cooler 1 3.4 °C	☐ Cooler 2_____ °C	☐ Cooler 3_____ °C	☐ Cooler 4_____ °C	☐ Cooler 5_____ °C
	☐ Cooler 6_____ °C	☐ Cooler 7_____ °C	☐ Cooler 8_____ °C	☐ Cooler 9_____ °C	☐ Cooler 10_____ °C
Thermometer:	*A - S/N* 130538506 Secondary	*B - S/N* 140252070	*C - S/N* 140252067	*D S/N* 150553630	Fm 2/5/16

Comments: ☐ **Temperature is out of range. PM was informed IMMEDIATELY.**

Note: _____

DISCREPANCIES

LabSampleID	LabSampleContainerID	Code	ClientSample Label ID / Information	Corrective Action

10/4/16

my for Andy 10/4/16

☐ pH holding time requirement for water samples is 15 mins. Water samples for pH analysis are received beyond 15 minutes from sampling time.

NOTES/OBSERVATIONS: Label reads SW6020 - COC reads Diss. Cr by 6020AFF (Under General Comments section).

☐ **Continue to next page.**

LEGEND:

Code	Description- Sample Management	Code	Description-Sample Management	Code	Description-Sample Management
D1	Analysis is not indicated in _____	D13	Out of Holding Time	R1	Proceed as indicated in ☐ COC ☐ Label
D2	Analysis mismatch COC vs label	D14	Bubble is >6mm	R2	Refer to attached instruction
D3	Sample ID mismatch COC vs label	D15	No trip blank in cooler	R3	Cancel the analysis
D4	Sample ID is not indicated in _____	D16	Preservation not indicated in _____	R4	Use vial with smallest bubble first
D5	Container -[improper] [leaking] [broken]	D17	Preservation mismatch COC vs label	R5	Log-in with latest sampling date and time+1 min
D6	Date/Time is not indicated in _____	D18	Insufficient chemical preservative	R6	Adjust pH as necessary
D7	Date/Time mismatch COC vs label	D19	Insufficient Sample	R7	Filter and preserved as necessary
D8	Sample listed in COC is not received	D20	No filtration info for dissolved analysis	R8	_____
D9	Sample received is not listed in COC	D21	No sample for moisture determination	R9	_____
D10	No initial/date on corrections in COC/label	D22	_____	R10	_____
D11	Container count mismatch COC vs received	D23	_____	R11	_____
D12	Container size mismatch COC vs received	D24	_____	R12	_____

REVIEWS:

Sample Labeling _____ **Date** 10/4/16 10/4/16

SRF _____ **Date** 10/4/16

PM my for Andy **Date** 10/4/16

GSO
GOLDEN STATE OVERNIGHT

800-322-5555 www.gso.com

Ship From
ADVANCED TECHNOLOGY LABORATORIES, INC.
MARLON CARTIN
3151 W. POST RD.
LAS VEGAS, NV 89118

Ship To
EMAX LABORATORIES
SAMPLE RECEIVING
1835 205TH STREET
TORRANCE, CA 90501

COD: $0.00
Weight: 0 lb(s)
Reference:

Delivery Instructions:

Signature Type: REQUIRED

Tracking #: 533504885 **CPS**

LAX **F**
TORRANCE

D90501A

57256363

Print Date: 10/3/2016 4:37 PM

LABEL INSTRUCTIONS:

Do not copy or reprint this label for additional shipments - each package must have a unique barcode.

Use the "Print Label" button on this page to print the shipping label on a laser or inkjet printer. Securely attach this label to your package, do not cover the barcode.

REPORTING CONVENTIONS

DATA QUALIFIERS:

Lab Qualifier	AFCEE Qualifier	Description
J	F	Indicates that the analyte is positively identified and the result is less than LOQ/RL but greater than LOD/MDL/DL.
N		Indicates presumptive evidence of a compound.
B	B	Indicates that the analyte is found in the associated method blank as well as in the sample at above QC level.
E	J	Indicates that the result is above the maximum calibration range or estimated value.
*	*	Out of QC limit.

Note: The above qualifiers are used to flag the results unless the project requires a different set of qualification criteria.

ACRONYMS AND ABBREVIATIONS:

CRDL	Contract Required Detection Limit
RL	Reporting Limit
MRL	Method Reporting Limit
MDL	Method Detection Limit
DL	Detection Limit
LOD	Limit of Detection
LOQ	Limit of Quantitation
DO	Diluted out

DATES

The date and time information for leaching and preparation reflect the beginning date and time of the procedure unless the method, protocol, or project specifically requires otherwise.

LABORATORY REPORT FOR

ASSET LABS

PG&E HINKLEY

METHOD SW6020A
DISSOLVED CHROMIUM BY ICP-MS

SDG#: 16J012

CASE NARRATIVE

Client : ASSET LABS

Project: PG&E HINKLEY

SDG : 16J012

METHOD SW6020A
DISSOLVED CHROMIUM BY ICP-MS

A total of two (2) water samples were received on 10/04/16 to be analyzed for Dissolved Chromium by ICP-MS in accordance with Method SW6020A and project specific requirements.

Holding Time
Samples were digested and analyzed within the prescribed holding time.

Calibration
Initial Calibration was established as prescribed by the method and was verified using a secondary source(ICV). Interference checks were performed and results were within required limits. Continuing calibration verifications and continuing calibration blanks were carried out at the frequency specified by the project. All calibration requirements were within acceptance criteria.

Method Blank
Method blank was prepared and analyzed at the frequency required by the project. For this SDG, one (1) method blank was analyzed. IMJ007WB - result was compliant to project requirement. Refer to sample result summary form for details.

Lab Control Sample
Lab control sample was prepared and analyzed at a frequency required by the project. For this SDG, one (1) set of LCS/LCD was analyzed. IMJ007WL/IMJ007WC were within LCS limits. Refer to LCS summary form for details.

Matrix QC Sample
No matrix QC sample was designated on this SDG. Analytical spike and serial dilution from a different SDG were analyzed and evaluated as appropriate. Results were within expected values.

Sample Analysis
Samples were analyzed according to prescribed analytical procedures. Results were evaluated in accordance to project requirements. For this SDG, all quality control requirements were met.

LAB CHRONICLE
DISSOLVED CHROMIUM BY ICP-MS

Client : ASSET LABS
Project : PG&E HINKLEY
SDG NO. : 16J012
Instrument ID : T-I98

WATER

Client Sample ID	Laboratory Sample ID	Dilution Factor	% Moist	Analysis DateTime	Extraction DateTime	Sample Data FN	Calibration Data FN	Prep. Batch	Notes
MBLK1W	IMJ007WB	1.00	NA	10/06/1619:32	10/05/1613:39	98J03081	98J03079	IMJ007W	Method Blank
LCS1W	IMJ007WL	1.00	NA	10/06/1619:37	10/05/1613:39	98J03082	98J03079	IMJ007W	Lab Control Sample (LCS)
LCD1W	IMJ007WC	1.00	NA	10/06/1619:41	10/05/1613:39	98J03083	98J03079	IMJ007W	LCS Duplicate
16E-ST011TW11	J006-11A	1.00	NA	10/06/1620:37	10/05/1613:39	98J03095	98J03091	IMJ007W	Analytical Spike Sample
16E-ST011TW11	J006-11	1.00	NA	10/06/1620:41	10/05/1613:39	98J03096	98J03091	IMJ007W	Field Sample
16E-ST011TW11	J006-11J	5.00	NA	10/06/1620:46	10/05/1613:39	98J03097	98J03091	IMJ007W	Diluted Sample
MW-55-120-Q316	J012-01	1.00	NA	10/06/1621:18	10/05/1613:39	98J03104	98J03102	IMJ007W	Field Sample
MW-55-120-EB-Q316	J012-02N	1.00	NA	10/13/1623:36	10/05/1613:39	98J04045	98J04037	IMJ007W	Field Sample

FN - Filename
% Moist - Percent Moisture

7991

METHOD SW6020A
DISSOLVED CHROMIUM BY ICP-MS

Client : ASSET LABS	Date Collected: 09/30/16 09:57
Project : PG&E HINKLEY	Date Received: 10/04/16
SDG NO. : 16J012	Date Extracted: 10/05/16 13:39
Sample ID: MW-55-120-Q316	Date Analyzed: 10/06/16 21:18
Lab Samp ID: J012-01	Dilution Factor: 1
Lab File ID: 98J03104	Matrix: WATER
Ext Btch ID: IMJ007W	% Moisture: NA
Calib. Ref.: 98J03102	Instrument ID: 98

PARAMETERS	Result (ug/L)	RL (ug/L)	MDL (ug/L)
Chromium	6.83	1.00	0.200

Note: Detection limits are reported relative to sample result significant figures.

Sample Amount : 50ml	Final Volume:50ml
Prepared by : SPara	Analyzed by:CCapul

METHOD SW6020A
DISSOLVED CHROMIUM BY ICP-MS

Client : ASSET LABS	Date Collected: 09/30/16 09:20
Project : PG&E HINKLEY	Date Received: 10/04/16
SDG NO. : 16J012	Date Extracted: 10/05/16 13:39
Sample ID: MW-55-120-EB-Q316	Date Analyzed: 10/13/16 23:36
Lab Samp ID: J012-02N	Dilution Factor: 1
Lab File ID: 98J04045	Matrix: WATER
Ext Btch ID: IMJ007W	% Moisture: NA
Calib. Ref.: 98J04037	Instrument ID: 98

PARAMETERS	Result (ug/L)	RL (ug/L)	MDL (ug/L)
Chromium	ND	1.00	0.200

Note: Detection limits are reported relative to sample result significant figures.

Sample Amount : 50ml	Final Volume:50ml
Prepared by : SPara	Analyzed by:CCapul

METHOD SW6020A
DISSOLVED CHROMIUM BY ICP-MS

Client	: ASSET LABS	Date Collected:	NA
Project	: PG&E HINKLEY	Date Received:	NA
SDG NO.	: 16J012	Date Extracted:	10/05/16 13:39
Sample ID:	MBLK1W	Date Analyzed:	10/06/16 19:32
Lab Samp ID:	IMJ007WB	Dilution Factor:	1
Lab File ID:	98J03081	Matrix:	WATER
Ext Btch ID:	IMJ007W	% Moisture:	NA
Calib. Ref.:	98J03079	Instrument ID:	98

PARAMETERS	Result (ug/L)	RL (ug/L)	MDL (ug/L)
Chromium	ND	1.00	0.200

Note: Detection limits are reported relative to sample result significant figures.

Sample Amount	: 50ml	Final Volume:	50ml
Prepared by	: SPara	Analyzed by:	CCapul

EMAX QUALITY CONTROL DATA
LAB CONTROL SAMPLE ANALYSIS

CLIENT : ASSET LABS
PROJECT : PG&E HINKLEY
BATCH NO. : 16J012
METHOD : SW6020A

MATRIX	: WATER		% MOISTURE:NA
DILUTION FACTOR	: 1.00	1.00	1.00
SAMPLE ID	: MBLK1W	LCS1W	LCD1W
LAB SAMPLE ID	: IMJ007WB	IMJ007WL	IMJ007WC
LAB FILE ID	: 98J03081	98J03082	98J03083
DATE PREPARED	: 10/05/16 13:39	10/05/16 13:39	10/05/16 13:39
DATE ANALYZED	: 10/06/16 19:32	10/06/16 19:37	10/06/16 19:41
PREP BATCH	: IMJ007W	IMJ007W	IMJ007W
CALIBRATION REF	: 98J03079	98J03079	98J03079

ACCESSION:

PARAMETERS	MBResult (ug/L)	SpikeAmt (ug/L)	LCSResult (ug/L)	LCSRec (%)	SpikeAmt (ug/L)	LCDResult (ug/L)	LCDRec (%)	RPD (%)	QCLimit (%)	MaxRPD (%)
Chromium	ND	30	29.8	99	30	29.8	99	0	85-115	20

EMAX QUALITY CONTROL DATA
SERIAL DILUTION ANALYSIS

CLIENT : ASSET LABS
PROJECT : PG&E HINKLEY
BATCH NO. : 16J012
METHOD : SW6020A

MATRIX	: WATER	% MOISTURE: NA
DILUTION FACTOR	: 1	5
SAMPLE ID	: 16E-ST011TW11	16E-ST011TW11
LAB SAMPLE ID	: J006-11	J006-11J
LAB FILE ID	: 98J03096	98J03097
DATE PREPARED	: 10/05/16 13:39	10/05/16 13:39
DATE ANALYZED	: 10/06/16 20:41	10/06/16 20:46
PREP BATCH	: IMJ007W	IMJ007W
CALIBRATION REF	: 98J03091	98J03091

ACCESSION:

PARAMETERS	Sample Result (ug/L)	SD Result (ug/L)	%Difference (%)	Max %D (%)
Chromium	ND	ND	0	10

SD - Serial Dilution

EMAX QUALITY CONTROL DATA
ANALYTICAL SPIKE ANALYSIS

CLIENT : ASSET LABS
PROJECT : PG&E HINKLEY
BATCH NO. : 16J012
METHOD : SW6020A

MATRIX	: WATER	% MOISTURE: NA
DILUTION FACTOR	: 1	1
SAMPLE ID	: 16E-ST011TW11	16E-ST011TW11
LAB SAMPLE ID	: J006-11	J006-11A
LAB FILE ID	: 98J03096	98J03095
DATE PREPARED	: 10/05/16 13:39	10/05/16 13:39
DATE ANALYZED	: 10/06/16 20:41	10/06/16 20:37
PREP BATCH	: IMJ007W	IMJ007W
CALIBRATION REF	: 98J03091	98J03091

ACCESSION:

PARAMETERS	Sample Result (ug/L)	Spike Amt (ug/L)	AS Result (ug/L)	AS Rec (%)	QC Limit (%)
Chromium	ND	30	31.7	106	80-120

AS - Analytical Spike

ICP QC CHECK TABLE

QC	ICV	CCV	ICSAB	ICSA	MLCV
Limit%	90-110	90-110	80-120	80-120	80-120
Comp	mg/L	mg/L	mg/L	mg/L	mg\L
Al	100	100	400	400	200
Sb	1.5	1.5	1	0	5
As	1	1	1	0	1
Ba	2	2	0.5	0	5
Be	1.5	1.5	0.5	0	5
B	2.5	2.5	0.5	0	5
Cd	2	2	1	0	5
Ca	75	75	500	500	250
Cr	2.5	2.5	0.5	0	5
Co	1	1	0.5	0	1
Cu	2.5	2.5	0.5	0	5
Fe	25	25	200	200	200
Pb	2.5	2.5	1	0	5
Li	0.5	0.5	1	0	0.5
Mg	60	60	200	200	100
Mn	2.5	2.5	0.5	0	5
Mo	2.5	2.5	1	0	5
Ni	2.5	2.5	1	0	5
K	60	60	75	0	250
Se	1	1	1	0	1
Ag	0.5	0.5	1	0	0.5
Na	60	60	75	0	150
Sr	0.5	0.5	0.5	0	0.5
Tl	2.5	2.5	1	0	5
Sn	0.5	0.5	1	0	0.5
Ti	0.5	0.5	1	0	0.5
V	1.5	1.5	0.5	0	5
Zn	2.5	2.5	1	0	5

EMAX LABORATORIES, INC.

ANALYSIS RUN LOG
for
ICP-MS

Note: For samples and relevant QCs/Standards analyzed, refer to attached analytical sequence.

Start Date: 10/6/16 13:34

End Date: 10/6/16 21:57

Comments:

All soil/solid samples are diluted at 10x dilution prior to analysis.

Filter Lot #: NA

J012702 C-K

Book #:	A98-041
Instrument No.:	98
Analytical Batch:	T98J03
Analytical Sequence:	98J03
Method File:	EM6020HR
Micropipette ID:	☑ 142781004
Micropipette ID:	☑ ICP-06
Micropipette ID:	☑ 339362028
Micropipette ID:	☑ GFAA-07
Micropipette ID:	☐
Micropipette ID:	☐
Micropipette ID:	☐

SOP #	Rev. #
☑ EMAX-6020	9
☐ EMAX-200.8	5
☐ EMAX-	
☐ EMAX-	
☐ EMAX-	

STANDARDS ID		STANDARDS ID	
S0	SM6B10.10.07	MRL1 (1)	SM6B10.12.01
S1	.10.08	MRL2 (0.5)	.12.02
S2	.11.01	MRL3 (1.0)	.12.03
S3	.11.02	MRL4	NA
S4	.11.03	MRL5	
S5	NA	MRL6	
S6		Internal Standard	SM6B07.100.01
S7		Post-Spike 1	SM6A.007.03.26
ICV	SM6B07.99.01	Post-Spike 2	03.27
CCV	SM6B10.11.04	Post-Spike 3	NA
ICSA	.11.05	Post-Spike 4	
ICSAB	.11.06		
6020 TUNE SOLN.	.13.03		
200.8 TUNE SOLN.	.13.04		

Analyzed By: CM

Date: 10/6/16

INITIAL CALIBRATION VERIFICATION SUMMARY FORM

Client : ASSET LABS
Project : PG&E HINKLEY
SDG NO. : 16J012
Method : METHOD SW6020A
Sequence : I98J03
InstrumentID: 98

		ICV	ICSA	ICSAB
Lab Samp ID	:	ICV	ICSA	ICSAB
QC Limit	:	%R:90-110/RSD:<5	%R:80-120/<LOD	%R:80-120
Lab File ID	:	98J03009	98J03013	98J03014
DateAnalyed	:	10/06/1614:01	10/06/1614:20	10/06/1614:25

Parameter		Result	ICV EV	RSD	%Recovery	Result	ICSA EV	%Rec/LOD	Result	ICSAB EV	%Recovery
Lithium		29.44	30	1.22	98	.3057	0	>0	20.01	20	100
Beryllium		29.46	30	2.53	98	.009857	0	<0.1	20.38	20	102
Boron		28.85	30	2.88	96	.6423	0	<5.0	19.31	20	97
Sodium		28880	30000	0.31	96	100300	100000	100	96520	100000	97
Magnesium		29100	30000	2.11	97	98170	100000	98	96620	100000	97
Aluminum		29790	30000	0.81	99	100100	100000	100	98600	100000	99
Silicon		3072	3000	0.60	102	9.676	0	<20	9.91	200	5*
Phosphorus		295.1	300	0.93	98	102700	100000	103	101800	100000	102
Potassium		30150	30000	2.51	100	98640	100000	99	100100	100000	100
Calcium		27990	30000	0.62	93	100400	100000	100	95660	100000	96
Titanium		293.7	300	0.39	98	2208	2000	110	2234	2000	112
Vanadium		294.8	300	1.98	98	-.01977	0	<0.5	20.02	20	100
Chromium	T	302.9	300	2.11	101	1.337	0	>0.2	21.44	20	107
Manganese		1849	2000	0.23	92	.331	0	>0.2	20	20	100
Iron		28860	30000	1.64	96	97590	100000	98	95980	100000	96
Cobalt		278.4	300	0.72	93	.3254	0	>0.2	19.99	20	100
Nickel		294.1	300	2.41	98	.08287	0	<0.2	19.67	20	98
Copper		295	300	2.37	98	.7252	0	>0.5	20.23	20	101
Zinc		297.1	300	0.37	99	3.052	0	<10	21.66	20	108
Arsenic		288.8	300	1.66	96	.17	0	<0.2	20.84	20	104
Selenium		288.2	300	0.34	96	.2202	0	<0.3	22.21	20	111
Strontium		289.3	300	0.93	96	.6603	0	<1.0	19.89	20	99
Zirconium		25.89	30	1.91	86*	1.559	0	<2.0	7.75	20	39*
Molybdenum		286	300	2.04	95	2041	2000	102	2029	2000	101
Silver		29.44	30	2.64	98	.02579	0	<0.2	19.72	20	99
Cadmium		289.6	300	2.60	97	.3216	0	>0.2	19.85	20	99
Tin		301.3	300	0.91	100	.0476	0	<0.2	20.25	20	101
Antimony		58.86	60	0.44	98	.06029	0	<0.5	20.17	20	101
Barium		306.8	300	0.25	102	.1093	0	<0.5	21.14	20	106
Tungsten		29.24	30	0.73	97	.1308	0	<1.0	19.08	20	95
Thallium		287.5	300	0.78	96	.006298	0	<0.2	20.05	20	100
Lead		272.4	300	0.65	91	.2191	0	>0.1	18.93	20	95
Uranium		286.1	300	1.02	95	.005057	0	<0.1	19.78	20	99

Unit: ug/L
T: Target analyte
EV: Expected Value
Comment: * Out of QC limit

CONTINUING CALIBRATION BLANK SUMMARY FORM

Client : ASSET LABS
Project : PG&E HINKLEY
SDG NO. : 16J012
Method : SW6020A
Sequence : I98J03
Instrument ID: 98

CB SampleID		: ICB		CCB1		CCB7		CCB8		CCB9	
CB DataFileID		: 98J03010		98J03017		98J03080		98J03092		98J03103	
CB DateTime		: 10/06/1614:06		10/06/1614:38		10/06/1619:27		10/06/1620:23		10/06/1621:13	
PARAMETER	LOD	RESULT	< LOD >	RESULT	< LOD >	RESULT	< LOD >	RESULT	< LOD >	RESULT	< LOD >
Lithium	0	0.02	>0	0.07	>0	0.07	>0	0.2	>0	0.02	>0
Beryllium	0.1	0.003	<0.1	0.006	<0.1	0.005	<0.1	0.008	<0.1	0.002	<0.1
Boron	5.0	0.03	<5.0	0.06	<5.0	0.2	<5.0	0.7	<5.0	0.5	<5.0
Sodium	50	10	<50	10	<50	8	<50	8	<50	5	<50
Magnesium	10	0.7	<10	0.2	<10	0.05	<10	0.3	<10	0.3	<10
Aluminum	20	2	<20	0.3	<20	0.4	<20	0.3	<20	0.3	<20
Silicon	20	2	<20	2	<20	7	<20	8	<20	3	<20
Phosphorus	25	3	<25	3	<25	3	<25	5	<25	5	<25
Potassium	20	4	<20	0.4	<20	0.7	<20	0.6	<20	3	<20
Calcium	25	6	<25	2	<25	0.010	<25	1	<25	0.2	<25
Titanium	0.5	0.03	<0.5	0.03	<0.5	0.002	<0.5	0.010	<0.5	0.008	<0.5
Vanadium	0.5	0.006	<0.5	0.02	<0.5	0.02	<0.5	0.08	<0.5	0.08	<0.5
Chromium T	0.2	0.04	<0.2	0.005	<0.2	0.009	<0.2	0.008	<0.2	0.004	<0.2
Manganese	0.2	0.1	<0.2	0.01	<0.2	0.006	<0.2	0.009	<0.2	0.02	<0.2
Iron	10	7	<10	3	<10	2	<10	3	<10	2	<10
Cobalt	0.2	0.02	<0.2	0.004	<0.2	0.006	<0.2	0.003	<0.2	0.004	<0.2
Nickel	0.2	0.04	<0.2	0.08	<0.2	0.09	<0.2	0.09	<0.2	0.1	<0.2
Copper	0.5	0.03	<0.5	0.02	<0.5	0.05	<0.5	0.05	<0.5	0.05	<0.5
Zinc	10	0.03	<10	0.008	<10	0.08	<10	0.10	<10	0.10	<10
Arsenic	0.2	0.1	<0.2	0.05	<0.2	0.08	<0.2	0.03	<0.2	0.05	<0.2
Selenium	0.3	0.1	<0.3	0.06	<0.3	0.04	<0.3	0.04	<0.3	0.04	<0.3
Strontium	1.0	0.01	<1.0	0.005	<1.0	0.002	<1.0	0.001	<1.0	0.003	<1.0
Zirconium	2.0	1	<2.0	1	<2.0	1	<2.0	1	<2.0	1	<2.0
Molybdenum	0.5	0.1	<0.5	0.1	<0.5	0.09	<0.5	0.1	<0.5	0.1	<0.5
Silver	0.2	0.004	<0.2	0.004	<0.2	0.002	<0.2	0.0010	<0.2	0.001	<0.2
Cadmium	0.2	0.03	<0.2	0.01	<0.2	0.009	<0.2	0.006	<0.2	0.008	<0.2
Tin	0.2	0.10	<0.2	0.04	<0.2	0.04	<0.2	0.04	<0.2	0.04	<0.2
Antimony	0.5	0.01	<0.5	0.0007	<0.5	0.001	<0.5	0.03	<0.5	0.02	<0.5
Barium	0.5	0.02	<0.5	0.01	<0.5	0.009	<0.5	0.004	<0.5	0.007	<0.5
Tungsten	1.0	0.07	<1.0	0.03	<1.0	0.03	<1.0	0.04	<1.0	0.05	<1.0
Thallium	0.2	0.04	<0.2	0.02	<0.2	0.010	<0.2	0.01	<0.2	0.01	<0.2
Lead	0.1	0.04	<0.1	0.01	<0.1	0.02	<0.1	0.01	<0.1	0.010	<0.1
Uranium	0.1	0.03	<0.1	0.01	<0.1	0.02	<0.1	0.01	<0.1	0.02	<0.1

CB SampleID		: CCB10	
CB DataFileID		: 98J03112	
CB DateTime		: 10/06/1621:55	
PARAMETER	LOD	RESULT	< LOD >
Lithium	0	0.03	>0
Beryllium	0.1	0.002	<0.1
Boron	5.0	0.5	<5.0
Sodium	50	30	<50
Magnesium	10	1	<10
Aluminum	20	0.3	<20
Silicon	20	3	<20
Phosphorus	25	2	<25
Potassium	20	1	<20
Calcium	25	0.9	<25
Titanium	0.5	0.04	<0.5
Vanadium	0.5	0.07	<0.5
Chromium T	0.2	0.002	<0.2
Manganese	0.2	0.02	<0.2
Iron	10	4	<10
Cobalt	0.2	0.005	<0.2
Nickel	0.2	0.03	<0.2
Copper	0.5	0.005	<0.5
Zinc	10	0.1	<10

Arsenic	0.2	0.05	<0.2
Selenium	0.3	0.04	<0.3
Strontium	1.0	0.003	<1.0
Zirconium	2.0	1	<2.0
Molybdenum	0.5	0.3	<0.5
Silver	0.2	0.001	<0.2
Cadmium	0.2	0.01	<0.2
Tin	0.2	0.04	<0.2
Antimony	0.5	0.004	<0.5
Barium	0.5	0.005	<0.5
Tungsten	1.0	0.08	<1.0
Thallium	0.2	0.009	<0.2
Lead	0.1	0.008	<0.1
Uranium	0.1	0.01	<0.1

Unit: ug/L
CB: Calibration Blank
T: Target analyte
Acceptance Criteria: CCB Result <LOD
Comment:

CONTINUING CALIBRATION VERIFICATION SUMMARY FORM

Client : ASSET LABS
Project : PG&E HINKLEY
SDG NO. : 16J012
Method : METHOD SW6020A
Sequence : I98J03
Instrument ID: 98

CCV SampleID		: CCV1			CCV7			CCV8			CCV9			CCV10
CCV DataFileID		: 98J03016			98J03079			98J03091			98J03102			98J0311
CCV DateTime		: 10/06/16 14:34			10/06/16 19:23			10/06/16 20:18			10/06/16 21:09			10/06/1
PARAMETER	CCV EV	RESULT	%REC	RSD	RESULT	%REC	RSD	RESULT	%REC	RSD	RESULT	%REC	RSD	RESULT
Lithium	25	25.0	100	2.05	25.6	102	1.77	26.0	104	0.48	25.7	103	2.78	25.1
Beryllium	25	25.7	103	1.07	26.7	107	1.34	26.8	107	0.27	25.9	104	0.92	25.3
Boron	50	52.8	106	2.03	52.5	105	1.63	53.6	107	1.74	52.2	104	2.43	52.3
Sodium	25000	24600	99	1.05	24600	98	0.60	24600	98	0.68	24600	98	1.58	24400
Magnesium	25000	25200	101	1.87	23700	95	1.24	23500	94	1.40	23600	95	2.90	25100
Aluminum	25000	25600	102	1.38	24100	96	1.08	24100	97	0.35	24200	97	2.70	25200
Silicon	2500	2490	100	0.98	2550	102	0.46	2490	100	0.56	2480	99	1.52	2490
Phosphorus	250	258	103	1.01	240	96	0.88	234	93	0.90	236	95	1.37	247
Potassium	25000	25600	102	0.76	25100	100	2.29	25000	100	1.20	25100	101	0.85	25200
Calcium	25000	24900	100	0.50	25300	101	0.47	25100	100	0.34	25100	100	0.90	24600
Titanium	250	253	101	1.06	247	99	0.81	247	99	0.53	249	99	1.71	246
Vanadium	250	251	101	1.24	246	99	1.17	247	99	0.89	247	99	0.70	247
Chromium T	250	254	102	1.24	248	99	1.23	250	100	0.83	248	99	0.74	247
Manganese	1500	1520	101	1.11	1510	100	1.29	1510	100	1.51	1520	101	2.97	1510
Iron	25000	24800	99	0.50	24500	98	0.65	24500	98	0.07	24600	98	0.58	24600
Cobalt	250	267	107	2.26	246	98	1.68	247	99	1.42	247	99	2.78	247
Nickel	250	255	102	1.65	249	100	1.34	251	100	1.15	247	99	0.48	246
Copper	250	254	102	1.51	247	99	0.90	249	100	1.15	247	99	0.84	244
Zinc	250	243	97	2.90	249	100	0.42	249	99	1.60	250	100	0.55	253
Arsenic	250	250	100	0.51	245	98	0.84	243	97	0.70	248	99	0.80	245
Selenium	250	250	100	0.43	247	99	0.86	247	99	1.14	246	98	0.60	247
Strontium	250	252	101	1.18	253	101	0.79	255	102	0.06	251	100	1.30	249
Zirconium	25	25.9	104	1.81	25.6	102	1.27	25.3	101	0.36	24.7	99	0.56	24.4
Molybdenum	250	250	100	2.65	239	95	1.09	240	96	1.89	240	96	1.86	242
Silver	25	25.5	102	0.47	25.2	101	0.65	25.1	100	0.25	25.6	102	1.16	25.1
Cadmium	250	236	95	4.31	240	96	0.63	243	97	0.36	243	97	0.57	246
Tin	250	255	102	1.68	249	100	1.68	252	101	0.89	251	101	0.94	253
Antimony	50	49.2	98	0.70	49.1	98	0.86	49.6	99	0.17	49.4	99	0.13	48.6
Barium	500	513	103	2.49	509	102	0.47	508	102	0.77	508	102	0.68	502
Tungsten	25	25.6	103	2.18	25.1	101	0.39	25.1	100	0.21	25.3	101	1.80	24.6
Thallium	250	252	101	1.92	257	103	0.73	255	102	0.44	260	104	1.92	253
Lead	250	257	103	2.40	255	102	1.10	255	102	1.00	256	102	1.47	254
Uranium	250	243	97	2.43	247	99	0.54	247	99	1.07	248	99	1.31	246

Unit: ug/L
T: Target analyte
%Rec QC Limit: 90-110
RSD QC Limit: <5
CCV EV: CCV Expected Value ug/L
Comment:

	Method	Type	Vial	Data File	Sample	Comment	Dil/Lvl	Final WT or Vol	Sample WT or Vol	Dil Multiplier	ISTD Conc	Action on Failure	Skip	Result
1		Keyword		TUNBEG	Start of TUNE									
2	C:\ICPCHEM\1\METHODS\TN6020_C.M	Tun6	1301	98J03001	6020tunchk		1.000							
3	C:\ICPCHEM\1\METHODS\TN200_8C.M	Tun2	1302	98J03002	2008tunchk		1.000							
4		Keyword		TUNEND	End of TUNE									
5		Keyword		CALBEG	Start of CALIB									
6	C:\ICPCHEM\1\METHODS\EM6020HR.M	CalBlk	1101	98J03003	BLNK		Level 1							
7	C:\ICPCHEM\1\METHODS\EM6020HR.M	CalBlk	1202	98J03004	S0		Level 1							
8	C:\ICPCHEM\1\METHODS\EM6020HR.M	CalStd	1104	98J03005	S1 0.5		Level 2							
9	C:\ICPCHEM\1\METHODS\EM6020HR.M	CalStd	1105	98J03006	S2 50		Level 3							
10	C:\ICPCHEM\1\METHODS\EM6020HR.M	CalStd	1106	98J03007	S3 250		Level 4							
11	C:\ICPCHEM\1\METHODS\EM6020HR.M	CalStd	1107	98J03008	S4 500		Level 5							
12	C:\ICPCHEM\1\METHODS\EM6020HR.M	ICV1	1204	98J03009	ICV		1.000							
13	C:\ICPCHEM\1\METHODS\EM6020HR.M	ICB	1202	98J03010	ICB		1.000							
14	C:\ICPCHEM\1\METHODS\EM6020HR.M	Sample	1306	98J03011	MRLJ0601	0.5/50/4 ppb	1.000							
15	C:\ICPCHEM\1\METHODS\EM6020HR.M	Sample	1305	98J03012	MRLJ0602	1/100/10 ppb	1.000							
16	C:\ICPCHEM\1\METHODS\EM6020HR.M	ICS-A	1303	98J03013	ICSA		1.000							
17	C:\ICPCHEM\1\METHODS\EM6020HR.M	ICS-AB	1304	98J03014	ICSAB		1.000							
18	C:\ICPCHEM\1\METHODS\EM6020HR.M	Sample	1207	98J03015	MRLJ0603	500 ppb CAT	1.000							
19	C:\ICPCHEM\1\METHODS\EM6020HR.M	CCV	1206	98J03016	CCV1		1.000							
20	C:\ICPCHEM\1\METHODS\EM6020HR.M	CCB	1202	98J03017	CCB1		1.000							
21		Keyword		CALEND	End of CALIB									
22		Keyword		SMPLBEG	Start of SMPL									
23	C:\ICPCHEM\1\METHODS\EM6020HR.M	MBW	2101	98J03018	IMJ001WB	Cat	1.000							
24	C:\ICPCHEM\1\METHODS\EM6020HR.M	LCS	2102	98J03019	IMJ001WL		1.000							
25	C:\ICPCHEM\1\METHODS\EM6020HR.M	LCS	2103	98J03020	IMJ001WC		1.000							
26	C:\ICPCHEM\1\METHODS\EM6020HR.M	Sample	2104	98J03021	I268-02A		1.000							
27	C:\ICPCHEM\1\METHODS\EM6020HR.M	Sample	2105	98J03022	I268-02N		1.000							
28	C:\ICPCHEM\1\METHODS\EM6020HR.M	Sample	2106	98J03023	I268-02J		5.000							
29	C:\ICPCHEM\1\METHODS\EM6020HR.M	Sample	2107	98J03024	I268-04N	Ca710R	1.000							
30	C:\ICPCHEM\1\METHODS\EM6020HR.M	Sample	2108	98J03025	I268-05N		1.000							
31	C:\ICPCHEM\1\METHODS\EM6020HR.M	Sample	2109	98J03026	I268-04I	Ca	5.000							
32	C:\ICPCHEM\1\METHODS\EM6020HR.M	Sample	1101	98J03027	BLANK		1.000							
33	C:\ICPCHEM\1\METHODS\EM6020HR.M	CCV	1206	98J03028	CCV2		1.000							
34	C:\ICPCHEM\1\METHODS\EM6020HR.M	CCB	1202	98J03029	CCB2		1.000							
35	C:\ICPCHEM\1\METHODS\EM6020HR.M	MBS	2110	98J03030	IMJ004SB	Cat	1.000							
36	C:\ICPCHEM\1\METHODS\EM6020HR.M	LCSS	2111	98J03031	IMJ004SL		1.000							
37	C:\ICPCHEM\1\METHODS\EM6020HR.M	LCSS	2112	98J03032	IMJ004SC		1.000							
38	C:\ICPCHEM\1\METHODS\EM6020HR.M	Sample	2201	98J03033	I270-15M		1.000							
39	C:\ICPCHEM\1\METHODS\EM6020HR.M	Sample	2202	98J03034	I270-15S		1.000							
40	C:\ICPCHEM\1\METHODS\EM6020HR.M	Sample	2203	98J03035	I270-15A		1.000							
41	C:\ICPCHEM\1\METHODS\EM6020HR.M	Sample	2204	98J03036	I270-15		1.000							
42	C:\ICPCHEM\1\METHODS\EM6020HR.M	Sample	2205	98J03037	I270-15J		5.000							
43	C:\ICPCHEM\1\METHODS\EM6020HR.M	Sample	2206	98J03038	I258-05I		5.000							
44	C:\ICPCHEM\1\METHODS\EM6020HR.M	Sample	1101	98J03039	BLANK		1.000							
45	C:\ICPCHEM\1\METHODS\EM6020HR.M	CCV	1206	98J03040	CCV3		1.000							
46	C:\ICPCHEM\1\METHODS\EM6020HR.M	CCB	1202	98J03041	CCB3		1.000							
47	C:\ICPCHEM\1\METHODS\EM6020HR.M	MBS	2110	98J03042	IMJ004SB	✓	1.000							
48	C:\ICPCHEM\1\METHODS\EM6020HR.M	LCSS	2111	98J03043	IMJ004SL		1.000							
49	C:\ICPCHEM\1\METHODS\EM6020HR.M	LCSS	2112	98J03044	IMJ004SC		1.000							
50	C:\ICPCHEM\1\METHODS\EM6020HR.M	Sample	1101	98J03045	BLANK		1.000							
51	C:\ICPCHEM\1\METHODS\EM6020HR.M	MBW	2101	98J03046	IMJ001WB	✓	1.000							

	Method	Type	Vial	Data File	Sample	Comment	Dil/Lvl	Final WT or Vol	Sample WT or Vol	Dil Multiplier	ISTD Conc	Action on Failure	Skip	Result
52	C:\ICPCHEM\1\METHODS\EM6020HR.M	LCS	2102	98J03047	IMJ001WL		1.000							
53	C:\ICPCHEM\1\METHODS\EM6020HR.M	LCS	2103	98J03048	IMJ001WC		1.000							
54	C:\ICPCHEM\1\METHODS\EM6020HR.M	CCV	1206	98J03049	CCV4		1.000							
55	C:\ICPCHEM\1\METHODS\EM6020HR.M	CCB	1202	98J03050	CCB4		1.000							
56	C:\ICPCHEM\1\METHODS\EM6020HR.M	Sample	2207	98J03051	I270-16		1.000							
57	C:\ICPCHEM\1\METHODS\EM6020HR.M	Sample	2208	98J03052	I269-08		1.000							
58	C:\ICPCHEM\1\METHODS\EM6020HR.M	Sample	2209	98J03053	I269-09		1.000							
59	C:\ICPCHEM\1\METHODS\EM6020HR.M	Sample	2210	98J03054	I269-16		1.000							
60	C:\ICPCHEM\1\METHODS\EM6020HR.M	Sample	2211	98J03055	I233-01		1.000							
61	C:\ICPCHEM\1\METHODS\EM6020HR.M	Sample	2212	98J03056	I233-02		1.000							
62	C:\ICPCHEM\1\METHODS\EM6020HR.M	Sample	2301	98J03057	I233-03		1.000							
63	C:\ICPCHEM\1\METHODS\EM6020HR.M	Sample	2302	98J03058	I233-04		1.000							
64	C:\ICPCHEM\1\METHODS\EM6020HR.M	Sample	2303	98J03059	I233-05		1.000							
65	C:\ICPCHEM\1\METHODS\EM6020HR.M	Sample	1101	98J03060	BLANK		1.000							
66	C:\ICPCHEM\1\METHODS\EM6020HR.M	CCV	1206	98J03061	CCV5		1.000							
67	C:\ICPCHEM\1\METHODS\EM6020HR.M	CCB	1202	98J03062	CCB5		1.000							
68	C:\ICPCHEM\1\METHODS\EM6020HR.M	Sample	2510	98J03063	I190-06		1.000							
69	C:\ICPCHEM\1\METHODS\EM6020HR.M	Sample	2511	98J03064	I190-07		1.000							
70	C:\ICPCHEM\1\METHODS\EM6020HR.M	Sample	1101	98J03065	BLANK		1.000							
71	C:\ICPCHEM\1\METHODS\EM6020HR.M	Sample	1305	98J03066	MRLJ0604	1/100/10 ppb	1.000							
72	C:\ICPCHEM\1\METHODS\EM6020HR.M	CCV	1206	98J03067	CCV6		1.000							
73	C:\ICPCHEM\1\METHODS\EM6020HR.M	CCB	1202	98J03068	CCB6		1.000							
74	C:\ICPCHEM\1\METHODS\EM6020HR.M	Sample	2304	98J03069	I233-06		1.000							
75	C:\ICPCHEM\1\METHODS\EM6020HR.M	Sample	2305	98J03070	I233-07		1.000							
76	C:\ICPCHEM\1\METHODS\EM6020HR.M	Sample	2306	98J03071	I233-08		1.000							
77	C:\ICPCHEM\1\METHODS\EM6020HR.M	Sample	2307	98J03072	I233-09		1.000							
78	C:\ICPCHEM\1\METHODS\EM6020HR.M	Sample	2308	98J03073	I233-10		1.000							
79	C:\ICPCHEM\1\METHODS\EM6020HR.M	Sample	2309	98J03074	I233-11		1.000							
80	C:\ICPCHEM\1\METHODS\EM6020HR.M	Sample	2310	98J03075	I233-12		1.000							
81	C:\ICPCHEM\1\METHODS\EM6020HR.M	Sample	2311	98J03076	I233-13		1.000							
82	C:\ICPCHEM\1\METHODS\EM6020HR.M	Sample	2312	98J03077	I233-14		1.000							
83	C:\ICPCHEM\1\METHODS\EM6020HR.M	Sample	1101	98J03078	BLANK		1.000							
84	C:\ICPCHEM\1\METHODS\EM6020HR.M	CCV	1206	98J03079	CCV7		1.000							
85	C:\ICPCHEM\1\METHODS\EM6020HR.M	CCB	1202	98J03080	CCB7		1.000							
86	C:\ICPCHEM\1\METHODS\EM6020HR.M	MBW	2401	98J03081	IMJ007WB		1.000							
87	C:\ICPCHEM\1\METHODS\EM6020HR.M	LCS	2402	98J03082	IMJ007WL		1.000							
88	C:\ICPCHEM\1\METHODS\EM6020HR.M	LCS	2403	98J03083	IMJ007WC		1.000							
89	C:\ICPCHEM\1\METHODS\EM6020HR.M	Sample	2404	98J03084	I290-04	Ca>10K (10X)	1.000							
90	C:\ICPCHEM\1\METHODS\EM6020HR.M	Sample	2405	98J03085	J006-02	Ca, Mn>10K (1X)	1.000							
91	C:\ICPCHEM\1\METHODS\EM6020HR.M	Sample	2406	98J03086	J006-04	Ca>10K (1X)	1.000							
92	C:\ICPCHEM\1\METHODS\EM6020HR.M	Sample	2407	98J03087	J006-05	Ca>10K (10X)	1.000							
93	C:\ICPCHEM\1\METHODS\EM6020HR.M	Sample	2408	98J03088	J006-06		1.000							
94	C:\ICPCHEM\1\METHODS\EM6020HR.M	Sample	2409	98J03089	J006-07		1.000							
95	C:\ICPCHEM\1\METHODS\EM6020HR.M	Sample	1101	98J03090	BLANK		1.000							
96	C:\ICPCHEM\1\METHODS\EM6020HR.M	CCV	1206	98J03091	CCV8		1.000							
97	C:\ICPCHEM\1\METHODS\EM6020HR.M	CCB	1202	98J03092	CCB8		1.000							
98	C:\ICPCHEM\1\METHODS\EM6020HR.M	Sample	2410	98J03093	J006-11M	Ca>10K (1X)	1.000							
99	C:\ICPCHEM\1\METHODS\EM6020HR.M	Sample	2411	98J03094	J006-11S		1.000							
100	C:\ICPCHEM\1\METHODS\EM6020HR.M	Sample	2412	98J03095	J006-11A		1.000							
101	C:\ICPCHEM\1\METHODS\EM6020HR.M	Sample	2501	98J03096	J006-11		1.000							
102	C:\ICPCHEM\1\METHODS\EM6020HR.M	Sample	2502	98J03097	J006-11J		5.000							

	Method	Type	Vial	Data File	Sample	Comment	Dil/Lvl	Final WT or Vol	Sample WT or Vol	Dil Multiplier	ISTD Conc	Action on Failure	Skip	Result
103	C:\ICPCHEM\1\METHODS\EM6020HR.M	Sample	2503	98J03098	J006-12	Ca2uPR	1.000							
104	C:\ICPCHEM\1\METHODS\EM6020HR.M	Sample	2504	98J03099	J006-13		1.000							
105	C:\ICPCHEM\1\METHODS\EM6020HR.M	Sample	2505	98J03100	J006-14		1.000							
106	C:\ICPCHEM\1\METHODS\EM6020HR.M	Sample	1101	98J03101	BLANK		1.000							
107	C:\ICPCHEM\1\METHODS\EM6020HR.M	CCV	1206	98J03102	CCV9		1.000							
108	C:\ICPCHEM\1\METHODS\EM6020HR.M	CCB	1202	98J03103	CCB9		1.000							
109	C:\ICPCHEM\1\METHODS\EM6020HR.M	Sample	2506	98J03104	J012-01		1.000							
110	C:\ICPCHEM\1\METHODS\EM6020HR.M	Sample	2507	98J03105	J012-02	Ca IS fail	1.000							
111	C:\ICPCHEM\1\METHODS\EM6020HR.M	Sample	2508	98J03106	I485-01I		50.00							
112	C:\ICPCHEM\1\METHODS\EM6020HR.M	Sample	2509	98J03107	I485-01R		50.00							
113	C:\ICPCHEM\1\METHODS\EM6020HR.M	Sample	1101	98J03108	BLANK		1.000							
114	C:\ICPCHEM\1\METHODS\EM6020HR.M	ICS-A	1303	98J03109	ICSA2		1.000							
115	C:\ICPCHEM\1\METHODS\EM6020HR.M	ICS-AB	1304	98J03110	ICSAB2		1.000							
116	C:\ICPCHEM\1\METHODS\EM6020HR.M	CCV	1206	98J03111	CCV10		1.000							
117	C:\ICPCHEM\1\METHODS\EM6020HR.M	CCB	1202	98J03112	CCB10		1.000							
118		Keyword		StandBy										
119		Keyword		SMPLEND	End of SMPL									
120		Keyword		End	End of Sequence									
121		Keyword		CCVBEG	Start of CCV									
122		Keyword		CCVEND	End of CCV									
123		Keyword		BLKBEG	Start of BLANK									
124		Keyword		BLKEND	End of BLANK									
125		Keyword		ERRBEG	Start of ERRTERM									
126		Keyword		ERREND	End of ERRTERM									

Last Calib: Oct 06, 2016 02:00 pm
Calibration Type: External Calibration Method
Calibration Title:
Weighting Method: 1/(SD*SD)
Mass Interpolation Fit for VIS: Point to Point
Method: C:\ICPCHEM\1\METHODS\EM6020HR.M
Multi Tune: #1 h2.u
#2 he.u
#3 norm.u

=== Standard Files ===
<Data Correction>
Bkg File: ---
Rejected Masses: ---
Interference Correction: ON

	Data File	Sample Name	Date Acquired
1	d:\data\i982016\j\i98j03.b\98j03004.d\98j03004.d#	S0	Oct 6 2016 01:38 pm
2	d:\data\i982016\j\i98j03.b\98j03005.d\98j03005.d#	S1 0.5	Oct 6 2016 01:43 pm
3	d:\data\i982016\j\i98j03.b\98j03006.d\98j03006.d#	S2 50	Oct 6 2016 01:48 pm
4	d:\data\i982016\j\i98j03.b\98j03007.d\98j03007.d#	S3 250	Oct 6 2016 01:52 pm
5	d:\data\i982016\j\i98j03.b\98j03008.d\98j03008.d#	S4 500	Oct 6 2016 01:57 pm
6	---		
7	---		
8	---		
9	---		
10	---		
11	---		
12	---		
13	---		
14	---		
15	---		
16	---		
17	---		
18	---		
19	---		
20	---		

Calibration - d:\DATA\I982016\J\I98J03.B\EM6020HR.C

=== ISTD Table ===

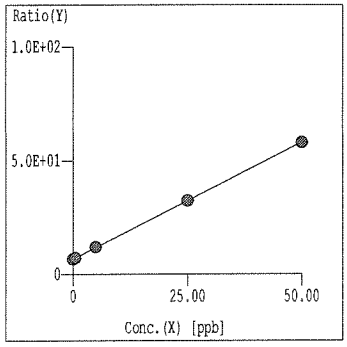
Fix ISTD Conc: ON

	Step	Mass	Element	VIS	Units	All Levels
1	3	6	Li		ppb	100.0
2	1	45	Sc		ppb	100.0
3	2	45	Sc		ppb	100.0
4	3	45	Sc		ppb	100.0
5	1	72	Ge		ppb	100.0
6	2	72	Ge		ppb	100.0
7	3	72	Ge		ppb	100.0
8	3	115	In		ppb	100.0
9	3	159	Tb		ppb	100.0
10	3	209	Bi		ppb	100.0

CLIENT

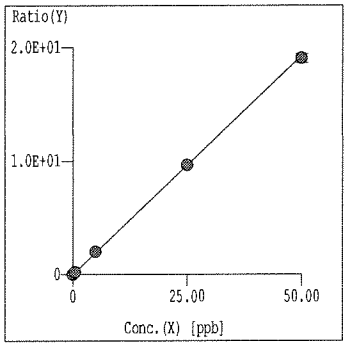
=== Graph Detail ===

Step Mass Element (3) 7 Li | ISTD 6 | Unit ppb



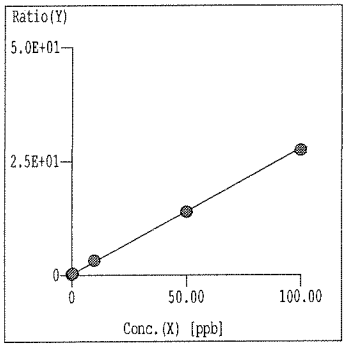
Curve Fit: Y=aX+b
r = 1.0000
Y = 1.028E+000*X +6.705E+000
X = 9.725E-001*Y -6.520E+000
DL = 4.440E-01 ppb
BEC = 6.520 ppb

Step Mass Element (3) 9 Be | ISTD 6 | Unit ppb



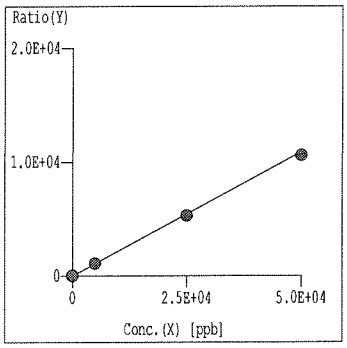
Curve Fit: Y=aX+b
r = 1.0000
Y = 3.852E-001*X +7.513E-003
X = 2.596E+000*Y -1.951E-002
DL = 1.536E-02 ppb
BEC = 1.951E-02 ppb

Step Mass Element (3) 11 B | ISTD 6 | Unit ppb



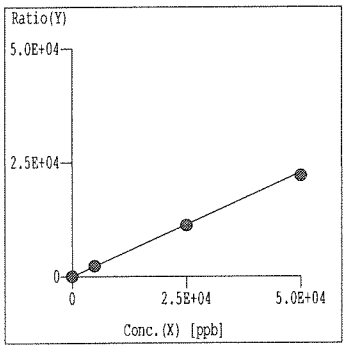
Curve Fit: Y=aX+b
r = 0.9999
Y = 2.764E-001*X +2.099E-001
X = 3.618E+000*Y -7.592E-001
DL = 1.193E-01 ppb
BEC = 7.592E-01 ppb

Step Mass Element (1) 23 Na | ISTD 45 | Unit ppb



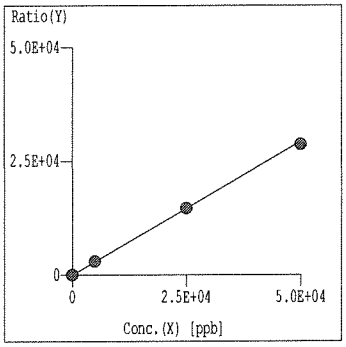
Curve Fit: Y=aX+b
r = 1.0000
Y = 2.175E-001*X +8.041E+000
X = 4.597E+000*Y -3.696E+001
DL = 1.006 ppb
BEC = 36.96 ppb

Step Mass Element (3) 24 Mg | ISTD 45 | Unit ppb



Curve Fit: Y=aX+b
r = 1.0000
Y = 4.574E-001*X +1.446E+000
X = 2.186E+000*Y -3.161E+000
DL = 1.829E-01 ppb
BEC = 3.161 ppb

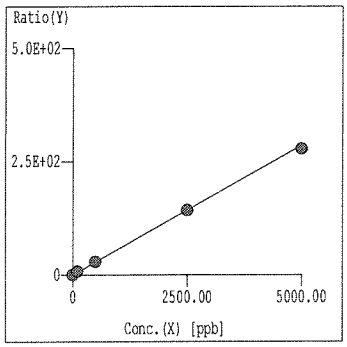
Step Mass Element (3) 27 Al | ISTD 45 | Unit ppb



Curve Fit: Y=aX+b
r = 0.9999
Y = 5.856E-001*X +2.704E-001
X = 1.708E+000*Y -4.617E-001
DL = 3.896E-02 ppb
BEC = 4.617E-01 ppb

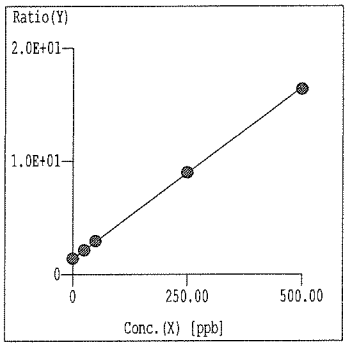
=== Graph Detail ===

Step Mass Element (1) 28 Si | ISTD 45 | Unit ppb



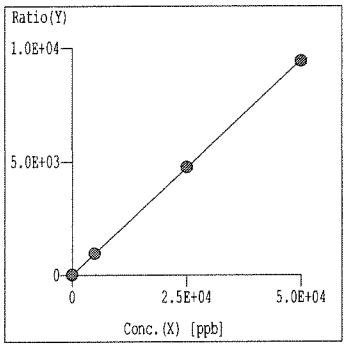
Curve Fit: Y=aX+b
r = 0.9999
Y = 5.707E-002*X +1.041E-001
X = 1.752E+001*Y -1.824E+000
DL = 4.934E-01 ppb
BEC = 1.824 ppb

Step Mass Element (3) 31 P | ISTD 45 | Unit ppb



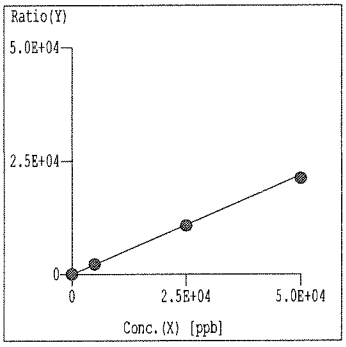
Curve Fit: Y=aX+b
r = 1.0000
Y = 3.030E-002*X +1.372E+000
X = 3.300E+001*Y -4.528E+001
DL = 3.477 ppb
BEC = 45.28 ppb

Step Mass Element (2) 39 K | ISTD 45 | Unit ppb



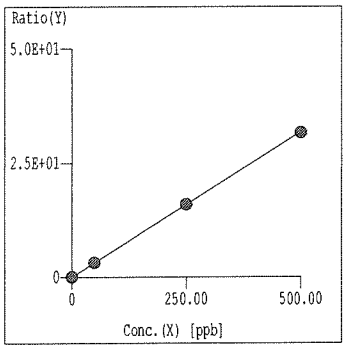
Curve Fit: Y=aX+b
r = 1.0000
Y = 1.894E-001*X +1.387E+001
X = 5.280E+000*Y -7.325E+001
DL = 5.439 ppb
BEC = 73.25 ppb

Step Mass Element (1) 40 Ca | ISTD 45 | Unit ppb



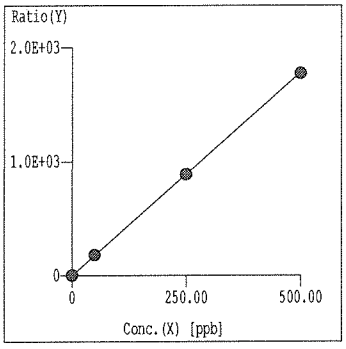
Curve Fit: Y=aX+b
r = 1.0000
Y = 4.386E-001*X +2.572E+000
X = 2.280E+000*Y -5.864E+000
DL = 2.706E-01 ppb
BEC = 5.864 ppb

Step Mass Element (3) 47 Ti | ISTD 45 | Unit ppb



Curve Fit: Y=aX+b
r = 1.0000
Y = 6.371E-002*X +4.593E-003
X = 1.570E+001*Y -7.209E-002
DL = 6.637E-03 ppb
BEC = 7.209E-02 ppb

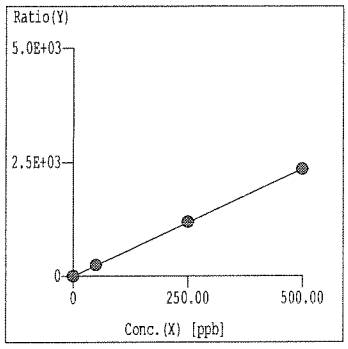
Step Mass Element (2) 51 V | ISTD 45 | Unit ppb



Curve Fit: Y=aX+b
r = 1.0000
Y = 3.563E+000*X +8.618E-001
X = 2.807E-001*Y -2.419E-001
DL = 3.052E-02 ppb
BEC = 2.419E-01 ppb

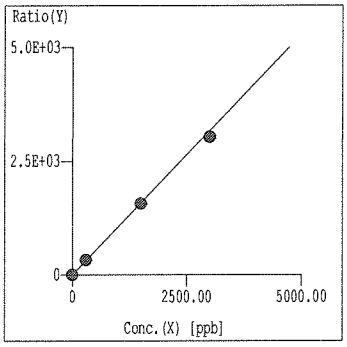
=== Graph Detail ===

Step Mass Element (2) 52 Cr | ISTD 45 | Unit ppb



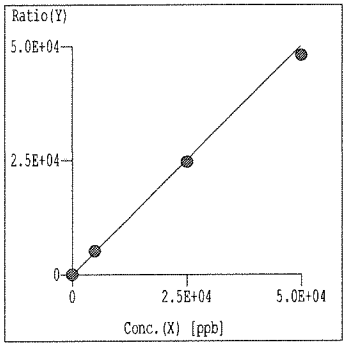
Curve Fit: Y=aX+b
r = 1.0000
Y = 4.708E+000*X +2.531E-001
X = 2.124E-001*Y -5.376E-002
DL = 1.827E-02 ppb
BEC = 5.376E-02 ppb

Step Mass Element (3) 55 Mn | ISTD 45 | Unit ppb



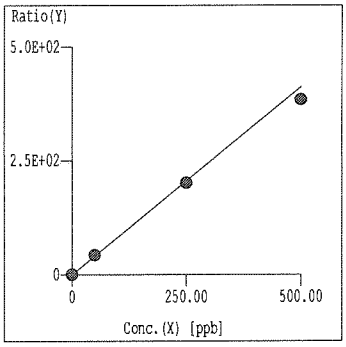
Curve Fit: Y=aX+b
r = 0.9999
Y = 1.058E+000*X +1.666E-001
X = 9.451E-001*Y -1.574E-001
DL = 2.484E-02 ppb
BEC = 1.574E-01 ppb

Step Mass Element (1) 56 Fe | ISTD 45 | Unit ppb



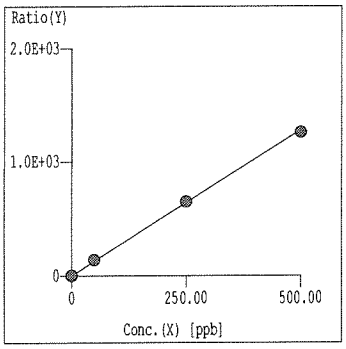
Curve Fit: Y=aX+b
r = 0.9999
Y = 1.006E+000*X +1.484E+000
X = 9.941E-001*Y -1.475E+000
DL = 1.745E-01 ppb
BEC = 1.475 ppb

Step Mass Element (3) 59 Co | ISTD 45 | Unit ppb



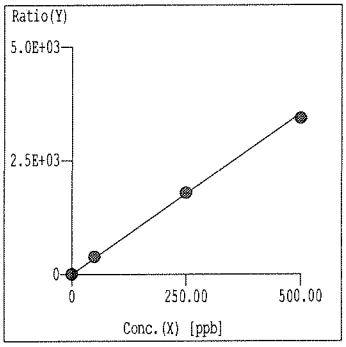
Curve Fit: Y=aX+b
r = 0.9997
Y = 8.234E-001*X +5.596E-003
X = 1.214E+000*Y -6.796E-003
DL = 1.432E-03 ppb
BEC = 6.796E-03 ppb

Step Mass Element (2) 60 Ni | ISTD 45 | Unit ppb



Curve Fit: Y=aX+b
r = 0.9999
Y = 2.560E+000*X +9.073E-001
X = 3.907E-001*Y -3.544E-001
DL = 7.804E-02 ppb
BEC = 3.544E-01 ppb

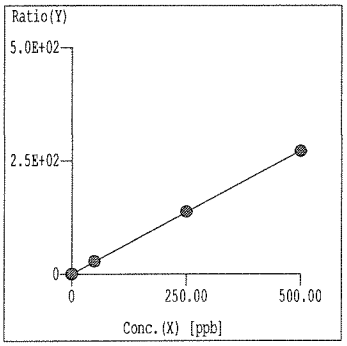
Step Mass Element (2) 63 Cu | ISTD 45 | Unit ppb



Curve Fit: Y=aX+b
r = 0.9998
Y = 7.079E+000*X +9.446E-001
X = 1.413E-001*Y -1.334E-001
DL = 1.787E-02 ppb
BEC = 1.334E-01 ppb

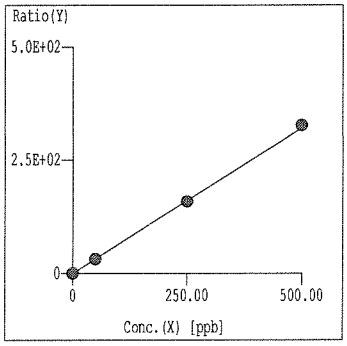
=== Graph Detail ===

Step Mass Element (3) 66 Zn | ISTD 72 | Unit ppb



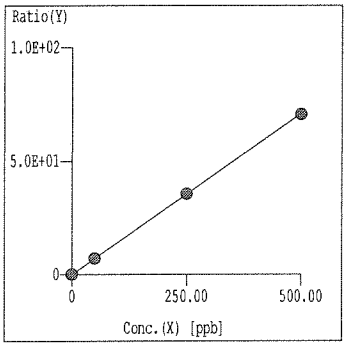
Curve Fit: Y=aX+b
r = 1.0000
Y = 5.435E-001*X +1.710E-001
X = 1.840E+000*Y -3.146E-001
DL = 5.577E-02 ppb
BEC = 3.146E-01 ppb

Step Mass Element (2) 75 As | ISTD 72 | Unit ppb



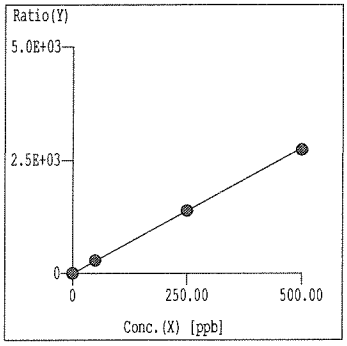
Curve Fit: Y=aX+b
r = 0.9999
Y = 6.413E-001*X +2.317E-002
X = 1.559E+000*Y -3.613E-002
DL = 2.172E-02 ppb
BEC = 3.613E-02 ppb

Step Mass Element (1) 78 Se | ISTD 72 | Unit ppb



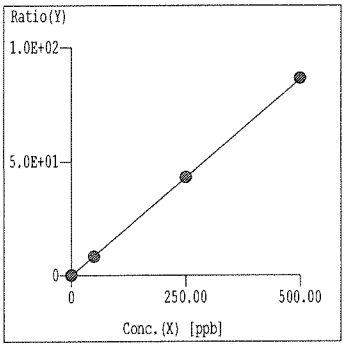
Curve Fit: Y=aX+b
r = 1.0000
Y = 1.420E-001*X +1.727E-003
X = 7.043E+000*Y -1.216E-002
DL = 2.054E-02 ppb
BEC = 1.216E-02 ppb

Step Mass Element (3) 88 Sr | ISTD 72 | Unit ppb



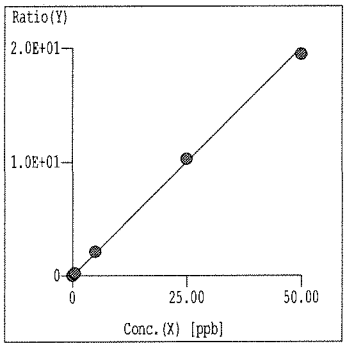
Curve Fit: Y=aX+b
r = 1.0000
Y = 5.533E+000*X +9.682E-002
X = 1.807E-001*Y -1.750E-002
DL = 5.642E-03 ppb
BEC = 1.750E-02 ppb

Step Mass Element (3) 95 Mo | ISTD 115 | Unit ppb



Curve Fit: Y=aX+b
r = 1.0000
Y = 1.724E-001*X +2.164E-003
X = 5.802E+000*Y -1.256E-002
DL = 1.424E-03 ppb
BEC = 1.256E-02 ppb

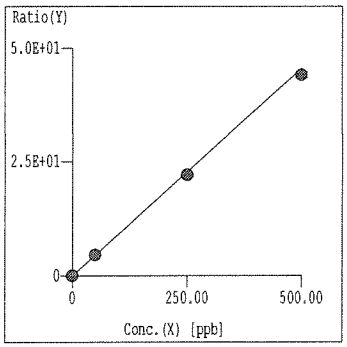
Step Mass Element (3) 107 Ag | ISTD 115 | Unit ppb



Curve Fit: Y=aX+b
r = 0.9996
Y = 4.012E-001*X +9.015E-004
X = 2.493E+000*Y -2.247E-003
DL = 1.119E-03 ppb
BEC = 2.247E-03 ppb

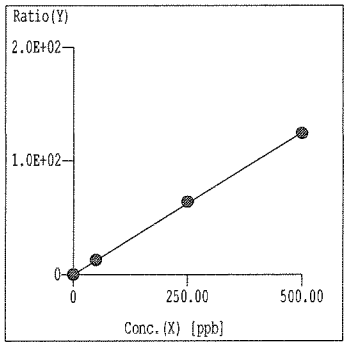
=== Graph Detail ===

Step Mass Element (3) 111 Cd | ISTD 115 | Unit ppb



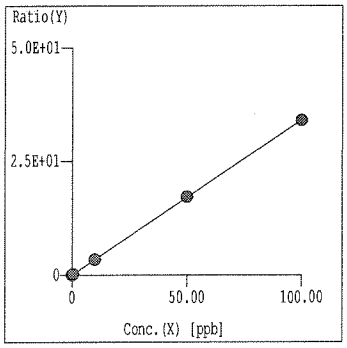
Curve Fit: Y=aX+b
r = 1.0000
Y = 9.097E-002*X +4.231E-004
X = 1.099E+001*Y -4.651E-003
DL = 1.175E-02 ppb
BEC = 4.651E-03 ppb

Step Mass Element (3) 118 Sn | ISTD 115 | Unit ppb



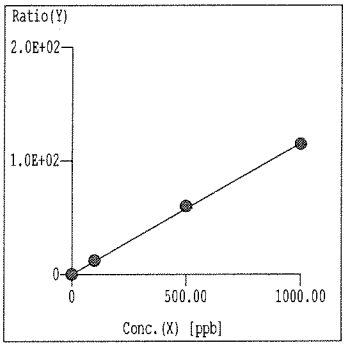
Curve Fit: Y=aX+b
r = 0.9999
Y = 2.498E-001*X +3.225E-003
X = 4.003E+000*Y -1.291E-002
DL = 4.239E-03 ppb
BEC = 1.291E-02 ppb

Step Mass Element (3) 121 Sb | ISTD 115 | Unit ppb



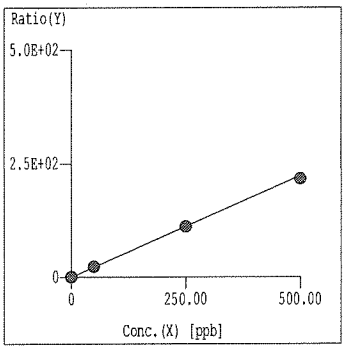
Curve Fit: Y=aX+b
r = 1.0000
Y = 3.404E-001*X +1.337E-002
X = 2.938E+000*Y -3.927E-002
DL = 1.271E-03 ppb
BEC = 3.927E-02 ppb

Step Mass Element (3) 137 Ba | ISTD 115 | Unit ppb



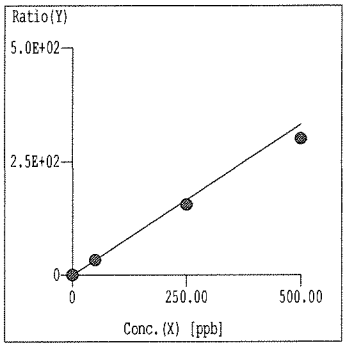
Curve Fit: Y=aX+b
r = 0.9998
Y = 1.153E-001*X +1.381E-003
X = 8.675E+000*Y -1.198E-002
DL = 9.038E-03 ppb
BEC = 1.198E-02 ppb

Step Mass Element (3) 205 Tl | ISTD 159 | Unit ppb



Curve Fit: Y=aX+b
r = 0.9999
Y = 4.473E-001*X +1.638E-003
X = 2.236E+000*Y -3.662E-003
DL = 1.059E-03 ppb
BEC = 3.662E-03 ppb

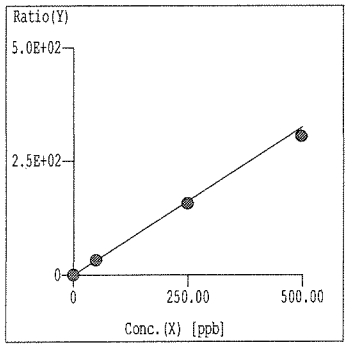
Step Mass Element (3) 208 Pb | ISTD 159 | Unit ppb



Curve Fit: Y=aX+b
r = 0.9999
Y = 6.642E-001*X +9.369E-003
X = 1.506E+000*Y -1.411E-002
DL = 3.723E-03 ppb
BEC = 1.411E-02 ppb

=== Graph Detail ===

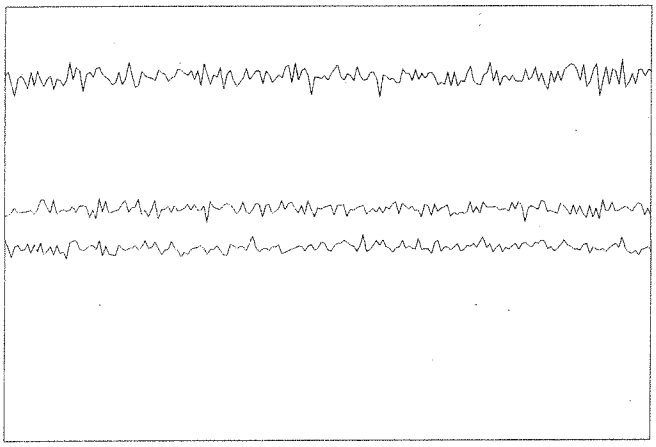
Step	Mass	Element	ISTD	Unit
(3)	238	U	159	ppb



Curve Fit: Y=aX+b
r = 0.9999
Y = 6.494E-001*X +9.305E-004
X = 1.540E+000*Y -1.433E-003
DL = 7.595E-04 ppb
BEC = 1.433E-03 ppb

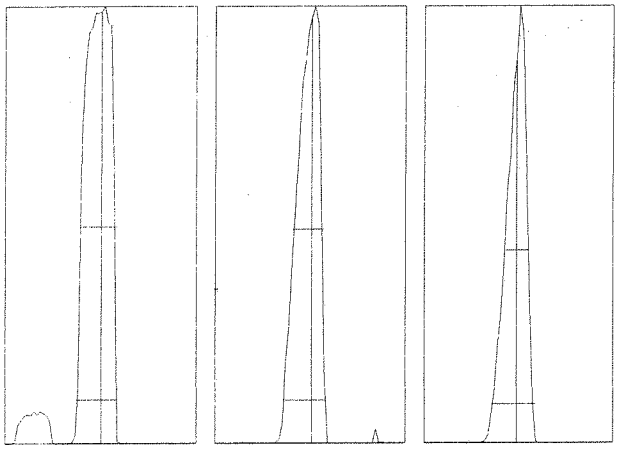
Tune Report

Tune File : NORM.U
Comment : I98J03



Integration Time:	0.1000 sec	
Sampling Period:	0.6200 sec	
n:	200	
Oxide:	156/140	1.929%
Doubly Charged:	70/140	1.211%

m/z	Range	Count	Mean	RSD%	Background
7	20,000	10262.0	10664.4	2.10	6.50
89	50,000	42531.0	41914.4	1.95	13.70
205	50,000	21723.0	22187.9	2.24	16.50
156/140	5	1.937%	1.966%	4.91	
70/140	2	1.135%	1.174%	5.94	



m/z:	7	89	205
Height:	10,487	41,641	21,752
Axis:	7.05	89.05	205.00
W-50%:	0.60	0.50	0.40
W-10%:	0.6500	0.700	0.700

Integration Time: 0.1000 sec
Acquisition Time: 22.7600 sec

Y axis : Linear

Generated : Oct 06, 2016 12:20:36
Printed : Oct 06, 2016 12:20:38

7025

Tune Report

Tune File : NORM.U
Comment : I98J03

Tuning Parameters

===Plasma Condition===			===Ion Lenses===			===Q-Pole Parameters===		
RF Power	1500	W	Extract 1	0	V	AMU Gain	135	
RF Matching	1.78	V	Extract 2	-150	V	AMU Offset	130	
Smpl Depth	8	mm	Omega Bias-ce	-30	V	Axis Gain	1.0006	
Torch-H	0.1	mm	Omega Lens-ce	-0.4	V	Axis Offset	-0.01	
Torch-V	-0.2	mm	Cell Entrance	-26	V	QP Bias	-3	V
Carrier Gas	0.82	L/min	QP Focus	2	V			
Makeup Gas	0.1	L/min	Cell Exit	-30	V	===Detector Parameters===		
Optional Gas	---	%				Discriminator	8	mV
Nebulizer Pump	0.1	rps	===Octopole Parameters===			Analog HV	2460	V
Sample Pump	---	rps	OctP RF	170	V	Pulse HV	1860	V
S/C Temp	2	degC	OctP Bias	-6	V			

===Reaction Cell===								
Reaction Mode	OFF							
H2 Gas	0	mL/min	He Gas	0	mL/min	Optional Gas	---	%

Generated : Oct 06, 2016 12:20:36
Printed : Oct 06, 2016 12:20:40

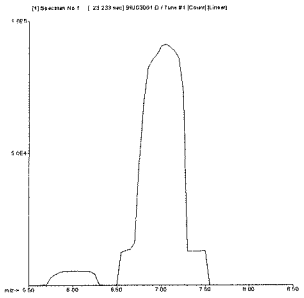
7826

6020 QC Tune Report

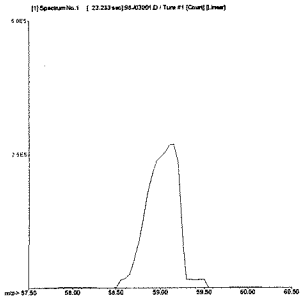
Data File: D:\DATA\I982016\J\I98J03.B\98J03001.D
Date Acquired: Oct 6 2016 01:25 pm
Acq. Method: TN6020_C.M
Operator: CCapul
Sample Name: 6020tunchk
Misc Info:
Vial Number: 1301
Current Method: C:\ICPCHEM\1\METHODS\TN6020_C.M

RSD (%)

Element	Actual	Required	Flag
7 Li	1.56	5.00	
59 Co	2.48	5.00	
115 In	2.63	5.00	
205 Tl	1.64	5.00	

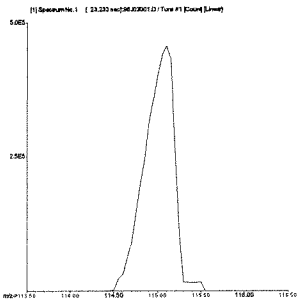


7 Li
Mass Calib.
Actual: 7.05
Required: 6.90 - 7.10
Flag:
Peak Width-10%
Actual: 0.50
Limit 0.90
Flag:



59 Co
Mass Calib.
Actual: 59.05
Required: 58.90 - 59.10
Flag:
Peak Width-10%
Actual: 0.55
Limit 0.90
Flag:

T627



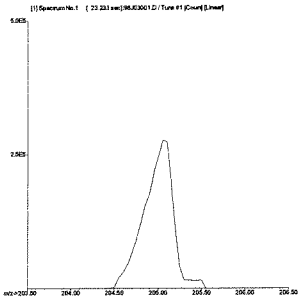
115 In

Mass Calib.

Actual:	115.05	
Required:	114.90 -	115.10
Flag:		

Peak Width-10%

Actual:	0.60
Limit	0.90
Flag:	



205 Tl

Mass Calib.

Actual:	205.05	
Required:	204.90 -	205.10
Flag:		

Peak Width-10%

Actual:	0.55
Limit	0.90
Flag:	

Calibration Blank QC Report

Data File: D:\DATA\I982016\J\I98J03.B\98J03003.D\98J03003.D#
Date Acquired: Oct 6 2016 01:34 pm
Operator: CCapul
Sample Name: BLNK
Misc Info:
Vial Number: 1101
Current Method: C:\ICPCHEM\1\METHODS\EM6020HR.M
Calibration File: D:\DATA\I982016\A\I98A01.B\EM6020HR.C
Last Cal Update: Oct 06 2016 01:37 pm
Sample Type: CalBlk
Total Dil Factor: 1.00

QC&ISTD Elements

Element		CPS Mean		SD	CPS RSD(%)
6	Li	890372.13	A	23890.00	2.68
7	Li	59808.62	P	355.70	0.59
9	Be	87.78	P	8.39	9.56
11	B	3086.03	P	13.47	0.44
23	Na	95332.49	P	3374.00	3.54
24	Mg	60218.63	P	1040.00	1.73
27	Al	18611.75	P	352.00	1.89
28	Si	2122.89	P	293.20	13.81
31	P	43157.18	P	1417.00	3.28
39	K	3704.00	P	310.10	8.37
40	Ca	412351.09	P	25330.00	6.14
45	Sc	1207818.00	A	76900.00	6.37
45	Sc	26258.69	P	1171.00	4.46
45	Sc	3136327.00	A	55240.00	1.76
47	Ti	162.23	P	25.02	15.42
51	V	192.45	P	10.10	5.25
52	Cr	75.56	P	8.68	11.48
55	Mn	5404.67	P	151.80	2.81
56	Fe	29154.31	P	1757.00	6.03
59	Co	251.12	P	42.47	16.91
60	Ni	242.00	P	17.68	7.31
63	Cu	338.67	P	9.17	2.71
66	Zn	9145.83	P	221.60	2.42
72	Ge	361736.19	P	25430.00	7.03
72	Ge	17235.55	P	581.00	3.37
72	Ge	698979.00	P	10710.00	1.53
75	As	7.56	P	2.69	35.66
78	Se	9.33	P	4.05	43.45
88	Sr	1756.86	P	17.64	1.00
90	Zr	1397.09	P	102.60	7.34
95	Mo	151.12	P	15.03	9.95
107	Ag	73.34	P	15.28	20.84
111	Cd	37.36	P	52.16	139.61
115	In	4778926.00	A	54360.00	1.14
118	Sn	293.35	P	49.33	16.82
121	Sb	818.95	P	48.58	5.93
137	Ba	211.12	P	22.20	10.52
159	Tb	6356033.00	A	66010.00	1.04
182	W	226.68	P	18.56	8.19
205	Tl	231.12	P	28.35	12.27
208	Pb	768.93	P	47.42	6.17
209	Bi	3566482.00	A	70280.00	1.97
235	U	8.89	P	1.93	21.66
238	U	164.45	P	13.47	8.19

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Calibration Blank QC Report

Data File: D:\DATA\I982016\J\I98J03.B\98J03004.D\98J03004.D#
Date Acquired: Oct 6 2016 01:38 pm
Operator: CCapul
Sample Name: S0
Misc Info:
Vial Number: 1202
Current Method: C:\ICPCHEM\1\METHODS\EM6020HR.M
Calibration File: D:\DATA\I982016\A\I98A01.B\EM6020HR.C
Last Cal Update: Oct 06 2016 01:37 pm
Sample Type: CalBlk
Total Dil Factor: 1.00

QC&ISTD Elements

Element		CPS Mean		SD	CPS RSD(%)
6	Li	893110.19	A	14530.00	1.63
7	Li	59025.09	P	398.60	0.68
9	Be	62.22	P	18.36	29.51
11	B	1335.68	P	81.28	6.09
23	Na	111990.80	P	1016.00	0.91
24	Mg	45052.55	P	814.50	1.81
27	Al	8512.04	P	109.20	1.28
28	Si	1391.34	P	128.20	9.21
31	P	43923.36	P	1283.00	2.92
39	K	4407.56	P	160.50	3.64
40	Ca	37842.86	P	731.60	1.93
45	Sc	1497448.00	A	13740.00	0.92
45	Sc	31623.00	P	398.10	1.26
45	Sc	3153267.00	A	48080.00	1.52
47	Ti	144.45	P	5.09	3.53
51	V	224.89	P	11.71	5.21
52	Cr	75.33	P	9.61	12.76
55	Mn	4522.07	P	301.50	6.67
56	Fe	17729.28	P	996.80	5.62
59	Co	173.34	P	14.53	8.38
60	Ni	275.12	P	22.00	8.00
63	Cu	265.56	P	16.76	6.31
66	Zn	1147.88	P	83.83	7.30
72	Ge	436311.69	P	513.80	0.12
72	Ge	20914.49	P	194.00	0.93
72	Ge	705390.38	P	8070.00	1.14
75	As	4.89	P	1.02	20.82
78	Se	7.78	P	4.23	54.44
88	Sr	652.26	P	66.20	10.15
90	Zr	1091.31	P	756.20	69.29
95	Mo	107.78	P	5.09	4.73
107	Ag	43.34	P	6.67	15.39
111	Cd	18.10	P	17.15	94.74
115	In	4921303.00	A	80050.00	1.63
118	Sn	155.56	P	19.53	12.55
121	Sb	657.82	P	15.75	2.39
137	Ba	60.00	P	16.67	27.78
159	Tb	6554350.00	A	32660.00	0.50
182	W	288.06	P	176.10	61.13
205	Tl	104.45	P	10.18	9.75
208	Pb	457.80	P	55.21	12.06
209	Bi	3641652.00	A	39750.00	1.09
235	U	5.56	P	6.94	124.90
238	U	57.78	P	10.71	18.54

7030

Calibration Standard QC Report

Data File: D:\DATA\I982016\J\I98J03.B\98J03005.D\98J03005.D#
Date Acquired: Oct 6 2016 01:43 pm
Operator: CCapul
Sample Name: S1 0.5
Misc Info:
Vial Number: 1104
Current Method: C:\ICPCHEM\1\METHODS\EM6020HR.M
Calibration File: D:\DATA\I982016\A\I98A01.B\EM6020HR.C
Last Cal Update: Oct 06 2016 01:41 pm
Sample Type: CalStd
Total Dil Factor: 1.00

QC&ISTD Elements

Element	CPS Mean		SD	CPS RSD(%)
6 Li	889899.50	A	2599.00	0.29
7 Li	63947.50	P	744.90	1.16
9 Be	1852.42	P	74.94	4.05
11 B	3201.62	P	36.74	1.15
23 Na	290607.41	P	2531.00	0.87
24 Mg	861437.13	A	6817.00	0.79
27 Al	1049630.00	A	19720.00	1.88
28 Si	116485.50	P	1834.00	1.57
31 P	67912.41	P	392.00	0.58
39 K	7447.96	P	47.35	0.64
40 Ca	377925.19	P	2784.00	0.74
45 Sc	1481882.00	A	9629.00	0.65
45 Sc	32244.50	P	800.10	2.48
45 Sc	3189776.00	A	16120.00	0.51
47 Ti	1379.01	P	103.60	7.51
51 V	857.59	P	17.67	2.06
52 Cr	923.15	P	56.68	6.14
55 Mn	23002.45	P	233.00	1.01
56 Fe	830871.31	A	8317.00	1.00
59 Co	14676.73	P	207.90	1.42
60 Ni	756.25	P	34.81	4.60
63 Cu	1663.68	P	36.09	2.17
66 Zn	5124.56	P	138.70	2.71
72 Ge	430762.91	P	6270.00	1.46
72 Ge	21536.69	P	585.40	2.72
72 Ge	706400.81	P	8154.00	1.15
75 As	73.11	P	6.84	9.36
78 Se	308.23	P	24.01	7.79
88 Sr	21371.16	P	260.80	1.22
90 Zr	13988.53	P	182.10	1.30
95 Mo	4093.05	P	86.79	2.12
107 Ag	10488.17	P	152.00	1.45
111 Cd	2304.60	P	70.48	3.06
115 In	4875138.00	A	53220.00	1.09
118 Sn	6569.77	P	245.10	3.73
121 Sb	8990.28	P	205.40	2.28
137 Ba	3038.26	P	44.78	1.47
159 Tb	6437088.00	A	50250.00	0.78
182 W	7541.56	P	91.05	1.21
205 Tl	16494.45	P	395.00	2.39
208 Pb	23778.21	P	87.91	0.37
209 Bi	3675629.00	A	31620.00	0.86
235 U	183.34	P	17.64	9.62
238 U	22029.77	P	349.50	1.59

ISTD Elements

Element	CPS Mean	CPS RSD(%)	Ref Value	Rec(%)	QC Range(%)	Flag
6 Li	889899.44	0.29	893110.19	99.6	60 - 125	
45 Sc	1481882.10	0.65	1497447.80	99.0	60 - 125	
45 Sc	32244.50	2.48	31623.00	102.0	60 - 125	
45 Sc	3189775.80	0.51	3153266.80	101.2	60 - 125	
72 Ge	430762.91	1.46	436311.72	98.7	60 - 125	
72 Ge	21536.69	2.72	20914.49	103.0	60 - 125	
72 Ge	706400.75	1.15	705390.44	100.1	60 - 125	
115 In	4875138.00	1.09	4921303.50	99.1	60 - 125	
159 Tb	6437088.00	0.78	6554350.50	98.2	60 - 125	

ISTD Ref File : D:\DATA\I982016\J\I98J03.B\98J03004.D\98J03004.D#

--- :Element Failures --- :Max. Number of Failures Allowed
0 :ISTD Failures 0 :Max. Number of ISTD Failures Allowed

Data Results:
Analytes: Pass
ISTD: Pass

Calibration Standard QC Report

Data File: D:\DATA\I982016\J\I98J03.B\98J03006.D\98J03006.D#
Date Acquired: Oct 6 2016 01:48 pm
Operator: CCapul
Sample Name: S2 50
Misc Info:
Vial Number: 1105
Current Method: C:\ICPCHEM\1\METHODS\EM6020HR.M
Calibration File: D:\DATA\I982016\A\I98A01.B\EM6020HR.C
Last Cal Update: Oct 06 2016 01:46 pm
Sample Type: CalStd
Total Dil Factor: 1.00

QC&ISTD Elements

Element	CPS Mean		SD	CPS RSD(%)
6 Li	865483.13	A	3623.00	0.42
7 Li	103601.20	P	645.00	0.62
9 Be	17419.93	P	602.80	3.46
11 B	27881.69	P	770.60	2.76
23 Na	15659090.00	A	325900.00	2.08
24 Mg	73700560.00	A	1832000.00	2.49
27 Al	95803608.00	A	2439000.00	2.55
28 Si	414539.19	P	10450.00	2.52
31 P	93527.75	P	2355.00	2.52
39 K	302196.69	P	3679.00	1.22
40 Ca	31578290.00	A	446200.00	1.41
45 Sc	1430762.00	A	21340.00	1.49
45 Sc	31425.72	P	492.30	1.57
45 Sc	3186044.00	A	25960.00	0.81
47 Ti	101683.20	P	1093.00	1.07
51 V	56955.18	P	857.00	1.50
52 Cr	77529.83	P	1141.00	1.47
55 Mn	10409470.00	A	85080.00	0.82
56 Fe	74153512.00	A	499900.00	0.67
59 Co	1375575.00	A	9689.00	0.70
60 Ni	43596.32	P	745.20	1.71
63 Cu	120776.30	P	1798.00	1.49
66 Zn	195850.41	P	1886.00	0.96
72 Ge	404004.00	P	1836.00	0.45
72 Ge	21131.48	P	41.07	0.19
72 Ge	699388.19	P	963.80	0.14
75 As	6670.90	P	80.77	1.21
78 Se	28625.08	P	314.00	1.10
88 Sr	1990838.00	A	12930.00	0.65
90 Zr	246405.30	P	280.80	0.11
95 Mo	393344.09	P	2858.00	0.73
107 Ag	100037.70	P	503.20	0.50
111 Cd	216292.41	P	1702.00	0.79
115 In	4722472.00	A	59230.00	1.25
118 Sn	604785.69	P	5334.00	0.88
121 Sb	159542.30	P	1089.00	0.68
137 Ba	569096.31	P	2733.00	0.48
159 Tb	6462954.00	A	59800.00	0.93
182 W	71858.47	P	990.60	1.38
205 Tl	1488405.00	A	15090.00	1.01
208 Pb	2135083.00	A	13570.00	0.64
209 Bi	3522479.00	A	22820.00	0.65
235 U	16066.31	P	21.49	0.13
238 U	2095767.00	A	19870.00	0.95

ISTD Elements

Element	CPS Mean	CPS RSD(%)	Ref Value	Rec(%)	QC Range(%)	Flag
6 Li	865483.13	0.42	893110.19	96.9	60 - 125	
45 Sc	1430762.00	1.49	1497447.80	95.5	60 - 125	
45 Sc	31425.72	1.57	31623.00	99.4	60 - 125	
45 Sc	3186043.80	0.81	3153266.80	101.0	60 - 125	
72 Ge	404004.06	0.45	436311.72	92.6	60 - 125	
72 Ge	21131.48	0.19	20914.49	101.0	60 - 125	
72 Ge	699388.19	0.14	705390.44	99.1	60 - 125	
115 In	4722472.50	1.25	4921303.50	96.0	60 - 125	
159 Tb	6462953.50	0.93	6554350.50	98.6	60 - 125	

ISTD Ref File : D:\DATA\I982016\J\I98J03.B\98J03004.D\98J03004.D#

--- :Element Failures --- :Max. Number of Failures Allowed
0 :ISTD Failures 0 :Max. Number of ISTD Failures Allowed

Data Results:
Analytes: Pass
ISTD: Pass

Calibration Standard QC Report

Data File: D:\DATA\I982016\J\I98J03.B\98J03007.D\98J03007.D#
Date Acquired: Oct 6 2016 01:52 pm
Operator: CCapul
Sample Name: S3 250
Misc Info:
Vial Number: 1106
Current Method: C:\ICPCHEM\1\METHODS\EM6020HR.M
Calibration File: D:\DATA\I982016\A\I98A01.B\EM6020HR.C
Last Cal Update: Oct 06 2016 01:51 pm
Sample Type: CalStd
Total Dil Factor: 1.00

QC&ISTD Elements

Element	CPS Mean		SD	CPS RSD(%)
6 Li	896749.13	A	17340.00	1.93
7 Li	290587.69	P	6101.00	2.10
9 Be	86315.71	P	1220.00	1.41
11 B	124606.60	P	1435.00	1.15
23 Na	80359552.00	A	413500.00	0.51
24 Mg	359106110.00	A	6011000.00	1.67
27 Al	468837180.00	A	6633000.00	1.41
28 Si	2156385.00	A	28900.00	1.34
31 P	287093.41	P	1926.00	0.67
39 K	1537639.00	A	26050.00	1.69
40 Ca	162987390.00	A	2659000.00	1.63
45 Sc	1517422.00	A	22350.00	1.47
45 Sc	32247.72	P	692.00	2.15
45 Sc	3198580.00	A	20000.00	0.63
47 Ti	509947.59	P	1512.00	0.30
51 V	286382.91	P	1689.00	0.59
52 Cr	384924.59	P	5663.00	1.47
55 Mn	50114288.00	A	466900.00	0.93
56 Fe	374193600.00	A	4342000.00	1.16
59 Co	6435744.00	A	64660.00	1.00
60 Ni	208892.59	P	1312.00	0.63
63 Cu	575728.38	P	3959.00	0.69
66 Zn	933673.13	A	4024.00	0.43
72 Ge	416795.00	P	2553.00	0.61
72 Ge	21180.41	P	124.60	0.59
72 Ge	681411.19	P	4729.00	0.69
75 As	33475.75	P	403.20	1.20
78 Se	148099.00	P	624.50	0.42
88 Sr	9424899.00	A	87220.00	0.93
90 Zr	660221.88	P	4046.00	0.61
95 Mo	1930321.00	A	13950.00	0.72
107 Ag	459537.31	P	701.30	0.15
111 Cd	985863.50	A	14330.00	1.45
115 In	4472205.00	A	10360.00	0.23
118 Sn	2854355.00	A	21650.00	0.76
121 Sb	765397.88	P	3594.00	0.47
137 Ba	2671486.00	A	65190.00	2.44
159 Tb	6223437.00	A	69170.00	1.11
182 W	343728.59	P	3569.00	1.04
205 Tl	6914104.00	A	92730.00	1.34
208 Pb	9646025.00	A	65040.00	0.67
209 Bi	3232398.00	A	13100.00	0.41
235 U	75632.69	P	751.10	0.99
238 U	9734196.00	A	138600.00	1.42

ISTD Elements

Element	CPS Mean	CPS RSD(%)	Ref Value	Rec(%)	QC Range(%)	Flag
6 Li	896749.13	1.93	893110.19	100.4	60 - 125	
45 Sc	1517422.60	1.47	1497447.80	101.3	60 - 125	
45 Sc	32247.73	2.15	31623.00	102.0	60 - 125	
45 Sc	3198579.80	0.63	3153266.80	101.4	60 - 125	
72 Ge	416795.03	0.61	436311.72	95.5	60 - 125	
72 Ge	21180.41	0.59	20914.49	101.3	60 - 125	
72 Ge	681411.19	0.69	705390.44	96.6	60 - 125	
115 In	4472205.00	0.23	4921303.50	90.9	60 - 125	
159 Tb	6223436.50	1.11	6554350.50	95.0	60 - 125	

ISTD Ref File : D:\DATA\I982016\J\I98J03.B\98J03004.D\98J03004.D#

--- :Element Failures --- :Max. Number of Failures Allowed
0 :ISTD Failures 0 :Max. Number of ISTD Failures Allowed

Data Results:
Analytes: Pass
ISTD: Pass

7633

Calibration Standard QC Report

Data File: D:\DATA\I982016\J\I98J03.B\98J03008.D\98J03008.D#
Date Acquired: Oct 6 2016 01:57 pm
Operator: CCapul
Sample Name: S4 500
Misc Info:
Vial Number: 1107
Current Method: C:\ICPCHEM\1\METHODS\EM6020HR.M
Calibration File: D:\DATA\I982016\A\I98A01.B\EM6020HR.C
Last Cal Update: Oct 06 2016 01:55 pm
Sample Type: CalStd
Total Dil Factor: 1.00

QC&ISTD Elements

Element	CPS Mean		SD	CPS RSD(%)
6 Li	948367.00	A	21130.00	2.23
7 Li	549732.13	P	8510.00	1.55
9 Be	180465.20	P	403.10	0.22
11 B	259654.00	P	1007.00	0.39
23 Na	160934590.00	A	3588000.00	2.23
24 Mg	741956100.00	A	6591000.00	0.89
27 Al	960185730.00	A	8113000.00	0.84
28 Si	4226233.00	A	97870.00	2.32
31 P	548829.50	P	4992.00	0.91
39 K	3086869.00	A	46760.00	1.51
40 Ca	322383810.00	A	7352000.00	2.28
45 Sc	1522114.00	A	27390.00	1.80
45 Sc	32720.04	P	248.80	0.76
45 Sc	3356285.00	A	14040.00	0.42
47 Ti	1061446.00	A	10330.00	0.97
51 V	579922.50	P	4890.00	0.84
52 Cr	769835.38	P	6839.00	0.89
55 Mn	101756300.00	A	656900.00	0.65
56 Fe	731098880.00	A	14730000.00	2.01
59 Co	12876880.00	A	82510.00	0.64
60 Ni	411301.09	P	4867.00	1.18
63 Cu	1122037.00	A	12720.00	1.13
66 Zn	1858512.00	A	10500.00	0.56
72 Ge	407111.81	P	4810.00	1.18
72 Ge	20620.72	P	353.90	1.72
72 Ge	686444.63	P	2028.00	0.30
75 As	67312.70	P	1050.00	1.56
78 Se	287088.09	P	3821.00	1.33
88 Sr	18705040.00	A	128000.00	0.68
90 Zr	1230615.00	A	8627.00	0.70
95 Mo	3810822.00	A	26530.00	0.70
107 Ag	857307.31	A	3781.00	0.44
111 Cd	1938351.00	A	16170.00	0.83
115 In	4402573.00	A	32440.00	0.74
118 Sn	5462404.00	A	32120.00	0.59
121 Sb	1494882.00	A	9122.00	0.61
137 Ba	5040796.00	A	39140.00	0.78
159 Tb	6112116.00	A	44120.00	0.72
182 W	687214.88	P	7875.00	1.15
205 Tl	13241860.00	A	111000.00	0.84
208 Pb	18361050.00	A	88810.00	0.48
209 Bi	3138684.00	A	25730.00	0.82
235 U	147183.91	P	812.30	0.55
238 U	18567940.00	A	266000.00	1.43

ISTD Elements

Element	CPS Mean	CPS RSD(%)	Ref Value	Rec(%)	QC Range(%)	Flag
6 Li	948366.94	2.23	893110.19	106.2	60 - 125	
45 Sc	1522114.50	1.80	1497447.80	101.6	60 - 125	
45 Sc	32720.04	0.76	31623.00	103.5	60 - 125	
45 Sc	3356285.30	0.42	3153266.80	106.4	60 - 125	
72 Ge	407111.78	1.18	436311.72	93.3	60 - 125	
72 Ge	20620.72	1.72	20914.49	98.6	60 - 125	
72 Ge	686444.63	0.30	705390.44	97.3	60 - 125	
115 In	4402573.50	0.74	4921303.50	89.5	60 - 125	
159 Tb	6112116.00	0.72	6554350.50	93.3	60 - 125	

ISTD Ref File : D:\DATA\I982016\J\I98J03.B\98J03004.D\98J03004.D#

0 :Element Failures --- :Max. Number of Failures Allowed
0 :ISTD Failures 0 :Max. Number of ISTD Failures Allowed

Data Results:
Analytes: Pass
ISTD: Pass

7034

ICV QC Report

Data File: D:\DATA\I982016\J\I98J03.B\98J03009.D\98J03009.D#
Date Acquired: Oct 6 2016 02:01 pm
Acq. Method: EM6020HR.M
Operator: CCapul
Sample Name: ICV
Misc Info:
Vial Number: 1204
Current Method: C:\ICPCHEM\1\METHODS\EM6020HR.M
Calibration File: D:\DATA\I982016\A\I98A01.B\EM6020HR.C
Last Cal. Update: Oct 06 2016 02:00 pm
Sample Type: ICV1
Dilution Factor: 1.00

QC Elements

Element	Conc.		CPS	Conc. RSD(%)	Expected	QC Range(%)	Flag
7 Li	29.44	ppb	350536.8	1.22	30.00	90 - 110	
9 Be	29.46	ppb	107619.5	2.53	30.00	90 - 110	
11 B	28.85	ppb	77590.5	2.88	30.00	90 - 110	
23 Na	28880.00	ppb	96063216.0	0.31	30000.00	90 - 110	
24 Mg	29100.00	ppb	434599100.0	2.11	30000.00	90 - 110	
27 Al	29790.00	ppb	569525120.0	0.81	30000.00	90 - 110	
28 Si	3072.00	ppb	2678670.0	0.60	3000.00	90 - 110	
31 P	295.10	ppb	336726.4	0.93	300.00	90 - 110	
39 K	30150.00	ppb	1801367.0	2.51	30000.00	90 - 110	
40 Ca	27990.00	ppb	187499700.0	0.62	30000.00	90 - 110	
47 Ti	293.70	ppb	611145.9	0.39	300.00	90 - 110	
51 V	294.80	ppb	330857.3	1.98	300.00	90 - 110	
52 Cr	302.90	ppb	448999.8	2.11	300.00	90 - 110	
55 Mn	1849.00	ppb	63869688.0	0.23	2000.00	90 - 110	
56 Fe	28860.00	ppb	443371710.0	1.64	30000.00	90 - 110	
59 Co	278.40	ppb	7485109.0	0.72	300.00	90 - 110	
60 Ni	294.10	ppb	237240.9	2.41	300.00	90 - 110	
63 Cu	295.00	ppb	657597.5	2.37	300.00	90 - 110	
66 Zn	297.10	ppb	1099615.0	0.37	300.00	90 - 110	
75 As	288.80	ppb	38274.9	1.66	300.00	90 - 110	
78 Se	288.20	ppb	171032.3	0.34	300.00	90 - 110	
88 Sr	289.30	ppb	10889610.0	0.93	300.00	90 - 110	
90 Zr	25.89	ppb	627381.6	1.91	30.00	90 - 110	Fail
95 Mo	286.00	ppb	2167427.0	2.04	300.00	90 - 110	
107 Ag	29.44	ppb	519226.0	2.64	30.00	90 - 110	
111 Cd	289.60	ppb	1158265.0	2.60	300.00	90 - 110	
118 Sn	301.30	ppb	3310133.0	0.91	300.00	90 - 110	
121 Sb	58.86	ppb	881731.9	0.44	60.00	90 - 110	
137 Ba	306.80	ppb	1555604.0	0.25	300.00	90 - 110	
182 W	29.24	ppb	400581.1	0.73	30.00	90 - 110	
205 Tl	287.50	ppb	7870732.0	0.78	300.00	90 - 110	
208 Pb	272.40	ppb	11074800.0	0.65	300.00	90 - 110	
235 U	1.87	ppb	88777.4	2.22	0.22	90 - 110	Fail
238 U	286.10	ppb	11373520.0	1.02	300.00	90 - 110	

ISTD Elements

Element	CPS Mean	CPS RSD(%)	Ref Value	Rec(%)	QC Range(%)	Flag
6 Li	947971.3	1.09	893110.19	106.1	60 - 125	
45 Sc	1527102.3	0.65	1497447.80	102.0	60 - 125	
45 Sc	31488.0	3.08	31623.00	99.6	60 - 125	
45 Sc	3264963.3	1.29	3153266.80	103.5	60 - 125	
72 Ge	418037.5	0.84	436311.72	95.8	60 - 125	
72 Ge	20665.2	1.97	20914.49	98.8	60 - 125	
72 Ge	680215.0	0.95	705390.44	96.4	60 - 125	
115 In	4397542.5	1.52	4921303.50	89.4	60 - 125	
159 Tb	6121091.5	0.26	6554350.50	93.4	60 - 125	

ISTD Ref File : D:\DATA\I982016\J\I98J03.B\98J03004.D\98J03004.D#

2 :Element Failures — 0 :Max. Number of Failures Allowed
0 :ISTD Failures — 0 :Max. Number of ISTD Failures Allowed

Data Results:
Analytes: Fail
ISTD: Pass

7035

ICB QC Report

Data File: D:\DATA\I982016\J\I98J03.B\98J03010.D\98J03010.D#
Date Acquired: Oct 6 2016 02:06 pm
Acq. Method: EM6020HR.M
Operator: CCapul
Sample Name: ICB
Misc Info:
Vial Number: 1202
Current Method: C:\ICPCHEM\1\METHODS\EM6020HR.M
Calibration File: D:\DATA\I982016\A\I98A01.B\EM6020HR.C
Last Cal. Update: Oct 06 2016 02:00 pm
Sample Type: ICB
Dilution Factor: 1.00

QC Elements

Element	Conc.		CPS	Conc RSD(%)	High Limit	Flag
7 Li	-0.0246	ppb	66002.4	208.22	0.20	
9 Be	0.0033	ppb	86.7	102.37	0.10	
11 B	0.0250	ppb	2142.5	103.40	5.00	
23 Na	10.0600	ppb	159250.1	8.26	40.00	
24 Mg	0.7300	ppb	59986.6	44.88	10.00	
27 Al	1.8770	ppb	46148.3	15.91	20.00	
28 Si	1.6330	ppb	3069.6	28.04	20.00	
31 P	3.2610	ppb	49586.4	4.40	10.00	
39 K	3.9520	ppb	4918.9	50.94	20.00	
40 Ca	5.5400	ppb	77870.0	4.37	25.00	
47 Ti	0.0310	ppb	221.1	82.33	0.50	
51 V	-0.0060	ppb	282.7	121.32	0.50	
52 Cr	0.0393	ppb	147.6	25.29	0.20	
55 Mn	0.1227	ppb	9989.8	13.10	0.20	
56 Fe	6.6930	ppb	127904.8	4.73	10.00	
59 Co	0.0180	ppb	686.7	21.72	0.20	
60 Ni	-0.0365	ppb	273.8	21.90	0.20	
63 Cu	0.0275	ppb	383.1	33.86	0.40	
66 Zn	0.0307	ppb	1367.9	45.48	2.00	
75 As	0.1081	ppb	20.7	20.28	0.20	
78 Se	0.1095	ppb	77.3	12.58	0.20	
88 Sr	0.0148	ppb	1303.5	28.90	0.20	
90 Zr	1.2780	ppb	595.6	0.08	2.00	
95 Mo	0.1121	ppb	1071.2	12.74	0.40	
107 Ag	0.0043	ppb	131.1	11.85	0.20	
111 Cd	0.0282	ppb	149.0	12.47	0.20	
118 Sn	0.0983	ppb	1384.6	6.77	0.20	
121 Sb	0.0134	ppb	893.4	35.85	0.40	
137 Ba	0.0182	ppb	173.3	36.36	0.20	
182 W	0.0743	ppb	1429.0	2.91	1.00	
205 Tl	0.0446	ppb	1433.5	11.58	0.20	
208 Pb	0.0382	ppb	2308.0	12.22	0.10	
235 U	0.0003	ppb	18.9	82.60	1.00	
238 U	0.0328	ppb	1479.1	15.22	0.10	

ISTD Elements

Element	CPS Mean	CPS RSD(%)	Ref Value	Rec(%)	QC Range(%)	Flag
6 Li	988208.8	1.12	893110.19	110.6	60 - 125	
45 Sc	1556911.4	0.72	1497447.80	104.0	60 - 125	
45 Sc	33654.6	2.63	31623.00	106.4	60 - 125	
45 Sc	3371486.0	0.74	3153266.80	106.9	60 - 125	
72 Ge	447795.6	0.83	436311.72	102.6	60 - 125	
72 Ge	22355.9	1.70	20914.49	106.9	60 - 125	
72 Ge	728962.3	0.74	705390.44	103.3	60 - 125	
115 In	4985347.0	0.45	4921303.50	101.3	60 - 125	
159 Tb	6649136.0	0.81	6554350.50	101.4	60 - 125	

ISTD Ref File : D:\DATA\I982016\J\I98J03.B\98J03004.D\98J03004.D#

0 :Element Failures 0 :Max. Number of Failures Allowed
0 :ISTD Failures 0 :Max. Nnumber of ISTD Failures Allowed

Data Results:
Analytes: Pass
ISTD: Pass

Sample QC Report

Data File: D:\DATA\I982016\J\I98J03.B\98J03011.D\98J03011.D#
Date Acquired: Oct 6 2016 02:10 pm
Acq. Method: EM6020HR.M
Operator: CCapul
Sample Name: MRLJ0601
Misc Info: 0.5/50/4 ppb
Vial Number: 1306
Current Method: C:\ICPCHEM\1\METHODS\EM6020HR.M
Calibration File: D:\DATA\I982016\A\I98A01.B\EM6020HR.C
Last Cal. Update: Oct 06 2016 02:00 pm
Sample Type: Sample
Dilution Factor: 1.00
Autodil Factor: Undiluted
Final Dil Factor: 1.00

Tune #	Name
#1	h2.u
#2	he.u
#3	norm.u

QC Elements

Element	Tune	ISTD	CPS	Corr Conc	Raw Conc	Units	Conc RSD(%)	High Limit	Flag
7 Li	# 3	6	70881.1	0.0000	0.4343	ppb	5.85	50.00	
9 Be	# 3	6	1898.0	0.0000	0.4777	ppb	5.09	50.00	
11 B	# 3	6	5415.8	0.0000	1.2180	ppb	6.16	100.00	
23 Na	# 1	45	311792.3	0.0000	55.6100	ppb	2.85	50000.00	
24 Mg	# 3	45	881433.2	0.0000	53.6400	ppb	0.58	50000.00	
27 Al	# 3	45	1088464.0	0.0000	54.3300	ppb	0.84	50000.00	
28 Si	# 1	45	8181.3	0.0000	7.4430	ppb	12.88	10000.00	
31 P	# 3	45	48008.8	0.0000	1.4300	ppb	34.48	400000.00	
39 K	# 2	45	8075.0	0.0000	50.8000	ppb	3.37	50000.00	
40 Ca	# 1	45	388876.0	0.0000	51.3900	ppb	0.60	50000.00	
47 Ti	# 3	45	1283.4	0.0000	0.5220	ppb	6.71	500.00	
51 V	# 2	45	879.8	0.0000	0.4767	ppb	1.68	500.00	
52 Cr	# 2	45	948.3	0.0000	0.5323	ppb	1.73	500.00	
55 Mn	# 3	45	25529.4	0.0000	0.5539	ppb	3.46	3000.00	
56 Fe	# 1	45	847566.3	0.0000	52.9400	ppb	1.75	50000.00	
59 Co	# 3	45	15665.7	0.0000	0.5540	ppb	0.80	500.00	
60 Ni	# 2	45	745.1	0.0000	0.4928	ppb	6.28	500.00	
63 Cu	# 2	45	1648.8	0.0000	0.5448	ppb	5.23	500.00	
66 Zn	# 3	72	17949.9	0.0000	4.1240	ppb	0.77	500.00	
75 As	# 2	72	85.8	0.0000	0.5528	ppb	9.49	500.00	
78 Se	# 1	72	342.2	0.0000	0.5343	ppb	4.12	500.00	
88 Sr	# 3	72	22123.5	0.0000	0.5200	ppb	1.84	500.00	
90 Zr	# 3	72	707.1	0.0000	1.2820	ppb	0.17	1000.00	
95 Mo	# 3	115	4412.1	0.0000	0.4865	ppb	0.62	500.00	
107 Ag	# 3	115	2639.3	0.0000	0.1260	ppb	3.52	50.00	
111 Cd	# 3	115	2473.8	0.0000	0.5257	ppb	6.01	500.00	
118 Sn	# 3	115	7437.0	0.0000	0.5675	ppb	0.44	500.00	
121 Sb	# 3	115	9115.9	0.0000	0.4828	ppb	1.34	100.00	
137 Ba	# 3	115	3096.1	0.0000	0.5115	ppb	2.52	1000.00	
182 W	# 3	159	513.4	0.0000	0.0121	ppb	39.71	1000.00	
205 Tl	# 3	159	17415.8	0.0000	0.5708	ppb	0.72	500.00	
208 Pb	# 3	159	25176.0	0.0000	0.5451	ppb	0.54	500.00	
235 U	# 3	159	175.6	0.0000	0.0033	ppb	12.17	5.00	
238 U	# 3	159	22959.5	0.0000	0.5202	ppb	1.85	500.00	

ISTD Elements

Element	CPS Mean	CPS RSD(%)	Ref Value	Rec(%)	QC Range(%)	Flag
6 Li # 3	991205.06	1.32	893110.19	111.0	60 - 125	
45 Sc # 1	1548598.50	1.63	1497447.80	103.4	60 - 125	
45 Sc # 2	34363.36	2.86	31623.00	108.7	60 - 125	
45 Sc # 3	3392408.50	0.99	3153266.80	107.6	60 - 125	
72 Ge # 1	441011.81	0.59	436311.72	101.1	60 - 125	
72 Ge # 2	22696.47	1.87	20914.49	108.5	60 - 125	
72 Ge # 3	744039.44	0.88	705390.44	105.5	60 - 125	
115 In # 3	5129719.50	1.59	4921303.50	104.2	60 - 125	
159 Tb # 3	6777970.50	0.71	6554350.50	103.4	60 - 125	

ISTD Ref File : D:\DATA\I982016\J\I98J03.B\98J03004.D\98J03004.D#

0 :Element Failures
0 :ISTD Failures
0 :Max. Number of Failures Allowed
0 :Max. Number of ISTD Failures Allowed

Data Results:
Analytes: Pass
ISTD: Pass

7037

Sample QC Report

Data File: D:\DATA\I982016\J\I98J03.B\98J03012.D\98J03012.D#
Date Acquired: Oct 6 2016 02:15 pm
Acq. Method: EM6020HR.M
Operator: CCapul
Sample Name: MRLJ0602
Misc Info: 1/100/10 ppb
Vial Number: 1305
Current Method: C:\ICPCHEM\1\METHODS\EM6020HR.M
Calibration File: D:\DATA\I982016\A\I98A01.B\EM6020HR.C
Last Cal. Update: Oct 06 2016 02:00 pm
Sample Type: Sample
Dilution Factor: 1.00
Autodil Factor: Undiluted
Final Dil Factor: 1.00

Tune #	Name
#1	h2.u
#2	he.u
#3	norm.u

QC Elements

Element	Tune	ISTD	CPS	Corr Conc	Raw Conc	Units	Conc RSD(%)	High Limit	Flag
7 Li	# 3	6	70276.7	0.0000	0.9697	ppb	4.20	50.00	
9 Be	# 3	6	3600.6	0.0000	1.0050	ppb	1.33	50.00	
11 B	# 3	6	27229.1	0.0000	10.0400	ppb	1.98	100.00	
23 Na	# 1	45	471268.6	0.0000	109.4000	ppb	0.33	50000.00	
24 Mg	# 3	45	1599391.0	0.0000	109.9000	ppb	0.20	50000.00	
27 Al	# 3	45	1978868.0	0.0000	108.8000	ppb	0.21	50000.00	
28 Si	# 1	45	3051.3	0.0000	1.7880	ppb	28.25	10000.00	
31 P	# 3	45	45940.8	0.0000	3.7530	ppb	14.49	400000.00	
39 K	# 2	45	10861.6	0.0000	104.2000	ppb	6.13	50000.00	
40 Ca	# 1	45	739005.5	0.0000	108.0000	ppb	1.19	50000.00	
47 Ti	# 3	45	2206.9	0.0000	1.0480	ppb	2.83	500.00	
51 V	# 2	45	1405.9	0.0000	0.9791	ppb	2.83	500.00	
52 Cr	# 2	45	1695.2	0.0000	1.0610	ppb	5.29	500.00	
55 Mn	# 3	45	40862.9	0.0000	1.0920	ppb	3.09	3000.00	
56 Fe	# 1	45	1615574.0	0.0000	107.0000	ppb	0.45	50000.00	
59 Co	# 3	45	28192.0	0.0000	1.1000	ppb	1.32	500.00	
60 Ni	# 2	45	1130.7	0.0000	1.0130	ppb	5.95	500.00	
63 Cu	# 2	45	2911.9	0.0000	1.1400	ppb	4.19	500.00	
66 Zn	# 3	72	42042.4	0.0000	10.9900	ppb	1.20	500.00	
75 As	# 2	72	147.6	0.0000	1.0440	ppb	10.96	500.00	
78 Se	# 1	72	619.6	0.0000	1.0280	ppb	1.63	500.00	
88 Sr	# 3	72	83738.3	0.0000	2.1950	ppb	0.61	500.00	
90 Zr	# 3	72	808.0	0.0000	1.2880	ppb	0.11	1000.00	
95 Mo	# 3	115	8111.8	0.0000	0.9798	ppb	2.38	500.00	
107 Ag	# 3	115	20113.7	0.0000	1.0550	ppb	1.87	50.00	
111 Cd	# 3	115	4221.7	0.0000	0.9739	ppb	2.69	500.00	
118 Sn	# 3	115	12501.2	0.0000	1.0420	ppb	0.32	500.00	
121 Sb	# 3	115	16599.5	0.0000	0.9887	ppb	0.99	100.00	
137 Ba	# 3	115	5687.1	0.0000	1.0280	ppb	3.95	1000.00	
182 W	# 3	159	320.0	0.0000	0.0010	ppb	118.53	1000.00	
205 Tl	# 3	159	31211.6	0.0000	1.1070	ppb	0.29	500.00	
208 Pb	# 3	159	45179.0	0.0000	1.0680	ppb	1.84	500.00	
235 U	# 3	159	330.0	0.0000	0.0067	ppb	4.14	5.00	
238 U	# 3	159	42224.2	0.0000	1.0330	ppb	1.12	500.00	

ISTD Elements

Element	CPS Mean	CPS RSD(%)	Ref Value	Rec(%)	QC Range(%)	Flag
6 Li # 3	912513.44	0.94	893110.19	102.2	60 - 125	
45 Sc # 1	1479864.30	0.34	1497447.80	98.8	60 - 125	
45 Sc # 2	32331.31	2.97	31623.00	102.2	60 - 125	
45 Sc # 3	3092340.50	1.05	3153266.80	98.1	60 - 125	
72 Ge # 1	419720.50	0.44	436311.72	96.2	60 - 125	
72 Ge # 2	21279.58	3.33	20914.49	101.7	60 - 125	
72 Ge # 3	683901.69	0.64	705390.44	97.0	60 - 125	
115 In # 3	4743613.50	1.46	4921303.50	96.4	60 - 125	
159 Tb # 3	6283265.50	0.45	6554350.50	95.9	60 - 125	

ISTD Ref File : D:\DATA\I982016\J\I98J03.B\98J03004.D\98J03004.D#

0 :Element Failures
0 :ISTD Failures
0 :Max. Number of Failures Allowed
0 :Max. Number of ISTD Failures Allowed

Data Results:
Analytes: Pass
ISTD: Pass

7038

ICS-A QC Report

Data File:	D:\DATA\I982016\J\I98J03.B\98J03013.D\98J03013.D#
Date Acquired:	Oct 6 2016 02:20 pm
Acq. Method:	EM6020HR.M
Operator:	CCapul
Sample Name:	ICSA
Misc Info:	
Vial Number:	1303
Current Method:	C:\ICPCHEM\1\METHODS\EM6020HR.M
Calibration File:	D:\DATA\I982016\A\I98A01.B\EM6020HR.C
Last Cal. Update:	Oct 06 2016 02:00 pm
Sample Type:	ICS-A
Dilution Factor:	1.00

QC Elements

Element	Conc.		CPS	Conc RSD(%)	High Limit	Flag
7 Li	0.31	ppb	57206.0	34.12	---	
9 Be	0.01	ppb	92.2	31.17	---	
11 B	0.64	ppb	3156.1	12.75	---	
23 Na	100300.00	ppb	313973700.0	1.08	120000.00	
24 Mg	98170.00	ppb	1305073000.0	1.46	120000.00	
27 Al	100100.00	ppb	1703136000.0	0.88	120000.00	
28 Si	9.68	ppb	9428.6	20.09	---	
31 P	102700.00	ppb	90486400.0	0.80	120000.00	
39 K	98640.00	ppb	5779133.0	1.21	120000.00	
40 Ca	100400.00	ppb	633444480.0	0.72	120000.00	
47 Ti	2208.00	ppb	4089118.0	0.20	2400.00	
51 V	-0.02	ppb	244.4	53.16	---	
52 Cr	1.34	ppb	2024.4	1.87	---	
55 Mn	0.33	ppb	15018.1	0.42	---	
56 Fe	97590.00	ppb	1412407000.0	0.99	120000.00	
59 Co	0.33	ppb	7949.5	2.45	---	
60 Ni	0.08	ppb	345.8	27.94	---	
63 Cu	0.73	ppb	1879.0	0.47	---	
66 Zn	3.05	ppb	11752.5	3.13	---	
75 As	0.17	ppb	26.7	17.28	---	
78 Se	0.22	ppb	126.7	5.48	---	
88 Sr	0.66	ppb	24082.7	2.58	---	
90 Zr	1.56	ppb	7278.0	0.80	---	
95 Mo	2041.00	ppb	13627150.0	0.67	2400.00	
107 Ag	0.03	ppb	435.6	4.29	---	
111 Cd	0.32	ppb	1151.2	31.90	---	
118 Sn	0.05	ppb	585.6	6.89	---	
121 Sb	0.06	ppb	1312.3	9.29	---	
137 Ba	0.11	ppb	541.1	11.07	---	
182 W	0.13	ppb	1890.2	6.55	---	
205 Tl	0.01	ppb	246.7	10.84	---	
208 Pb	0.22	ppb	8578.3	3.20	---	
235 U	0.00	ppb	15.6	14.71	---	
238 U	0.01	ppb	233.3	13.49	---	

ISTD Elements

Element	CPS Mean	CPS RSD(%)	Ref Value	Rec(%)	QC Range(%)	Flag
6 Li	815151.8	1.96	893110.19	91.3	60 - 125	
45 Sc	1438729.9	1.39	1497447.80	96.1	60 - 125	
45 Sc	30914.4	2.42	31623.00	97.8	60 - 125	
45 Sc	2906010.5	1.06	3153266.80	92.2	60 - 125	
72 Ge	383926.0	0.39	436311.72	88.0	60 - 125	
72 Ge	20175.5	0.56	20914.49	96.5	60 - 125	
72 Ge	642187.5	0.43	705390.44	91.0	60 - 125	
115 In	3873873.8	1.19	4921303.50	78.7	60 - 125	
159 Tb	5536851.5	0.30	6554350.50	84.5	60 - 125	

ISTD Ref File : D:\DATA\I982016\J\I98J03.B\98J03004.D\98J03004.D#

0 :Element Failures — 0 :Max. Number of Failures Allowed

0 :ISTD Failures — 0 :Max. Number of ISTD Failures Allowed

Data Results:

Analytes: Pass

ISTD: Pass

ICS-AB QC Report

Data File: D:\DATA\I982016\J\I98J03.B\98J03014.D\98J03014.D#
Date Acquired: Oct 6 2016 02:25 pm
Acq. Method: EM6020HR.M
Operator: CCapul
Sample Name: ICSAB
Misc Info:
Vial Number: 1304
Current Method: C:\ICPCHEM\1\METHODS\EM6020HR.M
Calibration File: D:\DATA\I982016\A\I98A01.B\EM6020HR.C
Last Cal. Update: Oct 06 2016 02:00 pm
Sample Type: ICS-AB
Dilution Factor: 1.00

QC Elements

Element	Conc.		CPS	Conc RSD(%)	Expected	QC Range(%)	Flag
7 Li	20.01	ppb	219134.2	1.36	20.00	80 - 120	
9 Be	20.38	ppb	63111.6	0.39	20.00	80 - 120	
11 B	19.31	ppb	44563.3	1.55	20.00	80 - 120	
23 Na	96520.00	ppb	289676100.0	2.11	100000.00	80 - 120	
24 Mg	96620.00	ppb	1279447000.0	1.78	100000.00	80 - 120	
27 Al	98600.00	ppb	1671292000.0	1.01	100000.00	80 - 120	
28 Si	9.91	ppb	9245.1	5.63	200.00	80 - 120	Fail
31 P	101800.00	ppb	89339672.0	0.72	100000.00	80 - 120	
39 K	100100.00	ppb	5555338.0	1.05	100000.00	80 - 120	
40 Ca	95660.00	ppb	578813700.0	1.04	100000.00	80 - 120	
47 Ti	2234.00	ppb	4120817.0	0.39	2000.00	80 - 120	
51 V	20.02	ppb	21141.1	2.98	20.00	80 - 120	
52 Cr	21.44	ppb	29635.5	0.79	20.00	80 - 120	
55 Mn	20.00	ppb	617524.2	0.06	20.00	80 - 120	
56 Fe	95980.00	ppb	1331469100.0	2.17	100000.00	80 - 120	
59 Co	19.99	ppb	476553.3	0.85	20.00	80 - 120	
60 Ni	19.67	ppb	15009.7	1.08	20.00	80 - 120	
63 Cu	20.23	ppb	42207.0	2.05	20.00	80 - 120	
66 Zn	21.66	ppb	76494.8	0.73	20.00	80 - 120	
75 As	20.84	ppb	2589.2	1.43	20.00	80 - 120	
78 Se	22.21	ppb	11416.5	0.72	20.00	80 - 120	
88 Sr	19.89	ppb	705588.6	0.21	20.00	80 - 120	
90 Zr	7.75	ppb	155779.0	0.64	20.00	80 - 120	Fail
95 Mo	2029.00	ppb	13639580.0	0.41	2000.00	80 - 120	
107 Ag	19.72	ppb	308553.9	1.34	20.00	80 - 120	
111 Cd	19.85	ppb	70451.3	0.51	20.00	80 - 120	
118 Sn	20.25	ppb	197403.3	0.55	20.00	80 - 120	
121 Sb	20.17	ppb	268280.4	1.37	20.00	80 - 120	
137 Ba	21.14	ppb	95086.9	0.43	20.00	80 - 120	
182 W	19.08	ppb	235233.2	0.89	20.00	80 - 120	
205 Tl	20.05	ppb	493980.5	1.26	20.00	80 - 120	
208 Pb	18.93	ppb	692753.9	0.54	20.00	80 - 120	
235 U	0.12	ppb	5185.8	3.41	0.14	80 - 120	
238 U	19.78	ppb	707581.0	1.34	19.86	80 - 120	

ISTD Elements

Element	CPS Mean	CPS RSD(%)	Ref Value	Rec(%)	QC Range(%)	Flag
6 Li	803314.8	1.58	893110.19	89.9	60 - 125	
45 Sc	1379721.6	3.40	1497447.80	92.1	60 - 125	
45 Sc	29289.6	2.64	31623.00	92.6	60 - 125	
45 Sc	2894660.0	0.42	3153266.80	91.8	60 - 125	
72 Ge	361772.8	1.73	436311.72	82.9	60 - 125	
72 Ge	19338.7	1.72	20914.49	92.5	60 - 125	
72 Ge	640524.4	0.95	705390.44	90.8	60 - 125	
115 In	3900147.5	0.57	4921303.50	79.3	60 - 125	
159 Tb	5506710.5	0.86	6554350.50	84.0	60 - 125	

ISTD Ref File : D:\DATA\I982016\J\I98J03.B\98J03004.D\98J03004.D#

2 :Element Failures 0 :Max. Number of Failures Allowed
0 :ISTD Failures 0 :Max. Number of ISTD Failures Allowed

Data Results:
Analytes: Fail
ISTD: Pass

7848

CCV QC Report

Data File: D:\DATA\I982016\J\I98J03.B\98J03016.D\98J03016.D#
Date Acquired: Oct 6 2016 02:34 pm
Operator: CCapul
Sample Name: CCV1
Misc Info:
Vial Number: * 1206
Current Method: C:\ICPCHEM\1\METHODS\EM6020HR.M
Calibration File: D:\DATA\I982016\A\I98A01.B\EM6020HR.C
Last Cal Update: Oct 06 2016 02:00 pm
Sample Type: CCV
Total Dil Factor: 1.00

QC Elements

Element	Conc.	CPS	Conc RSD(%)	Expected	QC Range(%)	Flag
7 Li	25.05 ppb	285604.59	2.05	25.00	90 - 110	
9 Be	25.71 ppb	87189.24	1.07	25.00	90 - 110	
11 B	52.81 ppb	130248.80	2.03	50.00	90 - 110	
23 Na	24630.00 ppb	82862832.00	1.05	25000.00	90 - 110	
24 Mg	25210.00 ppb	365103620.00	1.87	25000.00	90 - 110	
27 Al	25580.00 ppb	474330910.00	1.38	25000.00	90 - 110	
28 Si	2489.00 ppb	2195224.00	0.98	2500.00	90 - 110	
31 P	257.80 ppb	290771.41	1.01	250.00	90 - 110	
39 K	25600.00 ppb	1589122.00	0.76	25000.00	90 - 110	
40 Ca	24920.00 ppb	168819010.00	0.50	25000.00	90 - 110	
47 Ti	252.90 ppb	510173.50	1.06	250.00	90 - 110	
51 V	251.50 ppb	293181.91	1.24	250.00	90 - 110	
52 Cr	254.20 ppb	391209.69	1.24	250.00	90 - 110	
55 Mn	1522.00 ppb	50986360.00	1.11	1500.00	90 - 110	
56 Fe	24820.00 ppb	385497500.00	0.50	25000.00	90 - 110	
59 Co	266.60 ppb	6949585.00	2.26	250.00	90 - 110	
60 Ni	255.30 ppb	213868.30	1.65	250.00	90 - 110	
63 Cu	253.90 ppb	587598.69	1.51	250.00	90 - 110	
66 Zn	242.90 ppb	915353.38	2.90	250.00	90 - 110	
75 As	249.70 ppb	34589.99	0.51	250.00	90 - 110	
78 Se	250.20 ppb	151865.00	0.43	250.00	90 - 110	
88 Sr	251.80 ppb	9648976.00	1.18	250.00	90 - 110	
90 Zr	25.92 ppb	639638.88	1.81	25.00	90 - 110	
95 Mo	249.70 ppb	1986707.00	2.65	250.00	90 - 110	
107 Ag	25.45 ppb	471308.19	0.47	25.00	90 - 110	
111 Cd	236.40 ppb	992932.31	4.31	250.00	90 - 110	
118 Sn	255.30 ppb	2944660.00	1.68	250.00	90 - 110	
121 Sb	49.16 ppb	773152.50	0.70	50.00	90 - 110	
137 Ba	512.60 ppb	2727874.00	2.49	500.00	90 - 110	
182 W	25.63 ppb	357480.50	2.18	25.00	90 - 110	
205 Tl	252.10 ppb	7029563.00	1.92	250.00	90 - 110	
208 Pb	257.20 ppb	10648050.00	2.40	250.00	90 - 110	
235 U	1.64 ppb	79243.90	1.86	1.80	90 - 110	
238 U	243.30 ppb	9853657.00	2.43	250.00	90 - 110	

ISTD Elements

Element	CPS Mean	CPS RSD(%)	Ref Value	Rec(%)	QC Range(%)	Flag
6 Li	879923.81	2.55	893110.19	98.5	60 - 125	
45 Sc	1544120.10	0.44	1497447.80	103.1	60 - 125	
45 Sc	32687.73	2.34	31623.00	103.4	60 - 125	
45 Sc	3166327.00	1.45	3153266.80	100.4	60 - 125	
72 Ge	427432.28	0.91	436311.72	98.0	60 - 125	
72 Ge	21598.95	0.90	20914.49	103.3	60 - 125	
72 Ge	692514.50	0.98	705390.44	98.2	60 - 125	
115 In	4616288.50	0.52	4921303.50	93.8	60 - 125	
159 Tb	6234229.50	2.66	6554350.50	95.1	60 - 125	

ISTD Ref File : D:\DATA\I982016\J\I98J03.B\98J03004.D\98J03004.D#

0 :Element Failures 0 :Max. Number of Failures Allowed
0 :ISTD Failures 0 :Max. Number of ISTD Failures Allowed

Data Results:

Analytes: Pass
ISTD: Pass

7041

CCB QC Report

Data File: D:\DATA\I982016\J\I98J03.B\98J03017.D\98J03017.D#
Date Acquired: Oct 6 2016 02:38 pm
Acq. Method: EM6020HR.M
Operator: CCapul
Sample Name: CCB1
Misc Info:
Vial Number: 1202
Current Method: C:\ICPCHEM\1\METHODS\EM6020HR.M
Calibration File: D:\DATA\I982016\A\I98A01.B\EM6020HR.C
Last Cal. Update: Oct 06 2016 02:00 pm
Sample Type: CCB
Dilution Factor: 1.00

QC Elements

Element	Conc.		CPS	Conc RSD(%)	High Limit	Flag
7 Li	-0.0719	ppb	59428.9	170.12	0.20	
9 Be	-0.0056	ppb	47.8	59.38	0.10	
11 B	-0.0593	ppb	1734.6	23.91	5.00	
23 Na	10.3000	ppb	156667.4	7.77	40.00	
24 Mg	-0.2085	ppb	43317.8	15.65	10.00	
27 Al	0.2633	ppb	13618.8	7.57	20.00	
28 Si	1.6270	ppb	3003.3	25.32	20.00	
31 P	3.4200	ppb	47327.1	6.26	10.00	
39 K	0.3752	ppb	4591.0	478.68	20.00	
40 Ca	2.1960	ppb	53867.2	15.31	25.00	
47 Ti	0.0328	ppb	214.5	36.37	0.50	
51 V	-0.0193	ppb	261.1	46.09	0.50	
52 Cr	0.0051	ppb	91.3	98.27	0.20	
55 Mn	0.0125	ppb	5765.9	53.11	0.20	
56 Fe	3.4620	ppb	75647.4	12.66	10.00	
59 Co	0.0044	ppb	295.6	24.75	0.20	
60 Ni	-0.0782	ppb	232.7	41.32	0.20	
63 Cu	0.0207	ppb	359.3	23.88	0.40	
66 Zn	-0.0082	ppb	1182.3	42.32	2.00	
75 As	0.0538	ppb	12.9	27.88	0.20	
78 Se	0.0584	ppb	44.0	10.95	0.20	
88 Sr	0.0048	ppb	875.6	3.69	0.20	
90 Zr	1.2730	ppb	426.7	0.24	2.00	
95 Mo	0.1001	ppb	957.9	9.95	0.40	
107 Ag	0.0040	ppb	124.4	11.27	0.20	
111 Cd	0.0118	ppb	73.7	45.68	0.20	
118 Sn	0.0397	ppb	647.8	18.89	0.20	
121 Sb	0.0007	ppb	671.2	461.18	0.40	
137 Ba	0.0102	ppb	125.6	70.97	0.20	
182 W	0.0273	ppb	727.9	10.98	1.00	
205 Tl	0.0159	ppb	577.8	18.81	0.20	
208 Pb	0.0141	ppb	1242.3	6.00	0.10	
235 U	0.0002	ppb	11.1	21.25	1.00	
238 U	0.0132	ppb	628.9	11.33	0.10	

ISTD Elements

Element	CPS Mean	CPS RSD(%)	Ref Value	Rec(%)	QC Range(%)	Flag
6 Li	896468.2	1.80	893110.19	100.4	60 - 125	
45 Sc	1523977.0	1.15	1497447.80	101.8	60 - 125	
45 Sc	32927.4	1.11	31623.00	104.1	60 - 125	
45 Sc	3207443.5	0.35	3153266.80	101.7	60 - 125	
72 Ge	439466.7	0.90	436311.72	100.7	60 - 125	
72 Ge	22318.0	2.27	20914.49	106.7	60 - 125	
72 Ge	709871.3	0.47	705390.44	100.6	60 - 125	
115 In	4929388.5	1.34	4921303.50	100.2	60 - 125	
159 Tb	6622273.5	1.11	6554350.50	101.0	60 - 125	

ISTD Ref File : D:\DATA\I982016\J\I98J03.B\98J03004.D\98J03004.D#

0 :Element Failures 0 :Max. Number of Failures Allowed
0 :ISTD Failures 0 :Max. Nnumber of ISTD Failures Allowed

Data Results:
Analytes: Pass
ISTD: Pass

CCV QC Report

Data File: D:\DATA\I982016\J\I98J03.B\98J03079.D\98J03079.D#
Date Acquired: Oct 6 2016 07:23 pm
Operator: CCapul
Sample Name: CCV7
Misc Info:
Vial Number: 1206
Current Method: C:\ICPCHEM\1\METHODS\EM6020HR.M
Calibration File: D:\DATA\I982016\A\I98A01.B\EM6020HR.C
Last Cal Update: Oct 06 2016 02:00 pm
Sample Type: CCV
Total Dil Factor: 1.00

QC Elements

Element	Conc.	CPS	Conc RSD(%)	Expected	QC Range(%)	Flag
7 Li	25.59 ppb	235104.00	1.77	25.00	90 - 110	
9 Be	26.67 ppb	73190.10	1.34	25.00	90 - 110	
11 B	52.45 ppb	104723.70	1.63	50.00	90 - 110	
23 Na	24610.00 ppb	81565992.00	0.60	25000.00	90 - 110	
24 Mg	23720.00 ppb	312425310.00	1.24	25000.00	90 - 110	
27 Al	24100.00 ppb	406320290.00	1.08	25000.00	90 - 110	
28 Si	2547.00 ppb	2211958.00	0.46	2500.00	90 - 110	
31 P	239.80 ppb	248684.41	0.88	250.00	90 - 110	
39 K	25070.00 ppb	1574940.00	2.29	25000.00	90 - 110	
40 Ca	25340.00 ppb	169078000.00	0.47	25000.00	90 - 110	
47 Ti	247.30 ppb	453882.00	0.81	250.00	90 - 110	
51 V	246.40 ppb	290587.69	1.17	250.00	90 - 110	
52 Cr	248.10 ppb	386420.50	1.23	250.00	90 - 110	
55 Mn	1506.00 ppb	45903060.00	1.29	1500.00	90 - 110	
56 Fe	24540.00 ppb	375467100.00	0.65	25000.00	90 - 110	
59 Co	246.10 ppb	5834052.00	1.68	250.00	90 - 110	
60 Ni	249.30 ppb	211364.91	1.34	250.00	90 - 110	
63 Cu	247.00 ppb	578591.00	0.90	250.00	90 - 110	
66 Zn	249.00 ppb	872312.50	0.42	250.00	90 - 110	
75 As	245.20 ppb	35391.51	0.84	250.00	90 - 110	
78 Se	246.80 ppb	149093.50	0.86	250.00	90 - 110	
88 Sr	253.10 ppb	9015359.00	0.79	250.00	90 - 110	
90 Zr	25.56 ppb	585937.69	1.27	25.00	90 - 110	
95 Mo	238.70 ppb	1820058.00	1.09	250.00	90 - 110	
107 Ag	25.16 ppb	446591.59	0.65	25.00	90 - 110	
111 Cd	239.70 ppb	964536.63	0.63	250.00	90 - 110	
118 Sn	249.00 ppb	2752077.00	1.68	250.00	90 - 110	
121 Sb	49.09 ppb	739727.13	0.86	50.00	90 - 110	
137 Ba	508.60 ppb	2593431.00	0.47	500.00	90 - 110	
182 W	25.13 ppb	351481.00	0.39	25.00	90 - 110	
205 Tl	256.50 ppb	7165565.00	0.73	250.00	90 - 110	
208 Pb	255.40 ppb	10599380.00	1.10	250.00	90 - 110	
235 U	1.60 ppb	77390.14	1.13	1.80	90 - 110	Fail
238 U	247.50 ppb	10040670.00	0.54	250.00	90 - 110	

ISTD Elements

Element	CPS Mean	CPS RSD(%)	Ref Value	Rec(%)	QC Range(%)	Flag
6 Li	712099.19	1.55	893110.19	79.7	60 - 125	
45 Sc	1520950.40	0.63	1497447.80	101.6	60 - 125	
45 Sc	33073.27	0.55	31623.00	104.6	60 - 125	
45 Sc	2879555.80	1.01	3153266.80	91.3	60 - 125	
72 Ge	425386.91	0.52	436311.72	97.5	60 - 125	
72 Ge	22506.20	0.97	20914.49	107.6	60 - 125	
72 Ge	643694.88	0.55	705390.44	91.3	60 - 125	
115 In	4423196.00	0.11	4921303.50	89.9	60 - 125	
159 Tb	6247058.00	0.47	6554350.50	95.3	60 - 125	

ISTD Ref File : D:\DATA\I982016\J\I98J03.B\98J03004.D\98J03004.D#

1 :Element Failures 0 :Max. Number of Failures Allowed
0 :ISTD Failures 0 :Max. Number of ISTD Failures Allowed

Data Results:

Analytes: Fail
ISTD: Pass

7043

CCB QC Report

Data File: D:\DATA\I982016\J\I98J03.B\98J03080.D\98J03080.D#
Date Acquired: Oct 6 2016 07:27 pm
Acq. Method: EM6020HR.M
Operator: CCapul
Sample Name: CCB7
Misc Info:
Vial Number: 1202
Current Method: C:\ICPCHEM\1\METHODS\EM6020HR.M
Calibration File: D:\DATA\I982016\A\I98A01.B\EM6020HR.C
Last Cal. Update: Oct 06 2016 02:00 pm
Sample Type: CCB
Dilution Factor: 1.00

QC Elements				Conc		
Element	Conc.		CPS	RSD(%)	High Limit	Flag
7 Li	-0.0677	ppb	51454.1	151.89	0.20	
9 Be	-0.0047	ppb	44.4	86.79	0.10	
11 B	-0.1796	ppb	1242.3	12.86	5.00	
23 Na	7.5630	ppb	149955.4	10.83	40.00	
24 Mg	0.0491	ppb	43578.7	125.20	10.00	
27 Al	0.4249	ppb	15406.3	10.56	20.00	
28 Si	6.9690	ppb	7762.9	11.72	20.00	
31 P	-3.0760	ppb	37954.2	15.70	10.00	
39 K	0.6532	ppb	4796.6	456.37	20.00	
40 Ca	-0.0097	ppb	39756.3	997.52	25.00	
47 Ti	-0.0016	ppb	133.3	812.39	0.50	
51 V	-0.0157	ppb	276.2	40.33	0.50	
52 Cr	0.0085	ppb	100.4	84.23	0.20	
55 Mn	0.0060	ppb	5130.1	105.24	0.20	
56 Fe	1.9480	ppb	53316.8	4.30	10.00	
59 Co	0.0059	ppb	308.9	30.01	0.20	
60 Ni	-0.0915	ppb	230.7	15.34	0.20	
63 Cu	-0.0510	ppb	200.0	4.44	0.40	
66 Zn	-0.0847	ppb	860.1	14.64	2.00	
75 As	0.0805	ppb	17.6	67.05	0.20	
78 Se	0.0395	ppb	33.1	7.51	0.20	
88 Sr	0.0020	ppb	742.3	109.66	0.20	
90 Zr	1.2690	ppb	333.4	0.25	2.00	
95 Mo	0.0860	ppb	834.5	14.24	0.40	
107 Ag	0.0021	ppb	85.6	61.89	0.20	
111 Cd	0.0092	ppb	61.9	36.12	0.20	
118 Sn	0.0405	ppb	655.6	9.70	0.20	
121 Sb	0.0014	ppb	680.0	164.75	0.40	
137 Ba	0.0086	ppb	116.7	11.97	0.20	
182 W	0.0288	ppb	761.2	27.36	1.00	
205 Tl	0.0098	ppb	405.6	17.83	0.20	
208 Pb	0.0153	ppb	1313.4	11.62	0.10	
235 U	0.0001	ppb	10.0	78.80	1.00	
238 U	0.0163	ppb	774.5	10.50	0.10	

ISTD Elements		CPS				
Element	CPS Mean	RSD(%)	Ref Value	Rec(%)	QC Range(%)	Flag
6 Li	775491.1	1.40	893110.19	86.8	60 - 125	
45 Sc	1548473.9	1.47	1497447.80	103.4	60 - 125	
45 Sc	34275.3	0.63	31623.00	108.4	60 - 125	
45 Sc	2968116.5	1.30	3153266.80	94.1	60 - 125	
72 Ge	451555.3	0.42	436311.72	103.5	60 - 125	
72 Ge	23663.8	3.44	20914.49	113.1	60 - 125	
72 Ge	688335.8	0.58	705390.44	97.6	60 - 125	
115 In	4913574.0	0.19	4921303.50	99.8	60 - 125	
159 Tb	6732166.5	0.38	6554350.50	102.7	60 - 125	

ISTD Ref File : D:\DATA\I982016\J\I98J03.B\98J03004.D\98J03004.D#

0 :Element Failures 0 :Max. Number of Failures Allowed
0 :ISTD Failures 0 :Max. Nnumber of ISTD Failures Allowed

Data Results:
Analytes: Pass
ISTD: Pass

7044

CCB QC Report

Data File:	D:\DATA\I982016\J\I98J03.B\98J03081.D\98J03081.D#
Date Acquired:	Oct 6 2016 07:32 pm
Acq. Method:	EM6020HR.M
Operator:	CCapul
Sample Name:	IMJ007WB
Misc Info:	
Vial Number:	2401
Current Method:	C:\ICPCHEM\1\METHODS\EM6020HR.M
Calibration File:	D:\DATA\I982016\A\I98A01.B\EM6020HR.C
Last Cal. Update:	Oct 06 2016 02:00 pm
Sample Type:	MBW
Dilution Factor:	1.00

QC Elements

Element	Conc.		CPS	Conc RSD(%)	High Limit	Flag
7 Li	0.0815	ppb	50986.0	126.83	1.00	
9 Be	-0.0072	ppb	35.6	44.35	0.50	
11 B	-0.3109	ppb	931.2	11.20	5.00	
23 Na	11.5400	ppb	158629.3	4.29	50.00	
24 Mg	0.6951	ppb	51722.8	1.76	50.00	
27 Al	1.4500	ppb	32826.8	1.89	50.00	
28 Si	7.3540	ppb	7879.3	11.56	25.00	
31 P	-2.8260	ppb	37717.5	16.57	25.00	
39 K	4.7260	ppb	5077.9	35.97	50.00	
40 Ca	10.2200	ppb	106056.4	0.74	50.00	
47 Ti	0.0201	ppb	172.2	33.20	1.00	
51 V	-0.0203	ppb	271.6	44.35	0.50	
52 Cr	0.0093	ppb	102.2	44.30	0.50	
55 Mn	-0.0128	ppb	4486.5	40.44	0.50	
56 Fe	1.0900	ppb	38800.7	4.60	50.00	
59 Co	0.0018	ppb	207.8	80.86	0.50	
60 Ni	-0.2114	ppb	125.8	2.78	0.50	
63 Cu	-0.0125	ppb	294.5	24.40	0.50	
66 Zn	0.2446	ppb	2082.5	8.36	10.00	
75 As	0.0060	ppb	6.4	274.95	0.50	
78 Se	0.0137	ppb	16.2	25.83	0.50	
88 Sr	0.0131	ppb	1160.1	13.60	1.00	
90 Zr	1.2750	ppb	466.0	0.72	2.50	
95 Mo	0.0193	ppb	266.7	18.22	1.00	
107 Ag	0.0009	ppb	62.2	57.37	0.50	
111 Cd	0.0048	ppb	42.0	66.29	0.50	
118 Sn	0.0113	ppb	294.5	9.07	0.50	
121 Sb	-0.0100	ppb	484.5	11.14	0.50	
137 Ba	0.0782	ppb	505.6	10.05	0.50	
182 W	0.0003	ppb	325.6	1776.60	1.00	
205 Tl	0.0029	ppb	194.5	33.62	0.50	
208 Pb	0.0089	ppb	1008.9	18.32	0.50	
235 U	0.0001	ppb	6.7	83.16	---	
238 U	0.0045	ppb	254.5	15.95	0.50	

ISTD Elements

Element	CPS Mean	CPS RSD(%)	Ref Value	Rec(%)	QC Range(%)	Flag
6 Li	751151.0	0.97	893110.19	84.1	60 - 125	
45 Sc	1503635.8	0.77	1497447.80	100.4	60 - 125	
45 Sc	34382.3	1.86	31623.00	108.7	60 - 125	
45 Sc	2932302.8	0.23	3153266.80	93.0	60 - 125	
72 Ge	442915.7	1.17	436311.72	101.5	60 - 125	
72 Ge	23684.9	2.61	20914.49	113.2	60 - 125	
72 Ge	685083.2	0.83	705390.44	97.1	60 - 125	
115 In	4864997.5	0.34	4921303.50	98.9	60 - 125	
159 Tb	6605224.0	0.33	6554350.50	100.8	60 - 125	

ISTD Ref File : D:\DATA\I982016\J\I98J03.B\98J03004.D\98J03004.D#

0 :Element Failures — 0 :Max. Number of Failures Allowed

0 :ISTD Failures — 0 :Max. Nnumber of ISTD Failures Allowed

Data Results:

Analytes: Pass

ISTD: Pass

7945

LCS QC Report

Data File: D:\DATA\I982016\J\I98J03.B\98J03082.D\98J03082.D#
Date Acquired: Oct 6 2016 07:37 pm
Operator: CCapul
Sample Name: IMJ007WL
Misc Info:
Vial Number: 2402
Current Method: C:\ICPCHEM\1\METHODS\EM6020HR.M
Calibration File: D:\DATA\I982016\A\I98A01.B\EM6020HR.C
Last Cal. Update: Oct 06 2016 02:00 pm
Sample Type: LCS
Final Dil Factor: 1.00

Analyte Elements

Element	CPS Mean	Conc.		RSD(%)	Expected	QC Range(%)	Flag
7 Li	271477.91	30.41	ppb	1.54	30.00	80 - 120.0	
9 Be	87320.97	31.70	ppb	2.39	30.00	80 - 120.0	
11 B	63236.59	31.25	ppb	1.62	30.00	80 - 120.0	
23 Na	9991327.00	3117.00	ppb	0.13	3000.00	80 - 120.0	
24 Mg	38054808.00	2875.00	ppb	0.47	3000.00	80 - 120.0	
27 Al	49214568.00	2907.00	ppb	1.24	3000.00	80 - 120.0	
28 Si	9213.59	9.26	ppb	9.46	3000.00	80 - 120.0	Fail
31 P	38111.27	-1.75	ppb	139.10	300.00	80 - 120.0	Fail
39 K	190376.20	2950.00	ppb	1.94	3000.00	80 - 120.0	
40 Ca	19915830.00	3112.00	ppb	1.19	3000.00	80 - 120.0	
47 Ti	53601.67	29.04	ppb	0.72	30.00	80 - 120.0	
51 V	34366.47	28.76	ppb	1.20	30.00	80 - 120.0	
52 Cr	46777.52	29.82	ppb	1.59	30.00	80 - 120.0	
55 Mn	928016.50	30.19	ppb	1.64	30.00	80 - 120.0	
56 Fe	43980392.00	3001.00	ppb	0.69	3000.00	80 - 120.0	
59 Co	726608.13	30.53	ppb	1.62	30.00	80 - 120.0	
60 Ni	26129.47	30.34	ppb	0.28	30.00	80 - 120.0	
63 Cu	73318.91	31.01	ppb	1.28	30.00	80 - 120.0	
66 Zn	216930.41	59.89	ppb	0.59	60.00	80 - 120.0	
75 As	4144.26	28.26	ppb	1.64	30.00	80 - 120.0	
78 Se	17174.77	28.97	ppb	0.87	30.00	80 - 120.0	
88 Sr	1115512.00	30.39	ppb	0.26	30.00	80 - 120.0	
90 Zr	644.49	1.28	ppb	0.28	20.00	80 - 120.0	Fail
95 Mo	214361.80	27.09	ppb	1.77	30.00	80 - 120.0	
107 Ag	558106.88	30.32	ppb	1.55	30.00	80 - 120.0	
111 Cd	121330.50	29.06	ppb	0.51	30.00	80 - 120.0	
118 Sn	341085.81	29.74	ppb	0.68	30.00	80 - 120.0	
121 Sb	451388.81	28.86	ppb	0.35	30.00	80 - 120.0	
137 Ba	161855.09	30.59	ppb	0.26	30.00	80 - 120.0	
182 W	327.80	0.00	ppb	269.88	30.00	80 - 120.0	Fail
205 Tl	922849.19	31.84	ppb	1.85	30.00	80 - 120.0	
208 Pb	1294386.00	30.06	ppb	0.45	30.00	80 - 120.0	
235 U	9310.78	0.19	ppb	3.02	0.21	80 - 120.0	
238 U	1245839.00	29.60	ppb	1.40	29.79	80 - 120.0	

ISTD Elements

Element	CPS Mean	RSD(%)	Ref Value	Rec(%)	QC Range(%)	Flag
6 Li	714910.25	2.23	893110.19	80.0	60 - 125	
45 Sc	1456197.00	0.34	1497447.80	97.2	60 - 125	
45 Sc	33260.45	2.39	31623.00	105.2	60 - 125	
45 Sc	2890283.00	0.82	3153266.80	91.7	60 - 125	
72 Ge	417355.06	0.85	436311.72	95.7	60 - 125	
72 Ge	22836.75	1.62	20914.49	109.2	60 - 125	
72 Ge	662917.94	0.81	705390.44	94.0	60 - 125	
115 In	4588452.50	0.56	4921303.50	93.2	60 - 125	
159 Tb	6479948.00	0.29	6554350.50	98.9	60 - 125	

ISTD Ref File : D:\DATA\I982016\J\I98J03.B\98J03004.D\98J03004.D#

4 :Element Failures
0 :ISTD Failures
0 :Max. Number of Failures Allowed
0 :Max. Number of ISTD Failures Allowed

Data Results:
Analytes: Fail
ISTD: Pass

7846

LCS QC Report

Data File: D:\DATA\I982016\J\I98J03.B\98J03083.D\98J03083.D#
Date Acquired: Oct 6 2016 07:41 pm
Operator: CCapul
Sample Name: IMJ007WC
Misc Info:
Vial Number: 2403
Current Method: C:\ICPCHEM\1\METHODS\EM6020HR.M
Calibration File: D:\DATA\I982016\A\I98A01.B\EM6020HR.C
Last Cal. Update: Oct 06 2016 02:00 pm
Sample Type: LCS
Final Dil Factor: 1.00

Analyte Elements

Element	CPS Mean	Conc.		RSD(%)	Expected	QC Range(%)	Flag
7 Li	273961.09	29.86	ppb	2.04	30.00	80 - 120.0	
9 Be	87721.74	31.08	ppb	1.94	30.00	80 - 120.0	
11 B	63842.65	30.78	ppb	2.84	30.00	80 - 120.0	
23 Na	10125780.00	3114.00	ppb	1.42	3000.00	80 - 120.0	
24 Mg	37945872.00	2904.00	ppb	1.98	3000.00	80 - 120.0	
27 Al	48573448.00	2906.00	ppb	1.98	3000.00	80 - 120.0	
28 Si	9381.73	9.30	ppb	6.12	3000.00	80 - 120.0	Fail
31 P	37158.18	-2.30	ppb	57.56	300.00	80 - 120.0	Fail
39 K	189921.00	2955.00	ppb	1.52	3000.00	80 - 120.0	
40 Ca	19890450.00	3064.00	ppb	1.75	3000.00	80 - 120.0	
47 Ti	53560.09	29.39	ppb	0.15	30.00	80 - 120.0	
51 V	33847.78	28.45	ppb	0.97	30.00	80 - 120.0	
52 Cr	46526.19	29.79	ppb	1.38	30.00	80 - 120.0	
55 Mn	937257.88	30.88	ppb	1.03	30.00	80 - 120.0	
56 Fe	44554912.00	2997.00	ppb	0.59	3000.00	80 - 120.0	
59 Co	715958.13	30.46	ppb	1.82	30.00	80 - 120.0	
60 Ni	26047.07	30.38	ppb	1.90	30.00	80 - 120.0	
63 Cu	73207.74	31.10	ppb	1.12	30.00	80 - 120.0	
66 Zn	217106.00	60.20	ppb	1.04	60.00	80 - 120.0	
75 As	4169.60	27.90	ppb	1.29	30.00	80 - 120.0	
78 Se	17448.71	28.90	ppb	1.73	30.00	80 - 120.0	
88 Sr	1102906.00	30.18	ppb	1.19	30.00	80 - 120.0	
90 Zr	3419.22	1.40	ppb	11.56	20.00	80 - 120.0	Fail
95 Mo	214707.80	26.82	ppb	0.47	30.00	80 - 120.0	
107 Ag	552060.38	29.63	ppb	0.82	30.00	80 - 120.0	
111 Cd	120292.50	28.48	ppb	1.04	30.00	80 - 120.0	
118 Sn	339895.59	29.29	ppb	0.74	30.00	80 - 120.0	
121 Sb	447712.41	28.29	ppb	0.99	30.00	80 - 120.0	
137 Ba	160776.30	30.03	ppb	0.53	30.00	80 - 120.0	
182 W	286.68	0.00	ppb	215.13	30.00	80 - 120.0	Fail
205 Tl	921365.81	32.19	ppb	1.80	30.00	80 - 120.0	
208 Pb	1279152.00	30.08	ppb	1.11	30.00	80 - 120.0	
235 U	9278.56	0.19	ppb	1.36	0.21	80 - 120.0	
238 U	1234556.00	29.71	ppb	0.95	29.79	80 - 120.0	

ISTD Elements

Element	CPS Mean	RSD(%)	Ref Value	Rec(%)	QC Range(%)	Flag
6 Li	732570.88	2.20	893110.19	82.0	60 - 125	
45 Sc	1477264.50	1.17	1497447.80	98.7	60 - 125	
45 Sc	33118.90	2.44	31623.00	104.7	60 - 125	
45 Sc	2853847.00	1.32	3153266.80	90.5	60 - 125	
72 Ge	425094.22	1.09	436311.72	97.4	60 - 125	
72 Ge	23273.02	1.95	20914.49	111.3	60 - 125	
72 Ge	660129.31	0.71	705390.44	93.6	60 - 125	
115 In	4642876.50	0.42	4921303.50	94.3	60 - 125	
159 Tb	6398444.00	0.41	6554350.50	97.6	60 - 125	

ISTD Ref File : D:\DATA\I982016\J\I98J03.B\98J03004.D\98J03004.D#

4 :Element Failures
0 :ISTD Failures
0 :Max. Number of Failures Allowed
0 :Max. Number of ISTD Failures Allowed

Data Results:
Analytes: Fail
ISTD: Pass

7847

CCV QC Report

Data File: D:\DATA\I982016\J\I98J03.B\98J03091.D\98J03091.D#
Date Acquired: Oct 6 2016 08:18 pm
Operator: CCapul
Sample Name: CCV8
Misc Info:
Vial Number: 1206
Current Method: C:\ICPCHEM\1\METHODS\EM6020HR.M
Calibration File: D:\DATA\I982016\A\I98A01.B\EM6020HR.C
Last Cal Update: Oct 06 2016 02:00 pm
Sample Type: CCV
Total Dil Factor: 1.00

QC Elements			Conc			
Element	Conc.	CPS	RSD(%)	Expected	QC Range(%)	Flag
7 Li	25.99 ppb	233185.70	0.48	25.00	90 - 110	
9 Be	26.78 ppb	72013.73	0.27	25.00	90 - 110	
11 B	53.65 ppb	104921.20	1.74	50.00	90 - 110	
23 Na	24570.00 ppb	80372200.00	0.68	25000.00	90 - 110	
24 Mg	23450.00 ppb	311637090.00	1.40	25000.00	90 - 110	
27 Al	24130.00 ppb	410496510.00	0.35	25000.00	90 - 110	
28 Si	2495.00 ppb	2138505.00	0.56	2500.00	90 - 110	
31 P	233.60 ppb	245386.70	0.90	250.00	90 - 110	
39 K	24960.00 ppb	1560772.00	1.20	25000.00	90 - 110	
40 Ca	25060.00 ppb	165015200.00	0.34	25000.00	90 - 110	
47 Ti	246.70 ppb	456725.00	0.53	250.00	90 - 110	
51 V	246.70 ppb	289681.50	0.89	250.00	90 - 110	
52 Cr	250.00 ppb	387669.69	0.83	250.00	90 - 110	
55 Mn	1506.00 ppb	46279080.00	1.51	1500.00	90 - 110	
56 Fe	24470.00 ppb	369572420.00	0.07	25000.00	90 - 110	
59 Co	247.20 ppb	5912402.00	1.42	250.00	90 - 110	
60 Ni	250.50 ppb	211403.09	1.15	250.00	90 - 110	
63 Cu	248.90 ppb	580343.38	1.15	250.00	90 - 110	
66 Zn	248.70 ppb	878209.63	1.60	250.00	90 - 110	
75 As	243.40 ppb	35447.00	0.70	250.00	90 - 110	
78 Se	247.50 ppb	149247.70	1.14	250.00	90 - 110	
88 Sr	255.10 ppb	9162306.00	0.06	250.00	90 - 110	
90 Zr	25.25 ppb	583264.38	0.36	25.00	90 - 110	
95 Mo	239.80 ppb	1852154.00	1.89	250.00	90 - 110	
107 Ag	25.07 ppb	450698.81	0.25	25.00	90 - 110	
111 Cd	242.70 ppb	989426.19	0.36	250.00	90 - 110	
118 Sn	252.10 ppb	2822029.00	0.89	250.00	90 - 110	
121 Sb	49.55 ppb	756350.69	0.17	50.00	90 - 110	
137 Ba	508.20 ppb	2625007.00	0.77	500.00	90 - 110	
182 W	25.11 ppb	356889.41	0.21	25.00	90 - 110	
205 Tl	255.50 ppb	7254478.00	0.44	250.00	90 - 110	
208 Pb	255.00 ppb	10753460.00	1.00	250.00	90 - 110	
235 U	1.60 ppb	78711.07	1.55	1.80	90 - 110	Fail
238 U	247.40 ppb	10202860.00	1.07	250.00	90 - 110	

ISTD Elements		CPS				
Element	CPS Mean	RSD(%)	Ref Value	Rec(%)	QC Range(%)	Flag
6 Li	697580.19	0.32	893110.19	78.1	60 - 125	
45 Sc	1501066.50	0.82	1497447.80	100.2	60 - 125	
45 Sc	32928.50	2.09	31623.00	104.1	60 - 125	
45 Sc	2904510.50	1.52	3153266.80	92.1	60 - 125	
72 Ge	424721.56	0.42	436311.72	97.3	60 - 125	
72 Ge	22705.44	0.53	20914.49	108.6	60 - 125	
72 Ge	648999.25	0.76	705390.44	92.0	60 - 125	
115 In	4480601.50	0.37	4921303.50	91.0	60 - 125	
159 Tb	6349117.50	1.05	6554350.50	96.9	60 - 125	

ISTD Ref File : D:\DATA\I982016\J\I98J03.B\98J03004.D\98J03004.D#

1 :Element Failures — 0 :Max. Number of Failures Allowed
0 :ISTD Failures — 0 :Max. Number of ISTD Failures Allowed

Data Results:

Analytes: Fail
ISTD: Pass

7648

CCB QC Report

Data File: D:\DATA\I982016\J\I98J03.B\98J03092.D\98J03092.D#
Date Acquired: Oct 6 2016 08:23 pm
Acq. Method: EM6020HR.M
Operator: CCapul
Sample Name: CCB8
Misc Info:
Vial Number: 1202
Current Method: C:\ICPCHEM\1\METHODS\EM6020HR.M
Calibration File: D:\DATA\I982016\A\I98A01.B\EM6020HR.C
Last Cal. Update: Oct 06 2016 02:00 pm
Sample Type: CCB
Dilution Factor: 1.00

QC Elements

Element	Conc.		CPS	Conc RSD(%)	High Limit	Flag
7 Li	0.2170	ppb	50081.2	46.27	0.20	Fail
9 Be	-0.0083	ppb	31.1	88.47	0.10	
11 B	0.7117	ppb	2939.3	8.01	5.00	
23 Na	7.5630	ppb	148200.4	10.32	40.00	
24 Mg	-0.3178	ppb	38524.1	1.79	10.00	
27 Al	0.2553	ppb	12438.6	6.84	20.00	
28 Si	8.3390	ppb	8778.4	106.96	20.00	
31 P	-4.5800	ppb	36528.1	2.37	10.00	
39 K	0.5741	ppb	4767.7	373.28	20.00	
40 Ca	1.0240	ppb	46225.6	15.44	25.00	
47 Ti	-0.0097	ppb	117.8	244.87	0.50	
51 V	-0.0774	ppb	199.8	9.99	0.50	
52 Cr	0.0082	ppb	99.6	45.91	0.20	
55 Mn	-0.0088	ppb	4658.8	56.06	0.20	
56 Fe	2.7630	ppb	65211.5	6.71	10.00	
59 Co	0.0027	ppb	231.1	40.72	0.20	
60 Ni	-0.0912	ppb	229.8	19.98	0.20	
63 Cu	-0.0457	ppb	211.8	4.28	0.40	
66 Zn	-0.0968	ppb	820.1	19.40	2.00	
75 As	0.0305	ppb	10.2	37.46	0.20	
78 Se	0.0387	ppb	32.4	24.28	0.20	
88 Sr	0.0011	ppb	711.2	37.09	0.20	
90 Zr	1.2690	ppb	312.2	0.12	2.00	
95 Mo	0.1217	ppb	1153.4	9.54	0.40	
107 Ag	0.0010	ppb	64.4	71.30	0.20	
111 Cd	0.0057	ppb	46.7	55.25	0.20	
118 Sn	0.0434	ppb	700.0	10.14	0.20	
121 Sb	0.0262	ppb	1109.0	9.11	0.40	
137 Ba	0.0043	ppb	93.3	101.88	0.20	
182 W	0.0398	ppb	934.5	12.48	1.00	
205 Tl	0.0136	ppb	523.4	16.72	0.20	
208 Pb	0.0105	ppb	1109.0	6.54	0.10	
235 U	0.0001	ppb	7.8	151.70	1.00	
238 U	0.0145	ppb	700.1	2.65	0.10	

ISTD Elements

Element	CPS Mean	CPS RSD(%)	Ref Value	Rec(%)	QC Range(%)	Flag
6 Li	722926.3	1.57	893110.19	80.9	60 - 125	
45 Sc	1530404.0	1.88	1497447.80	102.2	60 - 125	
45 Sc	34097.2	0.62	31623.00	107.8	60 - 125	
45 Sc	2962163.0	0.16	3153266.80	93.9	60 - 125	
72 Ge	448955.6	0.34	436311.72	102.9	60 - 125	
72 Ge	23971.1	1.99	20914.49	114.6	60 - 125	
72 Ge	692705.4	0.52	705390.44	98.2	60 - 125	
115 In	4979512.0	1.46	4921303.50	101.2	60 - 125	
159 Tb	6784811.0	0.31	6554350.50	103.5	60 - 125	

ISTD Ref File : D:\DATA\I982016\J\I98J03.B\98J03004.D\98J03004.D#

1 :Element Failures
0 :ISTD Failures
0 :Max. Number of Failures Allowed
0 :Max. Nnumber of ISTD Failures Allowed

Data Results:
Analytes: Fail
ISTD: Pass

Sample QC Report

Data File: D:\DATA\I982016\J\I98J03.B\98J03095.D\98J03095.D#
Date Acquired: Oct 6 2016 08:37 pm
Acq. Method: EM6020HR.M
Operator: CCapul
Sample Name: J006-11A
Misc Info:
Vial Number: 2412
Current Method: C:\ICPCHEM\1\METHODS\EM6020HR.M
Calibration File: D:\DATA\I982016\A\I98A01.B\EM6020HR.C
Last Cal. Update: Oct 06 2016 02:00 pm
Sample Type: Sample
Dilution Factor: 1.00
Autodil Factor: Undiluted
Final Dil Factor: 1.00

Tune #	Name
#1	h2.u
#2	he.u
#3	norm.u

QC Elements

Element	Tune	ISTD	CPS	Corr Conc	Raw Conc	Units	Conc RSD(%)	High Limit	Flag
7 Li	# 3	6	325486.7	0.0000	38.5500	ppb	0.80	50.00	
9 Be	# 3	6	91350.4	0.0000	33.7500	ppb	1.19	50.00	
11 B	# 3	6	323349.2	0.0000	165.8000	ppb	1.81	100.00	>LRS
23 Na	# 1	45	33120900.0	0.0000	10220.0000	ppb	2.35	50000.00	
24 Mg	# 3	45	283742300.0	0.0000	21320.0000	ppb	1.68	50000.00	
27 Al	# 3	45	51106940.0	0.0000	2999.0000	ppb	0.55	50000.00	
28 Si	# 1	45	9156984.0	0.0000	10810.0000	ppb	1.95	10000.00	>LRS
31 P	# 3	45	46134.1	0.0000	7.0450	ppb	2.04	400000.00	
39 K	# 2	45	533609.6	0.0000	8649.0000	ppb	2.99	50000.00	
40 Ca	# 1	45	595632000.0	0.0000	91460.0000	ppb	1.85	50000.00	>LRS
47 Ti	# 3	45	65523.3	0.0000	35.2800	ppb	2.96	500.00	
51 V	# 2	45	35935.2	0.0000	30.9800	ppb	2.10	500.00	
52 Cr	# 2	45	48342.1	0.0000	31.7200	ppb	1.25	500.00	
55 Mn	# 3	45	9274361.0	0.0000	301.2000	ppb	2.77	3000.00	
56 Fe	# 1	45	50221780.0	0.0000	3361.0000	ppb	0.72	50000.00	
59 Co	# 3	45	784631.6	0.0000	32.7600	ppb	3.60	500.00	
60 Ni	# 2	45	30455.8	0.0000	36.4700	ppb	2.10	500.00	
63 Cu	# 2	45	78256.1	0.0000	34.0800	ppb	2.13	500.00	
66 Zn	# 3	72	256611.0	0.0000	74.3100	ppb	0.81	500.00	
75 As	# 2	72	4361.7	0.0000	30.3500	ppb	2.06	500.00	
78 Se	# 1	72	19494.3	0.0000	33.6800	ppb	0.55	500.00	
88 Sr	# 3	72	14752530.0	0.0000	421.4000	ppb	0.44	500.00	
90 Zr	# 3	72	3346.8	0.0000	1.3980	ppb	0.71	1000.00	
95 Mo	# 3	115	240850.8	0.0000	31.0700	ppb	0.39	500.00	
107 Ag	# 3	115	459169.6	0.0000	25.4500	ppb	1.05	50.00	
111 Cd	# 3	115	125080.1	0.0000	30.5700	ppb	1.13	500.00	
118 Sn	# 3	115	359318.4	0.0000	31.9800	ppb	1.39	500.00	
121 Sb	# 3	115	455627.5	0.0000	29.7300	ppb	1.56	100.00	
137 Ba	# 3	115	802824.6	0.0000	154.9000	ppb	1.63	1000.00	
182 W	# 3	159	597.8	0.0000	0.0204	ppb	12.55	1000.00	
205 Tl	# 3	159	932099.0	0.0000	32.9100	ppb	0.64	500.00	
208 Pb	# 3	159	1310476.0	0.0000	31.1500	ppb	0.74	500.00	
235 U	# 3	159	10699.8	0.0000	0.2180	ppb	0.84	5.00	
238 U	# 3	159	1417555.0	0.0000	34.4700	ppb	1.11	500.00	

ISTD Elements

Element	CPS Mean	CPS RSD(%)	Ref Value	Rec(%)	QC Range(%)	Flag
6 Li # 3	702358.06	0.22	893110.19	78.6	60 - 125	
45 Sc # 1	1484650.10	0.58	1497447.80	99.1	60 - 125	
45 Sc # 2	32309.01	0.61	31623.00	102.2	60 - 125	
45 Sc # 3	2909837.80	2.06	3153266.80	92.3	60 - 125	
72 Ge # 1	407567.31	1.08	436311.72	93.4	60 - 125	
72 Ge # 2	22384.77	1.92	20914.49	107.0	60 - 125	
72 Ge # 3	632686.56	0.34	705390.44	89.7	60 - 125	
115 In # 3	4496296.00	0.64	4921303.50	91.4	60 - 125	
159 Tb # 3	6331933.50	0.88	6554350.50	96.6	60 - 125	

ISTD Ref File : D:\DATA\I982016\J\I98J03.B\98J03004.D\98J03004.D#

3 :Element Failures
0 :ISTD Failures

0 :Max. Number of Failures Allowed
0 :Max. Number of ISTD Failures Allowed

Data Results:
Analytes: Fail
ISTD: Pass

7050

Sample QC Report

Data File: D:\DATA\I982016\J\I98J03.B\98J03096.D\98J03096.D#
Date Acquired: Oct 6 2016 08:41 pm
Acq. Method: EM6020HR.M
Operator: CCapul
Sample Name: J006-11
Misc Info:
Vial Number: 2501
Current Method: C:\ICPCHEM\1\METHODS\EM6020HR.M
Calibration File: D:\DATA\I982016\A\I98A01.B\EM6020HR.C
Last Cal. Update: Oct 06 2016 02:00 pm
Sample Type: Sample
Dilution Factor: 1.00
Autodil Factor: Undiluted
Final Dil Factor: 1.00

Tune #	Name
#1	h2.u
#2	he.u
#3	norm.u

QC Elements

Element	Tune	ISTD	CPS	Corr Conc	Raw Conc	Units	Conc RSD(%)	High Limit	Flag
7 Li	# 3	6	94387.2	0.0000	6.3920	ppb	4.70	50.00	
9 Be	# 3	6	72.2	0.0000	0.0068	ppb	38.41	50.00	
11 B	# 3	6	265552.6	0.0000	134.4000	ppb	3.12	100.00	>LRS
23 Na	# 1	45	24364850.0	0.0000	7364.0000	ppb	0.41	50000.00	
24 Mg	# 3	45	251136610.0	0.0000	18720.0000	ppb	0.93	50000.00	
27 Al	# 3	45	1306893.0	0.0000	75.6500	ppb	2.64	50000.00	
28 Si	# 1	45	9480483.0	0.0000	10970.0000	ppb	1.53	10000.00	>LRS
31 P	# 3	45	46089.0	0.0000	6.5970	ppb	11.47	400000.00	
39 K	# 2	45	349761.7	0.0000	5572.0000	ppb	1.14	50000.00	
40 Ca	# 1	45	595699520.0	0.0000	89730.0000	ppb	1.51	50000.00	>LRS
47 Ti	# 3	45	9461.2	0.0000	4.9930	ppb	2.64	500.00	
51 V	# 2	45	663.4	0.0000	0.3273	ppb	4.96	500.00	
52 Cr	# 2	45	566.5	0.0000	0.3140	ppb	3.41	500.00	
55 Mn	# 3	45	8315012.0	0.0000	267.9000	ppb	1.58	3000.00	
56 Fe	# 1	45	4838493.0	0.0000	316.4000	ppb	1.00	50000.00	
59 Co	# 3	45	64703.7	0.0000	2.6730	ppb	2.41	500.00	
60 Ni	# 2	45	5232.7	0.0000	5.8950	ppb	2.84	500.00	
63 Cu	# 2	45	6470.3	0.0000	2.6600	ppb	1.62	500.00	
66 Zn	# 3	72	45027.0	0.0000	12.4800	ppb	1.51	500.00	
75 As	# 2	72	82.4	0.0000	0.5421	ppb	6.55	500.00	
78 Se	# 1	72	1277.0	0.0000	2.1190	ppb	1.66	500.00	
88 Sr	# 3	72	13895280.0	0.0000	388.0000	ppb	0.19	500.00	
90 Zr	# 3	72	2899.2	0.0000	1.3760	ppb	2.72	1000.00	
95 Mo	# 3	115	17566.2	0.0000	2.2300	ppb	1.18	500.00	
107 Ag	# 3	115	251.1	0.0000	0.0115	ppb	13.65	50.00	
111 Cd	# 3	115	279.6	0.0000	0.0630	ppb	27.32	500.00	
118 Sn	# 3	115	704.5	0.0000	0.0492	ppb	10.40	500.00	
121 Sb	# 3	115	7144.6	0.0000	0.4226	ppb	0.66	100.00	
137 Ba	# 3	115	688964.6	0.0000	131.5000	ppb	1.59	1000.00	
182 W	# 3	159	387.8	0.0000	0.0048	ppb	31.77	1000.00	
205 Tl	# 3	159	451.1	0.0000	0.0118	ppb	19.52	500.00	
208 Pb	# 3	159	6626.6	0.0000	0.1387	ppb	1.92	500.00	
235 U	# 3	159	809.0	0.0000	0.0160	ppb	11.50	5.00	
238 U	# 3	159	104384.3	0.0000	2.4610	ppb	1.79	500.00	

ISTD Elements

Element	CPS Mean	CPS RSD(%)	Ref Value	Rec(%)	QC Range(%)	Flag
6 Li # 3	711127.25	2.35	893110.19	79.6	60 - 125	
45 Sc # 1	1513332.10	0.67	1497447.80	101.1	60 - 125	
45 Sc # 2	32719.07	1.54	31623.00	103.5	60 - 125	
45 Sc # 3	2932043.50	0.76	3153266.80	93.0	60 - 125	
72 Ge # 1	421969.91	0.30	436311.72	96.7	60 - 125	
72 Ge # 2	22233.44	1.02	20914.49	106.3	60 - 125	
72 Ge # 3	647292.63	1.62	705390.44	91.8	60 - 125	
115 In # 3	4543866.00	0.25	4921303.50	92.3	60 - 125	
159 Tb # 3	6529135.50	1.34	6554350.50	99.6	60 - 125	

ISTD Ref File : D:\DATA\I982016\J\I98J03.B\98J03004.D\98J03004.D#

3 :Element Failures
0 :ISTD Failures

0 :Max. Number of Failures Allowed
0 :Max. Number of ISTD Failures Allowed

Data Results:
Analytes: Fail
ISTD: Pass

7851

Sample QC Report

Data File: D:\DATA\I982016\J\I98J03.B\98J03097.D\98J03097.D#
Date Acquired: Oct 6 2016 08:46 pm
Acq. Method: EM6020HR.M
Operator: CCapul
Sample Name: J006-11J
Misc Info:
Vial Number: 2502
Current Method: C:\ICPCHEM\1\METHODS\EM6020HR.M
Calibration File: D:\DATA\I982016\A\I98A01.B\EM6020HR.C
Last Cal. Update: Oct 06 2016 02:00 pm
Sample Type: Sample
Dilution Factor: 5.00
Autodil Factor: Undiluted
Final Dil Factor: 5.00

Tune #	Name
#1	h2.u
#2	he.u
#3	norm.u

QC Elements

Element	Tune	ISTD	CPS	Corr Conc	Raw Conc	Units	Conc RSD(%)	High Limit	Flag
7 Li	# 3	6	59331.7	0.0000	1.2160	ppb	9.80	50.00	
9 Be	# 3	6	58.9	0.0000	0.0009	ppb	482.99	50.00	
11 B	# 3	6	58352.5	0.0000	27.5400	ppb	0.37	100.00	
23 Na	# 1	45	5153613.0	0.0000	1541.0000	ppb	2.25	50000.00	
24 Mg	# 3	45	53745320.0	0.0000	3983.0000	ppb	1.26	50000.00	
27 Al	# 3	45	298124.9	0.0000	16.8100	ppb	2.51	50000.00	
28 Si	# 1	45	1991649.0	0.0000	2323.0000	ppb	1.45	10000.00	
31 P	# 3	45	38427.2	0.0000	-2.2480	ppb	32.71	400000.00	
39 K	# 2	45	77316.5	0.0000	1175.0000	ppb	0.68	50000.00	
40 Ca	# 1	45	123807300.0	0.0000	18790.0000	ppb	0.39	50000.00	
47 Ti	# 3	45	2048.0	0.0000	1.0190	ppb	0.66	500.00	
51 V	# 2	45	332.5	0.0000	0.0433	ppb	29.99	500.00	
52 Cr	# 2	45	184.9	0.0000	0.0663	ppb	3.16	500.00	
55 Mn	# 3	45	1845824.0	0.0000	59.0400	ppb	1.39	3000.00	
56 Fe	# 1	45	1044106.0	0.0000	67.6500	ppb	1.18	50000.00	
59 Co	# 3	45	14085.0	0.0000	0.5736	ppb	2.80	500.00	
60 Ni	# 2	45	1223.6	0.0000	1.1060	ppb	6.42	500.00	
63 Cu	# 2	45	1699.9	0.0000	0.6005	ppb	0.96	500.00	
66 Zn	# 3	72	16278.7	0.0000	4.0510	ppb	1.40	500.00	
75 As	# 2	72	20.2	0.0000	0.0996	ppb	23.90	500.00	
78 Se	# 1	72	278.7	0.0000	0.4449	ppb	3.30	500.00	
88 Sr	# 3	72	3043804.0	0.0000	80.1700	ppb	1.20	500.00	
90 Zr	# 3	72	2237.0	0.0000	1.3430	ppb	0.13	1000.00	
95 Mo	# 3	115	3849.6	0.0000	0.4485	ppb	3.00	500.00	
107 Ag	# 3	115	104.4	0.0000	0.0031	ppb	12.72	50.00	
111 Cd	# 3	115	108.3	0.0000	0.0199	ppb	45.69	500.00	
118 Sn	# 3	115	344.5	0.0000	0.0156	ppb	11.22	500.00	
121 Sb	# 3	115	2363.7	0.0000	0.1040	ppb	4.87	100.00	
137 Ba	# 3	115	148731.8	0.0000	26.6200	ppb	1.58	1000.00	
182 W	# 3	159	197.8	0.0000	-0.0088	ppb	21.75	1000.00	
205 Tl	# 3	159	201.1	0.0000	0.0029	ppb	25.85	500.00	
208 Pb	# 3	159	2197.9	0.0000	0.0344	ppb	3.67	500.00	
235 U	# 3	159	180.0	0.0000	0.0033	ppb	8.95	5.00	
238 U	# 3	159	22402.7	0.0000	0.5037	ppb	0.92	500.00	

ISTD Elements

Element	CPS Mean	CPS RSD(%)	Ref Value	Rec(%)	QC Range(%)	Flag
6 Li # 3	745941.00	2.25	893110.19	83.5	60 - 125	
45 Sc # 1	1501544.50	0.94	1497447.80	100.3	60 - 125	
45 Sc # 2	32715.86	1.68	31623.00	103.5	60 - 125	
45 Sc # 3	2947115.30	1.30	3153266.80	93.5	60 - 125	
72 Ge # 1	429493.41	0.56	436311.72	98.4	60 - 125	
72 Ge # 2	23255.31	2.69	20914.49	111.2	60 - 125	
72 Ge # 3	686021.88	0.82	705390.44	97.3	60 - 125	
115 In # 3	4845042.00	1.31	4921303.50	98.5	60 - 125	
159 Tb # 3	6828947.00	0.95	6554350.50	104.2	60 - 125	

ISTD Ref File : D:\DATA\I982016\J\I98J03.B\98J03004.D\98J03004.D#

0 :Element Failures
0 :ISTD Failures

0 :Max. Number of Failures Allowed
0 :Max. Number of ISTD Failures Allowed

Data Results:
Analytes: Pass
ISTD: Pass

7852

CCV QC Report

Data File: D:\DATA\I982016\J\I98J03.B\98J03102.D\98J03102.D#
Date Acquired: Oct 6 2016 09:09 pm
Operator: CCapul
Sample Name: CCV9
Misc Info:
Vial Number: 1206
Current Method: C:\ICPCHEM\1\METHODS\EM6020HR.M
Calibration File: D:\DATA\I982016\A\I98A01.B\EM6020HR.C
Last Cal Update: Oct 06 2016 02:00 pm
Sample Type: CCV
Total Dil Factor: 1.00

QC Elements

Element	Conc.	CPS	Conc RSD(%)	Expected	QC Range(%)	Flag
7 Li	25.68 ppb	256426.80	2.78	25.00	90 - 110	
9 Be	25.94 ppb	77403.12	0.92	25.00	90 - 110	
11 B	52.21 ppb	113321.50	2.43	50.00	90 - 110	
23 Na	24620.00 ppb	81594968.00	1.58	25000.00	90 - 110	
24 Mg	23630.00 ppb	328477500.00	2.90	25000.00	90 - 110	
27 Al	24160.00 ppb	429981410.00	2.70	25000.00	90 - 110	
28 Si	2482.00 ppb	2155744.00	1.52	2500.00	90 - 110	
31 P	236.30 ppb	259319.20	1.37	250.00	90 - 110	
39 K	25140.00 ppb	1612799.00	0.85	25000.00	90 - 110	
40 Ca	25090.00 ppb	167423900.00	0.90	25000.00	90 - 110	
47 Ti	248.60 ppb	481700.09	1.71	250.00	90 - 110	
51 V	246.90 ppb	297366.41	0.70	250.00	90 - 110	
52 Cr	248.50 ppb	395307.50	0.74	250.00	90 - 110	
55 Mn	1522.00 ppb	48944848.00	2.97	1500.00	90 - 110	
56 Fe	24590.00 ppb	376213180.00	0.58	25000.00	90 - 110	
59 Co	246.60 ppb	6172951.00	2.78	250.00	90 - 110	
60 Ni	247.00 ppb	213889.50	0.48	250.00	90 - 110	
63 Cu	246.60 ppb	589779.81	0.84	250.00	90 - 110	
66 Zn	250.30 ppb	915909.88	0.55	250.00	90 - 110	
75 As	247.70 ppb	36305.85	0.80	250.00	90 - 110	
78 Se	245.90 ppb	147920.00	0.60	250.00	90 - 110	
88 Sr	250.60 ppb	9322786.00	1.30	250.00	90 - 110	
90 Zr	24.73 ppb	591092.00	0.56	25.00	90 - 110	
95 Mo	240.40 ppb	1898724.00	1.86	250.00	90 - 110	
107 Ag	25.60 ppb	470755.81	1.16	25.00	90 - 110	
111 Cd	242.80 ppb	1012209.00	0.57	250.00	90 - 110	
118 Sn	251.50 ppb	2879661.00	0.94	250.00	90 - 110	
121 Sb	49.42 ppb	771654.63	0.13	50.00	90 - 110	
137 Ba	508.00 ppb	2683993.00	0.68	500.00	90 - 110	
182 W	25.34 ppb	369526.09	1.80	25.00	90 - 110	
205 Tl	259.60 ppb	7563689.00	1.92	250.00	90 - 110	
208 Pb	255.90 ppb	11075040.00	1.47	250.00	90 - 110	
235 U	1.59 ppb	79990.86	1.84	1.80	90 - 110	Fail
238 U	247.90 ppb	10489830.00	1.31	250.00	90 - 110	

ISTD Elements

Element	CPS Mean	CPS RSD(%)	Ref Value	Rec(%)	QC Range(%)	Flag
6 Li	774235.00	2.56	893110.19	86.7	60 - 125	
45 Sc	1520907.60	0.88	1497447.80	101.6	60 - 125	
45 Sc	33776.16	1.77	31623.00	106.8	60 - 125	
45 Sc	3040019.00	2.05	3153266.80	96.4	60 - 125	
72 Ge	423640.22	0.31	436311.72	97.1	60 - 125	
72 Ge	22851.20	2.26	20914.49	109.3	60 - 125	
72 Ge	672447.13	0.83	705390.44	95.3	60 - 125	
115 In	4582722.00	0.92	4921303.50	93.1	60 - 125	
159 Tb	6514113.50	0.64	6554350.50	99.4	60 - 125	

ISTD Ref File : D:\DATA\I982016\J\I98J03.B\98J03004.D\98J03004.D#

1 :Element Failures 0 :Max. Number of Failures Allowed
0 :ISTD Failures 0 :Max. Number of ISTD Failures Allowed

Data Results:

Analytes: Fail
ISTD: Pass

7053

CCB QC Report

Data File: D:\DATA\I982016\J\I98J03.B\98J03103.D\98J03103.D#
Date Acquired: Oct 6 2016 09:13 pm
Acq. Method: EM6020HR.M
Operator: CCapul
Sample Name: CCB9
Misc Info:
Vial Number: 1202
Current Method: C:\ICPCHEM\1\METHODS\EM6020HR.M
Calibration File: D:\DATA\I982016\A\I98A01.B\EM6020HR.C
Last Cal. Update: Oct 06 2016 02:00 pm
Sample Type: CCB
Dilution Factor: 1.00

QC Elements

Element	Conc.		CPS	Conc RSD(%)	High Limit	Flag
7 Li	-0.0224	ppb	53251.5	271.68	0.20	
9 Be	-0.0025	ppb	52.2	167.58	0.10	
11 B	0.4983	ppb	2770.4	16.18	5.00	
23 Na	5.0790	ppb	142990.4	16.07	40.00	
24 Mg	0.2653	ppb	48753.6	12.04	10.00	
27 Al	0.3335	ppb	14478.6	13.92	20.00	
28 Si	2.9140	ppb	4223.9	18.87	20.00	
31 P	-4.8180	ppb	38134.0	15.82	10.00	
39 K	-3.0630	ppb	4627.7	121.45	20.00	
40 Ca	0.2483	ppb	41924.3	4.18	25.00	
47 Ti	-0.0082	ppb	126.7	82.86	0.50	
51 V	-0.0785	ppb	202.7	2.36	0.50	
52 Cr	0.0039	ppb	94.4	285.60	0.20	
55 Mn	-0.0168	ppb	4627.7	34.48	0.20	
56 Fe	1.6070	ppb	48474.6	5.20	10.00	
59 Co	0.0037	ppb	268.9	26.65	0.20	
60 Ni	-0.1067	ppb	220.7	9.12	0.20	
63 Cu	-0.0532	ppb	197.8	9.35	0.40	
66 Zn	-0.0983	ppb	844.5	12.98	2.00	
75 As	0.0465	ppb	12.9	13.73	0.20	
78 Se	0.0403	ppb	34.0	26.45	0.20	
88 Sr	0.0031	ppb	820.1	63.77	0.20	
90 Zr	1.2700	ppb	374.6	0.29	2.00	
95 Mo	0.1344	ppb	1297.9	8.84	0.40	
107 Ag	0.0012	ppb	71.1	114.71	0.20	
111 Cd	0.0077	ppb	57.7	21.72	0.20	
118 Sn	0.0400	ppb	676.7	13.83	0.20	
121 Sb	0.0174	ppb	987.9	28.97	0.40	
137 Ba	0.0066	ppb	110.0	105.68	0.20	
182 W	0.0499	ppb	1135.7	16.25	1.00	
205 Tl	0.0101	ppb	434.5	7.45	0.20	
208 Pb	0.0098	ppb	1123.4	30.12	0.10	
235 U	0.0001	ppb	8.9	114.40	1.00	
238 U	0.0160	ppb	800.1	13.22	0.10	

ISTD Elements

Element	CPS Mean	CPS RSD(%)	Ref Value	Rec(%)	QC Range(%)	Flag
6 Li	796987.0	0.31	893110.19	89.2	60 - 125	
45 Sc	1563782.9	1.42	1497447.80	104.4	60 - 125	
45 Sc	34823.6	1.33	31623.00	110.1	60 - 125	
45 Sc	3110771.0	1.54	3153266.80	98.7	60 - 125	
72 Ge	456414.8	0.86	436311.72	104.6	60 - 125	
72 Ge	24314.1	0.53	20914.49	116.3	60 - 125	
72 Ge	718491.8	0.35	705390.44	101.9	60 - 125	
115 In	5122703.5	0.47	4921303.50	104.1	60 - 125	
159 Tb	7082973.0	0.26	6554350.50	108.1	60 - 125	

ISTD Ref File : D:\DATA\I982016\J\I98J03.B\98J03004.D\98J03004.D#

0 :Element Failures
0 :ISTD Failures
0 :Max. Number of Failures Allowed
0 :Max. Nnumber of ISTD Failures Allowed

Data Results:
Analytes: Pass
ISTD: Pass

Sample QC Report

Data File: D:\DATA\I982016\J\I98J03.B\98J03104.D\98J03104.D#
Date Acquired: Oct 6 2016 09:18 pm
Acq. Method: EM6020HR.M
Operator: CCapul
Sample Name: J012-01
Misc Info:
Vial Number: 2506
Current Method: C:\ICPCHEM\1\METHODS\EM6020HR.M
Calibration File: D:\DATA\I982016\A\I98A01.B\EM6020HR.C
Last Cal. Update: Oct 06 2016 02:00 pm
Sample Type: Sample
Dilution Factor: 1.00
Autodil Factor: Undiluted
Final Dil Factor: 1.00

Tune #	Name
#1	h2.u
#2	he.u
#3	norm.u

QC Elements

Element	Tune	ISTD	CPS	Corr Conc	Raw Conc	Units	Conc RSD(%)	High Limit	Flag
7 Li	# 3	6	4580351.0	0.0000	659.8000	ppb	0.89	50.00	>LRS
9 Be	# 3	6	62.2	0.0000	0.0047	ppb	144.37	50.00	
11 B	# 3	6	3264143.0	0.0000	1766.0000	ppb	2.62	100.00	>LRS
23 Na	# 1	45	--------	----	--------	ppb	--------	50000.00	>LRS
24 Mg	# 3	45	22254500.0	0.0000	1670.0000	ppb	3.74	50000.00	
27 Al	# 3	45	107194.2	0.0000	5.8330	ppb	3.67	50000.00	
28 Si	# 1	45	8257001.0	0.0000	10990.0000	ppb	0.87	10000.00	>LRS
31 P	# 3	45	60188.1	0.0000	23.0300	ppb	10.62	400000.00	
39 K	# 2	45	1253392.0	0.0000	21020.0000	ppb	1.38	50000.00	
40 Ca	# 1	45	442150210.0	0.0000	76560.0000	ppb	0.34	50000.00	>LRS
47 Ti	# 3	45	3991.9	0.0000	2.0840	ppb	4.16	500.00	
51 V	# 2	45	3389.1	0.0000	2.7910	ppb	0.70	500.00	
52 Cr	# 2	45	10165.8	0.0000	6.8320	ppb	1.27	500.00	
55 Mn	# 3	45	264540.2	0.0000	8.4430	ppb	0.79	3000.00	
56 Fe	# 1	45	46653.3	0.0000	2.0490	ppb	4.36	50000.00	
59 Co	# 3	45	5822.6	0.0000	0.2364	ppb	0.75	500.00	
60 Ni	# 2	45	252.2	0.0000	-0.0403	ppb	5.28	500.00	
63 Cu	# 2	45	3182.6	0.0000	1.3010	ppb	2.65	500.00	
66 Zn	# 3	72	6232.8	0.0000	1.8240	ppb	0.87	500.00	
75 As	# 2	72	786.0	0.0000	6.2650	ppb	2.00	500.00	
78 Se	# 1	72	310.2	0.0000	0.6458	ppb	1.25	500.00	
88 Sr	# 3	72	57076560.0	0.0000	1924.0000	ppb	0.62	500.00	>LRS
90 Zr	# 3	72	3414.4	0.0000	1.4270	ppb	1.36	1000.00	
95 Mo	# 3	115	293756.7	0.0000	50.4700	ppb	1.01	500.00	
107 Ag	# 3	115	176.7	0.0000	0.0108	ppb	26.84	50.00	
111 Cd	# 3	115	-126.7	0.0000	-0.0457	ppb	92.46	500.00	
118 Sn	# 3	115	557.8	0.0000	0.0532	ppb	5.18	500.00	
121 Sb	# 3	115	1585.7	0.0000	0.0987	ppb	6.75	100.00	
137 Ba	# 3	115	197262.7	0.0000	50.6700	ppb	0.70	1000.00	
182 W	# 3	159	20448.3	0.0000	2.0260	ppb	1.75	1000.00	
205 Tl	# 3	159	2636.0	0.0000	0.1284	ppb	5.79	500.00	
208 Pb	# 3	159	1173.4	0.0000	0.0255	ppb	8.61	500.00	
235 U	# 3	159	523.4	0.0000	0.0151	ppb	8.44	5.00	
238 U	# 3	159	68464.3	0.0000	2.3600	ppb	2.63	500.00	

ISTD Elements

Element	CPS Mean	CPS RSD(%)	Ref Value	Rec(%)	QC Range(%)	Flag
6 Li # 3	668577.94	2.19	893110.19	74.9	60 - 125	
45 Sc # 1	1316632.90	2.50	1497447.80	87.9	60 - 125	
45 Sc # 2	31364.43	4.00	31623.00	99.2	60 - 125	
45 Sc # 3	2907192.50	1.61	3153266.80	92.2	60 - 125	
72 Ge # 1	332107.91	2.00	436311.72	76.1	60 - 125	
72 Ge # 2	19452.13	2.52	20914.49	93.0	60 - 125	
72 Ge # 3	536083.25	2.43	705390.44	76.0	60 - 125	
115 In # 3	3376338.00	1.17	4921303.50	68.6	60 - 125	
159 Tb # 3	4465639.00	2.31	6554350.50	68.1	60 - 125	

ISTD Ref File : D:\DATA\I982016\J\I98J03.B\98J03004.D\98J03004.D#

6 :Element Failures
0 :ISTD Failures

0 :Max. Number of Failures Allowed
0 :Max. Number of ISTD Failures Allowed

Data Results:
Analytes: Fail
ISTD: Pass

7055

ICS-A QC Report

Data File: D:\DATA\I982016\J\I98J03.B\98J03109.D\98J03109.D#
Date Acquired: Oct 6 2016 09:41 pm
Acq. Method: EM6020HR.M
Operator: CCapul
Sample Name: ICSA2
Misc Info:
Vial Number: 1303
Current Method: C:\ICPCHEM\1\METHODS\EM6020HR.M
Calibration File: D:\DATA\I982016\A\I98A01.B\EM6020HR.C
Last Cal. Update: Oct 06 2016 02:00 pm
Sample Type: ICS-A
Dilution Factor: 1.00

QC Elements

Element	Conc.		CPS	Conc RSD(%)	High Limit	Flag
7 Li	0.43	ppb	56361.6	28.45	---	
9 Be	0.00	ppb	71.1	151.67	---	
11 B	1.40	ppb	4702.1	3.31	---	
23 Na	100900.00	ppb	332212510.0	1.96	120000.00	
24 Mg	97060.00	ppb	1333762900.0	0.54	120000.00	
27 Al	98960.00	ppb	1740741000.0	1.48	120000.00	
28 Si	9.81	ppb	10045.5	1.17	---	
31 P	101600.00	ppb	92519264.0	0.18	120000.00	
39 K	100100.00	ppb	6439627.0	0.37	120000.00	
40 Ca	100400.00	ppb	666263680.0	2.44	120000.00	
47 Ti	2204.00	ppb	4217675.0	0.81	2400.00	
51 V	-0.04	ppb	245.1	16.02	---	
52 Cr	1.33	ppb	2217.1	0.67	---	
55 Mn	0.29	ppb	14195.1	5.11	---	
56 Fe	97650.00	ppb	1486112000.0	1.45	120000.00	
59 Co	0.29	ppb	7365.8	2.44	---	
60 Ni	-0.14	ppb	182.4	7.67	---	
63 Cu	0.68	ppb	1943.5	2.32	---	
66 Zn	3.09	ppb	12225.3	1.88	---	
75 As	0.20	ppb	33.8	15.70	---	
78 Se	0.25	ppb	153.8	10.27	---	
88 Sr	0.66	ppb	24778.6	0.89	---	
90 Zr	1.45	ppb	4797.2	0.32	---	
95 Mo	1987.00	ppb	14183220.0	1.10	2400.00	
107 Ag	0.02	ppb	400.0	7.78	---	
111 Cd	0.32	ppb	1232.5	5.04	---	
118 Sn	0.03	ppb	466.7	7.29	---	
121 Sb	0.02	ppb	881.2	5.25	---	
137 Ba	0.11	ppb	585.6	6.62	---	
182 W	0.12	ppb	1785.8	3.03	---	
205 Tl	0.00	ppb	176.7	22.84	---	
208 Pb	0.21	ppb	8550.5	1.08	---	
235 U	0.00	ppb	25.6	15.80	---	
238 U	0.00	ppb	167.8	28.11	---	

ISTD Elements

Element	CPS Mean	CPS RSD(%)	Ref Value	Rec(%)	QC Range(%)	Flag
6 Li	789357.4	1.72	893110.19	88.4	60 - 125	
45 Sc	1512827.3	0.82	1497447.80	101.0	60 - 125	
45 Sc	33944.4	1.72	31623.00	107.3	60 - 125	
45 Sc	3004197.5	1.52	3153266.80	95.3	60 - 125	
72 Ge	409163.2	1.93	436311.72	93.8	60 - 125	
72 Ge	22739.9	2.87	20914.49	108.7	60 - 125	
72 Ge	661048.8	1.17	705390.44	93.7	60 - 125	
115 In	4141375.3	0.67	4921303.50	84.2	60 - 125	
159 Tb	5768266.5	1.69	6554350.50	88.0	60 - 125	

ISTD Ref File : D:\DATA\I982016\J\I98J03.B\98J03004.D\98J03004.D#

0 :Element Failures
0 :ISTD Failures
0 :Max. Number of Failures Allowed
0 :Max. Number of ISTD Failures Allowed

Data Results:
Analytes: Pass
ISTD: Pass

7056

ICS-AB QC Report

Data File: D:\DATA\I982016\J\I98J03.B\98J03110.D\98J03110.D#
Date Acquired: Oct 6 2016 09:46 pm
Acq. Method: EM6020HR.M
Operator: CCapul
Sample Name: ICSAB2
Misc Info:
Vial Number: 1304
Current Method: C:\ICPCHEM\1\METHODS\EM6020HR.M
Calibration File: D:\DATA\I982016\A\I98A01.B\EM6020HR.C
Last Cal. Update: Oct 06 2016 02:00 pm
Sample Type: ICS-AB
Dilution Factor: 1.00

QC Elements

Element	Conc.		CPS	Conc RSD(%)	Expected	QC Range(%)	Flag
7 Li	20.44	ppb	215805.5	1.79	20.00	80 - 120	
9 Be	20.47	ppb	61411.4	2.19	20.00	80 - 120	
11 B	20.39	ppb	45500.8	3.08	20.00	80 - 120	
23 Na	98420.00	ppb	318537090.0	1.20	100000.00	80 - 120	
24 Mg	96430.00	ppb	1290198000.0	1.22	100000.00	80 - 120	
27 Al	99060.00	ppb	1696529000.0	1.57	100000.00	80 - 120	
28 Si	9.88	ppb	9927.9	3.87	200.00	80 - 120	Fail
31 P	100800.00	ppb	89327248.0	0.84	100000.00	80 - 120	
39 K	98490.00	ppb	6116661.0	1.29	100000.00	80 - 120	
40 Ca	98690.00	ppb	643752900.0	1.06	100000.00	80 - 120	
47 Ti	2209.00	ppb	4116232.0	1.19	2000.00	80 - 120	
51 V	19.59	ppb	23150.8	1.03	20.00	80 - 120	
52 Cr	20.82	ppb	32209.4	1.14	20.00	80 - 120	
55 Mn	19.97	ppb	622901.2	2.32	20.00	80 - 120	
56 Fe	97770.00	ppb	1462639000.0	1.36	100000.00	80 - 120	
59 Co	19.86	ppb	478396.5	2.74	20.00	80 - 120	
60 Ni	19.08	ppb	16298.1	0.79	20.00	80 - 120	
63 Cu	19.44	ppb	45402.1	0.71	20.00	80 - 120	
66 Zn	21.80	ppb	77986.0	1.64	20.00	80 - 120	
75 As	20.39	ppb	2847.0	1.21	20.00	80 - 120	
78 Se	21.69	ppb	12395.4	0.35	20.00	80 - 120	
88 Sr	19.94	ppb	716830.7	0.12	20.00	80 - 120	
90 Zr	7.71	ppb	156885.6	1.28	20.00	80 - 120	Fail
95 Mo	1986.00	ppb	14079890.0	1.51	2000.00	80 - 120	
107 Ag	19.09	ppb	315115.5	1.73	20.00	80 - 120	
111 Cd	19.34	ppb	72408.7	0.80	20.00	80 - 120	
118 Sn	19.87	ppb	204343.3	1.34	20.00	80 - 120	
121 Sb	20.02	ppb	280836.8	1.67	20.00	80 - 120	
137 Ba	20.58	ppb	97629.5	2.45	20.00	80 - 120	
182 W	18.99	ppb	245521.0	2.03	20.00	80 - 120	
205 Tl	20.05	ppb	517874.0	2.60	20.00	80 - 120	
208 Pb	18.94	ppb	727033.1	2.73	20.00	80 - 120	
235 U	0.12	ppb	5552.7	3.74	0.14	80 - 120	
238 U	19.68	ppb	737927.2	2.99	19.86	80 - 120	

ISTD Elements

Element	CPS Mean	CPS RSD(%)	Ref Value	Rec(%)	QC Range(%)	Flag
6 Li	778525.4	2.52	893110.19	87.2	60 - 125	
45 Sc	1487125.5	0.67	1497447.80	99.3	60 - 125	
45 Sc	32768.0	1.42	31623.00	103.6	60 - 125	
45 Sc	2925298.3	2.55	3153266.80	92.8	60 - 125	
72 Ge	402272.8	2.11	436311.72	92.2	60 - 125	
72 Ge	21735.9	1.03	20914.49	103.9	60 - 125	
72 Ge	649004.3	0.91	705390.44	92.0	60 - 125	
115 In	4113777.5	0.99	4921303.50	83.6	60 - 125	
159 Tb	5776228.0	1.97	6554350.50	88.1	60 - 125	

ISTD Ref File : D:\DATA\I982016\J\I98J03.B\98J03004.D\98J03004.D#

2 :Element Failures 0 :Max. Number of Failures Allowed
0 :ISTD Failures 0 :Max. Number of ISTD Failures Allowed

Data Results:
Analytes: Fail
ISTD: Pass

7857

CCV QC Report

Data File: D:\DATA\I982016\J\I98J03.B\98J03111.D\98J03111.D#
Date Acquired: Oct 6 2016 09:51 pm
Operator: CCapul
Sample Name: CCV10
Misc Info:
Vial Number: 1206
Current Method: C:\ICPCHEM\1\METHODS\EM6020HR.M
Calibration File: D:\DATA\I982016\A\I98A01.B\EM6020HR.C
Last Cal Update: Oct 06 2016 02:00 pm
Sample Type: CCV
Total Dil Factor: 1.00

QC Elements

Element	Conc.	CPS	Conc RSD(%)	Expected	QC Range(%)	Flag
7 Li	25.08 ppb	283269.00	1.19	25.00	90 - 110	
9 Be	25.26 ppb	84800.66	4.33	25.00	90 - 110	
11 B	52.34 ppb	127740.90	7.39	50.00	90 - 110	
23 Na	24400.00 ppb	83821664.00	0.97	25000.00	90 - 110	
24 Mg	25070.00 ppb	370811810.00	4.69	25000.00	90 - 110	
27 Al	25240.00 ppb	477762400.00	4.75	25000.00	90 - 110	
28 Si	2495.00 ppb	2246158.00	0.71	2500.00	90 - 110	
31 P	246.90 ppb	286250.41	2.98	250.00	90 - 110	
39 K	25230.00 ppb	1654398.00	1.07	25000.00	90 - 110	
40 Ca	24640.00 ppb	170468400.00	0.46	25000.00	90 - 110	
47 Ti	246.30 ppb	507515.69	1.30	250.00	90 - 110	
51 V	246.60 ppb	303589.59	0.32	250.00	90 - 110	
52 Cr	247.30 ppb	401981.81	0.20	250.00	90 - 110	
55 Mn	1513.00 ppb	51753480.00	1.94	1500.00	90 - 110	
56 Fe	24560.00 ppb	389623100.00	0.47	25000.00	90 - 110	
59 Co	247.30 ppb	6584324.00	2.11	250.00	90 - 110	
60 Ni	245.80 ppb	217440.50	0.84	250.00	90 - 110	
63 Cu	244.20 ppb	596981.50	0.86	250.00	90 - 110	
66 Zn	252.90 ppb	965851.19	2.63	250.00	90 - 110	
75 As	245.20 ppb	36196.20	0.13	250.00	90 - 110	
78 Se	246.60 ppb	151360.30	0.79	250.00	90 - 110	
88 Sr	249.30 ppb	9687072.00	1.95	250.00	90 - 110	
90 Zr	24.38 ppb	607963.88	1.59	25.00	90 - 110	
95 Mo	242.20 ppb	1956308.00	2.30	250.00	90 - 110	
107 Ag	25.09 ppb	471751.81	3.40	25.00	90 - 110	
111 Cd	245.90 ppb	1048764.00	0.29	250.00	90 - 110	
118 Sn	253.30 ppb	2966882.00	1.92	250.00	90 - 110	
121 Sb	48.63 ppb	776552.88	1.84	50.00	90 - 110	
137 Ba	501.70 ppb	2710784.00	3.25	500.00	90 - 110	
182 W	24.63 ppb	355747.91	1.05	25.00	90 - 110	
205 Tl	252.90 ppb	7298887.00	0.99	250.00	90 - 110	
208 Pb	253.90 ppb	10877910.00	2.16	250.00	90 - 110	
235 U	1.59 ppb	79417.43	3.44	1.80	90 - 110	Fail
238 U	246.10 ppb	10312600.00	1.96	250.00	90 - 110	

ISTD Elements

Element	CPS Mean	CPS RSD(%)	Ref Value	Rec(%)	QC Range(%)	Flag
6 Li	871926.06	3.99	893110.19	97.6	60 - 125	
45 Sc	1576738.30	1.50	1497447.80	105.3	60 - 125	
45 Sc	34517.98	1.61	31623.00	109.2	60 - 125	
45 Sc	3233146.50	0.74	3153266.80	102.5	60 - 125	
72 Ge	432379.72	0.86	436311.72	99.1	60 - 125	
72 Ge	23014.82	1.95	20914.49	110.0	60 - 125	
72 Ge	702078.31	1.86	705390.44	99.5	60 - 125	
115 In	4688174.50	2.08	4921303.50	95.3	60 - 125	
159 Tb	6452088.00	1.62	6554350.50	98.4	60 - 125	

ISTD Ref File : D:\DATA\I982016\J\I98J03.B\98J03004.D\98J03004.D#

1 :Element Failures 0 :Max. Number of Failures Allowed
0 :ISTD Failures 0 :Max. Number of ISTD Failures Allowed

Data Results:

Analytes: Fail
ISTD: Pass

7658

CCB QC Report

Data File: D:\DATA\I982016\J\I98J03.B\98J03112.D\98J03112.D#
Date Acquired: Oct 6 2016 09:55 pm
Acq. Method: EM6020HR.M
Operator: CCapul
Sample Name: CCB10
Misc Info:
Vial Number: 1202
Current Method: C:\ICPCHEM\1\METHODS\EM6020HR.M
Calibration File: D:\DATA\I982016\A\I98A01.B\EM6020HR.C
Last Cal. Update: Oct 06 2016 02:00 pm
Sample Type: CCB
Dilution Factor: 1.00

QC Elements

Element	Conc.		CPS	Conc RSD(%)	High Limit	Flag
7 Li	-0.0333	ppb	61632.7	203.81	0.20	
9 Be	-0.0020	ppb	62.2	352.47	0.10	
11 B	0.5421	ppb	3323.9	8.70	5.00	
23 Na	26.4300	ppb	214038.8	4.03	40.00	
24 Mg	1.2400	ppb	67697.8	3.38	10.00	
27 Al	0.3113	ppb	15224.0	4.61	20.00	
28 Si	2.9720	ppb	4238.1	51.41	20.00	
31 P	-1.5500	ppb	44550.0	42.45	10.00	
39 K	-1.0240	ppb	4875.5	188.28	20.00	
40 Ca	0.9294	ppb	46255.7	10.64	25.00	
47 Ti	0.0380	ppb	235.6	68.06	0.50	
51 V	-0.0678	ppb	220.9	17.58	0.50	
52 Cr	0.0018	ppb	93.3	207.46	0.20	
55 Mn	-0.0209	ppb	4855.5	26.39	0.20	
56 Fe	3.6160	ppb	79495.1	3.28	10.00	
59 Co	0.0048	ppb	321.1	28.86	0.20	
60 Ni	-0.0326	ppb	293.6	66.25	0.20	
63 Cu	-0.0049	ppb	324.5	14.65	0.40	
66 Zn	-0.1185	ppb	793.4	3.38	2.00	
75 As	0.0483	ppb	13.3	19.97	0.20	
78 Se	0.0428	ppb	34.9	12.19	0.20	
88 Sr	0.0034	ppb	862.3	15.22	0.20	
90 Zr	1.3120	ppb	1548.8	3.74	2.00	
95 Mo	0.3381	ppb	3152.7	3.11	0.40	
107 Ag	0.0014	ppb	76.7	72.56	0.20	
111 Cd	0.0136	ppb	86.4	17.14	0.20	
118 Sn	0.0398	ppb	686.7	13.15	0.20	
121 Sb	0.0041	ppb	768.9	112.88	0.40	
137 Ba	0.0052	ppb	103.3	90.33	0.20	
182 W	0.0795	ppb	1570.2	12.54	1.00	
205 Tl	0.0090	ppb	390.0	28.19	0.20	
208 Pb	0.0075	ppb	993.4	32.97	0.10	
235 U	0.0002	ppb	12.2	73.28	1.00	
238 U	0.0143	ppb	705.6	11.79	0.10	

ISTD Elements

Element	CPS Mean	CPS RSD(%)	Ref Value	Rec(%)	QC Range(%)	Flag
6 Li	923985.0	0.14	893110.19	103.5	60 - 125	
45 Sc	1552408.9	1.49	1497447.80	103.7	60 - 125	
45 Sc	35648.0	1.68	31623.00	112.7	60 - 125	
45 Sc	3362882.3	1.39	3153266.80	106.6	60 - 125	
72 Ge	447457.5	0.88	436311.72	102.6	60 - 125	
72 Ge	24596.7	2.07	20914.49	117.6	60 - 125	
72 Ge	744880.3	1.38	705390.44	105.6	60 - 125	
115 In	5215058.5	1.35	4921303.50	106.0	60 - 125	
159 Tb	6923697.5	1.49	6554350.50	105.6	60 - 125	

ISTD Ref File : D:\DATA\I982016\J\I98J03.B\98J03004.D\98J03004.D#

0 :Element Failures 0 :Max. Number of Failures Allowed
0 :ISTD Failures 0 :Max. Nnumber of ISTD Failures Allowed

Data Results:
Analytes: Pass
ISTD: Pass

7058A

EMAX LABORATORIES, INC.

ANALYSIS RUN LOG
for
ICP-MS

Note: For samples and relevant QCs/Standards analyzed, refer to attached analytical sequence.

Start Date: 10/13/16 20:22

End Date: 10/14/16 00:59

Comments:

All soil/solid samples are diluted at 10x dilution prior to analysis.

Filter Lot #: NA

Book #:	A98-041
Instrument No.:	98
Analytical Batch:	498T04
Analytical Sequence:	98T04
Method File:	EM6020HR
Micropipette ID:	☑ 142781004
Micropipette ID:	☑ ICP-06
Micropipette ID:	☑ 339362028
Micropipette ID:	☑ GFAA-07
Micropipette ID:	☐
Micropipette ID:	☐
Micropipette ID:	☐

SOP #	Rev. #
☑ EMAX-6020	9
☐ EMAX-200.8	5
☐ EMAX-	
☐ EMAX-	
☐ EMAX-	

STANDARDS ID		STANDARDS ID	
S0	SMGB10.10.57	MRL1 (1)	SMGB10.12.01
S1	10.58	MRL2 (05)	12.02
S2	11.01	MRL3 (GAA)	12.03
S3	11.02	MRL4	NA
S4	11.57	MRL5	↓
S5	NA	MRL6	↓
S6	↓	Internal Standard	SMGBSD.180.01
S7	↓	Post-Spike 1	SMGA.100.026
ICV	SMGBSD.99.01	Post-Spike 2	↓ 027
CCV	SMGB10.11.04	Post-Spike 3	NA
ICSA	11.05	Post-Spike 4	↓
ICSAB	11.56		
6020 TUNE SOLN.	13.53		
200.8 TUNE SOLN.	13.54		

Analyzed By: CMG

Date: 10/13/16

INITIAL CALIBRATION VERIFICATION SUMMARY FORM

Client : ASSET LABS
Project : PG&E HINKLEY
SDG NO. : 16J012
Method : METHOD SW6020A
Sequence : I98J04
InstrumentID: 98

		ICV				ICSA			ICSAB		
Lab Samp ID :		ICV				ICSA			ICSAB		
QC Limit :		%R:90-110/RSD:<5				%R:80-120/<LOD			%R:80-120		
Lab File ID :		98J04009				98J04013			98J04014		
DateAnalyed :		10/13/1620:50				10/13/1621:08			10/13/1621:13		
Parameter		Result	ICV EV	RSD	%Recovery	Result	ICSA EV	%Rec/LOD	Result	ICSAB EV	%Recovery
Lithium		29.49	30	3.03	98	.5323	0	>0	21.08	20	105
Beryllium		30.3	30	2.94	101	.01108	0	<0.1	21.85	20	109
Boron		30.01	30	4.96	100	.4685	0	<5.0	20.3	20	101
Sodium		29210	30000	1.90	97	102100	100000	102	100300	100000	100
Magnesium		28810	30000	1.20	96	99800	100000	100	99060	100000	99
Aluminum		28710	30000	1.70	96	99230	100000	99	99230	100000	99
Silicon		3080	3000	1.85	103	5.229	0	<20	5.153	200	3*
Phosphorus		292	300	2.12	97	104900	100000	105	105400	100000	105
Potassium		29570	30000	1.81	99	98840	100000	99	99480	100000	99
Calcium		27700	30000	1.48	92	98590	100000	99	96850	100000	97
Titanium		298.9	300	3.08	100	2161	2000	108	2187	2000	109
Vanadium		290.6	300	0.32	97	.02122	0	<0.5	20.29	20	101
Chromium	T	304.4	300	0.68	101	1.372	0	>0.2	21.94	20	110
Manganese		1963	2000	3.46	98	.3436	0	>0.2	20.77	20	104
Iron		28880	30000	0.73	96	95410	100000	95	96880	100000	97
Cobalt		294.9	300	2.95	98	.1286	0	<0.2	21.19	20	106
Nickel		296.2	300	0.27	99	.1733	0	<0.2	20.13	20	101
Copper		299.6	300	0.45	100	.5813	0	>0.5	20.57	20	103
Zinc		295.2	300	0.36	98	2.86	0	<10	21.96	20	110
Arsenic		293.2	300	0.88	98	.2373	0	>0.2	22.09	20	110
Selenium		291.2	300	0.72	97	.04143	0	<0.3	22.66	20	113
Strontium		281.5	300	1.06	94	.662	0	<1.0	20.15	20	101
Zirconium		26.18	30	1.89	87*	1.199	0	<2.0	4.736	20	24*
Molybdenum		292.5	300	3.62	98	2127	2000	106	2164	2000	108
Silver		28.66	30	4.01	96	.02086	0	<0.2	19.27	20	96
Cadmium		281.8	300	1.80	94	.237	0	>0.2	20.33	20	102
Tin		285	300	1.01	95	.03549	0	<0.2	19.6	20	98
Antimony		57.45	60	2.23	96	.04949	0	<0.5	20.06	20	100
Barium		288.6	300	3.16	96	.125	0	<0.5	20.99	20	105
Tungsten		29.86	30	0.58	100	.1473	0	<1.0	20.85	20	104
Thallium		291	300	0.08	97	-.0008874	0	<0.2	20.4	20	102
Lead		303.8	300	1.62	101	.2279	0	>0.1	21.23	20	106
Uranium		288.8	300	1.58	96	.00165	0	<0.1	19.29	20	96

| Unit: ug/L
| T: Target analyte
| EV: Expected Value
| Comment: * Out of QC limit

CONTINUING CALIBRATION BLANK SUMMARY FORM

Client : ASSET LABS
Project : PG&E HINKLEY
SDG NO. : 16J012
Method : SW6020A
Sequence : I98J04
Instrument ID: 98

CB SampleID	: ICB		CCB1		CCB3		CCB4	
CB DataFileID	: 98J04010		98J04017		98J04038		98J04048	
CB DateTime	: 10/13/1620:54		10/13/1621:27		10/13/1623:04		10/13/1623:50	

PARAMETER	LOD	RESULT	< LOD >	RESULT	< LOD >	RESULT	< LOD >	RESULT	< LOD >
Lithium	0	0.010	>0	0.05	>0	0.09	>0	0.2	>0
Beryllium	0.1	0.0003	<0.1	0.001	<0.1	0.0002	<0.1	0.0005	<0.1
Boron	5.0	0.3	<5.0	0.2	<5.0	0.2	<5.0	0.2	<5.0
Sodium	50	3	<50	2	<50	4	<50	5	<50
Magnesium	10	0.4	<10	0.3	<10	0.4	<10	0.3	<10
Aluminum	20	0.5	<20	0.3	<20	0.4	<20	0.3	<20
Silicon	20	1	<20	0.6	<20	4	<20	4	<20
Phosphorus	25	0.6	<25	1	<25	2	<25	2	<25
Potassium	20	1	<20	1	<20	0.3	<20	0.9	<20
Calcium	25	0.9	<25	0.7	<25	1	<25	0.7	<25
Titanium	0.5	0.01	<0.5	0.02	<0.5	0.02	<0.5	0.01	<0.5
Vanadium	0.5	0.009	<0.5	0.01	<0.5	0.01	<0.5	0.01	<0.5
Chromium T	0.2	0.0002	<0.2	0.006	<0.2	0.003	<0.2	0.0008	<0.2
Manganese	0.2	0.05	<0.2	0.02	<0.2	0.02	<0.2	0.01	<0.2
Iron	10	2	<10	2	<10	2	<10	2	<10
Cobalt	0.2	0.003	<0.2	0.003	<0.2	0.003	<0.2	0.002	<0.2
Nickel	0.2	0.009	<0.2	0.009	<0.2	0.006	<0.2	0.01	<0.2
Copper	0.5	0.02	<0.5	0.03	<0.5	0.04	<0.5	0.04	<0.5
Zinc	10	0.1	<10	0.1	<10	0.1	<10	0.1	<10
Arsenic	0.2	0.08	<0.2	0.05	<0.2	0.03	<0.2	0.04	<0.2
Selenium	0.3	0.05	<0.3	0.02	<0.3	0.03	<0.3	0.03	<0.3
Strontium	1.0	0.004	<1.0	0.003	<1.0	0.004	<1.0	0.003	<1.0
Zirconium	2.0	0.9	<2.0	0.9	<2.0	0.9	<2.0	0.9	<2.0
Molybdenum	0.5	0.2	<0.5	0.2	<0.5	0.05	<0.5	0.05	<0.5
Silver	0.2	0.0009	<0.2	0.0007	<0.2	0.0003	<0.2	0.0008	<0.2
Cadmium	0.2	0.009	<0.2	0.0009	<0.2	0.003	<0.2	0.0006	<0.2
Tin	0.2	0.05	<0.2	0.02	<0.2	0.02	<0.2	0.02	<0.2
Antimony	0.5	0.01	<0.5	0.01	<0.5	0.01	<0.5	0.01	<0.5
Barium	0.5	0.002	<0.5	0.004	<0.5	0.006	<0.5	0.002	<0.5
Tungsten	1.0	0.2	<1.0	0.04	<1.0	0.002	<1.0	0.009	<1.0
Thallium	0.2	0.03	<0.2	0.009	<0.2	0.01	<0.2	0.009	<0.2
Lead	0.1	0.03	<0.1	0.01	<0.1	0.01	<0.1	0.009	<0.1
Uranium	0.1	0.02	<0.1	0.01	<0.1	0.01	<0.1	0.009	<0.1

Unit: ug/L
CB: Calibration Blank
T: Target analyte
Acceptance Criteria: CCB Result <LOD
Comment:

CONTINUING CALIBRATION VERIFICATION SUMMARY FORM

Client : ASSET LABS
Project : PG&E HINKLEY
SDG NO. : 16J012
Method : METHOD SW6020A
Sequence : I98J04
Instrument ID: 98

		CCV1			CCV3			CCV4		
CCV SampleID										
CCV DataFileID		98J04016			98J04037			98J04047		
CCV DateTime		10/13/16 21:22			10/13/16 22:59			10/13/16 23:46		
PARAMETER	CCV EV	RESULT	%REC	RSD	RESULT	%REC	RSD	RESULT	%REC	RSD
Lithium	25	25.0	100	0.89	25.9	103	1.09	25.0	100	1.02
Beryllium	25	26.2	105	0.21	27.6	110	1.71	26.9	108	1.89
Boron	50	52.7	105	2.16	55.3	111*	3.01	54.2	108	2.05
Sodium	25000	24000	96	0.64	23700	95	0.60	24200	97	2.19
Magnesium	25000	23800	95	2.03	23700	95	3.04	23100	92	0.73
Aluminum	25000	23800	95	2.54	23800	95	1.51	23300	93	0.96
Silicon	2500	2430	97	0.25	2480	99	0.42	2540	102	1.64
Phosphorus	250	247	99	1.66	251	100	0.25	249	99	1.49
Potassium	25000	24900	99	1.28	25100	101	1.78	25500	102	1.37
Calcium	25000	23600	94	0.38	24300	97	1.27	24200	97	1.75
Titanium	250	249	99	0.51	252	101	0.72	252	101	1.44
Vanadium	250	249	100	0.82	250	100	1.23	252	101	1.33
Chromium T	250	257	103	0.41	258	103	0.89	258	103	0.71
Manganese	1500	1510	101	0.36	1520	101	1.54	1500	100	1.11
Iron	25000	24600	98	0.96	24600	99	0.34	24400	98	1.32
Cobalt	250	253	101	0.77	257	103	2.51	252	101	1.12
Nickel	250	257	103	1.41	259	104	1.01	260	104	0.90
Copper	250	259	103	0.83	260	104	0.88	261	105	1.09
Zinc	250	249	100	0.59	249	100	1.31	247	99	0.49
Arsenic	250	254	102	0.74	252	101	2.21	259	103	3.16
Selenium	250	255	102	0.31	249	100	0.57	250	100	1.43
Strontium	250	251	100	0.41	245	98	1.11	250	100	1.66
Zirconium	25	26.3	105	1.60	25.6	102	2.44	25.9	104	2.00
Molybdenum	250	252	101	1.57	248	99	1.31	253	101	0.70
Silver	25	24.4	97	0.70	24.4	98	0.47	24.3	97	1.14
Cadmium	250	237	95	0.58	235	94	0.48	237	95	1.04
Tin	250	237	95	0.36	236	95	0.09	241	96	0.77
Antimony	50	48.7	97	0.57	48.0	96	2.74	48.3	97	1.95
Barium	500	494	99	1.79	487	97	1.48	493	99	0.96
Tungsten	25	25.1	100	0.42	25.2	101	1.27	25.0	100	1.38
Thallium	250	249	100	1.67	251	101	1.18	244	98	1.10
Lead	250	257	103	2.52	258	103	1.27	254	102	0.82
Uranium	250	246	98	0.99	244	98	2.49	246	98	2.24

Unit: ug/L
T: Target analyte
%Rec QC Limit: 90-110
RSD QC Limit: <5
CCV EV: CCV Expected Value ug/L
Comment: * Out of QC limit

	Method	Type	Vial	Data File	Sample	Comment	Dil/Lvl	Final WT or Vol	Sample WT or Vol	Dil Multiplier	ISTD Conc	Action on Failure	Skip	Result
1		Keyword		TUNBEG	Start of TUNE									
2	C:\ICPCHEM\1\METHODS\TN6020_C.M	Tun6	1301	98J04001	6020tunchk		1.000							
3	C:\ICPCHEM\1\METHODS\TN200_8C.M	Tun2	1302	98J04002	200Btunchk		1.000							
4		Keyword		TUNEND	End of TUNE									
5		Keyword		CALBEG	Start of CALIB									
6	C:\ICPCHEM\1\METHODS\EM6020HR.M	CalBlk	1101	98J04003	BLNK		Level 1							
7	C:\ICPCHEM\1\METHODS\EM6020HR.M	CalBlk	1202	98J04004	S0		Level 1							
8	C:\ICPCHEM\1\METHODS\EM6020HR.M	CalStd	1104	98J04005	S1 0.5		Level 2							
9	C:\ICPCHEM\1\METHODS\EM6020HR.M	CalStd	1105	98J04006	S2 50		Level 3							
10	C:\ICPCHEM\1\METHODS\EM6020HR.M	CalStd	1106	98J04007	S3 250		Level 4							
11	C:\ICPCHEM\1\METHODS\EM6020HR.M	CalStd	1107	98J04008	S4 500		Level 5							
12	C:\ICPCHEM\1\METHODS\EM6020HR.M	ICV1	1204	98J04009	ICV		1.000							
13	C:\ICPCHEM\1\METHODS\EM6020HR.M	ICB	1202	98J04010	ICB		1.000							
14	C:\ICPCHEM\1\METHODS\EM6020HR.M	Sample	1306	98J04011	MRLJ1301	0.5/50/4 ppb	1.000							
15	C:\ICPCHEM\1\METHODS\EM6020HR.M	Sample	1305	98J04012	MRLJ1302	1/100/10 ppb	1.000							
16	C:\ICPCHEM\1\METHODS\EM6020HR.M	ICS-A	1303	98J04013	ICSA		1.000							
17	C:\ICPCHEM\1\METHODS\EM6020HR.M	ICS-AB	1304	98J04014	ICSAB		1.000							
18	C:\ICPCHEM\1\METHODS\EM6020HR.M	Sample	1207	98J04015	MRLJ1303	500 ppb CAT	1.000							
19	C:\ICPCHEM\1\METHODS\EM6020HR.M	CCV	1206	98J04016	CCV1		1.000							
20	C:\ICPCHEM\1\METHODS\EM6020HR.M	CCB	1202	98J04017	CCB1		1.000							
21		Keyword		CALEND	End of CALIB									
22		Keyword		SMPLBEG	Start of SMPL									
23	C:\ICPCHEM\1\METHODS\EM6020HR.M	Sample	1102	98J04018	IDL-01		1.000							
24	C:\ICPCHEM\1\METHODS\EM6020HR.M	Sample	1102	98J04019	IDL-02		1.000							
25	C:\ICPCHEM\1\METHODS\EM6020HR.M	Sample	1102	98J04020	IDL-03		1.000							
26	C:\ICPCHEM\1\METHODS\EM6020HR.M	Sample	1102	98J04021	IDL-04		1.000							
27	C:\ICPCHEM\1\METHODS\EM6020HR.M	Sample	1102	98J04022	IDL-05		1.000							
28	C:\ICPCHEM\1\METHODS\EM6020HR.M	Sample	1102	98J04023	IDL-06		1.000							
29	C:\ICPCHEM\1\METHODS\EM6020HR.M	Sample	1102	98J04024	IDL-07		1.000							
30	C:\ICPCHEM\1\METHODS\EM6020HR.M	CCV	1206	98J04025	CCV2		1.000							
31	C:\ICPCHEM\1\METHODS\EM6020HR.M	CCB	1202	98J04026	CCB2		1.000							
32	C:\ICPCHEM\1\METHODS\EM6020HR.M	MBS	2101	98J04027	IMJ010SB		1.000							
33	C:\ICPCHEM\1\METHODS\EM6020HR.M	LCSS	2102	98J04028	IMJ010SL		1.000							
34	C:\ICPCHEM\1\METHODS\EM6020HR.M	LCSS	2103	98J04029	IMJ010SC		1.000							
35	C:\ICPCHEM\1\METHODS\EM6020HR.M	Sample	2104	98J04030	I271-03A		1.000							
36	C:\ICPCHEM\1\METHODS\EM6020HR.M	Sample	2105	98J04031	I271-03		1.000							
37	C:\ICPCHEM\1\METHODS\EM6020HR.M	Sample	2106	98J04032	I271-03J		5.000							
38	C:\ICPCHEM\1\METHODS\EM6020HR.M	Sample	2107	98J04033	I271-04		1.000							
39	C:\ICPCHEM\1\METHODS\EM6020HR.M	Sample	2108	98J04034	I271-05		1.000							
40	C:\ICPCHEM\1\METHODS\EM6020HR.M	Sample	2109	98J04035	I271-06		1.000							
41	C:\ICPCHEM\1\METHODS\EM6020HR.M	Sample	1101	98J04036	BLANK		1.000							
42	C:\ICPCHEM\1\METHODS\EM6020HR.M	CCV	1206	98J04037	CCV3		1.000							
43	C:\ICPCHEM\1\METHODS\EM6020HR.M	CCB	1202	98J04038	CCB3		1.000							
44	C:\ICPCHEM\1\METHODS\EM6020HR.M	Sample	2110	98J04039	I271-07		1.000							
45	C:\ICPCHEM\1\METHODS\EM6020HR.M	Sample	2111	98J04040	I271-08		1.000							
46	C:\ICPCHEM\1\METHODS\EM6020HR.M	Sample	2112	98J04041	I271-09		1.000							
47	C:\ICPCHEM\1\METHODS\EM6020HR.M	Sample	2201	98J04042	I271-10		1.000							
48	C:\ICPCHEM\1\METHODS\EM6020HR.M	Sample	2202	98J04043	I271-11		1.000							
49	C:\ICPCHEM\1\METHODS\EM6020HR.M	Sample	2203	98J04044	I271-12		1.000							
50	C:\ICPCHEM\1\METHODS\EM6020HR.M	Sample	2204	98J04045	J012-02N		1.000							
51	C:\ICPCHEM\1\METHODS\EM6020HR.M	Sample	1101	98J04046	BLANK		1.000							

	Method	Type	Vial	Data File	Sample	Comment	Dil/Lvl	Final WT or Vol	Sample WT or Vol	Dil Multiplier	ISTD Conc	Action on Failure	Skip	Result
52	C:\ICPCHEM\1\METHODS\EM6020HR.M	CCV	1206	98J04047	CCV3 4	CCV 10/11/16	1.000							
53	C:\ICPCHEM\1\METHODS\EM6020HR.M	CCB	1202	98J04048	CCB3 4		1.000							
54	C:\ICPCHEM\1\METHODS\EM6020HR.M	ICS-A	1303	98J04049	ICSA2		1.000							
55	C:\ICPCHEM\1\METHODS\EM6020HR.M	ICS-AB	1304	98J04050	ICSAB2		1.000							
56	C:\ICPCHEM\1\METHODS\EM6020HR.M	CCV	1206	98J04051	CCV4 5	CCV 10/11/16	1.000							
57	C:\ICPCHEM\1\METHODS\EM6020HR.M	CCB	1202	98J04052	CCB4 5		1.000							
58		Keyword		StandBy										
59		Keyword		SMPLEND	End of SMPL									
60		Keyword		End	End of Sequence									
61		Keyword		CCVBEG	Start of CCV									
62		Keyword		CCVEND	End of CCV									
63		Keyword		BLKBEG	Start of BLANK									
64		Keyword		BLKEND	End of BLANK									
65		Keyword		ERRBEG	Start of ERRTERM									
66		Keyword		ERREND	End of ERRTERM									

Last Calib: Oct 13, 2016 08:48 pm
Calibration Type: External Calibration Method
Calibration Title:
Weighting Method: 1/(SD*SD)
Mass Interpolation Fit for VIS: Point to Point
Method: C:\ICPCHEM\1\METHODS\EM6020HR.M
Multi Tune: #1 h2.u
#2 he.u
#3 norm.u

=== Standard Files ===
<Data Correction>
Bkg File: ---
Rejected Masses: ---
Interference Correction: ON

	Data File	Sample Name	Date Acquired
1	d:\data\i982016\j\i98j04.b\98j04004.d\98j04004.d#	S0	Oct 13 2016 08:27 pm
2	d:\data\i982016\j\i98j04.b\98j04005.d\98j04005.d#	S1 0.5	Oct 13 2016 08:32 pm
3	d:\data\i982016\j\i98j04.b\98j04006.d\98j04006.d#	S2 50	Oct 13 2016 08:36 pm
4	d:\data\i982016\j\i98j04.b\98j04007.d\98j04007.d#	S3 250	Oct 13 2016 08:41 pm
5	d:\data\i982016\j\i98j04.b\98j04008.d\98j04008.d#	S4 500	Oct 13 2016 08:45 pm
6	---		
7	---		
8	---		
9	---		
10	---		
11	---		
12	---		
13	---		
14	---		
15	---		
16	---		
17	---		
18	---		
19	---		
20	---		

7864

Calibration - d:\DATA\I982016\J\I98J04.B\EM6020HR.C

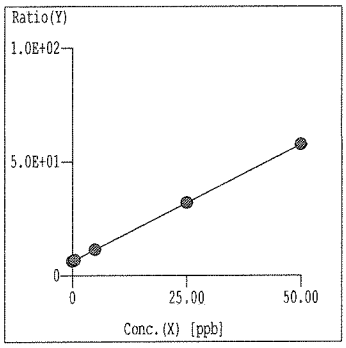
=== ISTD Table ===

Fix ISTD Conc: ON

	Step	Mass	Element	VIS	Units	All Levels
1	3	6	Li		ppb	100.0
2	1	45	Sc		ppb	100.0
3	2	45	Sc		ppb	100.0
4	3	45	Sc		ppb	100.0
5	1	72	Ge		ppb	100.0
6	2	72	Ge		ppb	100.0
7	3	72	Ge		ppb	100.0
8	3	115	In		ppb	100.0
9	3	159	Tb		ppb	100.0
10	3	209	Bi		ppb	100.0

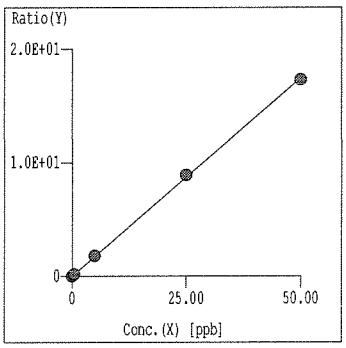
=== Graph Detail ===

Step Mass Element (3) 7 Li | ISTD 6 | Unit ppb



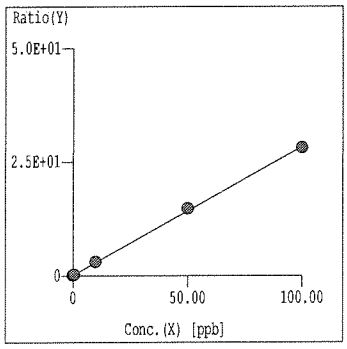
Curve Fit: Y=aX+b
r = 1.0000
Y = 1.026E+000*X +6.335E+000
X = 9.746E-001*Y -6.174E+000
DL = 2.729E-01 ppb
BEC = 6.174 ppb

Step Mass Element (3) 9 Be | ISTD 6 | Unit ppb



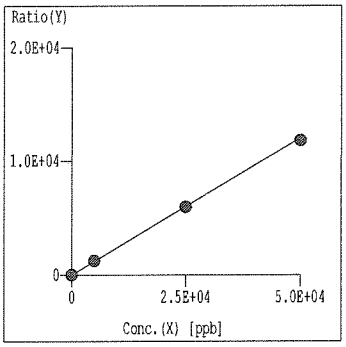
Curve Fit: Y=aX+b
r = 0.9999
Y = 3.487E-001*X +1.028E-003
X = 2.867E+000*Y -2.947E-003
DL = 5.881E-03 ppb
BEC = 2.947E-03 ppb

Step Mass Element (3) 11 B | ISTD 6 | Unit ppb



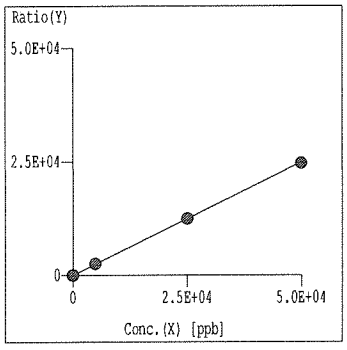
Curve Fit: Y=aX+b
r = 0.9997
Y = 2.816E-001*X +1.354E-001
X = 3.552E+000*Y -4.809E-001
DL = 9.454E-02 ppb
BEC = 4.809E-01 ppb

Step Mass Element (1) 23 Na | ISTD 45 | Unit ppb



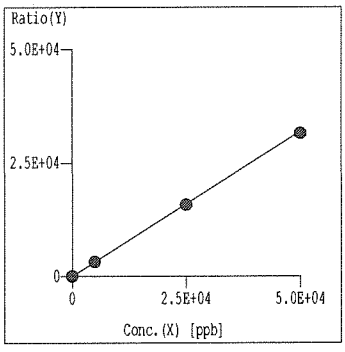
Curve Fit: Y=aX+b
r = 1.0000
Y = 2.405E-001*X +7.000E+000
X = 4.157E+000*Y -2.910E+001
DL = 1.986 ppb
BEC = 29.10 ppb

Step Mass Element (3) 24 Mg | ISTD 45 | Unit ppb



Curve Fit: Y=aX+b
r = 1.0000
Y = 4.982E-001*X +3.095E-001
X = 2.007E+000*Y -6.213E-001
DL = 1.547E-02 ppb
BEC = 6.213E-01 ppb

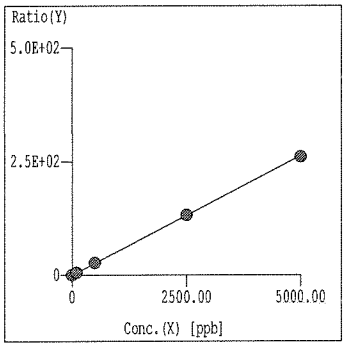
Step Mass Element (3) 27 Al | ISTD 45 | Unit ppb



Curve Fit: Y=aX+b
r = 1.0000
Y = 6.392E-001*X +3.893E-001
X = 1.564E+000*Y -6.090E-001
DL = 4.101E-02 ppb
BEC = 6.090E-01 ppb

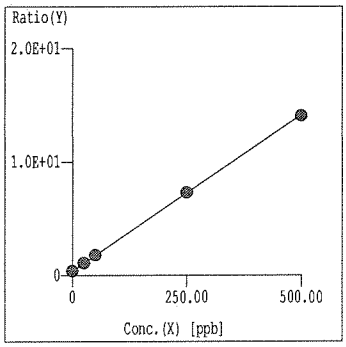
=== Graph Detail ===

Step Mass Element (1) 28 Si | ISTD 45 | Unit ppb



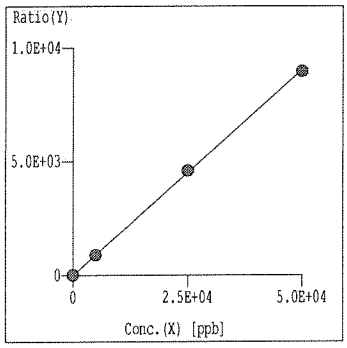
Curve Fit: Y=aX+b
r = 1.0000
Y = 5.246E-002*X +2.004E-001
X = 1.906E+001*Y -3.820E+000
DL = 3.603E-01 ppb
BEC = 3.820 ppb

Step Mass Element (3) 31 P | ISTD 45 | Unit ppb



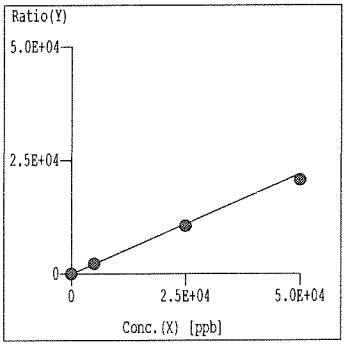
Curve Fit: Y=aX+b
r = 1.0000
Y = 2.753E-002*X +3.880E-001
X = 3.633E+001*Y -1.409E+001
DL = 4.807E-01 ppb
BEC = 14.09 ppb

Step Mass Element (2) 39 K | ISTD 45 | Unit ppb



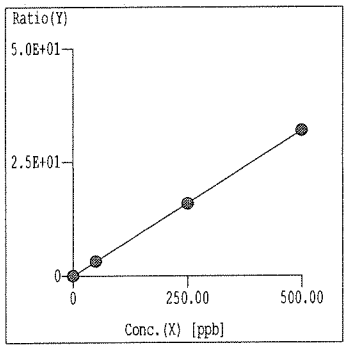
Curve Fit: Y=aX+b
r = 0.9999
Y = 1.803E-001*X +5.788E+000
X = 5.545E+000*Y -3.210E+001
DL = 3.486 ppb
BEC = 32.10 ppb

Step Mass Element (1) 40 Ca | ISTD 45 | Unit ppb



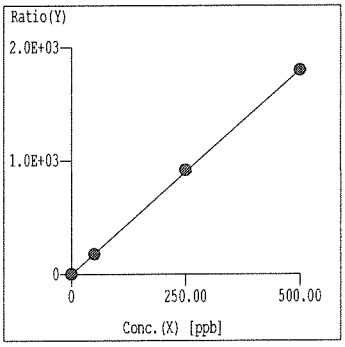
Curve Fit: Y=aX+b
r = 0.9999
Y = 4.401E-001*X +1.759E+000
X = 2.272E+000*Y -3.996E+000
DL = 1.422E-01 ppb
BEC = 3.996 ppb

Step Mass Element (3) 47 Ti | ISTD 45 | Unit ppb



Curve Fit: Y=aX+b
r = 1.0000
Y = 6.390E-002*X +2.179E-003
X = 1.565E+001*Y -3.409E-002
DL = 1.641E-02 ppb
BEC = 3.409E-02 ppb

Step Mass Element (2) 51 V | ISTD 45 | Unit ppb

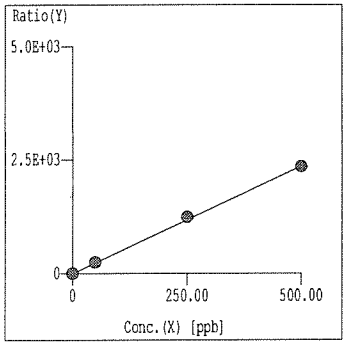


Curve Fit: Y=aX+b
r = 0.9999
Y = 3.601E+000*X +1.363E-001
X = 2.777E-001*Y -3.785E-002
DL = 8.431E-03 ppb
BEC = 3.785E-02 ppb

7657

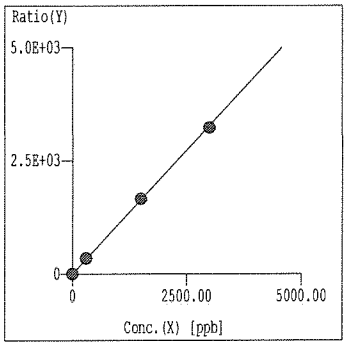
=== Graph Detail ===

Step Mass Element (2) 52 Cr | ISTD 45 | Unit ppb



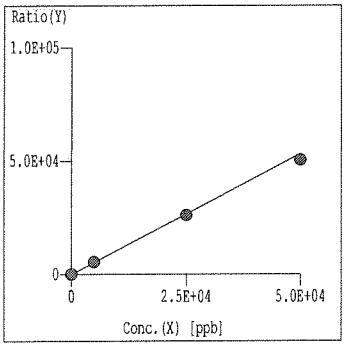
Curve Fit: Y=aX+b
r = 0.9996
Y = 4.715E+000*X +2.208E-001
X = 2.121E-001*Y -4.682E-002
DL = 2.343E-02 ppb
BEC = 4.682E-02 ppb

Step Mass Element (3) 55 Mn | ISTD 45 | Unit ppb



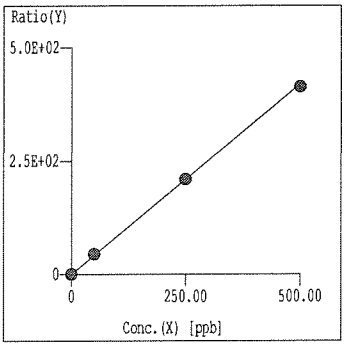
Curve Fit: Y=aX+b
r = 0.9999
Y = 1.093E+000*X +8.029E-002
X = 9.148E-001*Y -7.345E-002
DL = 7.135E-03 ppb
BEC = 7.345E-02 ppb

Step Mass Element (1) 56 Fe | ISTD 45 | Unit ppb



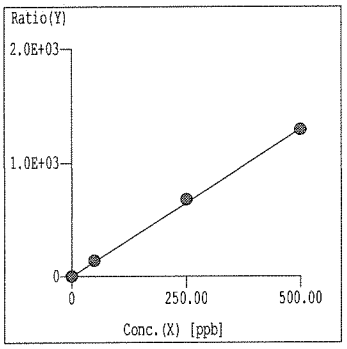
Curve Fit: Y=aX+b
r = 0.9999
Y = 1.064E+000*X +8.357E-001
X = 9.396E-001*Y -7.853E-001
DL = 9.833E-02 ppb
BEC = 7.853E-01 ppb

Step Mass Element (3) 59 Co | ISTD 45 | Unit ppb



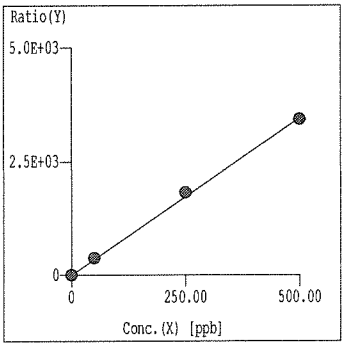
Curve Fit: Y=aX+b
r = 1.0000
Y = 8.401E-001*X +4.053E-003
X = 1.190E+000*Y -4.824E-003
DL = 1.867E-03 ppb
BEC = 4.824E-03 ppb

Step Mass Element (2) 60 Ni | ISTD 45 | Unit ppb



Curve Fit: Y=aX+b
r = 0.9997
Y = 2.598E+000*X +7.385E-002
X = 3.849E-001*Y -2.842E-002
DL = 2.248E-02 ppb
BEC = 2.842E-02 ppb

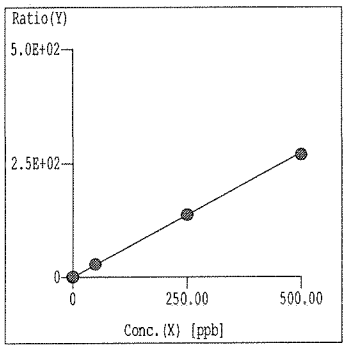
Step Mass Element (2) 63 Cu | ISTD 45 | Unit ppb



Curve Fit: Y=aX+b
r = 0.9995
Y = 6.918E+000*X +5.497E-001
X = 1.446E-001*Y -7.946E-002
DL = 2.225E-02 ppb
BEC = 7.946E-02 ppb

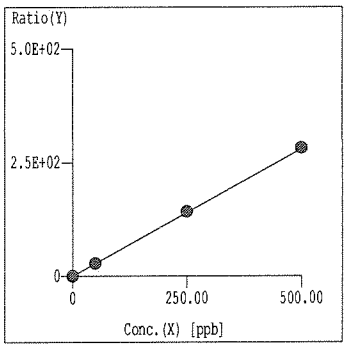
=== Graph Detail ===

Step Mass Element (3) 66 Zn | ISTD 72 | Unit ppb



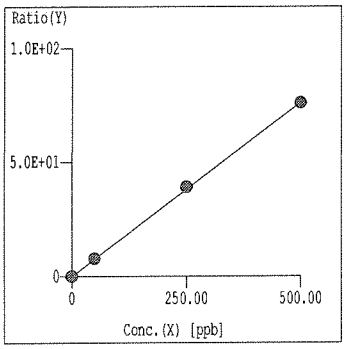
Curve Fit: Y=aX+b
r = 1.0000
Y = 5.466E-001*X +1.548E-001
X = 1.829E+000*Y -2.832E-001
DL = 1.671E-02 ppb
BEC = 2.832E-01 ppb

Step Mass Element (2) 75 As | ISTD 72 | Unit ppb



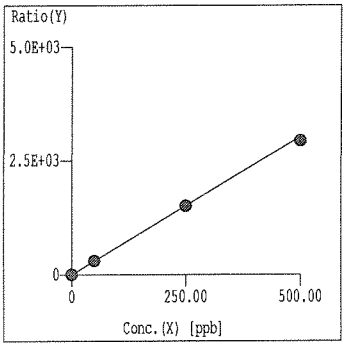
Curve Fit: Y=aX+b
r = 1.0000
Y = 5.602E-001*X +1.446E-002
X = 1.785E+000*Y -2.582E-002
DL = 2.964E-02 ppb
BEC = 2.582E-02 ppb

Step Mass Element (1) 78 Se | ISTD 72 | Unit ppb



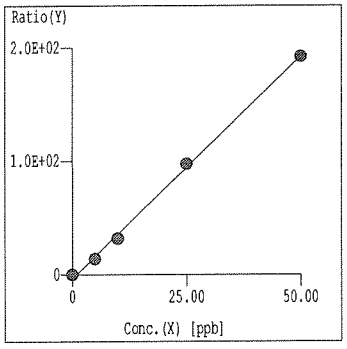
Curve Fit: Y=aX+b
r = 0.9999
Y = 1.522E-001*X +1.906E-003
X = 6.568E+000*Y -1.252E-002
DL = 8.844E-03 ppb
BEC = 1.252E-02 ppb

Step Mass Element (3) 88 Sr | ISTD 72 | Unit ppb



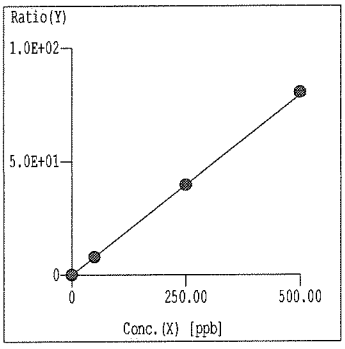
Curve Fit: Y=aX+b
r = 0.9999
Y = 6.051E+000*X +5.669E-002
X = 1.653E-001*Y -9.369E-003
DL = 3.037E-03 ppb
BEC = 9.369E-03 ppb

Step Mass Element (3) 90 Zr | ISTD 72 | Unit ppb



Curve Fit: Y=aX+b
r = 0.9992
Y = 3.921E+000*X -3.621E+000
X = 2.550E-001*Y +9.235E-001
DL = 9.765E-03 ppb
BEC = -9.235E-01 ppb

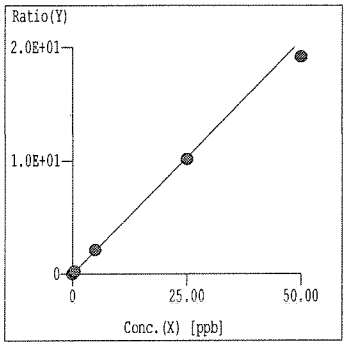
Step Mass Element (3) 95 Mo | ISTD 115 | Unit ppb



Curve Fit: Y=aX+b
r = 1.0000
Y = 1.585E-001*X +4.521E-003
X = 6.309E+000*Y -2.852E-002
DL = 1.011E-02 ppb
BEC = 2.852E-02 ppb

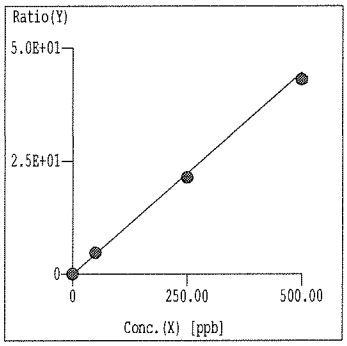
=== Graph Detail ===

Step Mass Element (3) 107 Ag | ISTD 115 | Unit ppb



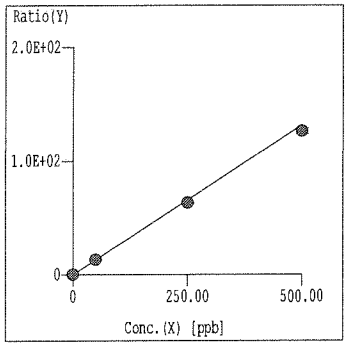
Curve Fit: Y=aX+b
r = 0.9996
Y = 4.122E-001*X +1.392E-003
X = 2.426E+000*Y -3.376E-003
DL = 2.880E-03 ppb
BEC = 3.376E-03 ppb

Step Mass Element (3) 111 Cd | ISTD 115 | Unit ppb



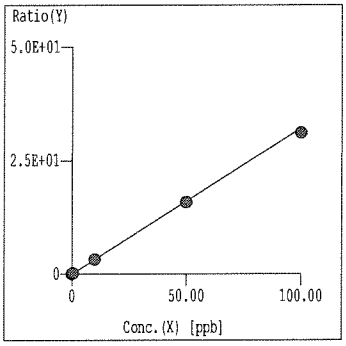
Curve Fit: Y=aX+b
r = 0.9999
Y = 8.919E-002*X +5.530E-004
X = 1.121E+001*Y -6.200E-003
DL = 7.675E-03 ppb
BEC = 6.200E-03 ppb

Step Mass Element (3) 118 Sn | ISTD 115 | Unit ppb



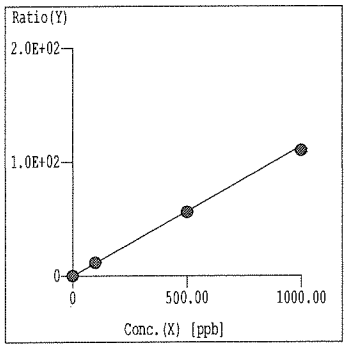
Curve Fit: Y=aX+b
r = 1.0000
Y = 2.634E-001*X +5.174E-003
X = 3.797E+000*Y -1.964E-002
DL = 3.280E-03 ppb
BEC = 1.964E-02 ppb

Step Mass Element (3) 121 Sb | ISTD 115 | Unit ppb



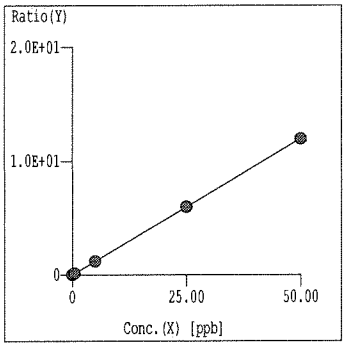
Curve Fit: Y=aX+b
r = 1.0000
Y = 3.216E-001*X +4.026E-003
X = 3.109E+000*Y -1.252E-002
DL = 1.451E-03 ppb
BEC = 1.252E-02 ppb

Step Mass Element (3) 137 Ba | ISTD 115 | Unit ppb



Curve Fit: Y=aX+b
r = 0.9999
Y = 1.139E-001*X +1.260E-003
X = 8.780E+000*Y -1.107E-002
DL = 3.163E-03 ppb
BEC = 1.107E-02 ppb

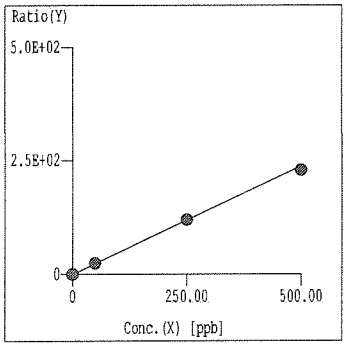
Step Mass Element (3) 182 W | ISTD 159 | Unit ppb



Curve Fit: Y=aX+b
r = 1.0000
Y = 2.395E-001*X +1.040E-002
X = 4.176E+000*Y -4.342E-002
DL = 7.531E-03 ppb
BEC = 4.342E-02 ppb

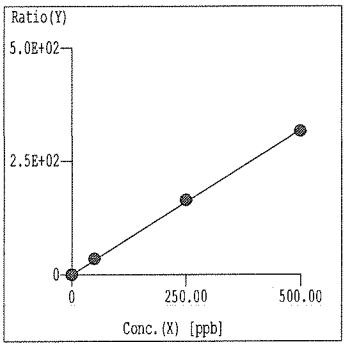
=== Graph Detail ===

Step Mass Element	ISTD	Unit
(3) 205 Tl	159	ppb



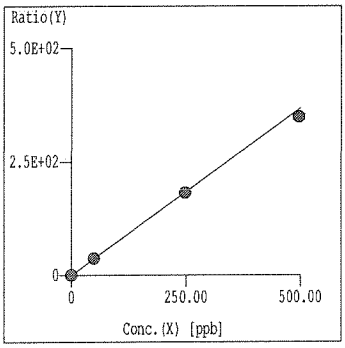
Curve Fit: Y=aX+b
r = 0.9998
Y = 4.738E-001*X +5.191E-003
X = 2.111E+000*Y -1.096E-002
DL = 1.224E-03 ppb
BEC = 1.096E-02 ppb

Step Mass Element	ISTD	Unit
(3) 208 Pb	159	ppb



Curve Fit: Y=aX+b
r = 0.9998
Y = 6.373E-001*X +1.061E-002
X = 1.569E+000*Y -1.664E-002
DL = 2.242E-03 ppb
BEC = 1.664E-02 ppb

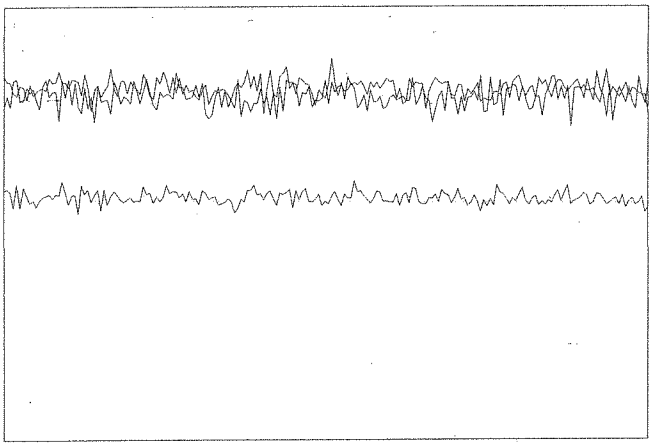
Step Mass Element	ISTD	Unit
(3) 238 U	159	ppb



Curve Fit: Y=aX+b
r = 0.9998
Y = 7.353E-001*X +2.858E-003
X = 1.360E+000*Y -3.887E-003
DL = 7.143E-04 ppb
BEC = 3.887E-03 ppb

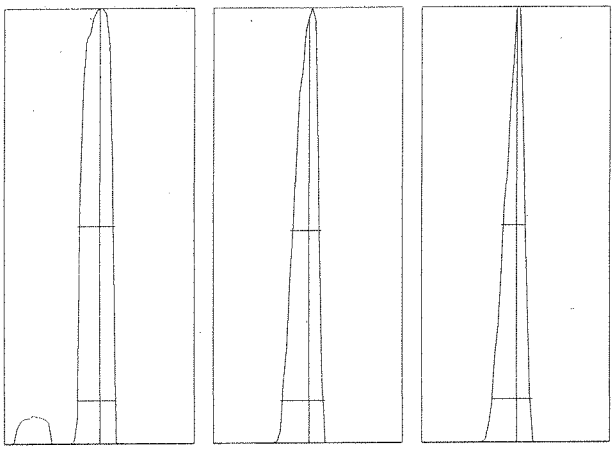
Tune Report

Tune File : NORM.U
Comment : i98j04



Integration Time:	0.1000 sec	
Sampling Period:	0.6200 sec	
n:	200	
Oxide:	156/140	1.600%
Doubly Charged:	70/140	0.689%

m/z	Range	Count	Mean	RSD%	Background
7	20,000	15004.0	15842.9	3.28	1.40
89	100,000	53849.0	55993.1	2.56	1.60
205	50,000	41315.0	40634.0	2.47	3.80
156/140	5	1.670%	1.610%	6.21	
70/140	2	0.718%	0.721%	7.19	



m/z:	7	89	205
Height:	15,814	57,143	44,953
Axis:	7.05	89.05	205.05
W-50%:	0.60	0.50	0.40
W-10%:	0.600	0.700	0.6500

Integration Time: 0.1000 sec
Acquisition Time: 22.7600 sec

Y axis : Linear

Generated : Oct 13, 2016 18:35:44
Printed : Oct 13, 2016 18:35:47

7072

Tune Report

Tune File : NORM.U
Comment : i98j04

Tuning Parameters

===Plasma Condition===			===Ion Lenses===			===Q-Pole Parameters===		
RF Power	:	1500 W	Extract 1	:	0 V	AMU Gain	:	135
RF Matching	:	1.78 V	Extract 2	:	-120 V	AMU Offset	:	130
Smpl Depth	:	8 mm	Omega Bias-ce	:	-30 V	Axis Gain	:	1.0006
Torch-H	:	0.1 mm	Omega Lens-ce	:	0.2 V	Axis Offset	:	-0.01
Torch-V	:	-0.2 mm	Cell Entrance	:	-26 V	QP Bias	:	-3 V
Carrier Gas	:	0.9 L/min	QP Focus	:	1 V			
Makeup Gas	:	0.14 L/min	Cell Exit	:	-30 V	===Detector Parameters===		
Optional Gas	:	--- %				Discriminator	:	8 mV
Nebulizer Pump	:	0.1 rps	===Octopole Parameters===			Analog HV	:	2460 V
Sample Pump	:	--- rps	OctP RF	:	170 V	Pulse HV	:	1860 V
S/C Temp	:	2 degC	OctP Bias	:	-6 V			

===Reaction Cell===								
Reaction Mode	:	OFF						
H2 Gas	:	0 mL/min	He Gas	:	0 mL/min	Optional Gas	:	--- %

Generated : Oct 13, 2016 18:35:44
Printed : Oct 13, 2016 18:35:49

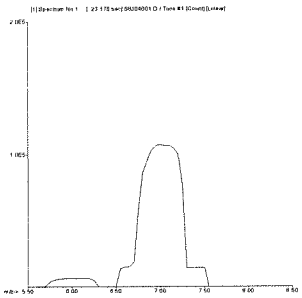
7873

6020 QC Tune Report

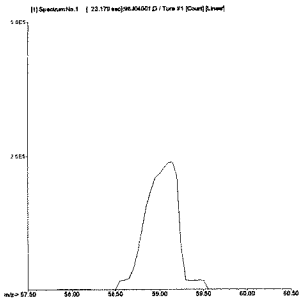
Data File: D:\DATA\I982016\J\I98J04.B\98J04001.D
Date Acquired: Oct 13 2016 07:07 pm
Acq. Method: TN6020_C.M
Operator: CCapul
Sample Name: 6020tunchk
Misc Info:
Vial Number: 1301
Current Method: C:\ICPCHEM\1\METHODS\TN6020_C.M

RSD (%)

Element	Actual	Required	Flag
7 Li	3.94	5.00	
59 Co	4.50	5.00	
115 In	2.97	5.00	
205 Tl	3.28	5.00	

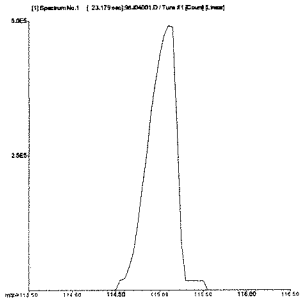


7 Li
Mass Calib.
Actual: 7.05
Required: 6.90 - 7.10
Flag:
Peak Width-10%
Actual: 0.50
Limit 0.90
Flag:



59 Co
Mass Calib.
Actual: 59.10
Required: 58.90 - 59.10
Flag:
Peak Width-10%
Actual: 0.55
Limit 0.90
Flag:

7074



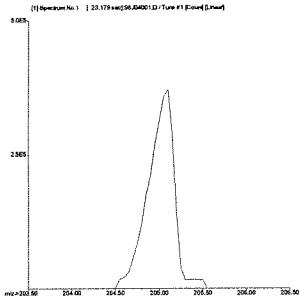
115 In

Mass Calib.

Actual:	115.05	
Required:	114.90 -	115.10
Flag:		

Peak Width-10%

Actual:	0.55
Limit	0.90
Flag:	



205 Tl

Mass Calib.

Actual:	205.05	
Required:	204.90 -	205.10
Flag:		

Peak Width-10%

Actual:	0.50
Limit	0.90
Flag:	

Calibration Blank QC Report

Data File: D:\DATA\I982016\J\I98J04.B\98J04003.D\98J04003.D#
Date Acquired: Oct 13 2016 08:22 pm
Operator: CCapul
Sample Name: BLNK
Misc Info:
Vial Number: 1101
Current Method: C:\ICPCHEM\1\METHODS\EM6020HR.M
Calibration File: D:\DATA\I982016\A\I98A01.B\EM6020HR.C
Last Cal Update: Oct 13 2016 08:04 pm
Sample Type: CalBlk
Total Dil Factor: 1.00

QC&ISTD Elements

Element		CPS Mean		SD	CPS RSD(%)
6	Li	1223171.00	A	12280.00	1.00
7	Li	77775.30	P	1658.00	2.13
9	Be	8.89	P	5.09	57.28
11	B	1712.40	P	42.47	2.48
23	Na	98898.59	P	4524.00	4.57
24	Mg	7031.05	P	186.40	2.65
27	Al	8142.88	P	196.60	2.41
28	Si	4174.51	P	463.80	11.11
31	P	11085.17	P	549.50	4.96
39	K	1930.23	P	66.59	3.45
40	Ca	32163.36	P	547.20	1.70
45	Sc	1519879.00	A	41960.00	2.76
45	Sc	31574.02	P	864.50	2.74
45	Sc	3000281.00	A	42770.00	1.43
47	Ti	55.56	P	6.94	12.49
51	V	35.56	P	2.04	5.73
52	Cr	67.78	P	11.20	16.52
55	Mn	2547.01	P	127.70	5.01
56	Fe	13646.79	P	633.20	4.64
59	Co	141.12	P	11.71	8.30
60	Ni	14.67	P	5.46	37.21
63	Cu	138.89	P	6.01	4.33
66	Zn	966.74	P	36.06	3.73
72	Ge	435384.50	P	7341.00	1.69
72	Ge	20960.14	P	468.90	2.24
72	Ge	697169.31	P	7886.00	1.13
75	As	6.00	P	1.33	22.22
78	Se	10.67	P	2.40	22.54
88	Sr	434.47	P	43.51	10.01
90	Zr	353.59	P	104.30	29.50
95	Mo	352.24	P	33.39	9.48
107	Ag	61.11	P	6.94	11.35
111	Cd	18.65	P	12.61	67.61
115	In	5478990.00	A	17320.00	0.32
118	Sn	370.02	P	54.87	14.83
121	Sb	261.12	P	8.39	3.21
137	Ba	72.23	P	1.93	2.67
159	Tb	8170588.00	A	72470.00	0.89
182	W	1041.20	P	60.04	5.77
205	Tl	313.35	P	11.55	3.69
208	Pb	945.61	P	35.96	3.80
209	Bi	4785551.00	A	62440.00	1.30
235	U	1.11	P	1.93	173.24
238	U	273.35	P	23.33	8.53

7076

Calibration Blank QC Report

Data File: D:\DATA\I982016\J\I98J04.B\98J04004.D\98J04004.D#
Date Acquired: Oct 13 2016 08:27 pm
Operator: CCapul
Sample Name: S0
Misc Info:
Vial Number: 1202
Current Method: C:\ICPCHEM\1\METHODS\EM6020HR.M
Calibration File: D:\DATA\I982016\A\I98A01.B\EM6020HR.C
Last Cal Update: Oct 13 2016 08:25 pm
Sample Type: CalBlk
Total Dil Factor: 1.00

QC&ISTD Elements

Element		CPS Mean		SD	CPS RSD(%)
6	Li	1290961.00	A	14100.00	1.09
7	Li	81968.36	P	1726.00	2.11
9	Be	13.33	P	8.82	66.14
11	B	1647.95	P	98.92	6.00
23	Na	105394.00	P	818.20	0.78
24	Mg	9597.24	P	43.72	0.46
27	Al	12064.93	P	372.10	3.08
28	Si	3199.84	P	36.74	1.15
31	P	11998.16	P	153.80	1.28
39	K	2039.13	P	66.78	3.27
40	Ca	27819.91	P	539.80	1.94
45	Sc	1595476.00	A	33450.00	2.10
45	Sc	36331.18	P	171.40	0.47
45	Sc	3100974.00	A	38210.00	1.23
47	Ti	66.67	P	11.55	17.32
51	V	48.89	P	3.79	7.75
52	Cr	71.78	P	13.09	18.24
55	Mn	2457.00	P	68.41	2.78
56	Fe	11997.22	P	718.30	5.99
59	Co	123.34	P	15.28	12.39
60	Ni	13.78	P	7.13	51.74
63	Cu	98.67	P	18.27	18.52
66	Zn	670.04	P	13.33	1.99
72	Ge	450675.81	P	1062.00	0.24
72	Ge	24472.04	P	149.90	0.61
72	Ge	716074.63	P	9588.00	1.34
75	As	3.33	P	1.33	39.99
78	Se	8.44	P	2.04	24.12
88	Sr	373.35	P	40.42	10.83
90	Zr	372.59	P	97.04	26.05
95	Mo	254.46	P	28.74	11.30
107	Ag	55.56	P	21.69	39.04
111	Cd	23.08	P	12.92	55.99
115	In	5652450.00	A	69290.00	1.23
118	Sn	292.24	P	19.53	6.68
121	Sb	222.23	P	10.72	4.82
137	Ba	71.11	P	6.94	9.76
159	Tb	8312643.00	A	46050.00	0.55
182	W	861.18	P	51.68	6.00
205	Tl	425.58	P	18.36	4.31
208	Pb	814.49	P	38.35	4.71
209	Bi	4896882.00	A	40590.00	0.83
235	U	3.33	P	3.33	99.99
238	U	235.57	P	13.88	5.89

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Calibration Standard QC Report

Data File: D:\DATA\I982016\J\I98J04.B\98J04005.D\98J04005.D#
Date Acquired: Oct 13 2016 08:32 pm
Operator: CCapul
Sample Name: S1 0.5
Misc Info:
Vial Number: 1104
Current Method: C:\ICPCHEM\1\METHODS\EM6020HR.M
Calibration File: D:\DATA\I982016\A\I98A01.B\EM6020HR.C
Last Cal Update: Oct 13 2016 08:30 pm
Sample Type: CalStd
Total Dil Factor: 1.00

QC&ISTD Elements

Element	CPS Mean		SD	CPS RSD(%)
6 Li	1244581.00	A	29130.00	2.34
7 Li	85444.64	P	1802.00	2.11
9 Be	2154.70	P	36.72	1.70
11 B	3442.81	P	22.20	0.64
23 Na	305616.09	P	3626.00	1.19
24 Mg	800269.63	A	7077.00	0.88
27 Al	1003573.00	A	3169.00	0.32
28 Si	83553.37	P	1702.00	2.04
31 P	32012.47	P	171.20	0.53
39 K	5421.34	P	55.50	1.02
40 Ca	409536.81	P	6252.00	1.53
45 Sc	1550698.00	A	8026.00	0.52
45 Sc	35560.13	P	484.70	1.36
45 Sc	2932486.00	A	72790.00	2.48
47 Ti	1101.20	P	130.10	11.81
51 V	710.47	P	11.44	1.61
52 Cr	991.38	P	49.11	4.95
55 Mn	21299.54	P	295.40	1.39
56 Fe	917883.69	A	7763.00	0.85
59 Co	14489.86	P	125.40	0.87
60 Ni	550.90	P	7.95	1.44
63 Cu	1576.55	P	38.44	2.44
66 Zn	5981.64	P	23.34	0.39
72 Ge	425246.31	P	1783.00	0.42
72 Ge	23967.76	P	909.20	3.79
72 Ge	680865.13	P	3343.00	0.49
75 As	78.89	P	10.78	13.67
78 Se	337.34	P	14.71	4.36
88 Sr	22070.06	P	199.80	0.91
90 Zr	94328.60	P	1336.00	1.42
95 Mo	4604.34	P	69.37	1.51
107 Ag	12074.05	P	275.60	2.28
111 Cd	2786.24	P	123.00	4.41
115 In	5475307.00	A	108700.00	1.99
118 Sn	7483.67	P	153.20	2.05
121 Sb	9168.23	P	153.50	1.67
137 Ba	3309.47	P	166.70	5.04
159 Tb	8176336.00	A	66360.00	0.81
182 W	10724.17	P	282.40	2.63
205 Tl	22232.08	P	273.60	1.23
208 Pb	32127.48	P	363.40	1.13
209 Bi	4827052.00	A	51340.00	1.06
235 U	241.12	P	11.71	4.86
238 U	31378.56	P	605.90	1.93

ISTD Elements

Element	CPS Mean	CPS RSD(%)	Ref Value	Rec(%)	QC Range(%)	Flag
6 Li	1244580.90	2.34	1290961.00	96.4	60 - 125	
45 Sc	1550698.30	0.52	1595475.90	97.2	60 - 125	
45 Sc	35560.13	1.36	36331.18	97.9	60 - 125	
45 Sc	2932486.50	2.48	3100973.80	94.6	60 - 125	
72 Ge	425246.28	0.42	450675.81	94.4	60 - 125	
72 Ge	23967.76	3.79	24472.05	97.9	60 - 125	
72 Ge	680865.13	0.49	716074.63	95.1	60 - 125	
115 In	5475307.50	1.99	5652450.00	96.9	60 - 125	
159 Tb	8176336.50	0.81	8312643.00	98.4	60 - 125	

ISTD Ref File : D:\DATA\I982016\J\I98J04.B\98J04004.D\98J04004.D#

--- :Element Failures --- :Max. Number of Failures Allowed
0 :ISTD Failures 0 :Max. Number of ISTD Failures Allowed

Data Results:
Analytes: Pass
ISTD: Pass

Calibration Standard QC Report

Data File: D:\DATA\I982016\J\I98J04.B\98J04006.D\98J04006.D#
Date Acquired: Oct 13 2016 08:36 pm
Operator: CCapul
Sample Name: S2 50
Misc Info:
Vial Number: 1105
Current Method: C:\ICPCHEM\1\METHODS\EM6020HR.M
Calibration File: D:\DATA\I982016\A\I98A01.B\EM6020HR.C
Last Cal Update: Oct 13 2016 08:35 pm
Sample Type: CalStd
Total Dil Factor: 1.00

QC&ISTD Elements

Element	CPS Mean		SD	CPS RSD(%)
6 Li	1266150.00	A	23180.00	1.83
7 Li	144986.20	P	2145.00	1.48
9 Be	22752.58	P	157.50	0.69
11 B	39033.19	P	197.70	0.51
23 Na	20530210.00	A	413300.00	2.01
24 Mg	77390960.00	A	1240000.00	1.60
27 Al	97599720.00	A	562100.00	0.58
28 Si	443211.69	P	3898.00	0.88
31 P	54764.12	P	536.90	0.98
39 K	336001.19	P	6461.00	1.92
40 Ca	36537140.00	A	313300.00	0.86
45 Sc	1643773.00	A	23320.00	1.42
45 Sc	37766.31	P	820.10	2.17
45 Sc	3070133.00	A	50560.00	1.65
47 Ti	98482.31	P	1187.00	1.21
51 V	67154.42	P	451.20	0.67
52 Cr	92924.57	P	639.80	0.69
55 Mn	10524900.00	A	124800.00	1.19
56 Fe	89111424.00	A	526800.00	0.59
59 Co	1361760.00	A	16330.00	1.20
60 Ni	52904.29	P	200.50	0.38
63 Cu	142651.00	P	715.10	0.50
66 Zn	195460.91	P	1699.00	0.87
72 Ge	447840.09	P	600.00	0.13
72 Ge	25029.82	P	353.00	1.41
72 Ge	693320.81	P	5036.00	0.73
75 As	7013.75	P	100.40	1.43
78 Se	35043.58	P	320.00	0.91
88 Sr	2096426.00	A	9693.00	0.46
90 Zr	219178.00	P	4998.00	2.28
95 Mo	427330.31	P	4981.00	1.17
107 Ag	114638.20	P	415.70	0.36
111 Cd	254022.50	P	1067.00	0.42
115 In	5417643.00	A	16510.00	0.30
118 Sn	715366.63	P	3004.00	0.42
121 Sb	174321.80	P	863.00	0.50
137 Ba	630938.69	P	4916.00	0.78
159 Tb	8244304.00	A	167800.00	2.04
182 W	99056.22	P	1812.00	1.83
205 Tl	1984846.00	A	61220.00	3.08
208 Pb	2874535.00	A	5768.00	0.20
209 Bi	4663885.00	A	112300.00	2.41
235 U	23066.24	P	180.10	0.78
238 U	3052856.00	A	32370.00	1.06

ISTD Elements

Element	CPS Mean	CPS RSD(%)	Ref Value	Rec(%)	QC Range(%)	Flag
6 Li	1266150.40	1.83	1290961.00	98.1	60 - 125	
45 Sc	1643772.80	1.42	1595475.90	103.0	60 - 125	
45 Sc	37766.32	2.17	36331.18	104.0	60 - 125	
45 Sc	3070133.00	1.65	3100973.80	99.0	60 - 125	
72 Ge	447840.16	0.13	450675.81	99.4	60 - 125	
72 Ge	25029.82	1.41	24472.05	102.3	60 - 125	
72 Ge	693320.75	0.73	716074.63	96.8	60 - 125	
115 In	5417643.00	0.30	5652450.00	95.8	60 - 125	
159 Tb	8244304.00	2.04	8312643.00	99.2	60 - 125	

ISTD Ref File : D:\DATA\I982016\J\I98J04.B\98J04004.D\98J04004.D#

--- :Element Failures --- :Max. Number of Failures Allowed
0 :ISTD Failures 0 :Max. Number of ISTD Failures Allowed

Data Results:
Analytes: Pass
ISTD: Pass

Calibration Standard QC Report

Data File: D:\DATA\I982016\J\I98J04.B\98J04007.D\98J04007.D#
Date Acquired: Oct 13 2016 08:41 pm
Operator: CCapul
Sample Name: S3 250
Misc Info:
Vial Number: 1106
Current Method: C:\ICPCHEM\1\METHODS\EM6020HR.M
Calibration File: D:\DATA\I982016\A\I98A01.B\EM6020HR.C
Last Cal Update: Oct 13 2016 08:39 pm
Sample Type: CalStd
Total Dil Factor: 1.00

QC&ISTD Elements

Element	CPS Mean		SD	CPS RSD(%)
6 Li	1195982.00	A	9188.00	0.77
7 Li	382850.59	P	3441.00	0.90
9 Be	106405.60	P	1428.00	1.34
11 B	176400.80	P	1380.00	0.78
23 Na	93994624.00	A	1451000.00	1.54
24 Mg	365063010.00	A	2638000.00	0.72
27 Al	463056290.00	A	6183000.00	1.34
28 Si	2082308.00	A	23650.00	1.14
31 P	214307.59	P	2134.00	1.00
39 K	1593617.00	A	25140.00	1.58
40 Ca	166375200.00	A	2675000.00	1.61
45 Sc	1579268.00	A	31390.00	1.99
45 Sc	34725.60	P	453.60	1.31
45 Sc	2939051.00	A	15810.00	0.54
47 Ti	466198.00	P	3784.00	0.81
51 V	318553.59	P	3847.00	1.21
52 Cr	429630.81	P	6772.00	1.58
55 Mn	48564832.00	A	558100.00	1.15
56 Fe	410740990.00	A	6667000.00	1.62
59 Co	6171544.00	A	76120.00	1.23
60 Ni	235835.70	P	2049.00	0.87
63 Cu	632663.88	P	6109.00	0.97
66 Zn	872533.38	A	7624.00	0.87
72 Ge	409853.00	P	3131.00	0.76
72 Ge	22834.56	P	307.40	1.35
72 Ge	637281.38	P	2356.00	0.37
75 As	32488.79	P	505.80	1.56
78 Se	159913.41	P	2033.00	1.27
88 Sr	9591771.00	A	81860.00	0.85
90 Zr	619799.13	P	1433.00	0.23
95 Mo	1909996.00	A	30110.00	1.58
107 Ag	488873.91	P	1749.00	0.36
111 Cd	1027616.00	A	7662.00	0.75
115 In	4819504.00	A	68160.00	1.41
118 Sn	3053861.00	A	32350.00	1.06
121 Sb	762222.00	P	3874.00	0.51
137 Ba	2699940.00	A	16580.00	0.61
159 Tb	7372526.00	A	29320.00	0.40
182 W	442171.81	P	407.30	0.09
205 Tl	8754684.00	A	54460.00	0.62
208 Pb	12056000.00	A	54580.00	0.45
209 Bi	4027638.00	A	46490.00	1.15
235 U	102274.50	P	527.10	0.52
238 U	13370300.00	A	95720.00	0.72

ISTD Elements

Element	CPS Mean	CPS RSD(%)	Ref Value	Rec(%)	QC Range(%)	Flag
6 Li	1195982.10	0.77	1290961.00	92.6	60 - 125	
45 Sc	1579268.00	1.99	1595475.90	99.0	60 - 125	
45 Sc	34725.59	1.31	36331.18	95.6	60 - 125	
45 Sc	2939050.80	0.54	3100973.80	94.8	60 - 125	
72 Ge	409853.03	0.76	450675.81	90.9	60 - 125	
72 Ge	22834.56	1.35	24472.05	93.3	60 - 125	
72 Ge	637281.38	0.37	716074.63	89.0	60 - 125	
115 In	4819504.50	1.41	5652450.00	85.3	60 - 125	
159 Tb	7372525.50	0.40	8312643.00	88.7	60 - 125	

ISTD Ref File : D:\DATA\I982016\J\I98J04.B\98J04004.D\98J04004.D#

--- :Element Failures --- :Max. Number of Failures Allowed
0 :ISTD Failures 0 :Max. Number of ISTD Failures Allowed

Data Results:
Analytes: Pass
ISTD: Pass

Calibration Standard QC Report

Data File: D:\DATA\I982016\J\I98J04.B\98J04008.D\98J04008.D#
Date Acquired: Oct 13 2016 08:45 pm
Operator: CCapul
Sample Name: S4 500
Misc Info:
Vial Number: 1107
Current Method: C:\ICPCHEM\1\METHODS\EM6020HR.M
Calibration File: D:\DATA\I982016\A\I98A01.B\EM6020HR.C
Last Cal Update: Oct 13 2016 08:44 pm
Sample Type: CalStd
Total Dil Factor: 1.00

QC&ISTD Elements

Element	CPS Mean		SD	CPS RSD(%)
6 Li	1187575.00	A	12650.00	1.07
7 Li	684677.13	A	8487.00	1.24
9 Be	205369.30	P	2403.00	1.17
11 B	333295.59	P	3933.00	1.18
23 Na	185003600.00	A	1762000.00	0.95
24 Mg	700222530.00	A	9375000.00	1.34
27 Al	894192380.00	A	14070000.00	1.57
28 Si	4077904.00	A	58160.00	1.43
31 P	399152.81	P	5604.00	1.40
39 K	3052044.00	A	38980.00	1.28
40 Ca	323628000.00	A	7978000.00	2.47
45 Sc	1568365.00	A	18820.00	1.20
45 Sc	34097.09	P	18.47	0.05
45 Sc	2839142.00	A	13960.00	0.49
47 Ti	907461.19	A	7267.00	0.80
51 V	613564.50	P	2415.00	0.39
52 Cr	800119.00	A	3715.00	0.46
55 Mn	91551040.00	A	653700.00	0.71
56 Fe	790699200.00	A	9296000.00	1.18
59 Co	11744180.00	A	106900.00	0.91
60 Ni	440922.31	P	1482.00	0.34
63 Cu	1169874.00	A	3490.00	0.30
66 Zn	1613540.00	A	22300.00	1.38
72 Ge	395590.91	P	1550.00	0.39
72 Ge	21585.70	P	447.70	2.07
72 Ge	600601.38	P	7122.00	1.19
75 As	60937.92	P	825.20	1.35
78 Se	300319.69	P	1831.00	0.61
88 Sr	17610240.00	A	259800.00	1.48
90 Zr	1153278.00	A	13230.00	1.15
95 Mo	3578377.00	A	30050.00	0.84
107 Ag	853458.19	A	6631.00	0.78
111 Cd	1914043.00	A	4566.00	0.24
115 In	4452588.00	A	67600.00	1.52
118 Sn	5622254.00	A	43380.00	0.77
121 Sb	1384237.00	A	21560.00	1.56
137 Ba	4896689.00	A	52240.00	1.07
159 Tb	6753768.00	A	70110.00	1.04
182 W	806802.50	A	11750.00	1.46
205 Tl	15394480.00	A	270400.00	1.76
208 Pb	21346960.00	A	263800.00	1.24
209 Bi	3651261.00	A	57670.00	1.58
235 U	185168.09	P	901.60	0.49
238 U	23516740.00	A	194000.00	0.82

ISTD Elements

Element	CPS Mean	CPS RSD(%)	Ref Value	Rec(%)	QC Range(%)	Flag
6 Li	1187575.30	1.07	1290961.00	92.0	60 - 125	
45 Sc	1568364.60	1.20	1595475.90	98.3	60 - 125	
45 Sc	34097.09	0.05	36331.18	93.9	60 - 125	
45 Sc	2839141.50	0.49	3100973.80	91.6	60 - 125	
72 Ge	395590.88	0.39	450675.81	87.8	60 - 125	
72 Ge	21585.71	2.07	24472.05	88.2	60 - 125	
72 Ge	600601.44	1.19	716074.63	83.9	60 - 125	
115 In	4452588.00	1.52	5652450.00	78.8	60 - 125	
159 Tb	6753768.00	1.04	8312643.00	81.2	60 - 125	

ISTD Ref File : D:\DATA\I982016\J\I98J04.B\98J04004.D\98J04004.D#

0 :Element Failures --- :Max. Number of Failures Allowed
0 :ISTD Failures 0 :Max. Number of ISTD Failures Allowed

Data Results:
Analytes: Pass
ISTD: Pass

7881

ICV QC Report

Data File: D:\DATA\I982016\J\I98J04.B\98J04009.D\98J04009.D#
Date Acquired: Oct 13 2016 08:50 pm
Acq. Method: EM6020HR.M
Operator: CCapul
Sample Name: ICV
Misc Info:
Vial Number: 1204
Current Method: C:\ICPCHEM\1\METHODS\EM6020HR.M
Calibration File: D:\DATA\I982016\A\I98A01.B\EM6020HR.C
Last Cal. Update: Oct 13 2016 08:48 pm
Sample Type: ICV1
Dilution Factor: 1.00

QC Elements

Element	Conc.		CPS	Conc. RSD(%)	Expected	QC Range(%)	Flag
7 Li	29.49	ppb	456673.1	3.03	30.00	90 - 110	
9 Be	30.30	ppb	131829.6	2.94	30.00	90 - 110	
11 B	30.01	ppb	107071.1	4.96	30.00	90 - 110	
23 Na	29210.00	ppb	116204000.0	1.90	30000.00	90 - 110	
24 Mg	28810.00	ppb	430648510.0	1.20	30000.00	90 - 110	
27 Al	28710.00	ppb	550678210.0	1.70	30000.00	90 - 110	
28 Si	3080.00	ppb	2672902.0	1.85	3000.00	90 - 110	
31 P	292.00	ppb	252861.2	2.12	300.00	90 - 110	
39 K	29570.00	ppb	1909070.0	1.81	30000.00	90 - 110	
40 Ca	27700.00	ppb	201467100.0	1.48	30000.00	90 - 110	
47 Ti	298.90	ppb	572976.7	3.08	300.00	90 - 110	
51 V	290.60	ppb	374275.2	0.32	300.00	90 - 110	
52 Cr	304.40	ppb	513249.9	0.68	300.00	90 - 110	
55 Mn	1963.00	ppb	64360760.0	3.46	2000.00	90 - 110	
56 Fe	28880.00	ppb	507769890.0	0.73	30000.00	90 - 110	
59 Co	294.90	ppb	7431928.0	2.95	300.00	90 - 110	
60 Ni	296.20	ppb	275238.1	0.27	300.00	90 - 110	
63 Cu	299.60	ppb	741310.8	0.45	300.00	90 - 110	
66 Zn	295.20	ppb	1052487.0	0.36	300.00	90 - 110	
75 As	293.20	ppb	37544.8	0.88	300.00	90 - 110	
78 Se	291.20	ppb	191908.9	0.72	300.00	90 - 110	
88 Sr	281.50	ppb	11098490.0	1.06	300.00	90 - 110	
90 Zr	26.18	ppb	645102.1	1.90	30.00	90 - 110	Fail
95 Mo	292.50	ppb	2267821.0	3.62	300.00	90 - 110	
107 Ag	28.66	ppb	577665.8	4.01	30.00	90 - 110	
111 Cd	281.80	ppb	1229836.0	1.80	300.00	90 - 110	
118 Sn	285.00	ppb	3673847.0	1.01	300.00	90 - 110	
121 Sb	57.45	ppb	904082.8	2.24	60.00	90 - 110	
137 Ba	288.60	ppb	1608162.0	3.16	300.00	90 - 110	
182 W	29.86	ppb	527035.2	0.58	30.00	90 - 110	
205 Tl	291.00	ppb	10147320.0	0.08	300.00	90 - 110	
208 Pb	303.80	ppb	14249010.0	1.62	300.00	90 - 110	
235 U	2.04	ppb	119101.2	4.22	0.22	90 - 110	Fail
238 U	288.80	ppb	15630400.0	1.58	300.00	90 - 110	

ISTD Elements

Element	CPS Mean	CPS RSD(%)	Ref Value	Rec(%)	QC Range(%)	Flag
6 Li	1248101.5	2.12	1290961.00	96.7	60 - 125	
45 Sc	1652365.9	0.82	1595475.90	103.6	60 - 125	
45 Sc	35755.9	0.69	36331.18	98.4	60 - 125	
45 Sc	3000230.5	1.78	3100973.80	96.8	60 - 125	
72 Ge	432845.0	0.35	450675.81	96.0	60 - 125	
72 Ge	22861.3	0.65	24472.05	93.4	60 - 125	
72 Ge	651525.9	1.55	716074.63	91.0	60 - 125	
115 In	4893773.0	2.81	5652450.00	86.6	60 - 125	
159 Tb	7360835.0	1.68	8312643.00	88.5	60 - 125	

ISTD Ref File : D:\DATA\I982016\J\I98J04.B\98J04004.D\98J04004.D#

2 :Element Failures — 0 :Max. Number of Failures Allowed
0 :ISTD Failures — 0 :Max. Number of ISTD Failures Allowed

Data Results:
Analytes: Fail
ISTD: Pass

ICB QC Report

Data File: D:\DATA\I982016\J\I98J04.B\98J04010.D\98J04010.D#
Date Acquired: Oct 13 2016 08:54 pm
Acq. Method: EM6020HR.M
Operator: CCapul
Sample Name: ICB
Misc Info:
Vial Number: 1202
Current Method: C:\ICPCHEM\1\METHODS\EM6020HR.M
Calibration File: D:\DATA\I982016\A\I98A01.B\EM6020HR.C
Last Cal. Update: Oct 13 2016 08:48 pm
Sample Type: ICB
Dilution Factor: 1.00

QC Elements

Element	Conc.		CPS	Conc RSD(%)	High Limit	Flag
7 Li	0.0096	ppb	86293.0	423.81	0.20	
9 Be	0.0003	ppb	15.6	245.51	0.10	
11 B	0.2954	ppb	2972.7	5.77	5.00	
23 Na	-2.8150	ppb	112397.1	12.71	40.00	
24 Mg	0.4129	ppb	17212.0	20.65	10.00	
27 Al	0.4603	ppb	22830.9	14.03	20.00	
28 Si	1.0830	ppb	4572.2	12.64	20.00	
31 P	-0.5766	ppb	12429.4	99.79	10.00	
39 K	-1.3900	ppb	2142.5	48.22	20.00	
40 Ca	0.8534	ppb	37943.6	5.29	25.00	
47 Ti	0.0123	ppb	98.9	84.53	0.50	
51 V	0.0090	ppb	65.3	52.97	0.50	
52 Cr	0.0002	ppb	85.8	1857.30	0.20	
55 Mn	0.0534	ppb	4633.2	8.40	0.20	
56 Fe	1.8920	ppb	50643.4	4.21	10.00	
59 Co	0.0033	ppb	226.7	32.01	0.20	
60 Ni	-0.0090	ppb	19.6	19.62	0.20	
63 Cu	-0.0211	ppb	156.0	12.92	0.40	
66 Zn	-0.1030	ppb	741.2	7.25	2.00	
75 As	0.0808	ppb	15.6	41.39	0.20	
78 Se	0.0467	ppb	43.3	4.74	0.20	
88 Sr	0.0043	ppb	623.4	45.97	0.20	
90 Zr	0.9361	ppb	372.2	0.12	2.00	
95 Mo	0.1736	ppb	1933.6	15.49	0.40	
107 Ag	0.0009	ppb	105.6	31.22	0.20	
111 Cd	0.0092	ppb	82.8	36.11	0.20	
118 Sn	0.0548	ppb	1184.6	11.67	0.20	
121 Sb	0.0131	ppb	497.8	32.96	0.40	
137 Ba	0.0015	ppb	86.7	160.68	0.20	
182 W	0.1506	ppb	4080.9	1.43	1.00	
205 Tl	0.0305	ppb	1722.4	17.44	0.20	
208 Pb	0.0293	ppb	2572.4	14.32	0.10	
235 U	0.0001	ppb	13.3	96.05	1.00	
238 U	0.0156	ppb	1260.1	17.63	0.10	

ISTD Elements

Element	CPS Mean	CPS RSD(%)	Ref Value	Rec(%)	QC Range(%)	Flag
6 Li	1359980.3	0.34	1290961.00	105.3	60 - 125	
45 Sc	1777662.5	1.03	1595475.90	111.4	60 - 125	
45 Sc	38695.9	2.31	36331.18	106.5	60 - 125	
45 Sc	3340681.3	0.67	3100973.80	107.7	60 - 125	
72 Ge	480781.0	1.56	450675.81	106.7	60 - 125	
72 Ge	26028.5	0.29	24472.05	106.4	60 - 125	
72 Ge	752618.5	1.25	716074.63	105.1	60 - 125	
115 In	6039396.0	1.01	5652450.00	106.8	60 - 125	
159 Tb	8785847.0	1.01	8312643.00	105.7	60 - 125	

ISTD Ref File : D:\DATA\I982016\J\I98J04.B\98J04004.D\98J04004.D#

0 :Element Failures 0 :Max. Number of Failures Allowed
0 :ISTD Failures 0 :Max. Nnumber of ISTD Failures Allowed

Data Results:
Analytes: Pass
ISTD: Pass

7083

Sample QC Report

Data File: D:\DATA\I982016\J\I98J04.B\98J04011.D\98J04011.D#
Date Acquired: Oct 13 2016 08:59 pm
Acq. Method: EM6020HR.M
Operator: CCapul
Sample Name: MRLJ1301
Misc Info: 0.5/50/4 ppb
Vial Number: 1306
Current Method: C:\ICPCHEM\1\METHODS\EM6020HR.M
Calibration File: D:\DATA\I982016\A\I98A01.B\EM6020HR.C
Last Cal. Update: Oct 13 2016 08:48 pm
Sample Type: Sample
Dilution Factor: 1.00
Autodil Factor: Undiluted
Final Dil Factor: 1.00

Tune #	Name
#1	h2.u
#2	he.u
#3	norm.u

QC Elements

Element	Tune	ISTD	CPS	Corr Conc	Raw Conc	Units	Conc RSD(%)	High Limit	Flag
7 Li	# 3	6	90879.8	0.0000	0.5784	ppb	23.22	50.00	
9 Be	# 3	6	2451.4	0.0000	0.5331	ppb	5.15	50.00	
11 B	# 3	6	4857.8	0.0000	0.8348	ppb	4.65	100.00	
23 Na	# 1	45	327764.2	0.0000	47.5500	ppb	0.73	50000.00	
24 Mg	# 3	45	853912.7	0.0000	51.5100	ppb	1.43	50000.00	
27 Al	# 3	45	1083804.0	0.0000	50.9600	ppb	1.83	50000.00	
28 Si	# 1	45	3925.2	0.0000	0.3886	ppb	27.79	10000.00	
31 P	# 3	45	11457.5	0.0000	-1.4360	ppb	37.41	400000.00	
39 K	# 2	45	5642.6	0.0000	47.1300	ppb	7.21	50000.00	
40 Ca	# 1	45	462855.7	0.0000	55.1600	ppb	0.41	50000.00	
47 Ti	# 3	45	1142.3	0.0000	0.5095	ppb	6.79	500.00	
51 V	# 2	45	774.9	0.0000	0.5070	ppb	3.45	500.00	
52 Cr	# 2	45	1095.4	0.0000	0.5414	ppb	2.15	500.00	
55 Mn	# 3	45	23365.5	0.0000	0.5766	ppb	1.33	3000.00	
56 Fe	# 1	45	1026383.0	0.0000	53.4600	ppb	1.07	50000.00	
59 Co	# 3	45	15483.3	0.0000	0.5557	ppb	1.46	500.00	
60 Ni	# 2	45	598.7	0.0000	0.5549	ppb	2.32	500.00	
63 Cu	# 2	45	1738.8	0.0000	0.5569	ppb	0.79	500.00	
66 Zn	# 3	72	18761.1	0.0000	4.2940	ppb	2.46	500.00	
75 As	# 2	72	90.2	0.0000	0.5770	ppb	11.05	500.00	
78 Se	# 1	72	394.0	0.0000	0.5188	ppb	4.02	500.00	
88 Sr	# 3	72	23701.0	0.0000	0.5130	ppb	1.90	500.00	
90 Zr	# 3	72	314.5	0.0000	0.9342	ppb	0.24	1000.00	
95 Mo	# 3	115	5181.3	0.0000	0.5166	ppb	1.06	500.00	
107 Ag	# 3	115	12000.6	0.0000	0.4822	ppb	0.74	50.00	
111 Cd	# 3	115	2710.6	0.0000	0.5006	ppb	5.46	500.00	
118 Sn	# 3	115	8140.8	0.0000	0.4958	ppb	1.14	500.00	
121 Sb	# 3	115	9601.9	0.0000	0.4854	ppb	1.98	100.00	
137 Ba	# 3	115	3518.4	0.0000	0.5041	ppb	2.32	1000.00	
182 W	# 3	159	1916.9	0.0000	0.0477	ppb	10.75	1000.00	
205 Tl	# 3	159	24017.8	0.0000	0.5664	ppb	1.37	500.00	
208 Pb	# 3	159	33831.3	0.0000	0.5879	ppb	0.93	500.00	
235 U	# 3	159	241.1	0.0000	0.0034	ppb	10.08	5.00	
238 U	# 3	159	32996.4	0.0000	0.5071	ppb	2.89	500.00	

ISTD Elements

Element	CPS Mean	CPS RSD(%)	Ref Value	Rec(%)	QC Range(%)	Flag
6 Li # 3	1311746.40	1.54	1290961.00	101.6	60 - 125	
45 Sc # 1	1777708.50	0.54	1595475.90	111.4	60 - 125	
45 Sc # 2	39498.16	1.21	36331.18	108.7	60 - 125	
45 Sc # 3	3287972.30	0.38	3100973.80	106.0	60 - 125	
72 Ge # 1	487214.63	1.05	450675.81	108.1	60 - 125	
72 Ge # 2	26735.57	2.82	24472.05	109.2	60 - 125	
72 Ge # 3	749774.75	0.39	716074.63	104.7	60 - 125	
115 In # 3	5996410.50	0.42	5652450.00	106.1	60 - 125	
159 Tb # 3	8781075.00	0.27	8312643.00	105.6	60 - 125	

ISTD Ref File : D:\DATA\I982016\J\I98J04.B\98J04004.D\98J04004.D#

0 :Element Failures
0 :ISTD Failures
0 :Max. Number of Failures Allowed
0 :Max. Number of ISTD Failures Allowed

Data Results:
Analytes: Pass
ISTD: Pass

7684

Sample QC Report

Data File:	D:\DATA\I982016\J\I98J04.B\98J04012.D\98J04012.D#
Date Acquired:	Oct 13 2016 09:04 pm
Acq. Method:	EM6020HR.M
Operator:	CCapul
Sample Name:	MRLJ1302
Misc Info:	1/100/10 ppb
Vial Number:	1305
Current Method:	C:\ICPCHEM\1\METHODS\EM6020HR.M
Calibration File:	D:\DATA\I982016\A\I98A01.B\EM6020HR.C
Last Cal. Update:	Oct 13 2016 08:48 pm
Sample Type:	Sample
Dilution Factor:	1.00
Autodil Factor:	Undiluted
Final Dil Factor:	1.00

Tune #	Name
#1	h2.u
#2	he.u
#3	norm.u

QC Elements

Element	Tune	ISTD	CPS	Corr Conc	Raw Conc	Units	Conc RSD(%)	High Limit	Flag
7 Li	# 3	6	96902.9	0.0000	0.9790	ppb	6.59	50.00	
9 Be	# 3	6	4583.2	0.0000	0.9924	ppb	3.88	50.00	
11 B	# 3	6	41311.1	0.0000	10.6300	ppb	0.70	100.00	
23 Na	# 1	45	536756.1	0.0000	98.2900	ppb	3.69	50000.00	
24 Mg	# 3	45	1692952.0	0.0000	103.4000	ppb	1.22	50000.00	
27 Al	# 3	45	2077214.0	0.0000	98.8800	ppb	0.66	50000.00	
28 Si	# 1	45	56550.8	0.0000	57.7000	ppb	1.85	10000.00	
31 P	# 3	45	59364.4	0.0000	51.9200	ppb	3.08	400000.00	
39 K	# 2	45	9188.1	0.0000	97.2200	ppb	1.96	50000.00	
40 Ca	# 1	45	826273.7	0.0000	103.2000	ppb	0.97	50000.00	
47 Ti	# 3	45	2333.6	0.0000	1.0840	ppb	5.56	500.00	
51 V	# 2	45	1412.1	0.0000	0.9579	ppb	1.86	500.00	
52 Cr	# 2	45	2020.8	0.0000	1.0410	ppb	2.01	500.00	
55 Mn	# 3	45	42091.6	0.0000	1.1050	ppb	0.77	3000.00	
56 Fe	# 1	45	1967932.0	0.0000	104.8000	ppb	2.42	50000.00	
59 Co	# 3	45	29655.4	0.0000	1.0760	ppb	0.73	500.00	
60 Ni	# 2	45	1117.6	0.0000	1.0630	ppb	2.62	500.00	
63 Cu	# 2	45	3312.7	0.0000	1.1360	ppb	0.65	500.00	
66 Zn	# 3	72	44799.7	0.0000	10.6500	ppb	1.15	500.00	
75 As	# 2	72	148.9	0.0000	0.9714	ppb	2.38	500.00	
78 Se	# 1	72	728.5	0.0000	0.9901	ppb	3.19	500.00	
88 Sr	# 3	72	95812.4	0.0000	2.1020	ppb	1.05	500.00	
90 Zr	# 3	72	98286.7	0.0000	4.2670	ppb	1.04	1000.00	
95 Mo	# 3	115	9277.1	0.0000	0.9673	ppb	1.85	500.00	
107 Ag	# 3	115	24537.4	0.0000	1.0090	ppb	1.20	50.00	
111 Cd	# 3	115	5707.4	0.0000	1.0830	ppb	4.94	500.00	
118 Sn	# 3	115	15043.0	0.0000	0.9520	ppb	0.41	500.00	
121 Sb	# 3	115	18306.4	0.0000	0.9559	ppb	1.19	100.00	
137 Ba	# 3	115	6656.5	0.0000	0.9835	ppb	3.42	1000.00	
182 W	# 3	159	42213.0	0.0000	1.9690	ppb	1.53	1000.00	
205 Tl	# 3	159	44461.6	0.0000	1.0610	ppb	1.66	500.00	
208 Pb	# 3	159	64367.0	0.0000	1.1360	ppb	1.59	500.00	
235 U	# 3	159	522.3	0.0000	0.0074	ppb	9.61	5.00	
238 U	# 3	159	62728.7	0.0000	0.9701	ppb	1.81	500.00	

ISTD Elements

Element	CPS Mean	CPS RSD(%)	Ref Value	Rec(%)	QC Range(%)	Flag
6 Li # 3	1320226.30	0.93	1290961.00	102.3	60 - 125	
45 Sc # 1	1752325.60	2.10	1595475.90	109.8	60 - 125	
45 Sc # 2	39390.46	2.66	36331.18	108.4	60 - 125	
45 Sc # 3	3266462.30	1.20	3100973.80	105.3	60 - 125	
72 Ge # 1	477178.44	0.84	450675.81	105.9	60 - 125	
72 Ge # 2	26660.94	3.09	24472.05	108.9	60 - 125	
72 Ge # 3	749814.44	1.22	716074.63	104.7	60 - 125	
115 In # 3	5877977.50	1.14	5652450.00	104.0	60 - 125	
159 Tb # 3	8759426.00	0.99	8312643.00	105.4	60 - 125	

ISTD Ref File : D:\DATA\I982016\J\I98J04.B\98J04004.D\98J04004.D#

0 :Element Failures
0 :ISTD Failures

0 :Max. Number of Failures Allowed
0 :Max. Number of ISTD Failures Allowed

Data Results:
Analytes: Pass
ISTD: Pass

7085

ICS-A QC Report

Data File: D:\DATA\I982016\J\I98J04.B\98J04013.D\98J04013.D#
Date Acquired: Oct 13 2016 09:08 pm
Acq. Method: EM6020HR.M
Operator: CCapul
Sample Name: ICSA
Misc Info:
Vial Number: 1303
Current Method: C:\ICPCHEM\1\METHODS\EM6020HR.M
Calibration File: D:\DATA\I982016\A\I98A01.B\EM6020HR.C
Last Cal. Update: Oct 13 2016 08:48 pm
Sample Type: ICS-A
Dilution Factor: 1.00

QC Elements

Element	Conc.		CPS	Conc RSD(%)	High Limit	Flag
7 Li	0.53	ppb	67200.5	8.54	---	
9 Be	0.01	ppb	47.8	13.44	---	
11 B	0.47	ppb	2610.4	5.82	---	
23 Na	102100.00	ppb	351259900.0	1.17	120000.00	
24 Mg	99800.00	ppb	1197772000.0	0.44	120000.00	
27 Al	99230.00	ppb	1528007900.0	1.99	120000.00	
28 Si	5.23	ppb	6789.8	3.60	---	
31 P	104900.00	ppb	69553320.0	0.71	120000.00	
39 K	98840.00	ppb	5700756.0	0.43	120000.00	
40 Ca	98590.00	ppb	620664130.0	0.82	120000.00	
47 Ti	2161.00	ppb	3326935.0	0.57	2400.00	
51 V	0.02	ppb	68.0	11.75	---	
52 Cr	1.37	ppb	2138.6	0.85	---	
55 Mn	0.34	ppb	10984.0	3.50	---	
56 Fe	95410.00	ppb	1451988000.0	0.83	120000.00	
59 Co	0.13	ppb	2699.3	5.12	---	
60 Ni	0.17	ppb	167.6	2.10	---	
63 Cu	0.58	ppb	1461.4	2.15	---	
66 Zn	2.86	ppb	9061.3	2.51	---	
75 As	0.24	ppb	29.6	8.99	---	
78 Se	0.04	ppb	29.3	1.47	---	
88 Sr	0.66	ppb	21423.3	0.75	---	
90 Zr	1.20	ppb	5701.9	0.46	---	
95 Mo	2127.00	ppb	12566700.0	1.41	2400.00	
107 Ag	0.02	ppb	372.2	3.88	---	
111 Cd	0.24	ppb	808.0	10.49	---	
118 Sn	0.04	ppb	541.1	2.24	---	
121 Sb	0.05	ppb	743.4	11.15	---	
137 Ba	0.13	ppb	577.8	7.15	---	
182 W	0.15	ppb	2596.0	4.27	---	
205 Tl	0.00	ppb	271.1	38.70	---	
208 Pb	0.23	ppb	8857.2	1.85	---	
235 U	0.00	ppb	6.7	85.18	---	
238 U	0.00	ppb	231.1	78.97	---	

ISTD Elements

Element	CPS Mean	CPS RSD(%)	Ref Value	Rec(%)	QC Range(%)	Flag
6 Li	976526.0	0.42	1290961.00	75.6	60 - 125	
45 Sc	1430129.6	1.43	1595475.90	89.6	60 - 125	
45 Sc	31969.4	1.09	36331.18	88.0	60 - 125	
45 Sc	2409023.0	0.94	3100973.80	77.7	60 - 125	
72 Ge	357174.2	1.13	450675.81	79.3	60 - 125	
72 Ge	20064.2	1.30	24472.05	82.0	60 - 125	
72 Ge	527336.8	0.48	716074.63	73.6	60 - 125	
115 In	3726376.5	0.66	5652450.00	65.9	60 - 125	
159 Tb	5683576.5	1.17	8312643.00	68.4	60 - 125	

ISTD Ref File : D:\DATA\I982016\J\I98J04.B\98J04004.D\98J04004.D#

0 :Element Failures 0 :Max. Number of Failures Allowed
0 :ISTD Failures 0 :Max. Number of ISTD Failures Allowed

Data Results:
Analytes: Pass
ISTD: Pass

7086

ICS-AB QC Report

Data File: D:\DATA\I982016\J\I98J04.B\98J04014.D\98J04014.D#
Date Acquired: Oct 13 2016 09:13 pm
Acq. Method: EM6020HR.M
Operator: CCapul
Sample Name: ICSAB
Misc Info:
Vial Number: 1304
Current Method: C:\ICPCHEM\1\METHODS\EM6020HR.M
Calibration File: D:\DATA\I982016\A\I98A01.B\EM6020HR.C
Last Cal. Update: Oct 13 2016 08:48 pm
Sample Type: ICS-AB
Dilution Factor: 1.00

QC Elements

Element	Conc.		CPS	Conc RSD(%)	Expected	QC Range(%)	Flag
7 Li	21.08	ppb	258232.7	0.78	20.00	80 - 120	
9 Be	21.85	ppb	70374.2	2.05	20.00	80 - 120	
11 B	20.30	ppb	54017.7	2.15	20.00	80 - 120	
23 Na	100300.00	ppb	329405310.0	0.75	100000.00	80 - 120	
24 Mg	99060.00	ppb	1158036000.0	1.23	100000.00	80 - 120	
27 Al	99230.00	ppb	1488286000.0	0.69	100000.00	80 - 120	
28 Si	5.15	ppb	6428.5	4.34	200.00	80 - 120	Fail
31 P	105400.00	ppb	68091912.0	0.58	100000.00	80 - 120	
39 K	99480.00	ppb	5456126.0	1.62	100000.00	80 - 120	
40 Ca	96850.00	ppb	582011780.0	1.39	100000.00	80 - 120	
47 Ti	2187.00	ppb	3279915.0	0.71	2000.00	80 - 120	
51 V	20.29	ppb	22251.6	2.46	20.00	80 - 120	
52 Cr	21.94	ppb	31520.6	1.79	20.00	80 - 120	
55 Mn	20.77	ppb	534609.7	0.92	20.00	80 - 120	
56 Fe	96880.00	ppb	1407605000.0	1.66	100000.00	80 - 120	
59 Co	21.19	ppb	417720.4	1.43	20.00	80 - 120	
60 Ni	20.13	ppb	15923.7	1.62	20.00	80 - 120	
63 Cu	20.57	ppb	43411.6	2.45	20.00	80 - 120	
66 Zn	21.96	ppb	62807.0	0.72	20.00	80 - 120	
75 As	22.09	ppb	2337.8	1.45	20.00	80 - 120	
78 Se	22.66	ppb	11823.5	0.11	20.00	80 - 120	
88 Sr	20.15	ppb	630121.5	0.57	20.00	80 - 120	
90 Zr	4.74	ppb	77223.0	0.46	20.00	80 - 120	Fail
95 Mo	2164.00	ppb	12640440.0	0.31	2000.00	80 - 120	
107 Ag	19.27	ppb	292695.9	0.97	20.00	80 - 120	
111 Cd	20.33	ppb	66816.6	2.07	20.00	80 - 120	
118 Sn	19.60	ppb	190366.6	0.59	20.00	80 - 120	
121 Sb	20.06	ppb	237790.9	1.40	20.00	80 - 120	
137 Ba	20.99	ppb	88119.2	2.05	20.00	80 - 120	
182 W	20.85	ppb	280526.0	1.00	20.00	80 - 120	
205 Tl	20.40	ppb	542146.8	0.44	20.00	80 - 120	
208 Pb	21.23	ppb	759393.6	0.27	20.00	80 - 120	
235 U	0.14	ppb	6164.1	2.43	0.14	80 - 120	
238 U	19.29	ppb	795346.8	0.61	19.86	80 - 120	

ISTD Elements

Element	CPS Mean	CPS RSD(%)	Ref Value	Rec(%)	QC Range(%)	Flag
6 Li	923489.3	1.52	1290961.00	71.5	60 - 125	
45 Sc	1365507.8	2.00	1595475.90	85.6	60 - 125	
45 Sc	30405.6	2.63	36331.18	83.7	60 - 125	
45 Sc	2346391.3	1.40	3100973.80	75.7	60 - 125	
72 Ge	342510.8	0.66	450675.81	76.0	60 - 125	
72 Ge	18875.7	2.15	24472.05	77.1	60 - 125	
72 Ge	516616.6	0.58	716074.63	72.1	60 - 125	
115 In	3684617.5	1.11	5652450.00	65.2	60 - 125	
159 Tb	5606683.5	0.35	8312643.00	67.4	60 - 125	

ISTD Ref File : D:\DATA\I982016\J\I98J04.B\98J04004.D\98J04004.D#

2 :Element Failures — 0 :Max. Number of Failures Allowed
0 :ISTD Failures — 0 :Max. Number of ISTD Failures Allowed

Data Results:
Analytes: Fail
ISTD: Pass

7087

CCV QC Report

Data File: D:\DATA\I982016\J\I98J04.B\98J04016.D\98J04016.D#
Date Acquired: Oct 13 2016 09:22 pm
Operator: CCapul
Sample Name: CCV1
Misc Info:
Vial Number: 1206
Current Method: C:\ICPCHEM\1\METHODS\EM6020HR.M
Calibration File: D:\DATA\I982016\A\I98A01.B\EM6020HR.C
Last Cal Update: Oct 13 2016 08:48 pm
Sample Type: CCV
Total Dil Factor: 1.00

QC Elements			Conc			
Element	Conc.	CPS	RSD(%)	Expected	QC Range(%)	Flag
7 Li	25.04 ppb	348905.69	0.89	25.00	90 - 110	
9 Be	26.18 ppb	99448.01	0.21	25.00	90 - 110	
11 B	52.74 ppb	163253.20	2.16	50.00	90 - 110	
23 Na	24020.00 ppb	93685168.00	0.64	25000.00	90 - 110	
24 Mg	23810.00 ppb	342527900.00	2.03	25000.00	90 - 110	
27 Al	23810.00 ppb	439531580.00	2.54	25000.00	90 - 110	
28 Si	2433.00 ppb	2069916.00	0.25	2500.00	90 - 110	
31 P	247.10 ppb	207661.30	1.66	250.00	90 - 110	
39 K	24870.00 ppb	1596400.00	1.28	25000.00	90 - 110	
40 Ca	23570.00 ppb	168012990.00	0.38	25000.00	90 - 110	
47 Ti	248.70 ppb	459181.69	0.51	250.00	90 - 110	
51 V	249.30 ppb	319175.59	0.82	250.00	90 - 110	
52 Cr	256.80 ppb	430438.31	0.41	250.00	90 - 110	
55 Mn	1512.00 ppb	47743792.00	0.36	1500.00	90 - 110	
56 Fe	24570.00 ppb	423406910.00	0.96	25000.00	90 - 110	
59 Co	252.90 ppb	6136759.00	0.77	250.00	90 - 110	
60 Ni	256.80 ppb	237193.91	1.41	250.00	90 - 110	
63 Cu	258.70 ppb	636281.81	0.83	250.00	90 - 110	
66 Zn	248.90 ppb	863405.88	0.59	250.00	90 - 110	
75 As	253.80 ppb	32759.91	0.74	250.00	90 - 110	
78 Se	254.70 ppb	165831.41	0.31	250.00	90 - 110	
88 Sr	250.70 ppb	9614705.00	0.41	250.00	90 - 110	
90 Zr	26.31 ppb	630937.81	1.60	25.00	90 - 110	
95 Mo	251.70 ppb	1960993.00	1.57	250.00	90 - 110	
107 Ag	24.37 ppb	493608.41	0.70	25.00	90 - 110	
111 Cd	237.00 ppb	1038942.00	0.58	250.00	90 - 110	
118 Sn	237.20 ppb	3070708.00	0.36	250.00	90 - 110	
121 Sb	48.69 ppb	769665.19	0.57	50.00	90 - 110	
137 Ba	494.30 ppb	2766604.00	1.79	500.00	90 - 110	
182 W	25.06 ppb	451815.91	0.42	25.00	90 - 110	
205 Tl	249.00 ppb	8864978.00	1.67	250.00	90 - 110	
208 Pb	257.50 ppb	12333590.00	2.52	250.00	90 - 110	
235 U	1.76 ppb	105197.30	1.94	1.80	90 - 110	
238 U	245.90 ppb	13590440.00	0.99	250.00	90 - 110	

ISTD Elements		CPS				
Element	CPS Mean	RSD(%)	Ref Value	Rec(%)	QC Range(%)	Flag
6 Li	1089240.60	0.90	1290961.00	84.4	60 - 125	
45 Sc	1619244.50	0.78	1595475.90	101.5	60 - 125	
45 Sc	35543.21	0.45	36331.18	97.8	60 - 125	
45 Sc	2888149.00	0.67	3100973.80	93.1	60 - 125	
72 Ge	427641.94	1.34	450675.81	94.9	60 - 125	
72 Ge	23037.05	0.44	24472.05	94.1	60 - 125	
72 Ge	633850.44	0.50	716074.63	88.5	60 - 125	
115 In	4913953.00	0.31	5652450.00	86.9	60 - 125	
159 Tb	7515461.50	1.27	8312643.00	90.4	60 - 125	

ISTD Ref File : D:\DATA\I982016\J\I98J04.B\98J04004.D\98J04004.D#

0 :Element Failures 0 :Max. Number of Failures Allowed
0 :ISTD Failures 0 :Max. Number of ISTD Failures Allowed

Data Results:

Analytes: Pass
ISTD: Pass

7080

CCB QC Report

Data File: D:\DATA\I982016\J\I98J04.B\98J04017.D\98J04017.D#
Date Acquired: Oct 13 2016 09:27 pm
Acq. Method: EM6020HR.M
Operator: CCapul
Sample Name: CCB1
Misc Info:
Vial Number: 1202
Current Method: C:\ICPCHEM\1\METHODS\EM6020HR.M
Calibration File: D:\DATA\I982016\A\I98A01.B\EM6020HR.C
Last Cal. Update: Oct 13 2016 08:48 pm
Sample Type: CCB
Dilution Factor: 1.00

QC Elements

Element	Conc.		CPS	Conc RSD(%)	High Limit	Flag
7 Li	0.0521	ppb	76616.5	67.07	0.20	
9 Be	0.0011	ppb	16.7	205.04	0.10	
11 B	0.1867	ppb	2253.6	12.67	5.00	
23 Na	-1.6370	ppb	113975.8	13.70	40.00	
24 Mg	0.3438	ppb	15261.7	20.99	10.00	
27 Al	0.3411	ppb	19282.8	16.84	20.00	
28 Si	0.6178	ppb	4017.4	17.89	20.00	
31 P	-1.1220	ppb	11341.2	90.82	10.00	
39 K	1.0890	ppb	2264.7	146.28	20.00	
40 Ca	0.6739	ppb	35463.3	3.48	25.00	
47 Ti	0.0152	ppb	100.0	41.18	0.50	
51 V	0.0117	ppb	67.6	35.40	0.50	
52 Cr	-0.0057	ppb	73.3	44.01	0.20	
55 Mn	0.0181	ppb	3178.3	25.39	0.20	
56 Fe	1.7710	ppb	46937.7	4.29	10.00	
59 Co	0.0030	ppb	210.0	38.16	0.20	
60 Ni	-0.0090	ppb	19.1	25.82	0.20	
63 Cu	-0.0340	ppb	119.1	6.98	0.40	
66 Zn	-0.1012	ppb	744.5	4.69	2.00	
75 As	0.0548	ppb	11.8	36.05	0.20	
78 Se	0.0241	ppb	26.7	27.69	0.20	
88 Sr	0.0034	ppb	576.7	60.18	0.20	
90 Zr	0.9332	ppb	284.5	0.25	2.00	
95 Mo	0.1630	ppb	1803.5	4.10	0.40	
107 Ag	-0.0007	ppb	65.6	79.87	0.20	
111 Cd	-0.0009	ppb	28.0	228.02	0.20	
118 Sn	0.0234	ppb	673.4	24.38	0.20	
121 Sb	0.0136	ppb	498.9	33.37	0.40	
137 Ba	0.0042	ppb	103.3	14.02	0.20	
182 W	0.0415	ppb	1815.8	10.18	1.00	
205 Tl	0.0092	ppb	854.5	14.89	0.20	
208 Pb	0.0105	ppb	1544.6	16.59	0.10	
235 U	0.0000	ppb	6.7	134.17	1.00	
238 U	0.0118	ppb	1026.8	9.46	0.10	

ISTD Elements

Element	CPS Mean	CPS RSD(%)	Ref Value	Rec(%)	QC Range(%)	Flag
6 Li	1199215.9	0.98	1290961.00	92.9	60 - 125	
45 Sc	1725306.4	1.02	1595475.90	108.1	60 - 125	
45 Sc	37857.8	3.10	36331.18	104.2	60 - 125	
45 Sc	3176442.8	1.91	3100973.80	102.4	60 - 125	
72 Ge	478404.1	1.10	450675.81	106.2	60 - 125	
72 Ge	26151.0	1.60	24472.05	106.9	60 - 125	
72 Ge	748478.1	0.63	716074.63	104.5	60 - 125	
115 In	5939038.0	0.64	5652450.00	105.1	60 - 125	
159 Tb	8938651.0	2.11	8312643.00	107.5	60 - 125	

ISTD Ref File : D:\DATA\I982016\J\I98J04.B\98J04004.D\98J04004.D#

0 :Element Failures 0 :Max. Number of Failures Allowed
0 :ISTD Failures 0 :Max. Nnumber of ISTD Failures Allowed

Data Results:
Analytes: Pass
ISTD: Pass

CCV QC Report

Data File: D:\DATA\I982016\J\I98J04.B\98J04037.D\98J04037.D#
Date Acquired: Oct 13 2016 10:59 pm
Operator: CCapul
Sample Name: CCV 3 cw 10/17/16
Misc Info:
Vial Number: 1206
Current Method: C:\ICPCHEM\1\METHODS\EM6020HR.M
Calibration File: D:\DATA\I982016\A\I98A01.B\EM6020HR.C
Last Cal Update: Oct 13 2016 08:48 pm
Sample Type: CCV
Total Dil Factor: 1.00

QC Elements

Element	Conc.	CPS	Conc RSD(%)	Expected	QC Range(%)	Flag
7 Li	25.85 ppb	327364.41	1.09	25.00	90 - 110	
9 Be	27.60 ppb	95880.38	1.71	25.00	90 - 110	~~Fail~~ 102 cw 10/14/16
11 B	55.31 ppb	156472.91	3.01	50.00	90 - 110	Fail
23 Na	23670.00 ppb	93921456.00	0.60	25000.00	90 - 110	
24 Mg	23740.00 ppb	334308290.00	3.04	25000.00	90 - 110	
27 Al	23770.00 ppb	429704000.00	1.51	25000.00	90 - 110	
28 Si	2479.00 ppb	2146451.00	0.42	2500.00	90 - 110	
31 P	250.80 ppb	206193.09	0.25	250.00	90 - 110	
39 K	25150.00 ppb	1622400.00	1.78	25000.00	90 - 110	
40 Ca	24270.00 ppb	176047010.00	1.27	25000.00	90 - 110	
47 Ti	252.20 ppb	455763.41	0.72	250.00	90 - 110	
51 V	250.10 ppb	321702.31	1.23	250.00	90 - 110	
52 Cr	258.00 ppb	434633.91	0.89	250.00	90 - 110	
55 Mn	1519.00 ppb	46946528.00	1.54	1500.00	90 - 110	
56 Fe	24640.00 ppb	432029790.00	0.34	25000.00	90 - 110	
59 Co	257.30 ppb	6111955.00	2.51	250.00	90 - 110	
60 Ni	258.80 ppb	240236.20	1.01	250.00	90 - 110	
63 Cu	259.80 ppb	642164.19	0.88	250.00	90 - 110	
66 Zn	249.10 ppb	870311.13	1.31	250.00	90 - 110	
75 As	251.90 ppb	33865.44	2.21	250.00	90 - 110	
78 Se	249.40 ppb	167002.80	0.57	250.00	90 - 110	
88 Sr	245.40 ppb	9478929.00	1.11	250.00	90 - 110	
90 Zr	25.61 ppb	617644.69	2.44	25.00	90 - 110	
95 Mo	247.60 ppb	1942966.00	1.31	250.00	90 - 110	
107 Ag	24.42 ppb	498172.09	0.47	25.00	90 - 110	
111 Cd	235.10 ppb	1037831.00	0.48	250.00	90 - 110	
118 Sn	236.50 ppb	3082723.00	0.09	250.00	90 - 110	
121 Sb	47.97 ppb	763725.63	2.74	50.00	90 - 110	
137 Ba	487.00 ppb	2745109.00	1.48	500.00	90 - 110	
182 W	25.21 ppb	446337.09	1.27	25.00	90 - 110	
205 Tl	251.50 ppb	8793354.00	1.18	250.00	90 - 110	
208 Pb	258.30 ppb	12151620.00	1.27	250.00	90 - 110	
235 U	1.75 ppb	102256.20	2.53	1.80	90 - 110	
238 U	244.30 ppb	13259250.00	2.49	250.00	90 - 110	

ISTD Elements

Element	CPS Mean	CPS RSD(%)	Ref Value	Rec(%)	QC Range(%)	Flag
6 Li	996361.56	1.60	1290961.00	77.2	60 - 125	
45 Sc	1647553.40	0.83	1595475.90	103.3	60 - 125	
45 Sc	35720.48	1.41	36331.18	98.3	60 - 125	
45 Sc	2827897.00	2.15	3100973.80	91.2	60 - 125	
72 Ge	439821.50	0.79	450675.81	97.6	60 - 125	
72 Ge	24001.12	2.22	24472.05	98.1	60 - 125	
72 Ge	638242.81	1.11	716074.63	89.1	60 - 125	
115 In	4949288.50	0.73	5652450.00	87.6	60 - 125	
159 Tb	7381328.00	1.02	8312643.00	88.8	60 - 125	

ISTD Ref File : D:\DATA\I982016\J\I98J04.B\98J04004.D\98J04004.D#

2 :Element Failures — 0 :Max. Number of Failures Allowed
0 :ISTD Failures — 0 :Max. Number of ISTD Failures Allowed

Data Results:
Analytes: Fail
ISTD: Pass

CCB QC Report

Data File: D:\DATA\I982016\J\I98J04.B\98J04038.D\98J04038.D#
Date Acquired: Oct 13 2016 11:04 pm
Acq. Method: EM6020HR.M
Operator: CCapul
Sample Name: CCB2/3 cw 10/14/16
Misc Info:
Vial Number: 1202
Current Method: C:\ICPCHEM\1\METHODS\EM6020HR.M
Calibration File: D:\DATA\I982016\A\I98A01.B\EM6020HR.C
Last Cal. Update: Oct 13 2016 08:48 pm
Sample Type: CCB
Dilution Factor: 1.00

QC Elements

Element	Conc.		CPS	Conc RSD(%)	High Limit	Flag
7 Li	0.0884	ppb	70820.8	93.66	0.20	
9 Be	0.0002	ppb	12.2	204.10	0.10	
11 B	0.1861	ppb	2069.1	23.17	5.00	
23 Na	-4.1540	ppb	103450.7	2.14	40.00	
24 Mg	0.3945	ppb	15637.7	14.87	10.00	
27 Al	0.4438	ppb	20783.0	22.85	20.00	
28 Si	4.1330	ppb	7192.3	3.79	20.00	
31 P	-2.0630	ppb	10235.2	33.92	10.00	
39 K	0.2767	ppb	2261.4	435.13	20.00	
40 Ca	1.2220	ppb	39588.4	8.19	25.00	
47 Ti	0.0249	ppb	116.7	13.54	0.50	
51 V	0.0115	ppb	68.9	16.28	0.50	
52 Cr	0.0032	ppb	91.3	81.39	0.20	
55 Mn	0.0203	ppb	3165.0	30.22	0.20	
56 Fe	2.2150	ppb	55037.4	2.27	10.00	
59 Co	0.0031	ppb	206.7	24.34	0.20	
60 Ni	-0.0059	ppb	22.7	23.74	0.20	
63 Cu	-0.0387	ppb	109.3	1.73	0.40	
66 Zn	-0.1117	ppb	693.4	11.22	2.00	
75 As	0.0289	ppb	8.2	18.34	0.20	
78 Se	0.0290	ppb	30.7	35.06	0.20	
88 Sr	0.0043	ppb	611.2	40.38	0.20	
90 Zr	0.9322	ppb	253.3	0.08	2.00	
95 Mo	0.0542	ppb	777.8	26.76	0.40	
107 Ag	0.0003	ppb	90.0	73.02	0.20	
111 Cd	0.0033	ppb	50.4	143.09	0.20	
118 Sn	0.0192	ppb	607.8	15.48	0.20	
121 Sb	0.0115	ppb	457.8	9.63	0.40	
137 Ba	0.0055	ppb	112.2	32.77	0.20	
182 W	-0.0021	ppb	884.5	146.41	1.00	
205 Tl	0.0103	ppb	901.2	4.70	0.20	
208 Pb	0.0114	ppb	1597.9	9.68	0.10	
235 U	0.0001	ppb	13.3	63.13	1.00	
238 U	0.0102	ppb	925.6	16.57	0.10	

ISTD Elements

Element	CPS Mean	CPS RSD(%)	Ref Value	Rec(%)	QC Range(%)	Flag
6 Li	1102211.1	1.13	1290961.00	85.4	60 - 125	
45 Sc	1723897.6	0.95	1595475.90	108.0	60 - 125	
45 Sc	38749.2	1.60	36331.18	106.7	60 - 125	
45 Sc	3092957.0	2.36	3100973.80	99.7	60 - 125	
72 Ge	484928.5	0.33	450675.81	107.6	60 - 125	
72 Ge	26812.5	1.33	24472.05	109.6	60 - 125	
72 Ge	739919.0	0.78	716074.63	103.3	60 - 125	
115 In	5936880.5	0.51	5652450.00	105.0	60 - 125	
159 Tb	8933037.0	0.38	8312643.00	107.5	60 - 125	

ISTD Ref File : D:\DATA\I982016\J\I98J04.B\98J04004.D\98J04004.D#

0 :Element Failures 0 :Max. Number of Failures Allowed
0 :ISTD Failures 0 :Max. Nnumber of ISTD Failures Allowed

Data Results:
Analytes: Pass
ISTD: Pass

7691

Sample QC Report

Data File: D:\DATA\I982016\J\I98J04.B\98J04045.D\98J04045.D#
Date Acquired: Oct 13 2016 11:36 pm
Acq. Method: EM6020HR.M
Operator: CCapul
Sample Name: J012-02N
Misc Info:
Vial Number: 2204
Current Method: C:\ICPCHEM\1\METHODS\EM6020HR.M
Calibration File: D:\DATA\I982016\A\I98A01.B\EM6020HR.C
Last Cal. Update: Oct 13 2016 08:48 pm
Sample Type: Sample
Dilution Factor: 1.00
Autodil Factor: Undiluted
Final Dil Factor: 1.00

Tune #	Name
#1	h2.u
#2	he.u
#3	norm.u

QC Elements

Element	Tune	ISTD	CPS	Corr Conc	Raw Conc	Units	Conc RSD(%)	High Limit	Flag
7 Li	# 3	6	66334.7	0.0000	0.0875	ppb	41.47	50.00	
9 Be	# 3	6	6.7	0.0000	-0.0011	ppb	86.31	50.00	
11 B	# 3	6	3106.0	0.0000	0.5877	ppb	2.77	100.00	
23 Na	# 1	45	159346.0	0.0000	10.1500	ppb	8.59	50000.00	
24 Mg	# 3	45	35642.1	0.0000	1.6900	ppb	3.35	50000.00	
27 Al	# 3	45	102757.4	0.0000	4.5850	ppb	2.97	50000.00	
28 Si	# 1	45	16760.4	0.0000	15.1100	ppb	5.76	10000.00	
31 P	# 3	45	14113.3	0.0000	2.4690	ppb	25.68	400000.00	
39 K	# 2	45	2348.1	0.0000	1.6770	ppb	81.57	50000.00	
40 Ca	# 1	45	211724.0	0.0000	24.5000	ppb	2.32	50000.00	
47 Ti	# 3	45	450.0	0.0000	0.1934	ppb	21.97	500.00	
51 V	# 2	45	68.9	0.0000	0.0118	ppb	15.74	500.00	
52 Cr	# 2	45	164.9	0.0000	0.0439	ppb	1.17	500.00	
55 Mn	# 3	45	7935.0	0.0000	0.1611	ppb	6.42	3000.00	
56 Fe	# 1	45	120193.4	0.0000	5.9090	ppb	4.77	50000.00	
59 Co	# 3	45	234.5	0.0000	0.0042	ppb	25.67	500.00	
60 Ni	# 2	45	52.0	0.0000	0.0235	ppb	21.07	500.00	
63 Cu	# 2	45	558.2	0.0000	0.1297	ppb	4.13	500.00	
66 Zn	# 3	72	4917.8	0.0000	0.9311	ppb	0.69	500.00	
75 As	# 2	72	2.9	0.0000	-0.0066	ppb	164.28	500.00	
78 Se	# 1	72	8.0	0.0000	-0.0015	ppb	170.87	500.00	
88 Sr	# 3	72	2791.5	0.0000	0.0529	ppb	6.28	500.00	
90 Zr	# 3	72	1440.1	0.0000	0.9731	ppb	0.22	1000.00	
95 Mo	# 3	115	124.5	0.0000	-0.0153	ppb	5.13	500.00	
107 Ag	# 3	115	90.0	0.0000	0.0003	ppb	73.63	50.00	
111 Cd	# 3	115	13.4	0.0000	-0.0037	ppb	64.11	500.00	
118 Sn	# 3	115	467.8	0.0000	0.0102	ppb	22.55	500.00	
121 Sb	# 3	115	467.8	0.0000	0.0120	ppb	2.12	100.00	
137 Ba	# 3	115	625.6	0.0000	0.0813	ppb	2.49	1000.00	
182 W	# 3	159	187.8	0.0000	-0.0346	ppb	0.56	1000.00	
205 Tl	# 3	159	187.8	0.0000	-0.0065	ppb	14.86	500.00	
208 Pb	# 3	159	2240.2	0.0000	0.0231	ppb	11.80	500.00	
235 U	# 3	159	4.4	0.0000	0.0000	ppb	740.73	5.00	
238 U	# 3	159	144.5	0.0000	-0.0017	ppb	10.28	500.00	

ISTD Elements

Element	CPS Mean	CPS RSD(%)	Ref Value	Rec(%)	QC Range(%)	Flag
6 Li # 3	1032461.30	1.46	1290961.00	80.0	60 - 125	
45 Sc # 1	1688173.60	2.40	1595475.90	105.8	60 - 125	
45 Sc # 2	38565.34	1.34	36331.18	106.1	60 - 125	
45 Sc # 3	3095772.00	0.92	3100973.80	99.8	60 - 125	
72 Ge # 1	475749.63	1.96	450675.81	105.6	60 - 125	
72 Ge # 2	27227.82	3.44	24472.05	111.3	60 - 125	
72 Ge # 3	740893.56	1.26	716074.63	103.5	60 - 125	
115 In # 3	5945543.50	0.56	5652450.00	105.2	60 - 125	
159 Tb # 3	8853922.00	1.51	8312643.00	106.5	60 - 125	

ISTD Ref File : D:\DATA\I982016\J\I98J04.B\98J04004.D\98J04004.D#

0 :Element Failures
0 :ISTD Failures

0 :Max. Number of Failures Allowed
0 :Max. Number of ISTD Failures Allowed

Data Results:
Analytes: Pass
ISTD: Pass

7692

CCV QC Report

Data File: D:\DATA\I982016\J\I98J04.B\98J04047.D\98J04047.D#
Date Acquired: Oct 13 2016 11:46 pm
Operator: CCapul
Sample Name: CCV 4 10/14/16
Misc Info:
Vial Number: 1206
Current Method: C:\ICPCHEM\1\METHODS\EM6020HR.M
Calibration File: D:\DATA\I982016\A\I98A01.B\EM6020HR.C
Last Cal Update: Oct 13 2016 08:48 pm
Sample Type: CCV
Total Dil Factor: 1.00

QC Elements			Conc			
Element	Conc.	CPS	RSD(%)	Expected	QC Range(%)	Flag
7 Li	25.04 ppb	322075.19	1.02	25.00	90 - 110	
9 Be	26.90 ppb	94328.61	1.89	25.00	90 - 110	
11 B	54.17 ppb	154708.91	2.05	50.00	90 - 110	
23 Na	24210.00 ppb	98427872.00	2.19	25000.00	90 - 110	
24 Mg	23080.00 ppb	333029890.00	0.73	25000.00	90 - 110	
27 Al	23290.00 ppb	431229500.00	0.96	25000.00	90 - 110	
28 Si	2540.00 ppb	2253216.00	1.64	2500.00	90 - 110	
31 P	248.60 ppb	209410.30	1.49	250.00	90 - 110	
39 K	25510.00 ppb	1708099.00	1.37	25000.00	90 - 110	
40 Ca	24170.00 ppb	179602500.00	1.75	25000.00	90 - 110	
47 Ti	251.90 ppb	466357.50	1.44	250.00	90 - 110	
51 V	252.00 ppb	336580.09	1.33	250.00	90 - 110	
52 Cr	257.90 ppb	450888.19	0.71	250.00	90 - 110	
55 Mn	1498.00 ppb	47422000.00	1.11	1500.00	90 - 110	
56 Fe	24390.00 ppb	438269600.00	1.32	25000.00	90 - 110	
59 Co	252.30 ppb	6140068.00	1.12	250.00	90 - 110	
60 Ni	260.30 ppb	250749.41	0.90	250.00	90 - 110	
63 Cu	261.50 ppb	670947.50	1.09	250.00	90 - 110	
66 Zn	246.60 ppb	869925.50	0.49	250.00	90 - 110	
75 As	258.50 ppb	35691.50	3.16	250.00	90 - 110	
78 Se	250.40 ppb	172864.41	1.43	250.00	90 - 110	
88 Sr	250.00 ppb	9751208.00	1.66	250.00	90 - 110	
90 Zr	25.92 ppb	631769.88	2.00	25.00	90 - 110	
95 Mo	252.60 ppb	1983863.00	0.70	250.00	90 - 110	
107 Ag	24.30 ppb	496276.31	1.14	25.00	90 - 110	
111 Cd	237.00 ppb	1047417.00	1.04	250.00	90 - 110	
118 Sn	240.60 ppb	3140064.00	0.77	250.00	90 - 110	
121 Sb	48.34 ppb	770342.19	1.95	50.00	90 - 110	
137 Ba	492.60 ppb	2779987.00	0.96	500.00	90 - 110	
182 W	25.03 ppb	450214.31	1.38	25.00	90 - 110	
205 Tl	243.90 ppb	8666311.00	1.10	250.00	90 - 110	
208 Pb	254.40 ppb	12160870.00	0.82	250.00	90 - 110	
235 U	1.74 ppb	103656.40	1.89	1.80	90 - 110	
238 U	245.90 ppb	13558220.00	2.24	250.00	90 - 110	

ISTD Elements		CPS				
Element	CPS Mean	RSD(%)	Ref Value	Rec(%)	QC Range(%)	Flag
6 Li	1005526.40	0.56	1290961.00	77.9	60 - 125	
45 Sc	1688279.50	1.30	1595475.90	105.8	60 - 125	
45 Sc	37078.61	1.11	36331.18	102.1	60 - 125	
45 Sc	2896279.00	1.05	3100973.80	93.4	60 - 125	
72 Ge	453438.75	0.52	450675.81	100.6	60 - 125	
72 Ge	24659.05	2.41	24472.05	100.8	60 - 125	
72 Ge	644592.13	0.55	716074.63	90.0	60 - 125	
115 In	4954192.00	0.98	5652450.00	87.6	60 - 125	
159 Tb	7498857.50	0.66	8312643.00	90.2	60 - 125	

ISTD Ref File : D:\DATA\I982016\J\I98J04.B\98J04004.D\98J04004.D#

0 :Element Failures — 0 :Max. Number of Failures Allowed
0 :ISTD Failures — 0 :Max. Number of ISTD Failures Allowed

Data Results:
Analytes: Pass
ISTD: Pass

CCB QC Report

Data File:	D:\DATA\I982016\J\I98J04.B\98J04048.D\98J04048.D#
Date Acquired:	Oct 13 2016 11:50 pm
Acq. Method:	EM6020HR.M
Operator:	CCapul
Sample Name:	CCB 3/4 CV 10/13/16
Misc Info:	
Vial Number:	1202
Current Method:	C:\ICPCHEM\1\METHODS\EM6020HR.M
Calibration File:	D:\DATA\I982016\A\I98A01.B\EM6020HR.C
Last Cal. Update:	Oct 13 2016 08:48 pm
Sample Type:	CCB
Dilution Factor:	1.00

QC Elements

Element	Conc.		CPS	Conc RSD(%)	High Limit	Flag
7 Li	0.2013	ppb	69269.2	47.57	0.20	Fail
9 Be	-0.0005	ppb	8.9	359.39	0.10	
11 B	0.1771	ppb	1961.3	10.38	5.00	
23 Na	-5.1670	ppb	98630.6	4.72	40.00	
24 Mg	0.2715	ppb	13892.4	10.93	10.00	
27 Al	0.3486	ppb	19118.1	7.24	20.00	
28 Si	4.0460	ppb	7068.8	5.75	20.00	
31 P	-1.7880	ppb	10579.5	16.40	10.00	
39 K	0.9000	ppb	2309.2	88.96	20.00	
40 Ca	0.7407	ppb	35719.3	2.47	25.00	
47 Ti	0.0105	ppb	88.9	77.93	0.50	
51 V	0.0103	ppb	67.3	8.37	0.50	
52 Cr	-0.0008	ppb	84.2	112.88	0.20	
55 Mn	0.0141	ppb	2990.5	16.49	0.20	
56 Fe	1.7930	ppb	47019.9	3.15	10.00	
59 Co	0.0025	ppb	192.2	37.01	0.20	
60 Ni	-0.0143	ppb	14.2	15.14	0.20	
63 Cu	-0.0385	ppb	110.0	3.64	0.40	
66 Zn	-0.1189	ppb	664.5	14.96	2.00	
75 As	0.0357	ppb	9.3	16.09	0.20	
78 Se	0.0293	ppb	31.1	33.95	0.20	
88 Sr	0.0034	ppb	573.4	43.85	0.20	
90 Zr	0.9339	ppb	302.2	0.08	2.00	
95 Mo	0.0473	ppb	723.4	10.47	0.40	
107 Ag	-0.0008	ppb	63.3	112.77	0.20	
111 Cd	-0.0006	ppb	30.0	407.85	0.20	
118 Sn	0.0206	ppb	637.8	28.34	0.20	
121 Sb	0.0145	ppb	522.3	1.73	0.40	
137 Ba	0.0024	ppb	92.2	111.74	0.20	
182 W	-0.0090	ppb	738.9	2.98	1.00	
205 Tl	0.0092	ppb	854.5	18.35	0.20	
208 Pb	0.0095	ppb	1494.5	17.10	0.10	
235 U	0.0000	ppb	5.6	398.15	1.00	
238 U	0.0085	ppb	817.8	14.70	0.10	

ISTD Elements

Element	CPS Mean	CPS RSD(%)	Ref Value	Rec(%)	QC Range(%)	Flag
6 Li	1058960.9	1.56	1290961.00	82.0	60 - 125	
45 Sc	1713194.3	0.81	1595475.90	107.4	60 - 125	
45 Sc	38809.3	2.91	36331.18	106.8	60 - 125	
45 Sc	3123360.5	0.81	3100973.80	100.7	60 - 125	
72 Ge	488582.5	0.69	450675.81	108.4	60 - 125	
72 Ge	27125.3	2.40	24472.05	110.8	60 - 125	
72 Ge	740171.1	0.69	716074.63	103.4	60 - 125	
115 In	6019619.0	0.66	5652450.00	106.5	60 - 125	
159 Tb	8974164.0	1.15	8312643.00	108.0	60 - 125	

ISTD Ref File : D:\DATA\I982016\J\I98J04.B\98J04004.D\98J04004.D#

1 :Element Failures — 0 :Max. Number of Failures Allowed

0 :ISTD Failures — 0 :Max. Nnumber of ISTD Failures Allowed

Data Results:

Analytes: Fail

ISTD: Pass

7694

ICS-A QC Report

Data File: D:\DATA\I982016\J\I98J04.B\98J04049.D\98J04049.D#
Date Acquired: Oct 13 2016 11:55 pm
Acq. Method: EM6020HR.M
Operator: CCapul
Sample Name: ICSA2
Misc Info:
Vial Number: 1303
Current Method: C:\ICPCHEM\1\METHODS\EM6020HR.M
Calibration File: D:\DATA\I982016\A\I98A01.B\EM6020HR.C
Last Cal. Update: Oct 13 2016 08:48 pm
Sample Type: ICS-A
Dilution Factor: 1.00

QC Elements Element	Conc.		CPS	Conc RSD(%)	High Limit	Flag
7 Li	0.69	ppb	59544.8	2.36	---	
9 Be	0.01	ppb	43.3	27.12	---	
11 B	0.59	ppb	2552.6	1.05	---	
23 Na	99320.00	ppb	343450690.0	1.08	120000.00	
24 Mg	96030.00	ppb	1122381100.0	1.14	120000.00	
27 Al	98400.00	ppb	1475527900.0	0.71	120000.00	
28 Si	6.49	ppb	7773.7	4.73	---	
31 P	105100.00	ppb	67867480.0	0.67	120000.00	
39 K	100100.00	ppb	5859223.0	1.73	120000.00	
40 Ca	98210.00	ppb	621202820.0	2.65	120000.00	
47 Ti	2210.00	ppb	3313054.0	1.11	2400.00	
51 V	0.03	ppb	75.1	29.43	---	
52 Cr	1.38	ppb	2183.8	0.53	---	
55 Mn	0.33	ppb	10266.7	6.03	---	
56 Fe	95150.00	ppb	1455258000.0	2.22	120000.00	
59 Co	0.13	ppb	2629.3	1.31	---	
60 Ni	0.20	ppb	190.0	4.95	---	
63 Cu	0.58	ppb	1476.8	1.09	---	
66 Zn	2.89	ppb	9179.2	2.00	---	
75 As	0.17	ppb	22.4	10.01	---	
78 Se	0.05	ppb	32.4	32.40	---	
88 Sr	0.66	ppb	21312.1	2.29	---	
90 Zr	1.08	ppb	3295.0	0.38	---	
95 Mo	2152.00	ppb	12635270.0	1.26	2400.00	
107 Ag	0.02	ppb	337.8	19.91	---	
111 Cd	0.20	ppb	680.3	35.02	---	
118 Sn	0.02	ppb	398.9	18.59	---	
121 Sb	0.05	ppb	702.3	2.81	---	
137 Ba	0.11	ppb	531.1	6.49	---	
182 W	0.11	ppb	2095.8	3.65	---	
205 Tl	0.00	ppb	211.1	22.04	---	
208 Pb	0.22	ppb	8660.5	3.21	---	
235 U	0.00	ppb	7.8	100.00	---	
238 U	0.00	ppb	260.0	65.82	---	

ISTD Elements Element	CPS Mean	CPS RSD(%)	Ref Value	Rec(%)	QC Range(%)	Flag
6 Li	846049.2	1.84	1290961.00	65.5	60 - 125	
45 Sc	1437208.3	0.93	1595475.90	90.1	60 - 125	
45 Sc	32444.9	2.86	36331.18	89.3	60 - 125	
45 Sc	2345893.0	1.54	3100973.80	75.7	60 - 125	
72 Ge	368602.1	1.10	450675.81	81.8	60 - 125	
72 Ge	20654.0	1.99	24472.05	84.4	60 - 125	
72 Ge	529411.8	0.84	716074.63	73.9	60 - 125	
115 In	3703397.5	0.44	5652450.00	65.5	60 - 125	
159 Tb	5692632.0	1.13	8312643.00	68.5	60 - 125	

ISTD Ref File : D:\DATA\I982016\J\I98J04.B\98J04004.D\98J04004.D#

0 :Element Failures 0 :Max. Number of Failures Allowed
0 :ISTD Failures 0 :Max. Number of ISTD Failures Allowed

Data Results:
Analytes: Pass
ISTD: Pass

ICS-AB QC Report

Data File: D:\DATA\I982016\J\I98J04.B\98J04050.D\98J04050.D#
Date Acquired: Oct 14 2016 12:00 am
Acq. Method: EM6020HR.M
Operator: CCapul
Sample Name: ICSAB2
Misc Info:
Vial Number: 1304
Current Method: C:\ICPCHEM\1\METHODS\EM6020HR.M
Calibration File: D:\DATA\I982016\A\I98A01.B\EM6020HR.C
Last Cal. Update: Oct 13 2016 08:48 pm
Sample Type: ICS-AB
Dilution Factor: 1.00

QC Elements

Element	Conc.		CPS	Conc RSD(%)	Expected	QC Range(%)	Flag
7 Li	21.17	ppb	234653.9	0.48	20.00	80 - 120	
9 Be	22.58	ppb	65867.9	0.57	20.00	80 - 120	
11 B	21.11	ppb	50841.7	0.50	20.00	80 - 120	
23 Na	95240.00	ppb	324876700.0	3.07	100000.00	80 - 120	
24 Mg	94190.00	ppb	1132270000.0	0.44	100000.00	80 - 120	
27 Al	95670.00	ppb	1475806000.0	0.34	100000.00	80 - 120	
28 Si	6.29	ppb	7517.0	2.79	200.00	80 - 120	Fail
31 P	103100.00	ppb	68476520.0	0.57	100000.00	80 - 120	
39 K	100700.00	ppb	5691175.0	1.29	100000.00	80 - 120	
40 Ca	95330.00	ppb	594859390.0	1.91	100000.00	80 - 120	
47 Ti	2182.00	ppb	3365458.0	1.09	2000.00	80 - 120	
51 V	20.17	ppb	22799.7	1.01	20.00	80 - 120	
52 Cr	22.08	ppb	32693.0	0.46	20.00	80 - 120	
55 Mn	20.27	ppb	536599.5	0.46	20.00	80 - 120	
56 Fe	95270.00	ppb	1437511900.0	0.64	100000.00	80 - 120	
59 Co	20.75	ppb	420758.4	1.12	20.00	80 - 120	
60 Ni	20.35	ppb	16587.4	0.51	20.00	80 - 120	
63 Cu	20.56	ppb	44727.5	0.45	20.00	80 - 120	
66 Zn	21.63	ppb	63537.4	0.51	20.00	80 - 120	
75 As	22.04	ppb	2466.3	1.20	20.00	80 - 120	
78 Se	22.54	ppb	12032.9	1.63	20.00	80 - 120	
88 Sr	20.18	ppb	647986.7	1.06	20.00	80 - 120	
90 Zr	4.67	ppb	77993.3	0.30	20.00	80 - 120	Fail
95 Mo	2167.00	ppb	12917860.0	1.13	2000.00	80 - 120	
107 Ag	19.31	ppb	299280.3	1.40	20.00	80 - 120	
111 Cd	20.34	ppb	68258.1	0.56	20.00	80 - 120	
118 Sn	19.64	ppb	194731.9	0.21	20.00	80 - 120	
121 Sb	20.05	ppb	242625.2	0.92	20.00	80 - 120	
137 Ba	21.13	ppb	90549.0	1.51	20.00	80 - 120	
182 W	20.74	ppb	284304.2	0.71	20.00	80 - 120	
205 Tl	20.44	ppb	553576.8	1.03	20.00	80 - 120	
208 Pb	21.17	ppb	771593.8	1.51	20.00	80 - 120	
235 U	0.14	ppb	6180.8	4.95	0.14	80 - 120	
238 U	19.42	ppb	816228.7	2.49	19.86	80 - 120	

ISTD Elements

Element	CPS Mean	CPS RSD(%)	Ref Value	Rec(%)	QC Range(%)	Flag
6 Li	836432.6	0.75	1290961.00	64.8	60 - 125	
45 Sc	1417730.8	0.09	1595475.90	88.9	60 - 125	
45 Sc	31332.2	1.64	36331.18	86.2	60 - 125	
45 Sc	2413046.8	1.88	3100973.80	77.8	60 - 125	
72 Ge	350374.4	1.20	450675.81	77.7	60 - 125	
72 Ge	19954.0	2.46	24472.05	81.5	60 - 125	
72 Ge	530318.9	0.75	716074.63	74.1	60 - 125	
115 In	3760332.8	1.27	5652450.00	66.5	60 - 125	
159 Tb	5714057.0	1.28	8312643.00	68.7	60 - 125	

ISTD Ref File : D:\DATA\I982016\J\I98J04.B\98J04004.D\98J04004.D#

2 :Element Failures — 0 :Max. Number of Failures Allowed
0 :ISTD Failures — 0 :Max. Number of ISTD Failures Allowed

Data Results:
Analytes: Fail
ISTD: Pass

7896

CCV QC Report

Data File: D:\DATA\I982016\J\I98J04.B\98J04051.D\98J04051.D#
Date Acquired: Oct 14 2016 12:04 am
Operator: CCapul
Sample Name: CCV
Misc Info:
Vial Number: 1206
Current Method: C:\ICPCHEM\1\METHODS\EM6020HR.M
Calibration File: D:\DATA\I982016\A\I98A01.B\EM6020HR.C
Last Cal Update: Oct 13 2016 08:48 pm
Sample Type: CCV
Total Dil Factor: 1.00

QC Elements			Conc			
Element	Conc.	CPS	RSD(%)	Expected	QC Range(%)	Flag
7 Li	25.12 ppb	304572.69	2.36	25.00	90 - 110	
9 Be	27.39 ppb	90600.82	3.30	25.00	90 - 110	
11 B	55.48 ppb	149419.41	2.78	50.00	90 - 110	Fail
23 Na	23110.00 ppb	93353776.00	0.32	25000.00	90 - 110	
24 Mg	22790.00 ppb	324536380.00	1.25	25000.00	90 - 110	
27 Al	23100.00 ppb	422169220.00	0.93	25000.00	90 - 110	
28 Si	2368.00 ppb	2087437.00	0.53	2500.00	90 - 110	
31 P	243.50 ppb	202718.80	0.50	250.00	90 - 110	
39 K	25140.00 ppb	1599042.00	0.88	25000.00	90 - 110	
40 Ca	23250.00 ppb	171688400.00	1.24	25000.00	90 - 110	
47 Ti	251.60 ppb	459571.69	0.86	250.00	90 - 110	
51 V	253.00 ppb	321004.41	0.71	250.00	90 - 110	
52 Cr	261.90 ppb	434929.41	0.18	250.00	90 - 110	
55 Mn	1547.00 ppb	48324460.00	1.48	1500.00	90 - 110	
56 Fe	24900.00 ppb	444581180.00	0.48	25000.00	90 - 110	
59 Co	258.80 ppb	6215357.00	1.36	250.00	90 - 110	
60 Ni	263.00 ppb	240725.50	0.85	250.00	90 - 110	
63 Cu	264.70 ppb	645233.13	0.54	250.00	90 - 110	
66 Zn	245.30 ppb	879362.00	0.90	250.00	90 - 110	
75 As	251.20 ppb	33354.80	2.26	250.00	90 - 110	
78 Se	252.60 ppb	170358.41	0.34	250.00	90 - 110	
88 Sr	250.90 ppb	9942967.00	0.62	250.00	90 - 110	
90 Zr	25.16 ppb	622451.88	2.24	25.00	90 - 110	
95 Mo	252.50 ppb	2009977.00	1.52	250.00	90 - 110	
107 Ag	24.39 ppb	504887.19	1.33	25.00	90 - 110	
111 Cd	238.40 ppb	1067671.00	0.40	250.00	90 - 110	
118 Sn	239.20 ppb	3164404.00	0.47	250.00	90 - 110	
121 Sb	47.39 ppb	765400.38	2.55	50.00	90 - 110	
137 Ba	488.60 ppb	2794372.00	2.08	500.00	90 - 110	
182 W	25.47 ppb	456808.09	1.02	25.00	90 - 110	
205 Tl	253.60 ppb	8985056.00	1.40	250.00	90 - 110	
208 Pb	258.90 ppb	12339800.00	2.52	250.00	90 - 110	
235 U	1.74 ppb	103022.30	0.87	1.80	90 - 110	
238 U	245.70 ppb	13509270.00	1.36	250.00	90 - 110	

ISTD Elements		CPS				
Element	CPS Mean	RSD(%)	Ref Value	Rec(%)	QC Range(%)	Flag
6 Li	948587.19	1.23	1290961.00	73.5	60 - 125	
45 Sc	1677575.10	0.73	1595475.90	105.1	60 - 125	
45 Sc	35221.30	1.19	36331.18	96.9	60 - 125	
45 Sc	2858398.50	0.98	3100973.80	92.2	60 - 125	
72 Ge	442967.69	0.55	450675.81	98.3	60 - 125	
72 Ge	23707.26	1.09	24472.05	96.9	60 - 125	
72 Ge	654933.88	1.23	716074.63	91.5	60 - 125	
115 In	5021139.00	0.09	5652450.00	88.8	60 - 125	
159 Tb	7478648.00	1.22	8312643.00	90.0	60 - 125	

ISTD Ref File : D:\DATA\I982016\J\I98J04.B\98J04004.D\98J04004.D#

1 :Element Failures 0 :Max. Number of Failures Allowed
0 :ISTD Failures 0 :Max. Number of ISTD Failures Allowed

Data Results:

Analytes: Fail
ISTD: Pass

CCB QC Report

Data File: D:\DATA\I982016\J\I98J04.B\98J04052.D\98J04052.D#
Date Acquired: Oct 14 2016 12:09 am
Acq. Method: EM6020HR.M
Operator: CCapul
Sample Name: CCB
Misc Info:
Vial Number: 1202
Current Method: C:\ICPCHEM\1\METHODS\EM6020HR.M
Calibration File: D:\DATA\I982016\A\I98A01.B\EM6020HR.C
Last Cal. Update: Oct 13 2016 08:48 pm
Sample Type: CCB
Dilution Factor: 1.00

QC Elements

Element	Conc.		CPS	Conc RSD(%)	High Limit	Flag
7 Li	0.1518	ppb	65732.3	41.83	0.20	
9 Be	0.0012	ppb	14.4	208.43	0.10	
11 B	0.2683	ppb	2135.8	6.56	5.00	
23 Na	-4.1470	ppb	104902.8	1.70	40.00	
24 Mg	0.6210	ppb	19231.5	6.61	10.00	
27 Al	0.6211	ppb	24428.3	8.26	20.00	
28 Si	2.6810	ppb	5960.5	6.65	20.00	
31 P	-1.6260	ppb	10659.3	51.80	10.00	
39 K	1.8530	ppb	2358.1	63.03	20.00	
40 Ca	0.9440	ppb	37999.5	6.71	25.00	
47 Ti	0.0225	ppb	112.2	42.33	0.50	
51 V	0.0162	ppb	74.9	18.08	0.50	
52 Cr	-0.0005	ppb	84.2	1236.70	0.20	
55 Mn	0.0246	ppb	3327.2	24.07	0.20	
56 Fe	2.3430	ppb	58181.6	1.68	10.00	
59 Co	0.0062	ppb	287.8	12.78	0.20	
60 Ni	-0.0016	ppb	26.9	51.48	0.20	
63 Cu	-0.0295	ppb	133.1	7.65	0.40	
66 Zn	-0.1028	ppb	734.5	3.79	2.00	
75 As	0.0390	ppb	9.6	66.35	0.20	
78 Se	0.0287	ppb	30.7	24.61	0.20	
88 Sr	0.0067	ppb	725.6	9.81	0.20	
90 Zr	0.9323	ppb	257.8	0.02	2.00	
95 Mo	0.1572	ppb	1795.8	10.13	0.40	
107 Ag	0.0001	ppb	86.7	1119.60	0.20	
111 Cd	0.0035	ppb	53.0	37.06	0.20	
118 Sn	0.0241	ppb	703.4	12.72	0.20	
121 Sb	0.0134	ppb	507.8	29.91	0.40	
137 Ba	0.0113	ppb	155.6	16.11	0.20	
182 W	-0.0042	ppb	855.6	95.17	1.00	
205 Tl	0.0124	ppb	1010.1	4.31	0.20	
208 Pb	0.0121	ppb	1672.3	20.28	0.10	
235 U	0.0002	ppb	17.8	63.92	1.00	
238 U	0.0113	ppb	1019.0	19.28	0.10	

ISTD Elements

Element	CPS Mean	CPS RSD(%)	Ref Value	Rec(%)	QC Range(%)	Flag
6 Li	1012741.1	1.34	1290961.00	78.4	60 - 125	
45 Sc	1747564.9	0.31	1595475.90	109.5	60 - 125	
45 Sc	38513.1	1.03	36331.18	106.0	60 - 125	
45 Sc	3108258.5	1.86	3100973.80	100.2	60 - 125	
72 Ge	488413.1	0.62	450675.81	108.4	60 - 125	
72 Ge	26477.3	2.21	24472.05	108.2	60 - 125	
72 Ge	745294.5	0.52	716074.63	104.1	60 - 125	
115 In	6100424.0	0.57	5652450.00	107.9	60 - 125	
159 Tb	9120050.0	1.43	8312643.00	109.7	60 - 125	

ISTD Ref File : D:\DATA\I982016\J\I98J04.B\98J04004.D\98J04004.D#

0 :Element Failures
0 :ISTD Failures
0 :Max. Number of Failures Allowed
0 :Max. Nnumber of ISTD Failures Allowed

Data Results:
Analytes: Pass
ISTD: Pass

7898

EMAX LABORATORIES, INC.

DIGESTION LOG
for
ICP-MS METALS

Note: For samples, relevant QCs/Standards digested, refer to attached digestion sequence.

Comments:

Digestion Vessel Lot # VC-15-014-1

all the samples are pH < 2

Book #: EIM-061
Batch: IMJ007W
Matrix: Water
Digestor ID: E

SOP #	Rev. #
☐ EMAX-200.8	5
☑ EMAX-6020	9
☐ EMAX-	

Start	Temp	End	Temp
	90.8 °C		92.4 °C

Standards	ID	Amount Added (ml/g)
LCS-1	SM6A-007-03-26	0.15
LCS-2	SM6A-007-03-16	0.15
MS	same spike soln & vol as LCS 1&2	
Blank Soil (Bead)	NA	NA
Reagent	**Lot# / ID**	**Amount Added (ml)**
HNO_3	SWIA-006-01-21	0.5 + 1
HCl	SWIA-006-01-13	0.25 + 0.25
H_2O_2	NA	NA
HNO_3(1:1)	NA	NA
pH Strip (0-14)	HC577678	NA
Digestate Location	Metals	
Extract Location	NA	
☑ Reagent Water ID:	SM5A-03-02-15	
☑ Thermometer ID:	150590610/E25	
☑ Pipette ID:	2393603 18	
☐ Pipette ID:	NA	
☐ Pipette ID:	NA	
☐ HNO_3 dispenser checked @ 5.0 ml with Class A volumetric flask		
☐ HCl dispenser checked @ 5.0 ml with Class A volumetric flask		

Prepared By: SP
Standard Added By: SP Witnessed By: CW
Extract Rcvd By: CW Checked By: CW

EMAX LABORATORIES, INC.

DIGESTION LOG FOR METALS

PrepBatchID	LabSampleID	Aliquot	Unit	DateTime	Vd(ml)	ExpAmt	ExpVd(ml)	PrepFctr	Comments
16IMJ007W01	IMJ007WB	50	ml	10/5/16 13:35	50	50	50	1	
16IMJ007W02	IMJ007WL	50	ml	10/5/16 13:35	50	50	50	1	
16IMJ007W03	IMJ007WC	50	ml	10/5/16 13:35	50	50	50	1	
16IMJ007W04	I290-04	50	ml	10/5/16 13:35	50	50	50	1	TOTAL
16IMJ007W05	J001-01	50	ml	10/5/16 13:36	50	50	50	1	TOTAL
16IMJ007W06	J001-02	50	ml	10/5/16 13:36	50	50	50	1	TOTAL
16IMJ007W07	J001-03	50	ml	10/5/16 13:36	50	50	50	1	TOTAL
16IMJ007W08	J006-02	50	ml	10/5/16 13:37	50	50	50	1	TOTAL
16IMJ007W09	J006-04	50	ml	10/5/16 13:37	50	50	50	1	TOTAL
16IMJ007W10	J006-05	50	ml	10/5/16 13:37	50	50	50	1	TOTAL
16IMJ007W11	J006-06	50	ml	10/5/16 13:37	50	50	50	1	TOTAL
16IMJ007W12	J006-07	50	ml	10/5/16 13:37	50	50	50	1	TOTAL
16IMJ007W13	J006-11	50	ml	10/5/16 13:37	50	50	50	1	TOTAL
16IMJ007W14	J006-11M	50	ml	10/5/16 13:37	50	50	50	1	TOTAL
16IMJ007W15	J006-11S	50	ml	10/5/16 13:37	50	50	50	1	TOTAL
16IMJ007W16	J006-12	50	ml	10/5/16 13:37	50	50	50	1	TOTAL
16IMJ007W17	J006-13	50	ml	10/5/16 13:37	50	50	50	1	TOTAL
16IMJ007W18	J006-14	50	ml	10/5/16 13:37	50	50	50	1	TOTAL
16IMJ007W19	J012-01	50	ml	10/5/16 13:37	50	50	50	1	DISOLVED
16IMJ007W20	J012-02	50	ml	10/5/16 13:37	50	50	50	1	DISOLVED

SP 10/05/16

Vd=digestate volume

PrepFctr=(ExpAmt/Aliquot)*(Vd/ExpVd)

☑ Digestion Started @ 10/5/16 13:39

☑ Digestion Ended @ 10/5/16 17:59

Prepared By: SPara

Checked By:

Date 10/05/16

Comments:

LABORATORY REPORT FOR

ASSET LABS

PG&E HINKLEY

METHOD E218.6
HEXAVALENT CHROMIUM

SDG#: 16J012

8000

CASE NARRATIVE

Client : ASSET LABS

Project: PG&E HINKLEY

SDG : 16J012

METHOD E218.6
HEXAVALENT CHROMIUM

A total of two (2) water samples were received on 10/04/16 to be analyzed for Hexavalent Chromium in accordance with Method E218.6 and project specific requirements.

Holding Time
Samples were analyzed within the prescribed holding time.

Calibration
Calibration was performed as prescribed by the method and was verified using a secondary source (ICV). All calibration requirements were within acceptance criteria.

Method Blank
Method blank was prepared and analyzed at the frequency required by the project. For this SDG, one (1) method blank was analyzed. Hexavalent Chromium was not detected in HCJ003WB. Refer to sample result summary form for details.

Lab Control Sample
Lab control sample was prepared and analyzed at a frequency required by the project. For this SDG, one (1) set of LCS/LCD was analyzed. HCJ003WL/HCJ003WC were within LCS limits. Refer to LCS summary form for details.

Matrix QC Sample
Matrix spike sample was prepared and analyzed at a frequency required by the project. For this SDG, two (2) MS were analyzed. Sample duplicate was analyzed and RPD was within expected value. Refer to Matrix QC summary forms for details.

Sample Analysis
Samples were analyzed according to prescribed analytical procedures. Results were evaluated in accordance to project requirements. For this SDG, all quality control requirements were met.

Sample J012-01 was diluted due to the peak being outside the established retention time window.

SAMPLE RESULTS

METHOD E218.6
HEXAVALENT CHROMIUM

Client : ASSET LABS
Project : PG&E HINKLEY
Batch No. : 16J012

Matrix : WATER
InstrumentID : 59

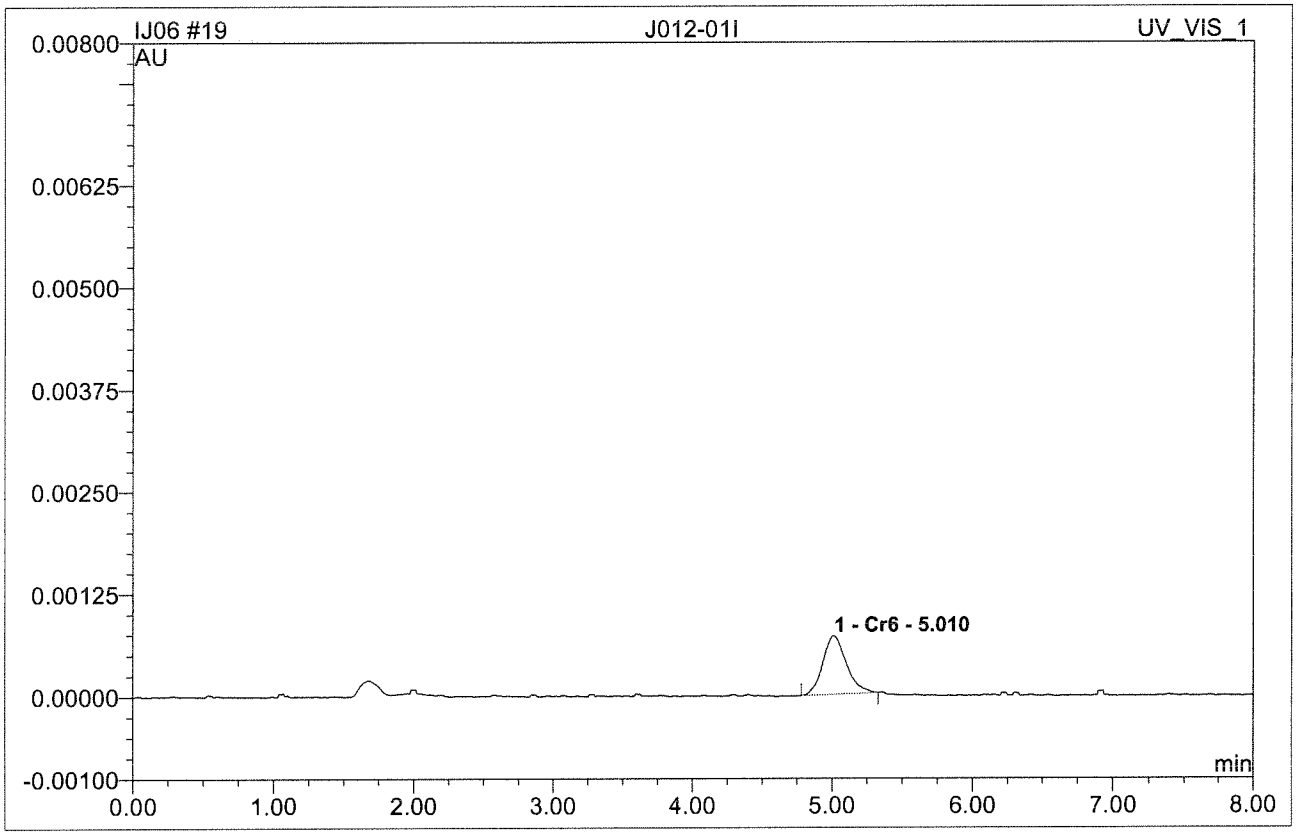
CLIENT SAMPLE ID	EMAX SAMPLE ID	RESULTS (ug/L)	DIL'N. FACTOR	MOIST (%)	LOQ (ug/L)	LOD (ug/L)	ANALYSIS DATETIME	PREPARATION DATETIME	DATA FILE ID	CAL REF	PREP BATCH	COLLECTION DATETIME	RECEIVED DATETIME
MBLK1W	HCJ003WB	ND	1	NA	0.2	0.1	10/06/1612:10	10/04/1611:13	IJ06004	IJ06002	HCJ003W	NA	NA
LCS1W	HCJ003WL	1.94	1	NA	0.2	0.1	10/06/1612:20	10/04/1611:13	IJ06005	IJ06002	HCJ003W	NA	NA
LCD1W	HCJ003WC	1.93	1	NA	0.2	0.1	10/06/1612:31	10/04/1611:13	IJ06006	IJ06002	HCJ003W	NA	NA
MW-55-120-Q316	J012-01I	6.39	5	NA	1	0.5	10/06/1612:53	10/04/1611:13	IJ06008	IJ06002	HCJ003W	09/30/1609:57	10/04/16
MW-55-120-Q316DUP	J012-01ID	6.16	5	NA	1	0.5	10/06/1613:04	10/04/1611:13	IJ06009	IJ06002	HCJ003W	09/30/1609:57	10/04/16
MW-55-120-Q316MS	J012-01IM	11.3	5	NA	1	0.5	10/06/1613:14	10/04/1611:13	IJ06010	IJ06002	HCJ003W	09/30/1609:57	10/04/16
MW-55-120-EB-Q316	J012-02	ND	1	NA	0.2	0.1	10/06/1613:24	10/04/1611:13	IJ06011	IJ06002	HCJ003W	09/30/1609:20	10/04/16
MW-55-120-EB-Q316MS	J012-02M	0.919	1	NA	0.2	0.1	10/06/1613:35	10/04/1611:13	IJ06012	IJ06002	HCJ003W	09/30/1609:20	10/04/16

8550

IJ06 008 J012-01I

DF=5

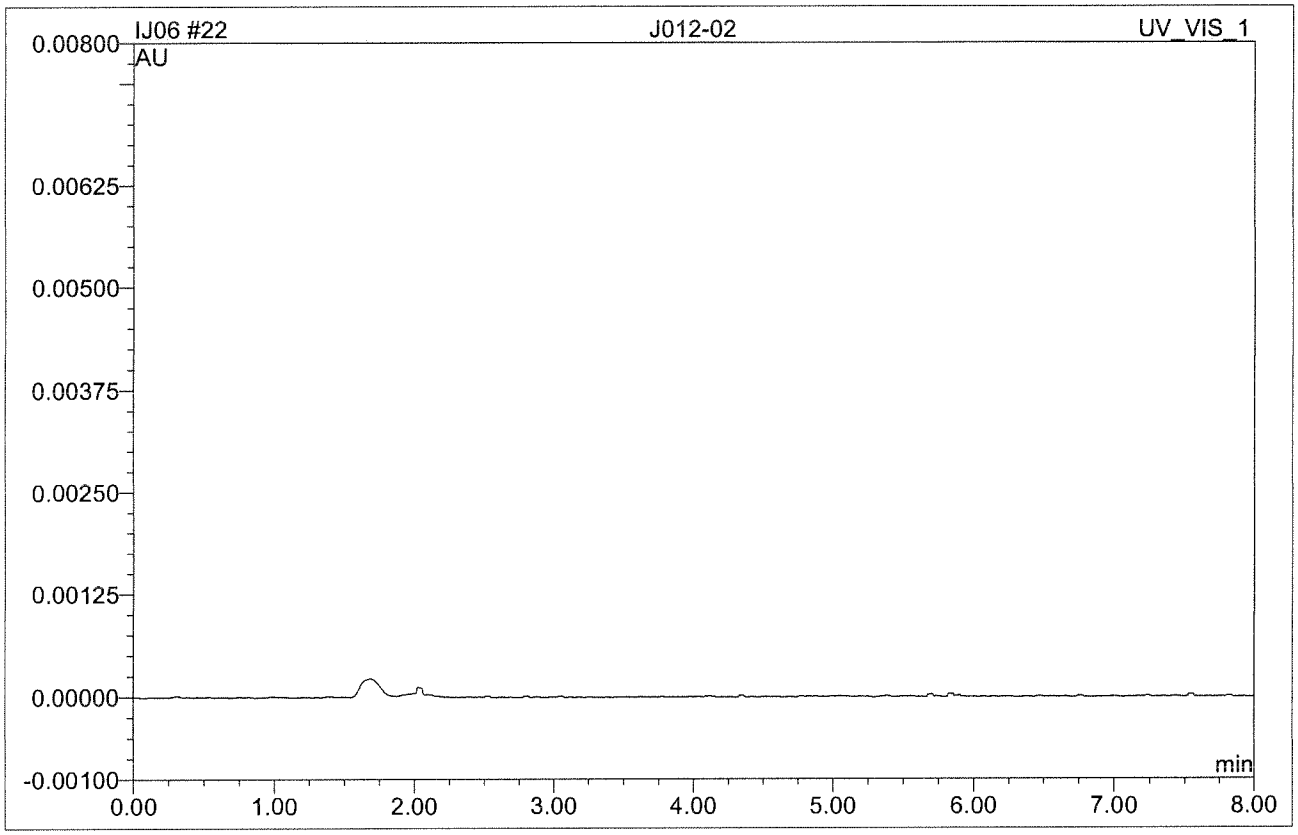
Sample Name:	**J012-01I**	*Injection Volume:*	**250.0**
Vial Number:	**0**	*Channel:*	**UV_VIS_1**
Sample Type:	**unknown**	*Wavelength:*	**n.a.**
Control Program:	**Cr6 Program**	*Bandwidth:*	**n.a.**
Quantif. Method:	**IC59J04**	*Dilution Factor:*	**5**
Recording Time:	**10/6/2016 12:53**	*Sample Weight:*	**1.0000**
Run Time (min):	**8.00**	*Sample Amount:*	**1.0000**



No.	Ret.Time min	Peak Name	Height AU	Area AU*min	Rel.Area %	Amount	Type
1	5.01	Cr6	0.0007130	0.0001385	100.00	6.390	BMB
Total:			0.001	0.000	100.00	6.390	

IJ06 011 J012-02

Sample Name:	**J012-02**	*Injection Volume:*	**250.0**
Vial Number:	**0**	*Channel:*	**UV_VIS_1**
Sample Type:	**unknown**	*Wavelength:*	**n.a.**
Control Program:	**Cr6 Program**	*Bandwidth:*	**n.a.**
Quantif. Method:	**IC59J04**	*Dilution Factor:*	**1**
Recording Time:	**10/6/2016 13:24**	*Sample Weight:*	**1.0000**
Run Time (min):	**8.00**	*Sample Amount:*	**1.0000**



No.	Ret.Time min	Peak Name	Height AU	Area AU*min	Rel.Area %	Amount	Type
Total:			0.000	0.000	0.00	0.000	

QC SUMMARIES

EMAX QUALITY CONTROL DATA
LAB CONTROL SAMPLE ANALYSIS

CLIENT : ASSET LABS
PROJECT : PG&E HINKLEY
BATCH NO. : 16J012
METHOD : E218.6

MATRIX : WATER % MOISTURE: NA

DILUTION FACTOR:	1	1	1
SAMPLE ID :	MBLK1W	LCS1W	LCD1W
LAB SAMPLE ID :	HCJ003WB	HCJ003WL	HCJ003WC
LAB FILE ID :	IJ06004	IJ06005	IJ06006
DATE PREPARED :	10/04/1611:13	10/04/1611:13	10/04/1611:13
DATE ANALYZED :	10/06/1612:10	10/06/1612:20	10/06/1612:31
PREP BATCH :	HCJ003W	HCJ003W	HCJ003W
CALIBRATION REF:	IJ06002	IJ06002	IJ06002

ACCESSION:

PARAMETER	MB RESULT (ug/L)	SPIKE AMT (ug/L)	BS RESULT (ug/L)	BS REC (%)	SPIKE AMT (ug/L)	BSD RESULT (ug/L)	BSD REC (%)	RPD (%)	QC LIMIT (%)	MAX RPD (%)
HEXAVALENT CHROMIUM	ND	2	1.94	97	2	1.93	96	1	90-110	20

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EMAX QUALITY CONTROL DATA
MATRIX SPIKE ANALYSIS

CLIENT : ASSET LABS
PROJECT : PG&E HINKLEY
BATCH NO. : 16J012
METHOD : E218.6

MATRIX	: WATER	% MOISTURE: NA
DILUTION FACTOR:	5	5
SAMPLE ID	: MW-55-120-Q316	MW-55-120-Q316MS
LAB SAMPLE ID	: J012-01I	J012-01M
LAB FILE ID	: IJ06008	IJ06010
DATE PREPARED	: 10/04/1611:13	10/04/1611:13
DATE ANALYZED	: 10/06/1612:53	10/06/1613:14
PREP BATCH	: HCJ003W	HCJ003W
CALIBRATION REF:	IJ06002	IJ06002

ACCESSION:

PARAMETER	PARENT RESULT (ug/L)	SPIKE AMT (ug/L)	MS RESULT (ug/L)	MS REC (%)	QC LIMIT (%)
HEXAVALENT CHROMIUM	6.39	5	11.3	98	90-110

EMAX QUALITY CONTROL DATA
MATRIX SPIKE ANALYSIS

CLIENT : ASSET LABS
PROJECT : PG&E HINKLEY
BATCH NO. : 16J012
METHOD : E218.6

MATRIX	: WATER	% MOISTURE: NA
DILUTION FACTOR	: 1	1
SAMPLE ID	: MW-55-120-EB-Q316	MW-55-120-EB-Q316MS
LAB SAMPLE ID	: J012-02	J012-02M
LAB FILE ID	: IJ06011	IJ06012
DATE PREPARED	: 10/04/1611:13	10/04/1611:13
DATE ANALYZED	: 10/06/1613:24	10/06/1613:35
PREP BATCH	: HCJ003W	HCJ003W
CALIBRATION REF	: IJ06002	IJ06002

ACCESSION:

PARAMETER	PARENT RESULT (ug/L)	SPIKE AMT (ug/L)	MS RESULT (ug/L)	MS REC (%)	QC LIMIT (%)
HEXAVALENT CHROMIUM	ND	1	0.919	92	90-110

EMAX QUALITY CONTROL DATA
SAMPLE DUPLICATE ANALYSIS

CLIENT : ASSET LABS
PROJECT : PG&E HINKLEY
BATCH NO. : 16J012
METHOD : E218.6

MATRIX	: WATER	% MOISTURE: NA
DILUTION FACTOR:	5	5
SAMPLE ID	: MW-55-120-Q316	MW-55-120-Q316DUP
LAB SAMPLE ID	: J012-01I	J012-01ID
LAB FILE ID	: IJ06008	IJ06009
DATE PREPARED	: 10/04/1611:13	10/04/1611:13
DATE ANALYZED	: 10/06/1612:53	10/06/1613:04
PREP BATCH	: HCJ003W	HCJ003W
CALIBRATION REF:	IJ06002	IJ06002

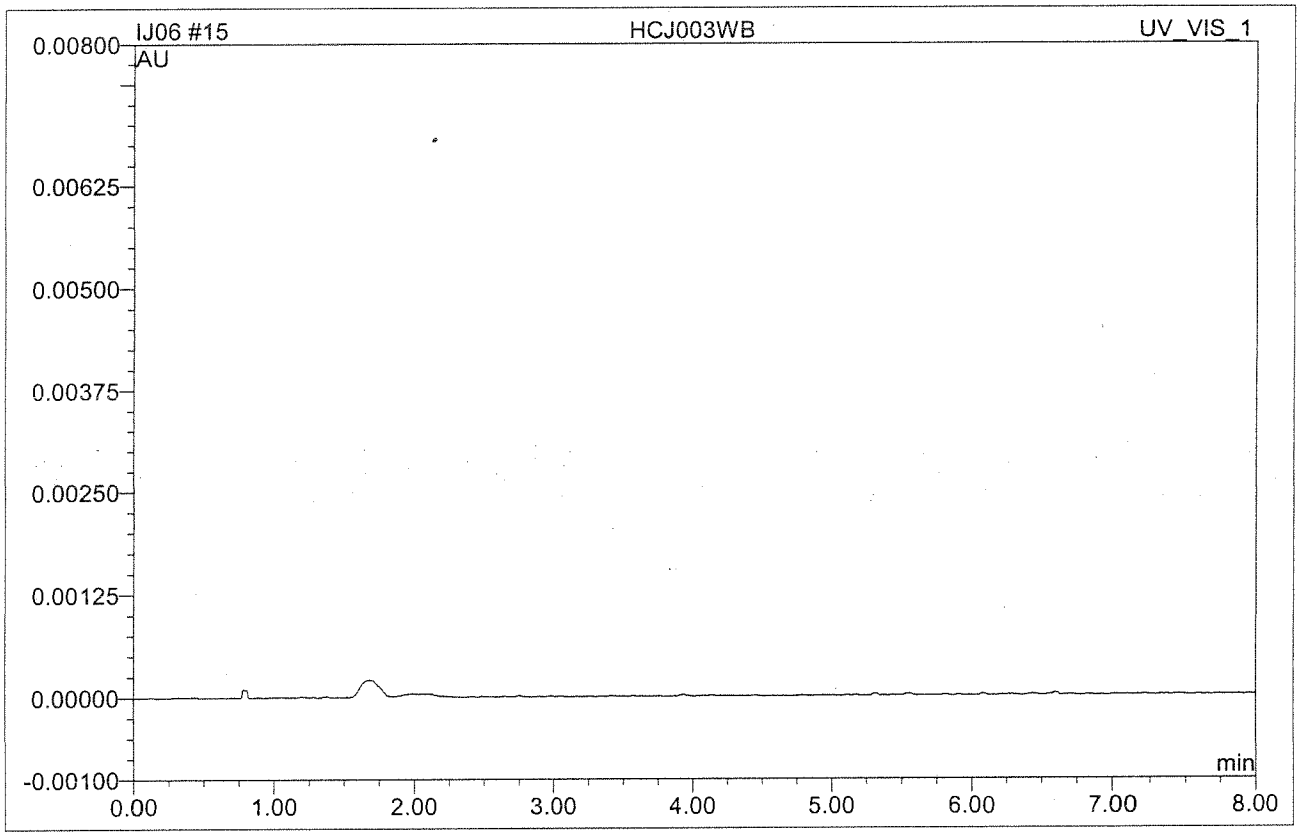
ACCESSION:

PARAMETER	PARENT RESULT (ug/L)	DUP RESULT (ug/L)	RPD (%)	MAX RPD (%)
HEXAVALENT CHROMIUM	6.39	6.16	4	20

QC DATA

IJ06 004 HCJ003WB

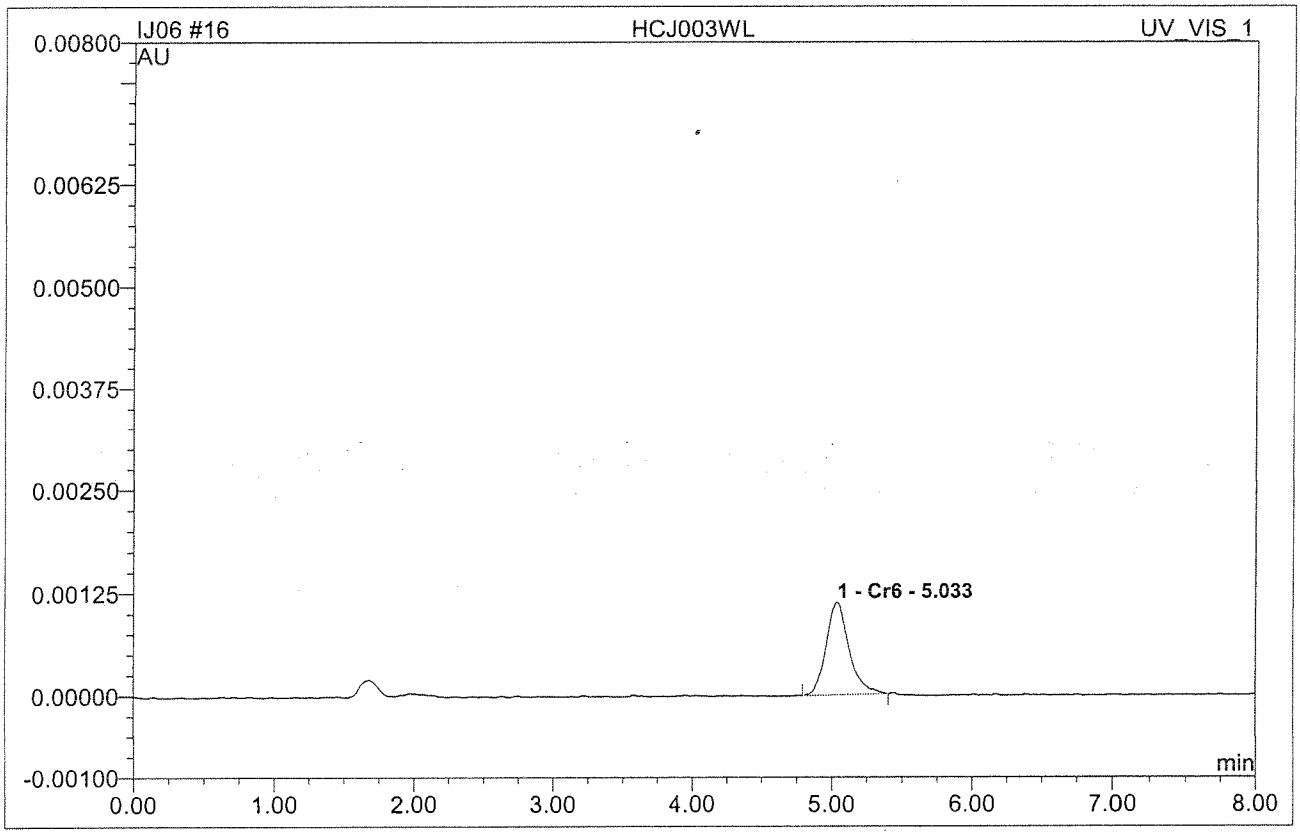
Sample Name:	**HCJ003WB**	*Injection Volume:*	**250.0**
Vial Number:	**0**	*Channel:*	**UV_VIS_1**
Sample Type:	**unknown**	*Wavelength:*	**n.a.**
Control Program:	**Cr6 Program**	*Bandwidth:*	**n.a.**
Quantif. Method:	**IC59J04**	*Dilution Factor:*	**1**
Recording Time:	**10/6/2016 12:10**	*Sample Weight:*	**1.0000**
Run Time (min):	**8.00**	*Sample Amount:*	**1.0000**



No.	Ret.Time min	Peak Name	Height AU	Area AU*min	Rel.Area %	Amount	Type
Total:			0.000	0.000	0.00	0.000	

IJ06 005 HCJ003WL

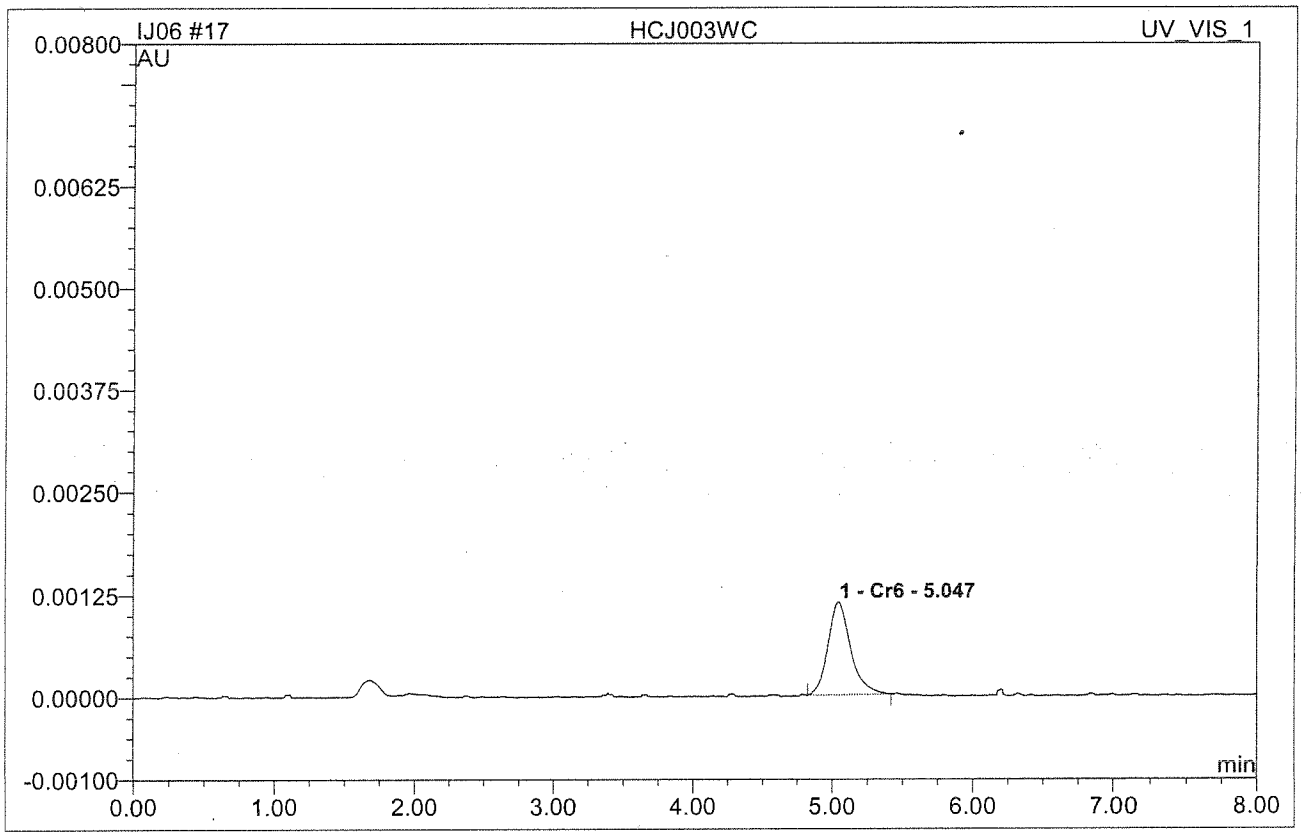
Sample Name:	**HCJ003WL**	*Injection Volume:*	**250.0**
Vial Number:	**0**	*Channel:*	**UV_VIS_1**
Sample Type:	**unknown**	*Wavelength:*	**n.a.**
Control Program:	**Cr6 Program**	*Bandwidth:*	**n.a.**
Quantif. Method:	**IC59J04**	*Dilution Factor:*	**1**
Recording Time:	**10/6/2016 12:20**	*Sample Weight:*	**1.0000**
Run Time (min):	**8.00**	*Sample Amount:*	**1.0000**



No.	Ret.Time min	Peak Name	Height AU	Area AU*min	Rel.Area %	Amount	Type
1	5.03	Cr6	0.0011270	0.0002133	100.00	1.936	BMB
Total:			0.001	0.000	100.00	1.936	

IJ06 006 HCJ003WC

Sample Name:	**HCJ003WC**	*Injection Volume:*	**250.0**
Vial Number:	**0**	*Channel:*	**UV_VIS_1**
Sample Type:	**unknown**	*Wavelength:*	**n.a.**
Control Program:	**Cr6 Program**	*Bandwidth:*	**n.a.**
Quantif. Method:	**IC59J04**	*Dilution Factor:*	**1**
Recording Time:	**10/6/2016 12:31**	*Sample Weight:*	**1.0000**
Run Time (min):	**8.00**	*Sample Amount:*	**1.0000**



No.	Ret.Time min	Peak Name	Height AU	Area AU*min	Rel.Area %	Amount	Type
1	5.05	Cr6	0.0011360	0.0002125	100.00	1.929	BMB
Total:			0.001	0.000	100.00	1.929	

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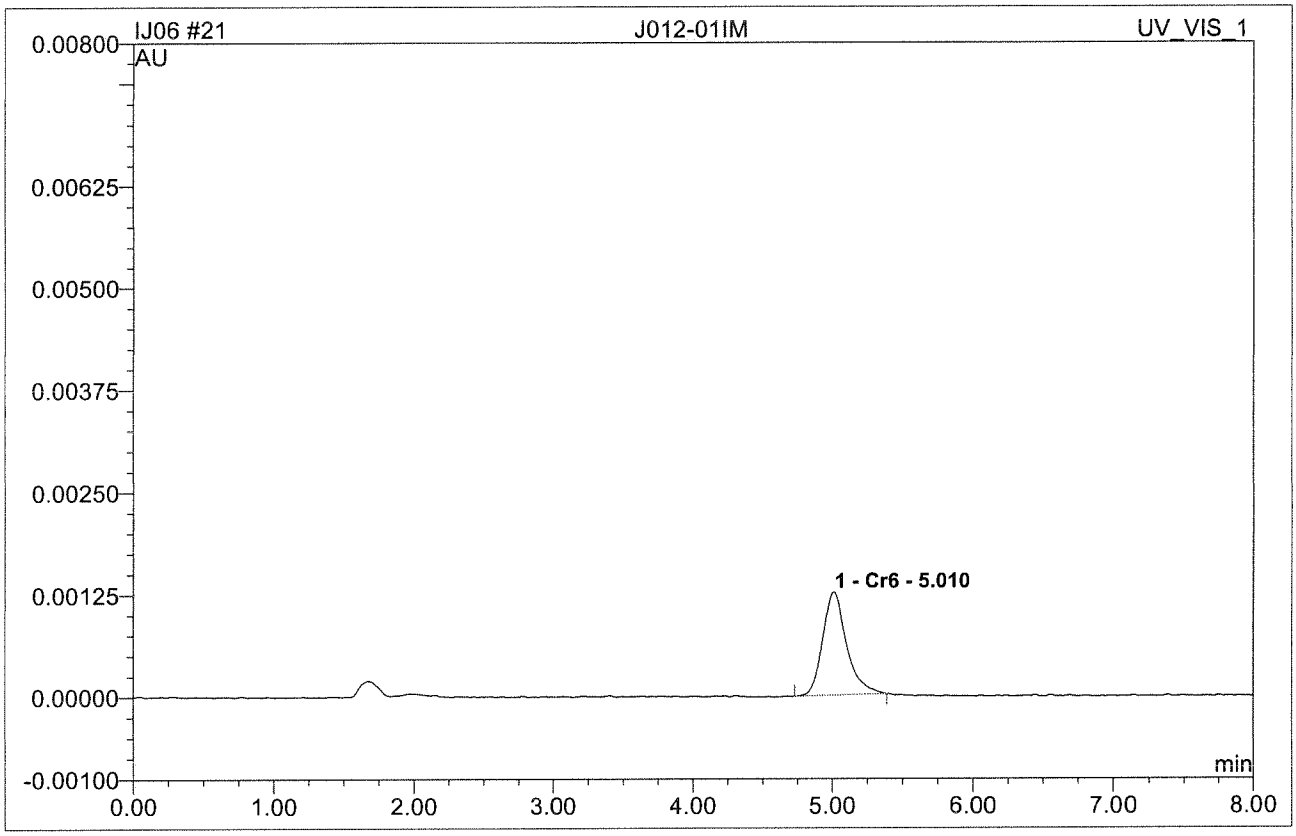
IJ06 010 J012-01IM

DF=5

Sample Name:	**J012-01IM**	*Injection Volume:*	**250.0**
Vial Number:	**0**	*Channel:*	**UV_VIS_1**
Sample Type:	**unknown**	*Wavelength:*	**n.a.**
Control Program:	**Cr6 Program**	*Bandwidth:*	**n.a.**
Quantif. Method:	**IC59J04**	*Dilution Factor:*	**5**
Recording Time:	**10/6/2016 13:14**	*Sample Weight:*	**1.0000**
Run Time (min):	**8.00**	*Sample Amount:*	**1.0000**

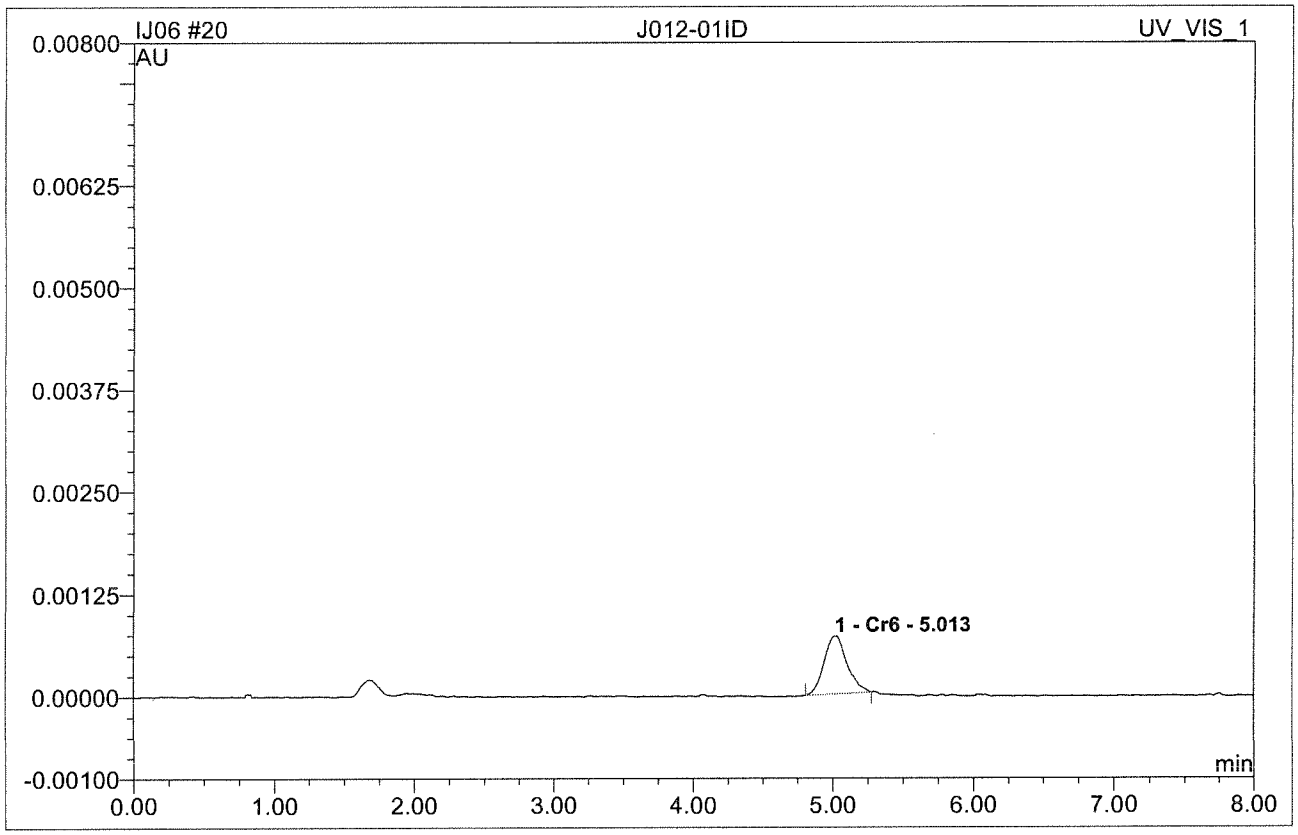


No.	Ret.Time min	Peak Name	Height AU	Area AU*min	Rel.Area %	Amount	Type
1	5.01	Cr6	0.0012630	0.0002492	100.00	11.255	BMB
Total:			0.001	0.000	100.00	11.255	

IJ06 009 J012-01ID

DF=5

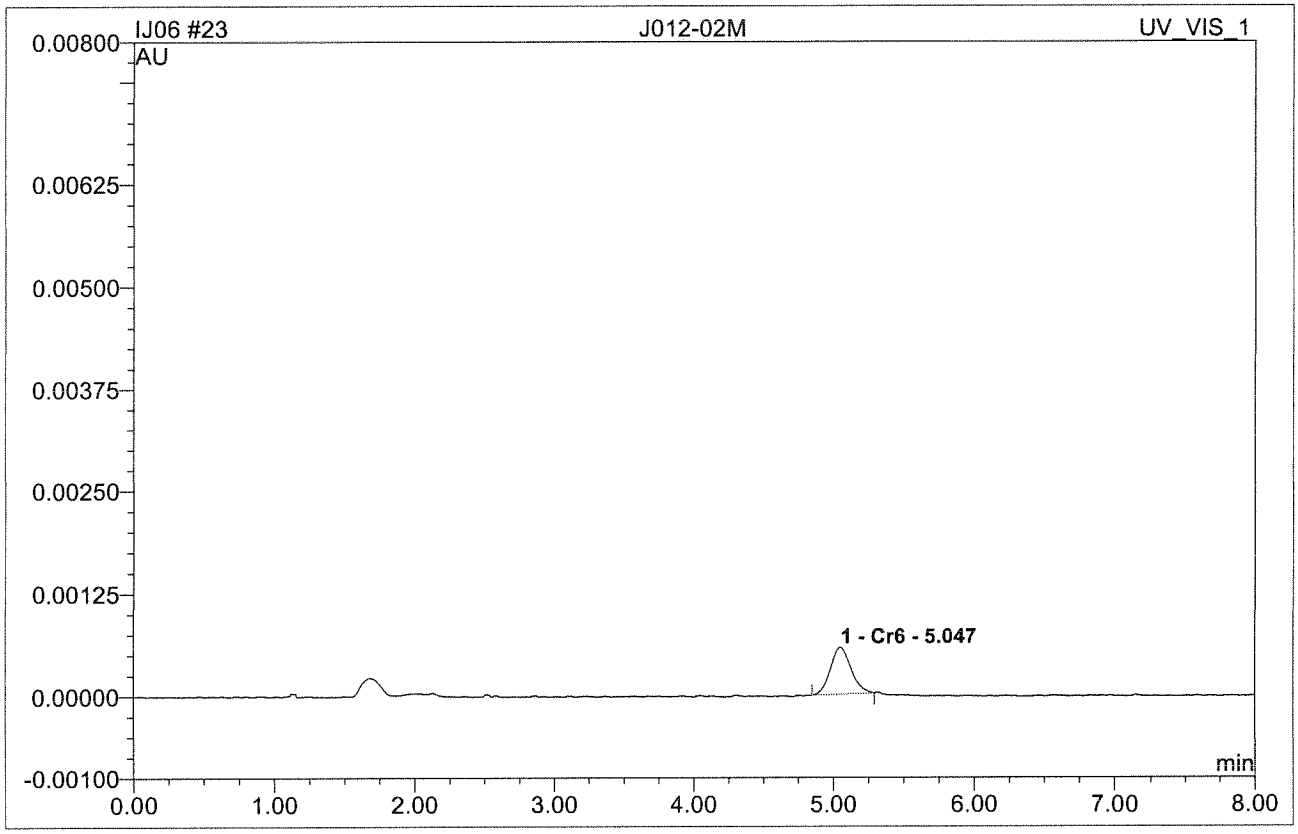
Sample Name:	**J012-01ID**	*Injection Volume:*	**250.0**
Vial Number:	**0**	*Channel:*	**UV_VIS_1**
Sample Type:	**unknown**	*Wavelength:*	**n.a.**
Control Program:	**Cr6 Program**	*Bandwidth:*	**n.a.**
Quantif. Method:	**IC59J04**	*Dilution Factor:*	**5**
Recording Time:	**10/6/2016 13:04**	*Sample Weight:*	**1.0000**
Run Time (min):	**8.00**	*Sample Amount:*	**1.0000**



No.	Ret.Time min	Peak Name	Height AU	Area AU*min	Rel.Area %	Amount	Type
1	5.01	Cr6	0.0007070	0.0001332	100.00	6.155	BMB
Total:			0.001	0.000	100.00	6.155	

IJ06 012 J012-02M

Sample Name:	**J012-02M**	*Injection Volume:*	**250.0**
Vial Number:	**0**	*Channel:*	**UV_VIS_1**
Sample Type:	**unknown**	*Wavelength:*	**n.a.**
Control Program:	**Cr6 Program**	*Bandwidth:*	**n.a.**
Quantif. Method:	**IC59J04**	*Dilution Factor:*	**1**
Recording Time:	**10/6/2016 13:35**	*Sample Weight:*	**1.0000**
Run Time (min):	**8.00**	*Sample Amount:*	**1.0000**



No.	Ret.Time min	Peak Name	Height AU	Area AU*min	Rel.Area %	Amount	Type
1	5.05	Cr6	0.0005730	0.0000977	100.00	0.919	BMB
Total:			0.001	0.000	100.00	0.919	

INITIAL CALIBRATIONS

IC RESULT FORM CalVersion : CR6.J04/IJ04 (2016)

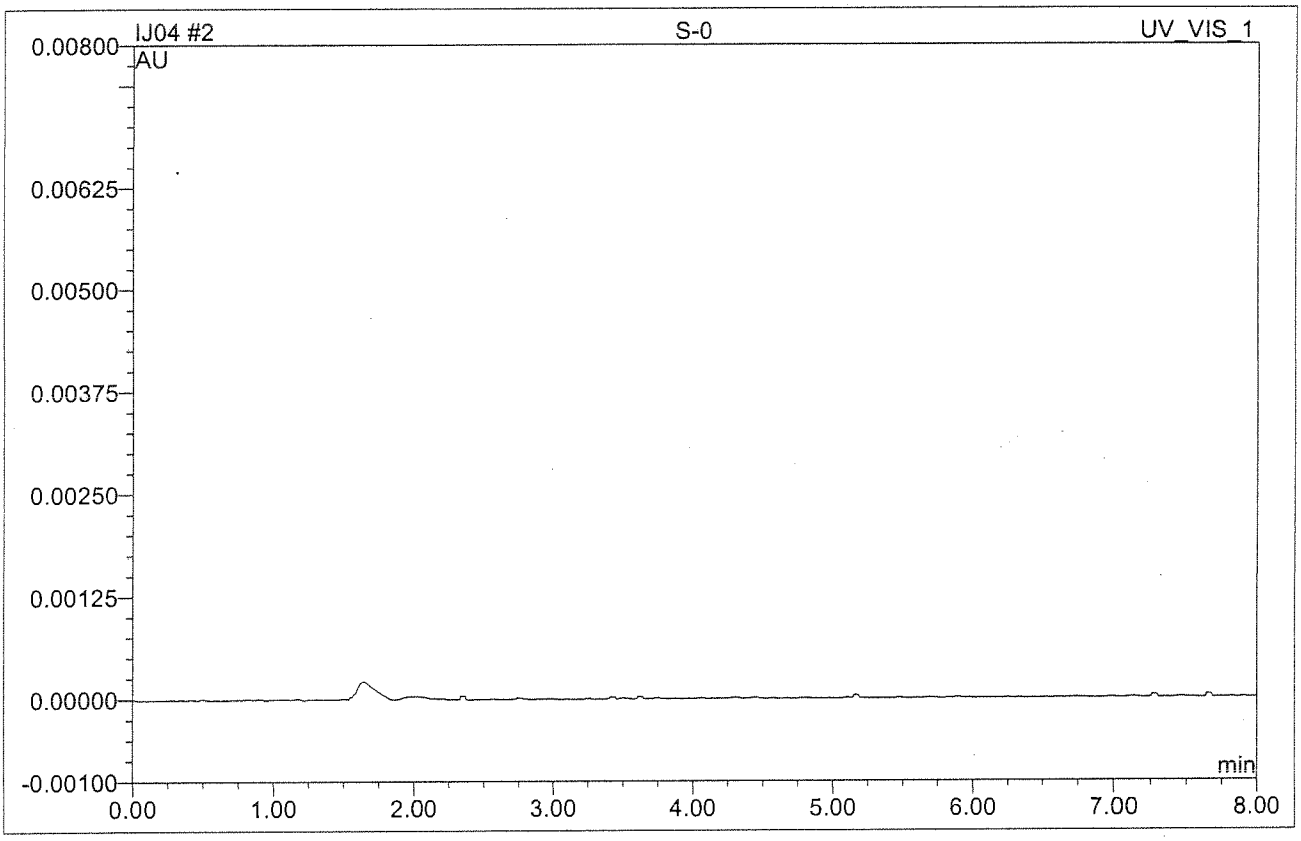
LFID	LSID	SelCmp	Cr6	DateTime	DF
IJ04001	IB	C	ND	10/04/1614:44	1
IJ04002	S-0	C	ND	10/04/1614:56	1
IJ04003	S-1	C	0.214	10/04/1615:06	1
IJ04004	S-2	C	0.500	10/04/1615:17	1
IJ04005	S-3	C	1.002	10/04/1615:27	1
IJ04006	S-4	C	1.972	10/04/1615:38	1
IJ04007	S-5	C	4.883	10/04/1615:48	1
IJ04008	S-6	C	7.525	10/04/1615:59	1
IJ04009	S-7	C	10.045	10/04/1616:09	1
IJ04010	ICV	C	101%	10/04/1616:19	1
IJ04011	ICB	C	ND	10/04/1616:33	1

IC59J04.MET
BUFFER (SW4-03-25-04)

10-11-16

IJ04 002 S-0

Sample Name:	**S-0**	*Injection Volume:*	**250.0**
Vial Number:	**0**	*Channel:*	**UV_VIS_1**
Sample Type:	**unknown**	*Wavelength:*	**n.a.**
Control Program:	**Cr6 Program**	*Bandwidth:*	**n.a.**
Quantif. Method:	**IC59J04**	*Dilution Factor:*	**1**
Recording Time:	**10/4/2016 14:56**	*Sample Weight:*	**1.0000**
Run Time (min):	**8.00**	*Sample Amount:*	**1.0000**



No.	Ret.Time min	Peak Name	Height AU	Area AU*min	Rel.Area %	Amount	Type
Total:			0.000	0.000	0.00	0.000	

10-11-16

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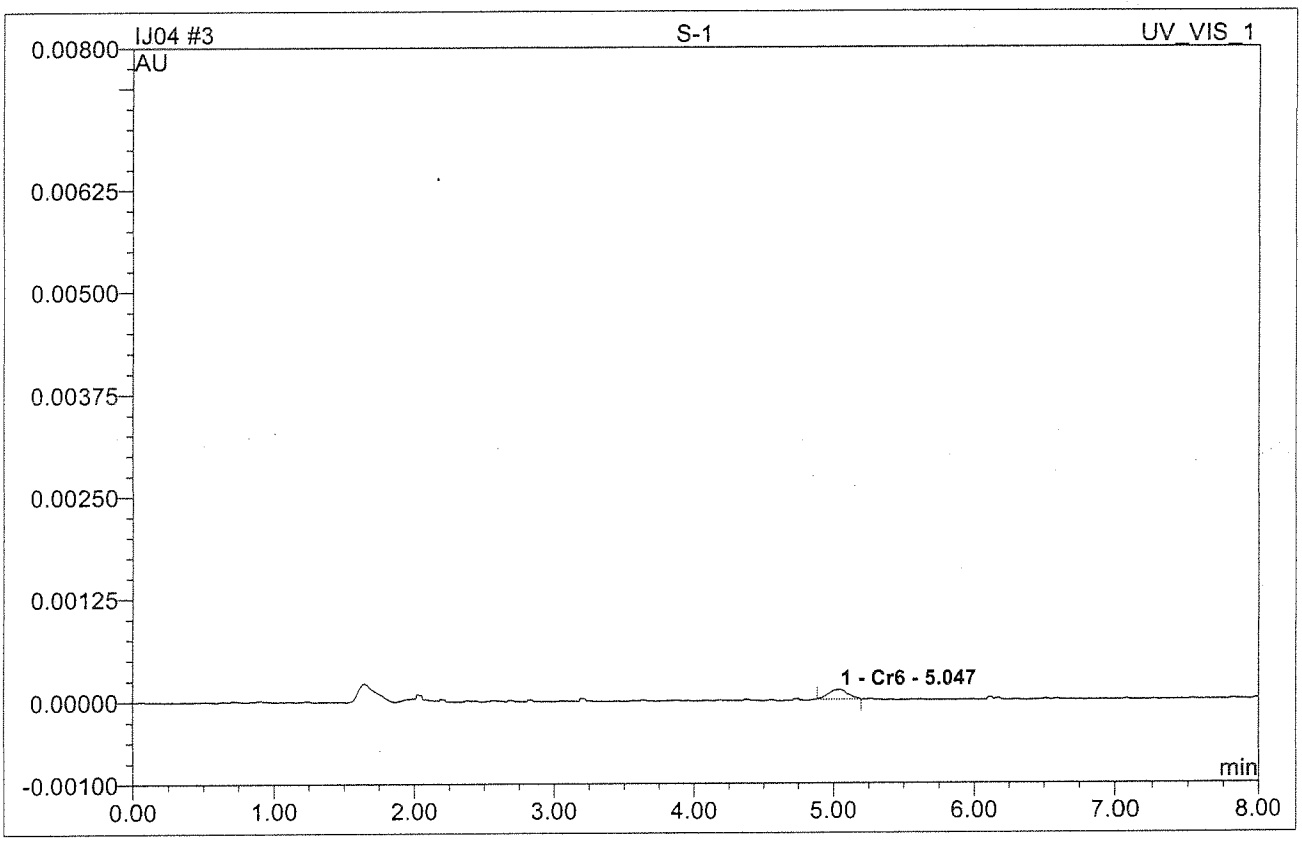
8020

IJ04 003 S-1

0.2 PPB

Sample Name:	**S-1**	*Injection Volume:*	**250.0**
Vial Number:	**0**	*Channel:*	**UV_VIS_1**
Sample Type:	**standard**	*Wavelength:*	**n.a.**
Control Program:	**Cr6 Program**	*Bandwidth:*	**n.a.**
Quantif. Method:	**IC59J04**	*Dilution Factor:*	**1**
Recording Time:	**10/4/2016 15:06**	*Sample Weight:*	**1.0000**
Run Time (min):	**8.00**	*Sample Amount:*	**1.0000**



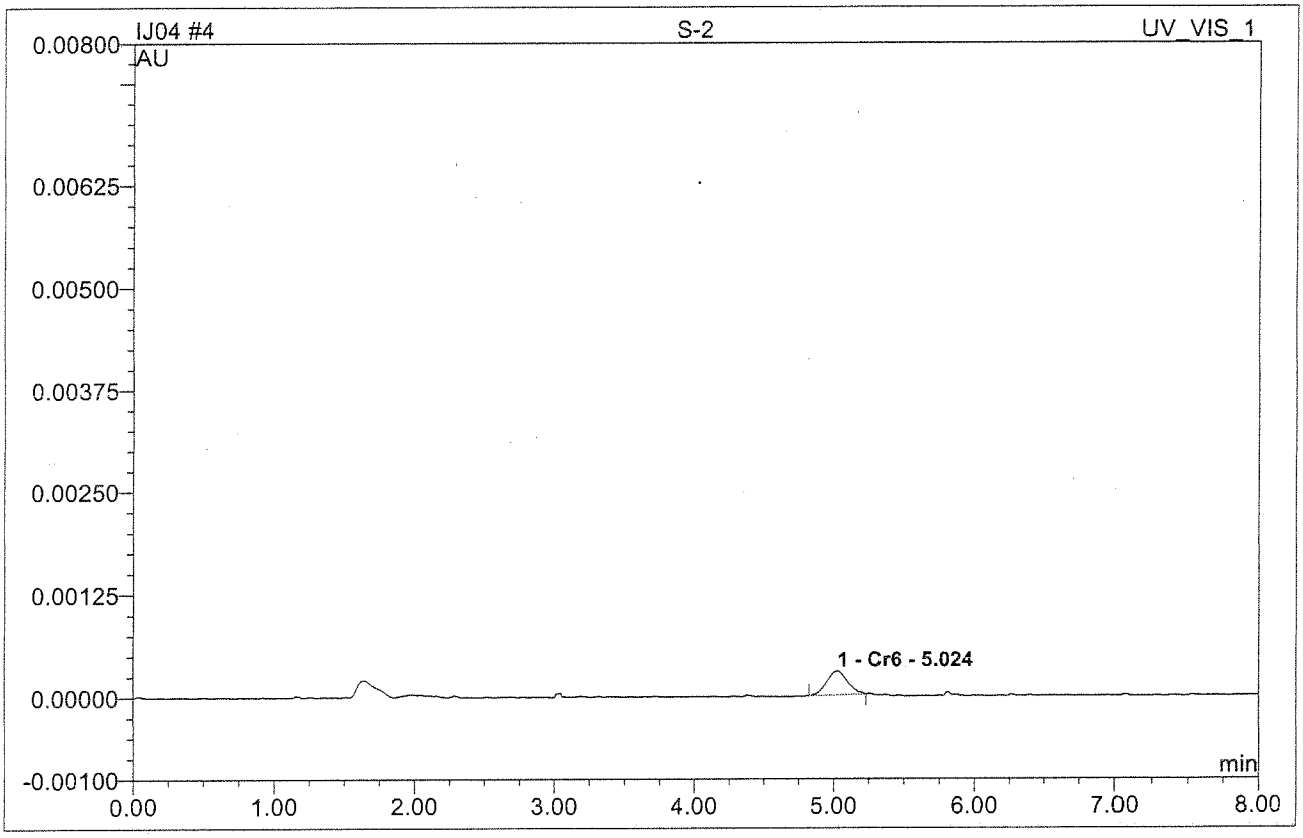
No.	Ret.Time min	Peak Name	Height AU	Area AU*min	Rel.Area %	Amount	Type
1	5.05	Cr6	0.0001160	0.0000175	100.00	0.214	BMB
Total:			0.000	0.000	100.00	0.214	

10-11-16

IJ04 004 S-2

0.5 PPB

Sample Name:	**S-2**	*Injection Volume:*	**250.0**
Vial Number:	**0**	*Channel:*	**UV_VIS_1**
Sample Type:	**standard**	*Wavelength:*	**n.a.**
Control Program:	**Cr6 Program**	*Bandwidth:*	**n.a.**
Quantif. Method:	**IC59J04**	*Dilution Factor:*	**1**
Recording Time:	**10/4/2016 15:17**	*Sample Weight:*	**1.0000**
Run Time (min):	**8.00**	*Sample Amount:*	**1.0000**



No.	Ret.Time min	Peak Name	Height AU	Area AU*min	Rel.Area %	Amount	Type
1	5.02	Cr6	0.0002950	0.0000500	100.00	0.500	BMB
Total:			0.000	0.000	100.00	0.500	

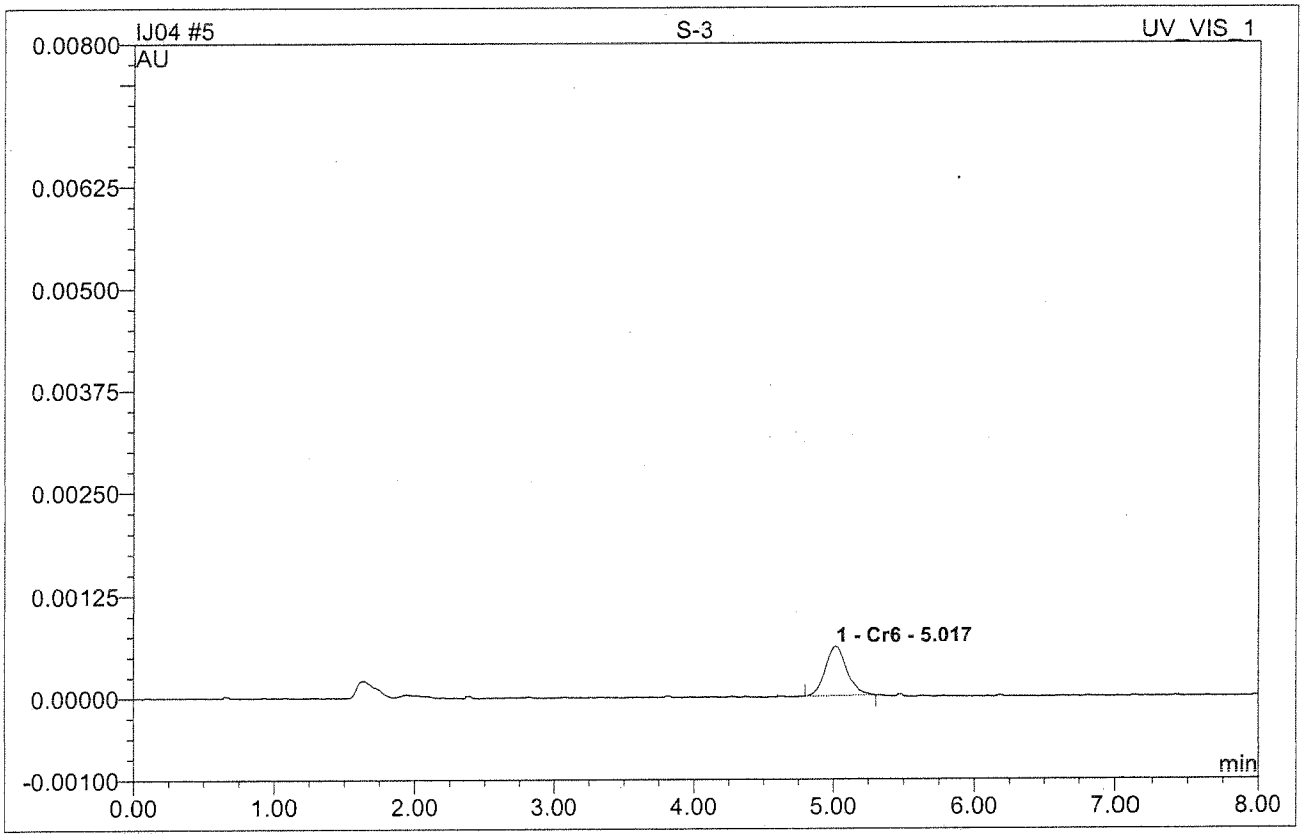
10-11-16

Chromeleon (c) Dionex 1996-2001
Version 6.70 SP2a Build 1871

IJ04 005 S-3

1.0 PPB

Sample Name:	**S-3**	*Injection Volume:*	**250.0**
Vial Number:	**0**	*Channel:*	**UV_VIS_1**
Sample Type:	**standard**	*Wavelength:*	**n.a.**
Control Program:	**Cr6 Program**	*Bandwidth:*	**n.a.**
Quantif. Method:	**IC59J04**	*Dilution Factor:*	**1**
Recording Time:	**10/4/2016 15:27**	*Sample Weight:*	**1.0000**
Run Time (min):	**8.00**	*Sample Amount:*	**1.0000**



No.	Ret.Time min	Peak Name	Height AU	Area AU*min	Rel.Area %	Amount	Type
1	5.02	Cr6	0.0006020	0.0001071	100.00	1.002	BMB
Total:			0.001	0.000	100.00	1.002	

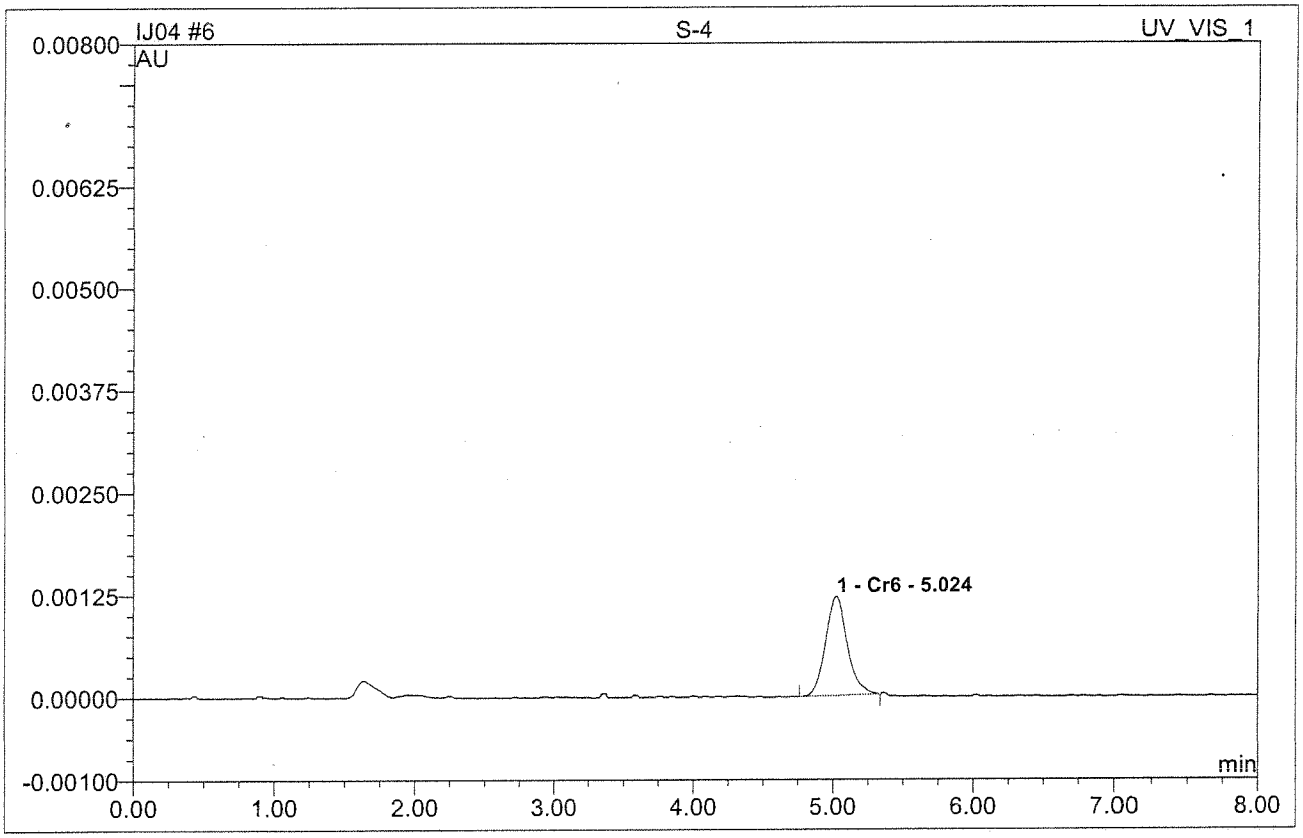
10-11-16

Chromeleon (c) Dionex 1996-2001
Version 6.70 SP2a Build 1871

IJ04 006 S-4

2.0 PPB

Sample Name:	**S-4**	*Injection Volume:*	**250.0**
Vial Number:	**0**	*Channel:*	**UV_VIS_1**
Sample Type:	**standard**	*Wavelength:*	**n.a.**
Control Program:	**Cr6 Program**	*Bandwidth:*	**n.a.**
Quantif. Method:	**IC59J04**	*Dilution Factor:*	**1**
Recording Time:	**10/4/2016 15:38**	*Sample Weight:*	**1.0000**
Run Time (min):	**8.00**	*Sample Amount:*	**1.0000**



No.	Ret.Time min	Peak Name	Height AU	Area AU*min	Rel.Area %	Amount	Type
1	5.02	Cr6	0.0012100	0.0002175	100.00	1.972	BMB
Total:			0.001	0.000	100.00	1.972	

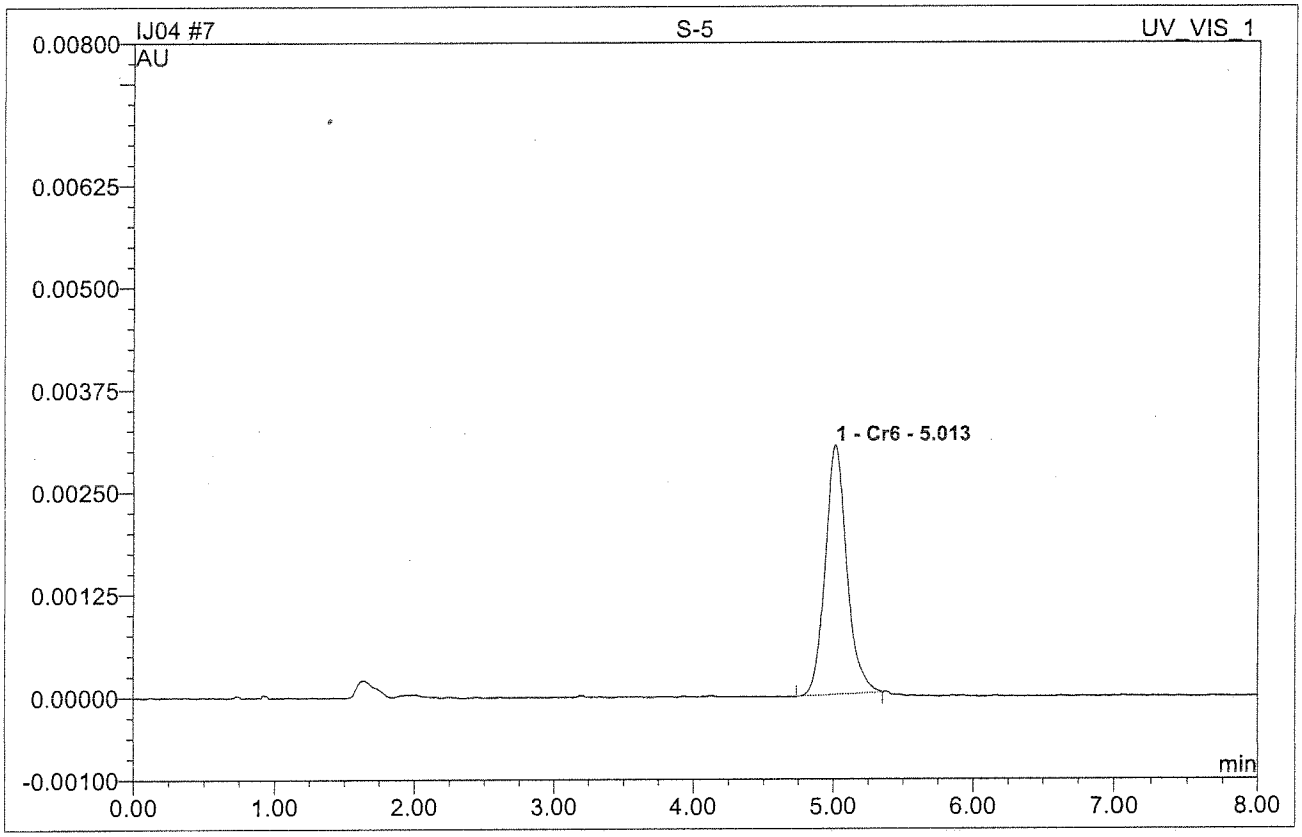
10-11-16

Chromeleon (c) Dionex 1996-2001
Version 6.70 SP2a Build 1871

IJ04 007 S-5

5.0 PPB

Sample Name:	**S-5**	*Injection Volume:*	**250.0**
Vial Number:	**0**	*Channel:*	**UV_VIS_1**
Sample Type:	**standard**	*Wavelength:*	**n.a.**
Control Program:	**Cr6 Program**	*Bandwidth:*	**n.a.**
Quantif. Method:	**IC59J04**	*Dilution Factor:*	**1**
Recording Time:	**10/4/2016 15:48**	*Sample Weight:*	**1.0000**
Run Time (min):	**8.00**	*Sample Amount:*	**1.0000**



No.	Ret.Time min	Peak Name	Height AU	Area AU*min	Rel.Area %	Amount	Type
1	5.01	Cr6	0.0030410	0.0005484	100.00	4.883	BMB
Total:			0.003	0.001	100.00	4.883	

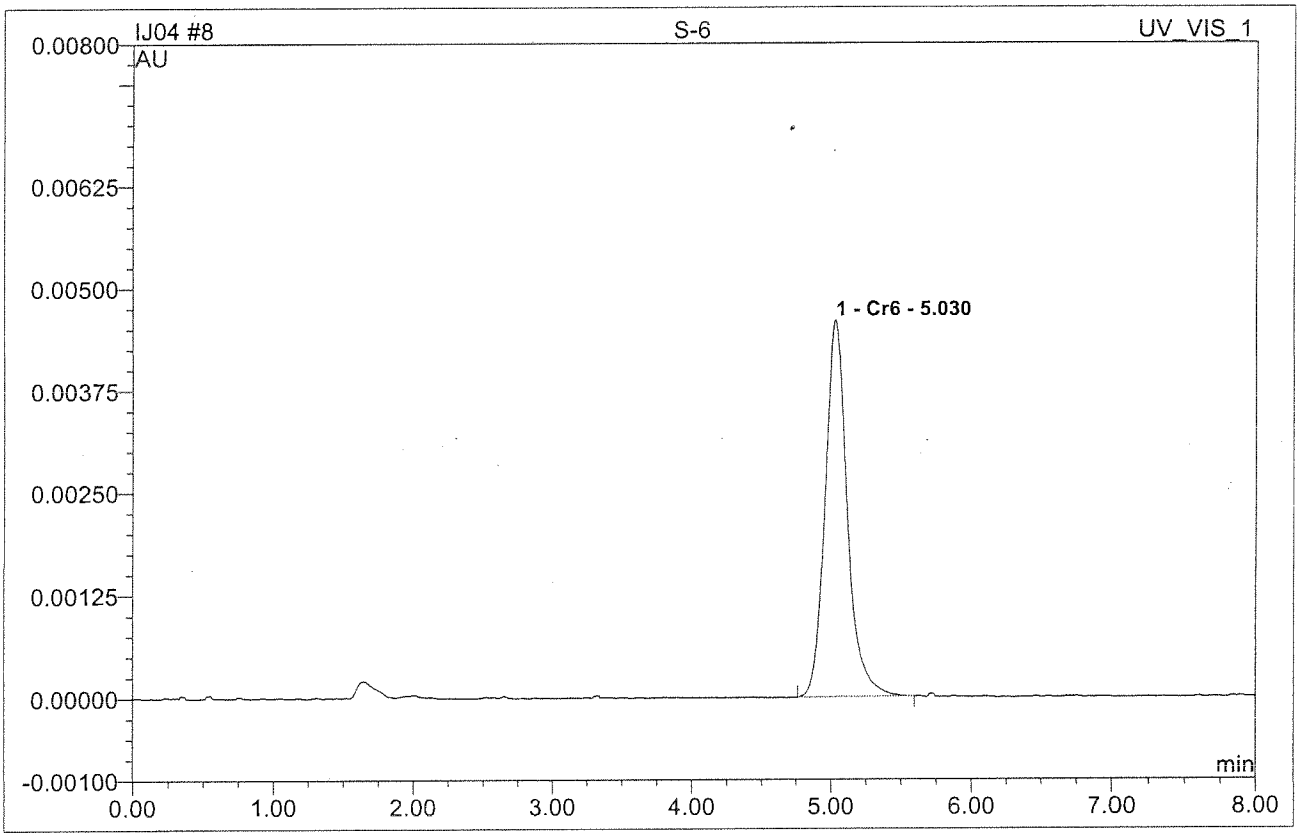
RW 10-11-16

Chromeleon (c) Dionex 1996-2001
Version 6.70 SP2a Build 1871

IJ04 008 S-6

7.5 PPB

Sample Name:	**S-6**	*Injection Volume:*	**250.0**
Vial Number:	**0**	*Channel:*	**UV_VIS_1**
Sample Type:	**standard**	*Wavelength:*	**n.a.**
Control Program:	**Cr6 Program**	*Bandwidth:*	**n.a.**
Quantif. Method:	**IC59J04**	*Dilution Factor:*	**1**
Recording Time:	**10/4/2016 15:59**	*Sample Weight:*	**1.0000**
Run Time (min):	**8.00**	*Sample Amount:*	**1.0000**



No.	Ret.Time min	Peak Name	Height AU	Area AU*min	Rel.Area %	Amount	Type
1	5.03	Cr6	0.0045970	0.0008488	100.00	7.525	BMB
Total:			0.005	0.001	100.00	7.525	

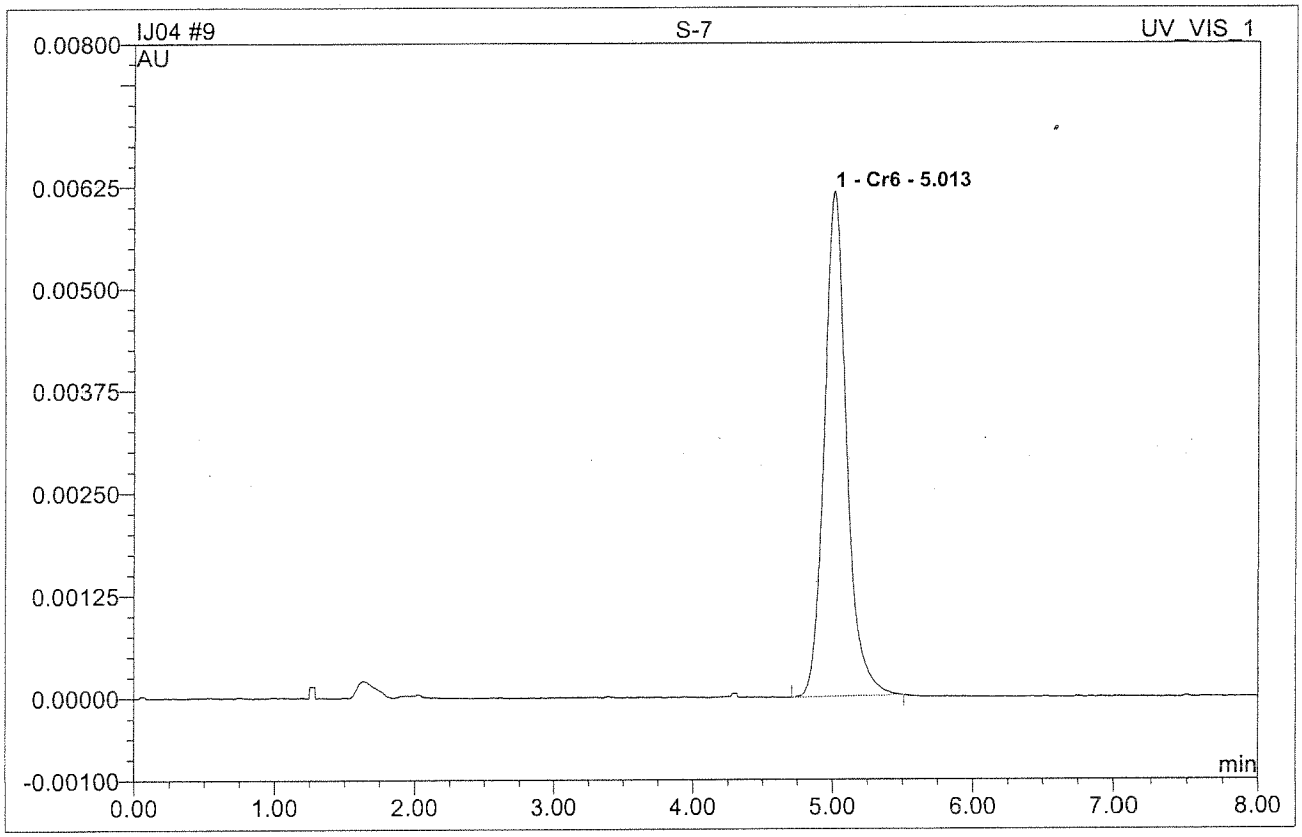
10-11-16

Chromeleon (c) Dionex 1996-2001
Version 6.70 SP2a Build 1871

IJ04 009 S-7

10 PPB

Sample Name:	**S-7**	*Injection Volume:*	**250.0**
Vial Number:	**0**	*Channel:*	**UV_VIS_1**
Sample Type:	**standard**	*Wavelength:*	**n.a.**
Control Program:	**Cr6 Program**	*Bandwidth:*	**n.a.**
Quantif. Method:	**IC59J04**	*Dilution Factor:*	**1**
Recording Time:	**10/4/2016 16:09**	*Sample Weight:*	**1.0000**
Run Time (min):	**8.00**	*Sample Amount:*	**1.0000**



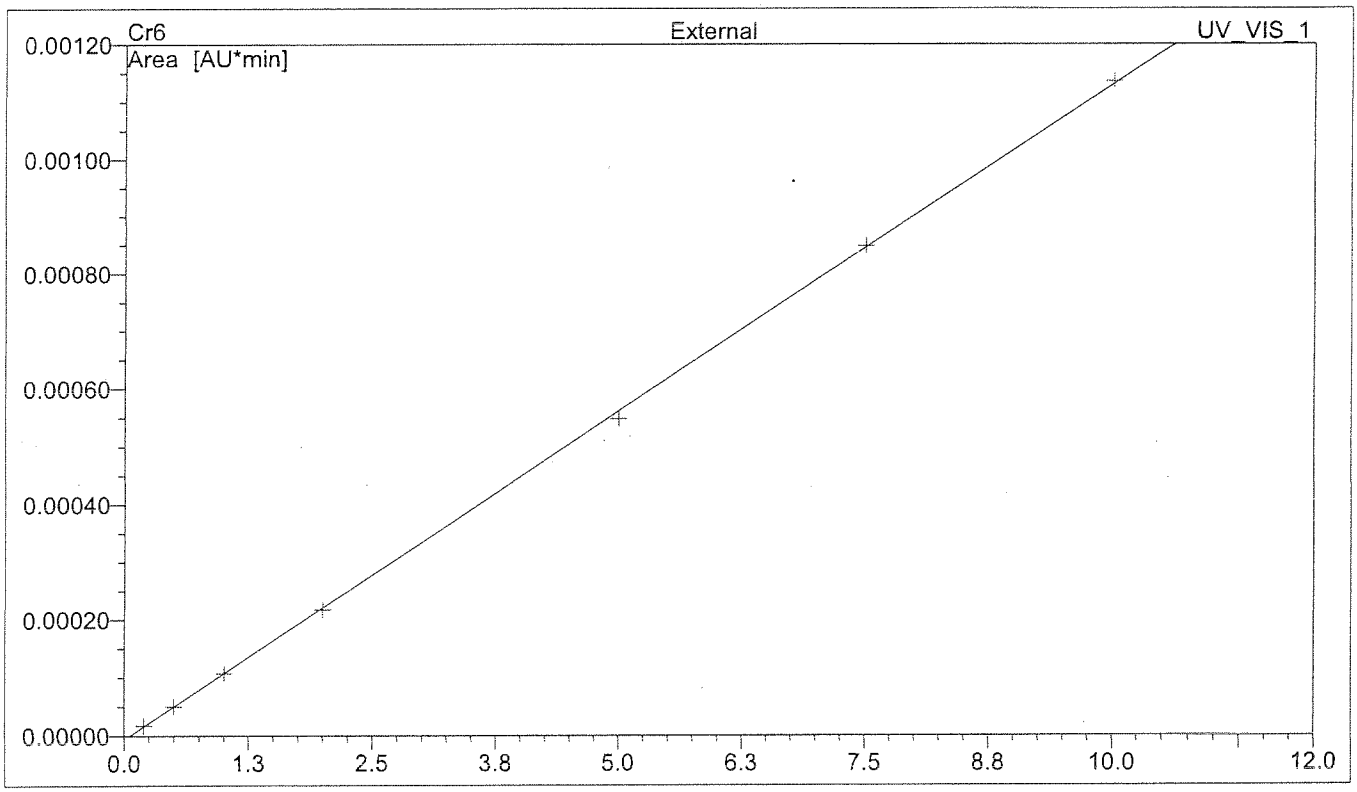
No.	Ret.Time min	Peak Name	Height AU	Area AU*min	Rel.Area %	Amount	Type
1	5.01	Cr6	0.0061800	0.0011354	100.00	10.045	BMB
Total:			0.006	0.001	100.00	10.045	

10-11-16

9 S-7

10 PPB

Sample Name:	**S-7**	*Injection Volume:*	**250.0**
Vial Number:	**0**	*Channel:*	**UV_VIS_1**
Sample Type:	**standard**	*Wavelength:*	**n.a.**
Control Program:	**Cr6 Program**	*Bandwidth:*	**n.a.**
Quantif. Method:	**IC59J04**	*Dilution Factor:*	**1.0000**
Recording Time:	**10/4/2016 16:09**	*Sample Weight:*	**1.0000**
Run Time (min):	**8.00**	*Sample Amount:*	**1.0000**



No.	Ret.Time min	Peak Name	Cal.Type	Points	R-Square	Offset	Slope	Curve
1	5.01	Cr6	0LOff	7	0.9998	-0.0000068	0.0001137	0.0000
Average:					0.9998	0.0000	0.0001	0.0000

10-11-16

Chromeleon (c) Dionex 1996-2001
Version 6.70 SP2a Build 1871

SECOND SOURCE VERIFICATION

IC RESULT FORM CalVersion : CR6.J04/IJ04 (2016)

LFID	LSID	SelCmp	Cr6	DateTime	DF
IJ04001	IB	C	ND	10/04/1614:44	1
IJ04002	S-0	C	ND	10/04/1614:56	1
IJ04003	S-1	C	0.214	10/04/1615:06	1
IJ04004	S-2	C	0.500	10/04/1615:17	1
IJ04005	S-3	C	1.002	10/04/1615:27	1
IJ04006	S-4	C	1.972	10/04/1615:38	1
IJ04007	S-5	C	4.883	10/04/1615:48	1
IJ04008	S-6	C	7.525	10/04/1615:59	1
IJ04009	S-7	C	10.045	10/04/1616:09	1
IJ04010	ICV	C	101%	10/04/1616:19	1
IJ04011	ICB	C	ND	10/04/1616:33	1

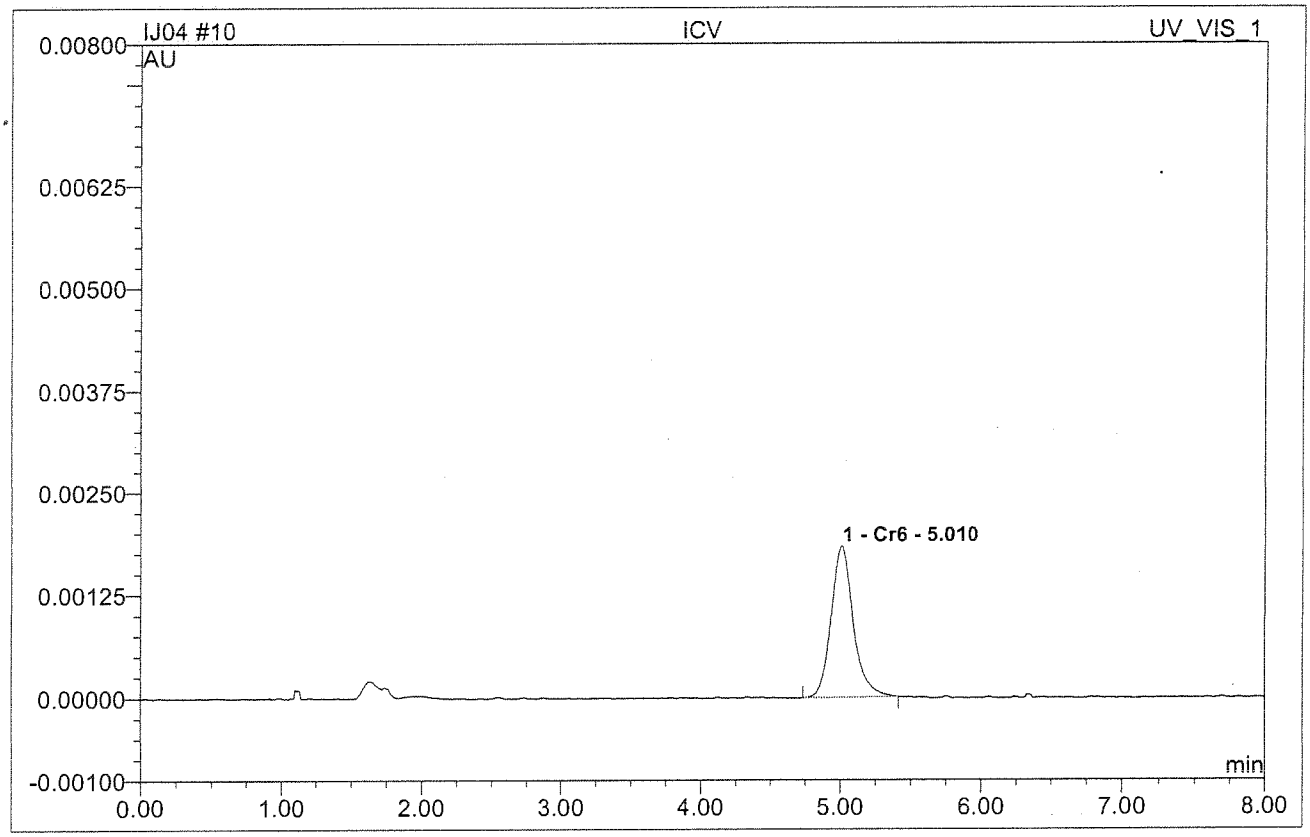
IC59J04.MET
BUFFER (SW4-03-25-04)

10-11-16

IJ04 010 ICV

3.0 PPB

Sample Name:	**ICV**	*Injection Volume:*	**250.0**
Vial Number:	**0**	*Channel:*	**UV_VIS_1**
Sample Type:	**unknown**	*Wavelength:*	**n.a.**
Control Program:	**Cr6 Program**	*Bandwidth:*	**n.a.**
Quantif. Method:	**IC59J04**	*Dilution Factor:*	**1**
Recording Time:	**10/4/2016 16:19**	*Sample Weight:*	**1.0000**
Run Time (min):	**8.00**	*Sample Amount:*	**1.0000**



No.	Ret.Time min	Peak Name	Height AU	Area AU*min	Rel.Area %	Amount		Type
1	5.01	Cr6	0.0018390	0.0003367	100.00	3.021	✓	BMB
Total:			0.002	0.000	100.00	3.021		

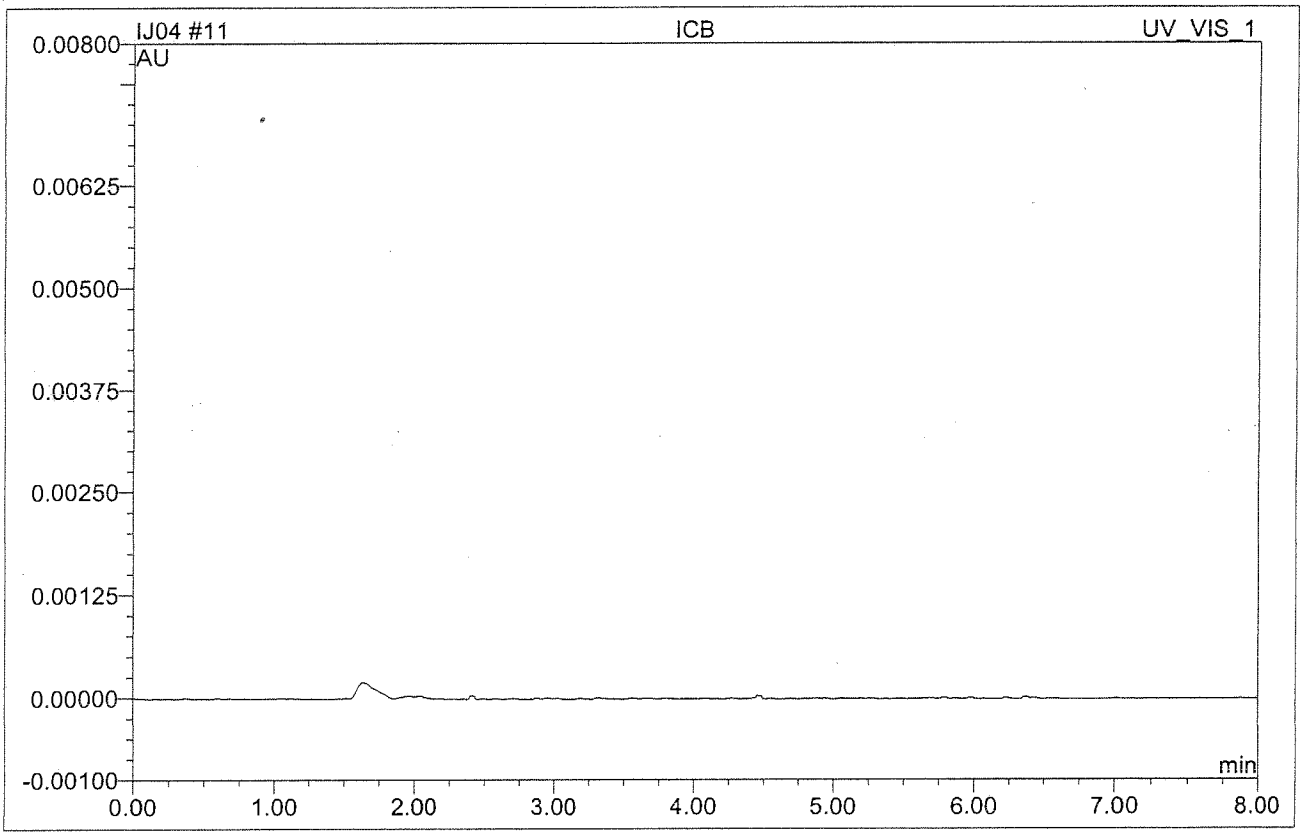
✓ = (area - offset) / slope

10-11-16

Chromeleon (c) Dionex 1996-2001
Version 6.70 SP2a Build 1871

IJ04 011 ICB

Sample Name:	**ICB**	*Injection Volume:*	**250.0**
Vial Number:	**0**	*Channel:*	**UV_VIS_1**
Sample Type:	**unknown**	*Wavelength:*	**n.a.**
Control Program:	**Cr6 Program**	*Bandwidth:*	**n.a.**
Quantif. Method:	**IC59J04**	*Dilution Factor:*	**1**
Recording Time:	**10/4/2016 16:33**	*Sample Weight:*	**1.0000**
Run Time (min):	**8.00**	*Sample Amount:*	**1.0000**



No.	Ret.Time min	Peak Name	Height AU	Area AU*min	Rel.Area %	Amount	Type
Total:			0.000	0.000	0.00	0.000	

JU
10-11-16

DAILY CALIBRATIONS

IC RESULT FORM CalVersion : CR6.J04/IJ04 (2016)

LFID	LSID	SelCmp	Cr6	DateTime	DF
IJ06001	LOW-LEVEL	C	0.235	10/06/1611:39	1
IJ06002	CCV9	C	95%	10/06/1611:49	1
IJ06003	CCB9	C	ND	10/06/1611:59	1
IJ06004	HCJ003WB	C	ND	10/06/1612:10	1
IJ06005	HCJ003WL	C	1.936	10/06/1612:20	1
IJ06006	HCJ003WC	C	1.929	10/06/1612:31	1
IJ06007	J012-01	C	6.386	10/06/1612:41	1
IJ06008	J012-01I	C	6.390	10/06/1612:53	5
IJ06009	J012-01ID	C	6.155	10/06/1613:04	5
IJ06010	J012-01IM	C	11.255	10/06/1613:14	5
IJ06011	J012-02	C	ND	10/06/1613:24	1
IJ06012	J012-02M	C	0.919	10/06/1613:35	1
IJ06013	CCV11	C	96%	10/06/1613:45	1
IJ06014	CCB11	C	ND	10/06/1613:56	1

Continuing Calibration Summary Form

Client : ASSET LABS
Project : PG&E HINKLEY
SDG : 16J012
Method : E218.6
QuantMethod : IC59J04
InstrumentID: 59
Parameter : HEXAVALENT CHROMIUM

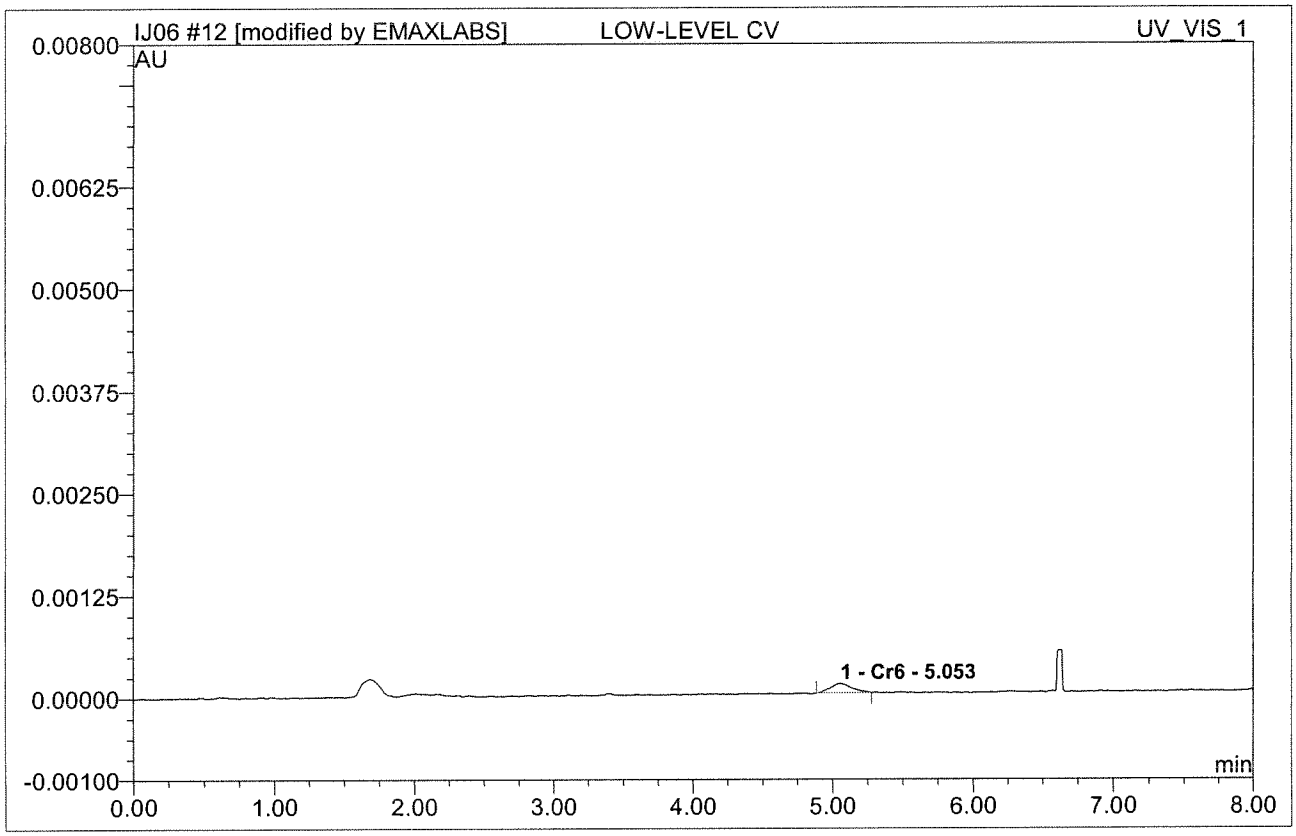
LFID	LSID	DF	Expected	Result	Unit	%Rec	AnalysisDateTime
IJ06002	CCV9	1	2	1.91	ug/L	95	10/06/1611:49
IJ06013	CCV11	1	2	1.917	ug/L	96	10/06/1613:45

CCV Acceptance Criteria: 90-110%

IJ06 001 LOW-LEVEL CV

0.2 PPB

Sample Name:	**LOW-LEVEL CV**	*Injection Volume:*	**250.0**
Vial Number:	**0**	*Channel:*	**UV_VIS_1**
Sample Type:	**unknown**	*Wavelength:*	**n.a.**
Control Program:	**Cr6 Program**	*Bandwidth:*	**n.a.**
Quantif. Method:	**IC59J04**	*Dilution Factor:*	**1**
Recording Time:	**10/6/2016 11:39**	*Sample Weight:*	**1.0000**
Run Time (min):	**8.00**	*Sample Amount:*	**1.0000**



No.	Ret.Time min	Peak Name	Height AU	Area AU*min	Rel.Area %	Amount	Type
1	5.05	Cr6	0.0001150	0.0000199	100.00	0.235	BMB
Total:			0.000	0.000	100.00	0.235	

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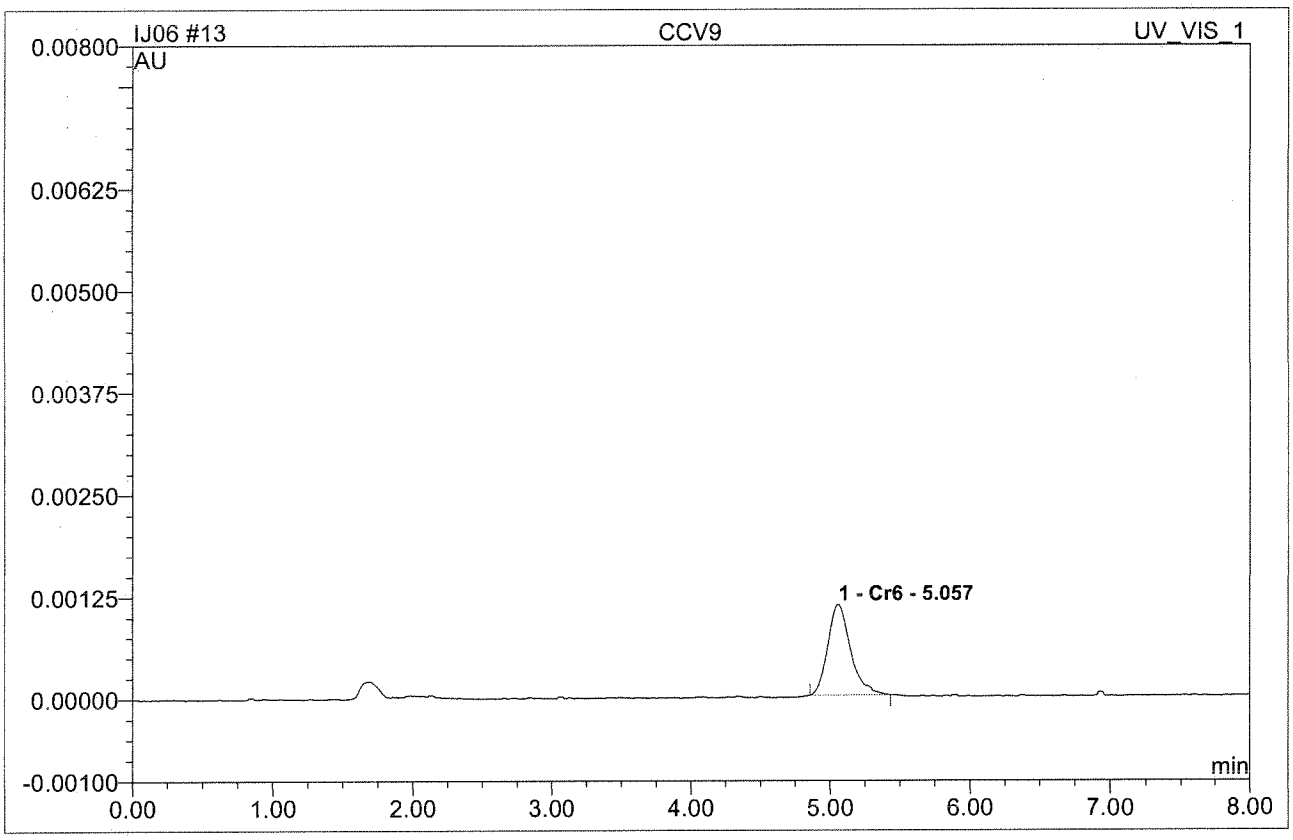
Version 6.70 SP2a Build 1871

IJ06 002 CCV9

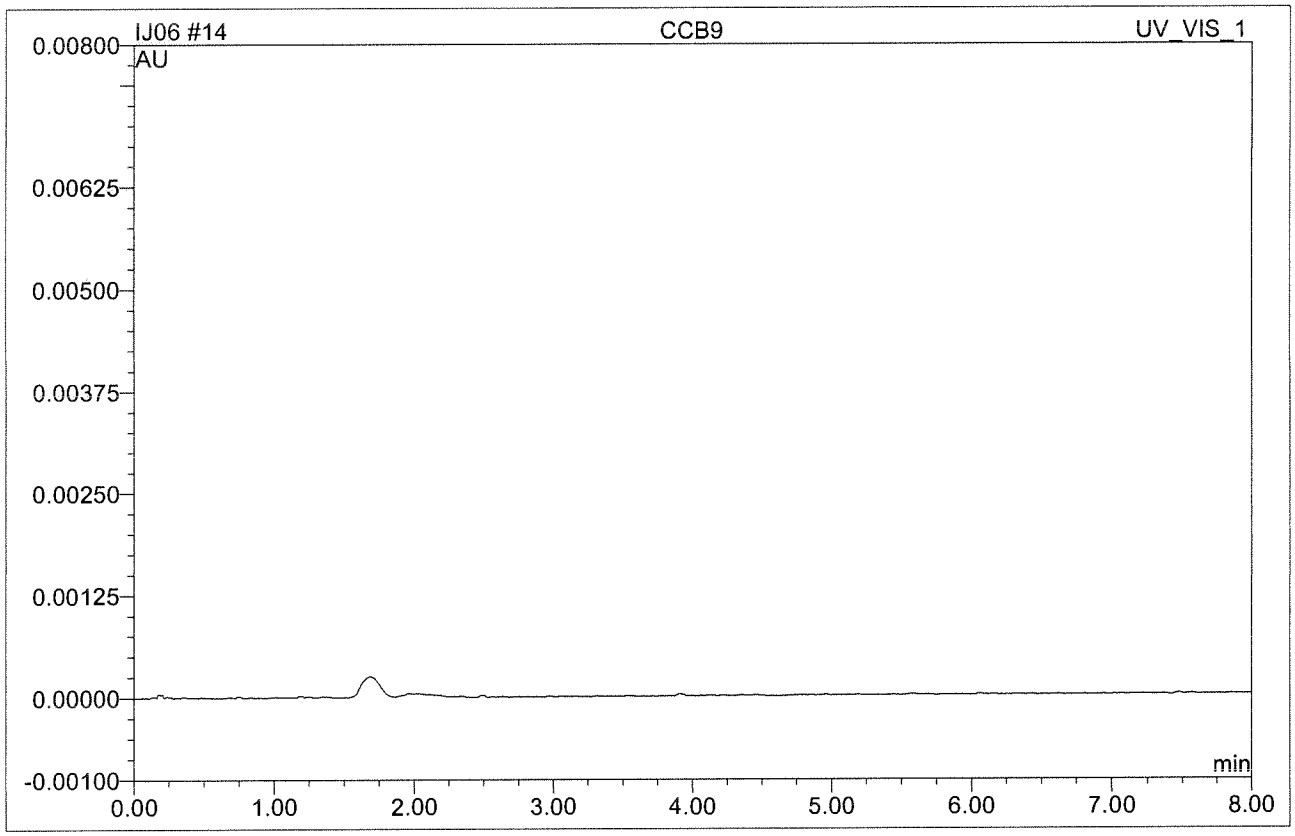
Sample Name:	**CCV9**	*Injection Volume:*	**250.0**
Vial Number:	**0**	*Channel:*	**UV_VIS_1**
Sample Type:	**unknown**	*Wavelength:*	**n.a.**
Control Program:	**Cr6 Program**	*Bandwidth:*	**n.a.**
Quantif. Method:	**IC59J04**	*Dilution Factor:*	**1**
Recording Time:	**10/6/2016 11:49**	*Sample Weight:*	**1.0000**
Run Time (min):	**8.00**	*Sample Amount:*	**1.0000**



No.	Ret.Time min	Peak Name	Height AU	Area AU*min	Rel.Area %	Amount	Type
1	5.06	Cr6	0.0011150	0.0002104	100.00	1.910	BMB
Total:			0.001	0.000	100.00	1.910	

IJ06 003 CCB9

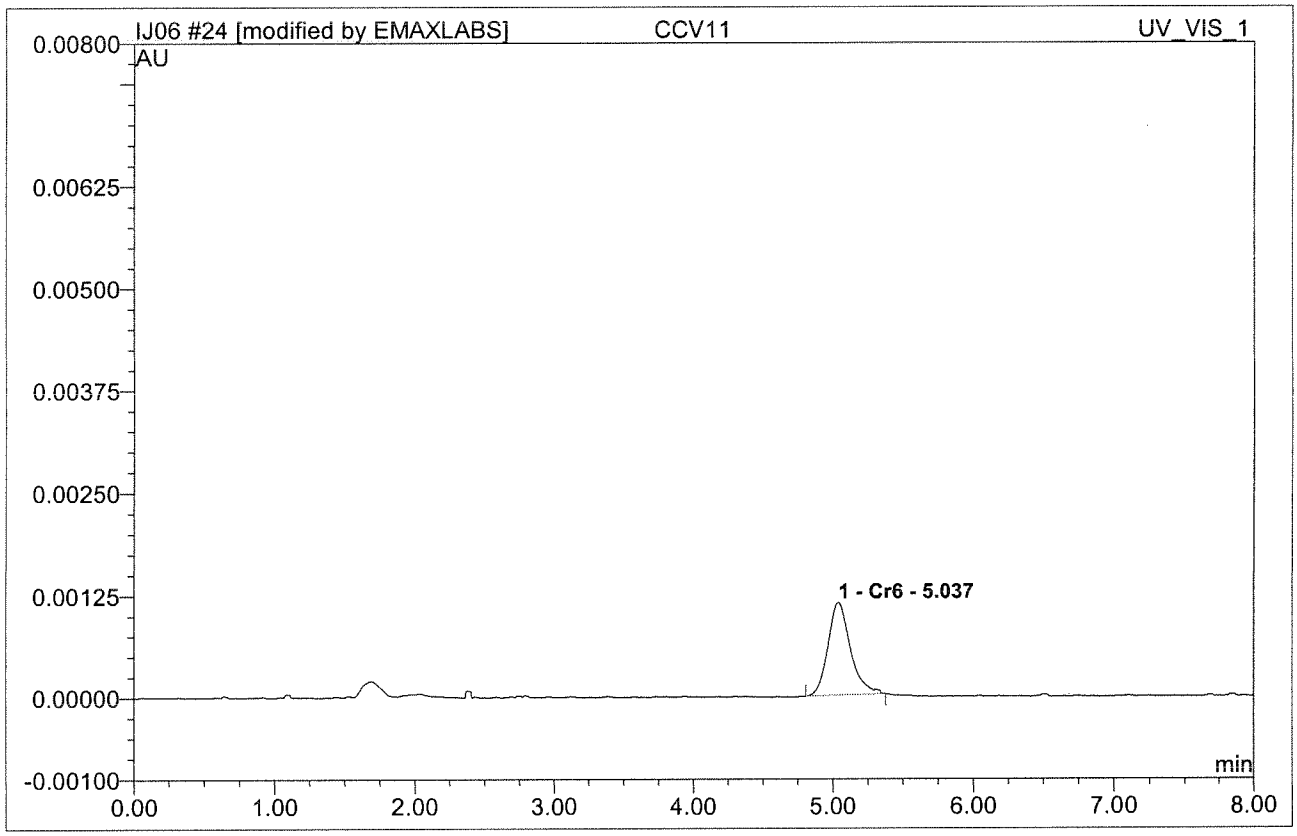
Sample Name:	**CCB9**	*Injection Volume:*	**250.0**
Vial Number:	**0**	*Channel:*	**UV_VIS_1**
Sample Type:	**unknown**	*Wavelength:*	**n.a.**
Control Program:	**Cr6 Program**	*Bandwidth:*	**n.a.**
Quantif. Method:	**IC59J04**	*Dilution Factor:*	**1**
Recording Time:	**10/6/2016 11:59**	*Sample Weight:*	**1.0000**
Run Time (min):	**8.00**	*Sample Amount:*	**1.0000**



No.	Ret.Time min	Peak Name	Height AU	Area AU*min	Rel.Area %	Amount	Type
Total:			0.000	0.000	0.00	0.000	

IJ06 013 CCV11

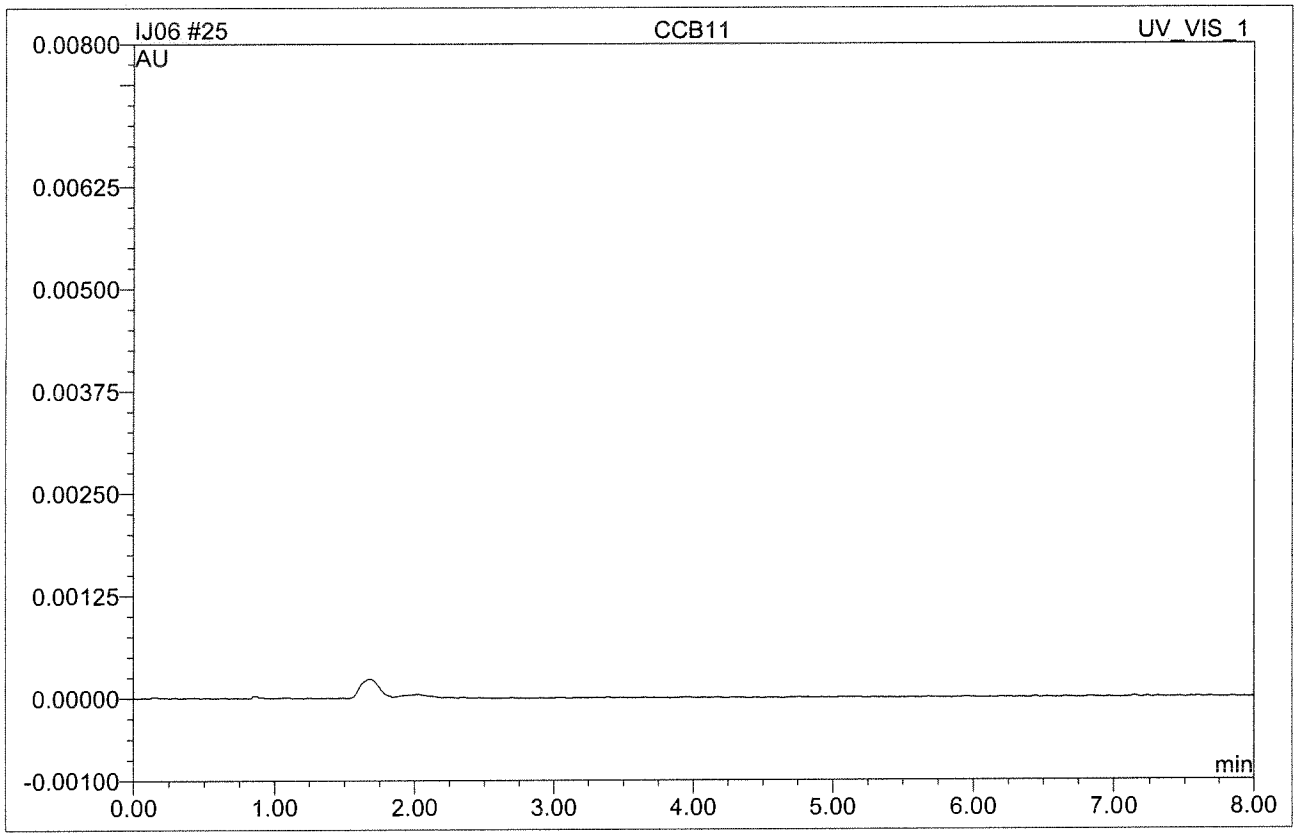
Sample Name:	**CCV11**	*Injection Volume:*	**250.0**
Vial Number:	**0**	*Channel:*	**UV_VIS_1**
Sample Type:	**unknown**	*Wavelength:*	**n.a.**
Control Program:	**Cr6 Program**	*Bandwidth:*	**n.a.**
Quantif. Method:	**IC59J04**	*Dilution Factor:*	**1**
Recording Time:	**10/6/2016 13:45**	*Sample Weight:*	**1.0000**
Run Time (min):	**5.90**	*Sample Amount:*	**1.0000**



No.	Ret.Time min	Peak Name	Height AU	Area AU*min	Rel.Area %	Amount	Type
1	5.04	Cr6	0.0011370	0.0002112	100.00	1.917	BMB*
Total:			0.001	0.000	100.00	1.917	

IJ06 014 CCB11

Sample Name:	**CCB11**	*Injection Volume:*	**250.0**
Vial Number:	**0**	*Channel:*	**UV_VIS_1**
Sample Type:	**unknown**	*Wavelength:*	**n.a.**
Control Program:	**Cr6 Program**	*Bandwidth:*	**n.a.**
Quantif. Method:	**IC59J04**	*Dilution Factor:*	**1**
Recording Time:	**10/6/2016 13:56**	*Sample Weight:*	**1.0000**
Run Time (min):	**8.00**	*Sample Amount:*	**1.0000**



No.	Ret.Time min	Peak Name	Height AU	Area AU*min	Rel.Area %	Amount	Type
Total:			0.000	0.000	0.00	0.000	

ANALYTICAL LOG(S)

EMAX LABORATORIES, INC.

ANALYSIS RUN LOG
for
HEXAVALENT CHROMIUM IC

Note: For samples and relevant QCs/Standards analyzed, refer to attached analytical sequence.

Comments:

1,5 Diphenylcarbohydrozide : 0.5 g SW9A-04-035

MeOH : 100 ml SW1A-006-02-16

H_2SO_4 : 28 ml SW1A-005-16-23

$(NH_4)_2SO_4$: 66 g SW9A-04-038

NH_4OH : 13 ml ↓ -036

☐ pH Adjusted Water ID #:
(range 9.3-9.5)

☑ Buffer (10 mL → 100 mL) SW4-03-25-04

Reagent Water ID #:

Linear Range (ppb): S-0 - 0 ppb
S-1 - 0.2
S-2 - 0.5
S-3 - 1.0
S-4 - 2.0
S-5 - 5.0
S-6 - 7.5
S-7 - 10.0
ICV - 3.0 ppb

Column: Dionex IonPac™ AS7 (4x250mm) serial # 015353
Guard Column: Dionex IonPac™ NG1 (4x35mm) serial # 024302
Wavelength: 530 nm
Flow rate: 1.00 mL/min
Inj. volume: 250 uL

AS 10/4/16 ~~HCJ~~ HCJ001W : J012

Book #: A59-039
Instrument No.: 59
Pipette ID: SW9A-04-017
SW9A-04-025
SW8A-02-21
Balance ID: 10601202
Analytical Sequence: IJ04
Method File: IC59J04
Analytical Batch: HCJ001W

SOP #	Rev. #
☑ EMAX-218.6	6
☑ EMAX-7199	5
☐ EMAX-	

STANDARDS ID	
ICAL	SW9B-06-01-03
ICV	SW9B-06-01-04
CCV	SW9B-06-01-06
LCS	SW9B-06-01-05
MS	SW9B-05-100-17

ELECTRONIC DATA ARCHIVAL	
Location	Date
☐ CHROMELEON	
☐	

5 mL vial kit Lot #: 038008 Snap-Seal Container
0.45 µm filter lot #: 21888550 4 oz: 01016001
0.2 µm filter lot #: 21896060 1.5 oz: 08716003
Analyzed By: AS/KG
Date: 10/04/16

Sequence: IJ04
Operator: EMAXLABS

Printed: 10/5/2016 9:45:21 AM

Title: Temporary sequence for manual data acquisition
Datasource: DG7B3Q91_local
Location: DX600\2016
Timebase: DX600
#Samples: 24

Created: 10/4/2016 1:05:45 PM by EMAXLABS
(Modified, not saved)

No.	Sequence	Sample ID	Name	Type	Inj. Vol.	Program	Method	Status	Inj. Date/Time	Dil. Factor	Comment
1	IJ04	001	IB	Unknown	250.0	Cr6 Program	IC59J04	Finished	10/4/2016 2:44:47 PM	1.0000	BUFFER
2	IJ04	002	S-0	Unknown	250.0	Cr6 Program	IC59J04	Finished	10/4/2016 2:56:33 PM	1.0000	
3	IJ04	003	S-1	Standard	250.0	Cr6 Program	IC59J04	Finished	10/4/2016 3:06:58 PM	1.0000	0.2 PPB
4	IJ04	004	S-2	Standard	250.0	Cr6 Program	IC59J04	Finished	10/4/2016 3:17:22 PM	1.0000	0.5 PPB
5	IJ04	005	S-3	Standard	250.0	Cr6 Program	IC59J04	Finished	10/4/2016 3:27:47 PM	1.0000	1.0 PPB
6	IJ04	006	S-4	Standard	250.0	Cr6 Program	IC59J04	Finished	10/4/2016 3:38:11 PM	1.0000	2.0 PPB
7	IJ04	007	S-5	Standard	250.0	Cr6 Program	IC59J04	Finished	10/4/2016 3:48:36 PM	1.0000	5.0 PPB
8	IJ04	008	S-6	Standard	250.0	Cr6 Program	IC59J04	Finished	10/4/2016 3:59:00 PM	1.0000	7.5 PPB
9	IJ04	009	S-7	Standard	250.0	Cr6 Program	IC59J04	Finished	10/4/2016 4:09:24 PM	1.0000	10 PPB
10	IJ04	010	ICV	Unknown	250.0	Cr6 Program	IC59J04	Finished	10/4/2016 4:19:48 PM	1.0000	3.0 PPB
11	IJ04	011	ICB	Unknown	250.0	Cr6 Program	IC59J04	Finished	10/4/2016 4:33:11 PM	1.0000	
12	IJ04	012	CCV1	Unknown	250.0	Cr6 Program	IC59J04	Finished	10/4/2016 4:43:35 PM	1.0000	
13	IJ04	013	CCB1	Unknown	250.0	Cr6 Program	IC59J04	Finished	10/4/2016 4:53:59 PM	1.0000	
14	IJ04	014	HCJ001WB	Unknown	250.0	Cr6 Program	IC59J04	Finished	10/4/2016 5:04:23 PM	1.0000	
15	IJ04	015	HCJ001WL	Unknown	250.0	Cr6 Program	IC59J04	Finished	10/4/2016 5:14:48 PM	1.0000	
16	IJ04	016	HCJ001WC	Unknown	250.0	Cr6 Program	IC59J04	Finished	10/4/2016 5:25:12 PM	1.0000	
17	IJ04	017	J012-01	Unknown	250.0	Cr6 Program	IC59J04	Finished	10/4/2016 5:35:36 PM	1.0000	
18	IJ04	018	J012-01I	Unknown	250.0	Cr6 Program	IC59J04	Finished	10/4/2016 6:16:08 PM	5.0000	DF=5
19	IJ04	019	J012-01ID	Unknown	250.0	Cr6 Program	IC59J04	Finished	10/4/2016 6:26:32 PM	5.0000	DF=5
20	IJ04	020	J012-01IM	Unknown	250.0	Cr6 Program	IC59J04	Finished	10/4/2016 6:36:56 PM	5.0000	DF=5
21	IJ04	021	J012-02	Unknown	250.0	Cr6 Program	IC59J04	Finished	10/4/2016 6:47:21 PM	1.0000	
22	IJ04	022	J012-02M	Unknown	250.0	Cr6 Program	IC59J04	Finished	10/4/2016 6:57:45 PM	1.0000	
23	IJ04	023	CCV3	Unknown	250.0	Cr6 Program	IC59J04	Finished	10/4/2016 7:08:09 PM	1.0000	
24	IJ04	024	CCB3	Unknown	250.0	Cr6 Program	IC59J04	Finished	10/4/2016 7:18:33 PM	1.0000	

FINAL AS/ KG 10/5/16

Chromeleon © Dionex Corporation, Version 6.70 SP2a Build 1871

EMAX LABORATORIES, INC.

ANALYSIS RUN LOG
for
HEXAVALENT CHROMIUM IC

Note: For samples and relevant QCs/Standards analyzed, refer to attached analytical sequence.

Comments:

1,5 Diphenylcarbohydrozide : 0.5 g	SW9A-04-035
MeOH : 100 ml	SW1A-006-02-16
H_2SO_4 : 28 ml	SW1A-005-16-23
$(NH_4)_2SO_4$: 66 g	SW9A-04-038
NH_4OH : 13 ml	↓ -036
☐ pH Adjusted Water ID #: (range 9.3-9.5)	
☑ Buffer (10 mL → 100 mL)	SW4-03-25-04
Reagent Water ID #:	KW1-16-002

HCJ003W : J012

Book #:	A59-039
Instrument No.:	59
Pipette ID:	SW9A-04-017
	SW9A-04-025
	SW8A-02-21
Balance ID:	10601202
Analytical Sequence:	IJ06
Method File:	IC59J04
Analytical Batch:	HCJ003W

SOP #	Rev. #
☑ EMAX-218.6	6
☐ EMAX-7199	5
☐ EMAX-	

STANDARDS ID	
ICAL	—
ICV	—
CCV	SW9B-06-01-09
LCS	↓ -10
MS	SW9B-05-100-17

ELECTRONIC DATA ARCHIVAL	
Location	Date
☐ CHROMELEON	
☐	

5 mL vial kit Lot #: 038008 Snap-Seal Container

0.45 µm filter lot #: 21888550 4 oz: 01016001

0.2 µm filter lot #: 21896060 1.5 oz: 08716003

Analyzed By: KG

Date: 10/6/10

Sequence: IJ06
Operator: EMAXLABS

Printed: 10/6/2016 4:14:12 PM

Title: Temporary sequence for manual data acquisition
Datasource: DG7B3Q91_local
Location: DX600\2016
Timebase: DX600
#Samples: 25

Created: 10/6/2016 10:48:43 AM by EMAXLABS
Last Update: 10/6/2016 2:59:25 PM by EMAXLABS

No.	Sequence	Sample ID	Name	Type	Inj. Vol.	Program	Method	Status	Inj. Date/Time	Dil. Factor	Comment
1	IJ06		IB	Unknown	250.0	Cr6 Program	IC59J04	Finished	10/4/2016 2:44:47 PM	1.0000	BUFFER
2	IJ06		S-0	Unknown	250.0	Cr6 Program	IC59J04	Finished	10/4/2016 2:56:33 PM	1.0000	
3	IJ06		S-1	Standard	250.0	Cr6 Program	IC59J04	Finished	10/4/2016 3:06:58 PM	1.0000	0.2 PPB
4	IJ06		S-2	Standard	250.0	Cr6 Program	IC59J04	Finished	10/4/2016 3:17:22 PM	1.0000	0.5 PPB
5	IJ06		S-3	Standard	250.0	Cr6 Program	IC59J04	Finished	10/4/2016 3:27:47 PM	1.0000	1.0 PPB
6	IJ06		S-4	Standard	250.0	Cr6 Program	IC59J04	Finished	10/4/2016 3:38:11 PM	1.0000	2.0 PPB
7	IJ06		S-5	Standard	250.0	Cr6 Program	IC59J04	Finished	10/4/2016 3:48:36 PM	1.0000	5.0 PPB
8	IJ06		S-6	Standard	250.0	Cr6 Program	IC59J04	Finished	10/4/2016 3:59:00 PM	1.0000	7.5 PPB
9	IJ06		S-7	Standard	250.0	Cr6 Program	IC59J04	Finished	10/4/2016 4:09:24 PM	1.0000	10 PPB
10	IJ06		ICV	Unknown	250.0	Cr6 Program	IC59J04	Finished	10/4/2016 4:19:48 PM	1.0000	3.0 PPB
11	IJ06		ICB	Unknown	250.0	Cr6 Program	IC59J04	Finished	10/4/2016 4:33:11 PM	1.0000	
12	IJ06	001	LOW-LEVEL CV	Unknown	250.0	Cr6 Program	IC59J04	Finished	10/6/2016 11:39:02 AM	1.0000	0.2 PPB
13	IJ06	002	CCV9	Unknown	250.0	Cr6 Program	IC59J04	Finished	10/6/2016 11:49:26 AM	1.0000	
14	IJ06	003	CCB9	Unknown	250.0	Cr6 Program	IC59J04	Finished	10/6/2016 11:59:51 AM	1.0000	
15	IJ06	004	HCJ003WB	Unknown	250.0	Cr6 Program	IC59J04	Finished	10/6/2016 12:10:15 PM	1.0000	
16	IJ06	005	HCJ003WL	Unknown	250.0	Cr6 Program	IC59J04	Finished	10/6/2016 12:20:39 PM	1.0000	
17	IJ06	006	HCJ003WC	Unknown	250.0	Cr6 Program	IC59J04	Finished	10/6/2016 12:31:03 PM	1.0000	
18	IJ06	007	J012-01	Unknown	250.0	Cr6 Program	IC59J04	Finished	10/6/2016 12:41:27 PM	1.0000	
19	IJ06	008	J012-01I	Unknown	250.0	Cr6 Program	IC59J04	Finished	10/6/2016 12:53:39 PM	5.0000	DF=5
20	IJ06	009	J012-01ID	Unknown	250.0	Cr6 Program	IC59J04	Finished	10/6/2016 1:04:03 PM	5.0000	DF=5
21	IJ06	010	J012-01IM	Unknown	250.0	Cr6 Program	IC59J04	Finished	10/6/2016 1:14:28 PM	5.0000	DF=5
22	IJ06	011	J012-02	Unknown	250.0	Cr6 Program	IC59J04	Finished	10/6/2016 1:24:52 PM	1.0000	
23	IJ06	012	J012-02M	Unknown	250.0	Cr6 Program	IC59J04	Finished	10/6/2016 1:35:16 PM	1.0000	
24	IJ06	013	CCV11	Unknown	250.0	Cr6 Program	IC59J04	Finished	10/6/2016 1:45:39 PM	1.0000	
25	IJ06	014	CCB11	Unknown	250.0	Cr6 Program	IC59J04	Finished	10/6/2016 1:56:03 PM	1.0000	

FINAL KG 10/6/16

Chromeleon © Dionex Corporation, Version 6.70 SP2a Build 1871

SAMPLE PRESERVATION

EMAX LABORATORIES, INC.

pH ADJUSTMENTS/SAMPLE PRESERVATION LOG FOR HEXAVALENT CHROMIUM

SOP ☑ EMAX-218.6 Rev. 6 ☐ EMAX-7199 Rev. 5

Matrix: W Start Date: 10/04/16 Time: 11:13 End Date: AS 10/04/16 ~~11:59~~ 10/04/16 Time: 11:59 Book #: PHC-014

Sample Prep ID	Lab Sample ID	Initial pH	Final pH	Notes
01	J012-01	9.34	9.34	no adj. needed
02	~~-03~~ 02 AS 10/04/16	9.37	9.37	↓
03				
04				
05				
06				
07				
08				
09				
10				
11				
12				
13				
14				AS 10/04/16
15				
16				
17				
18				
19				
20				
21				
22				
23				
24				
25				

Standards	ID	pH
Buffer 7	SW1-01-816	7.03
Buffer 10	SW1-01-815	10.03
Check pH Buffer (8)	SW1-01-817	8.01
pH meter	F-7	

Reagent	Standard ID #
NaOH	
$(NH_4)_2SO_4/NH_4OH$	
Reagent Water	

Legend:

Color	Texture	Clarity	Artifacts
Bu = Blue Bl = Black	Cs = Coarse	Cr = Clear	Rk = Rocks
Bn = Brown Gn = Green	Md = Medium	Cy = Cloudy	Sl = Shale
Og = Orange Rd = Red	Fn = Fine	Td = Turbid	Vg = Vegetation
Yw = Yellow			

☑ Samples were received with preservation

Comments:

N

Prepared By: AS/KG

Standard Added By:

Checked By:

RETENTION TIME WINDOW

RETENTION TIME WINDOW
METHOD 218.6/7199

Lab Name:	EMAX	**METHOD:**	EMAX-218.6/7199
Instrument ID:	DX500IC59	**IC COLUMN:**	AS7/AG7 / AS7/NG1
		COLUMN SIZE:	4x250mm

Compound	Ical Mean RT	from	to	Retention Time Window
CHROMIUM VI	**5.02**	4.93	5.12	**0.096**

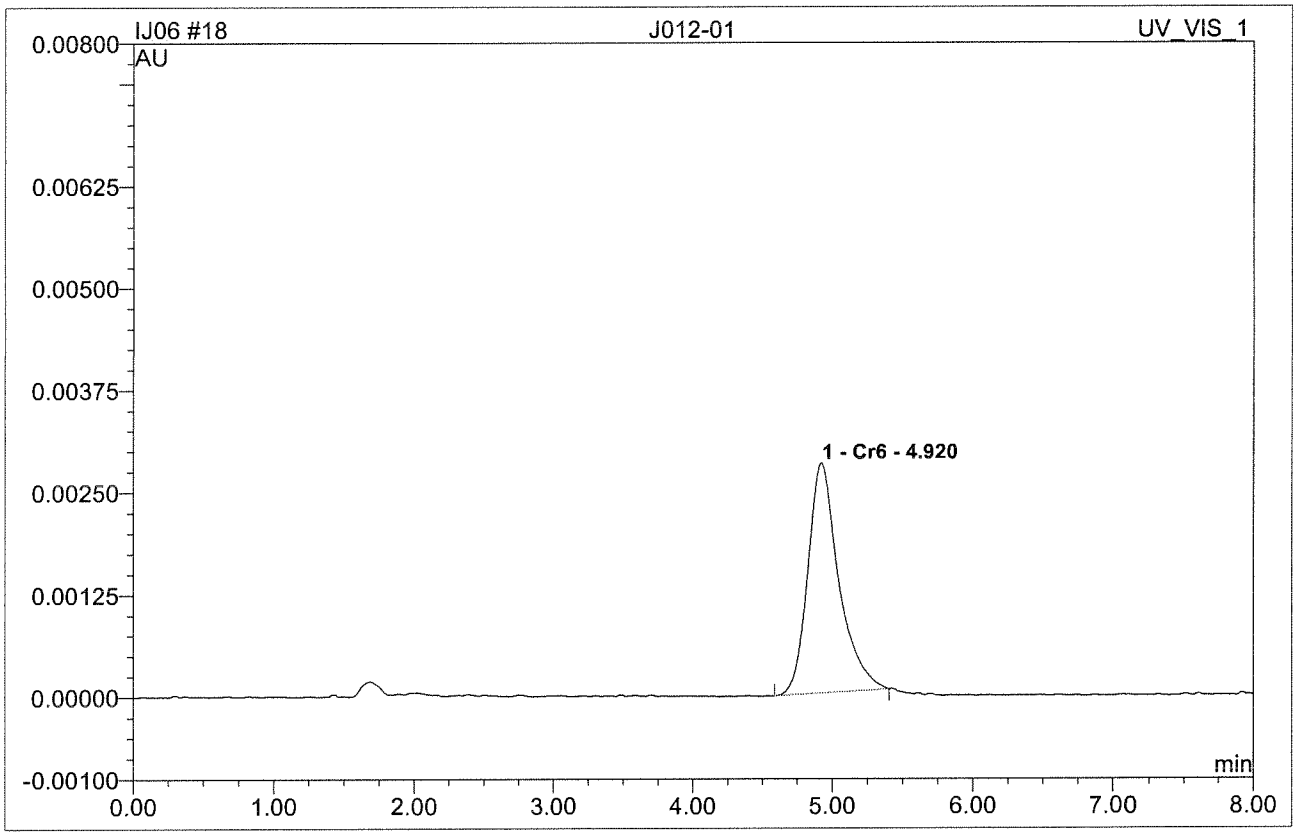
IC59J04

10-11-16

APPENDIX

IJ06 007 J012-01

Sample Name:	**J012-01**	*Injection Volume:*	**250.0**
Vial Number:	**0**	*Channel:*	**UV_VIS_1**
Sample Type:	**unknown**	*Wavelength:*	**n.a.**
Control Program:	**Cr6 Program**	*Bandwidth:*	**n.a.**
Quantif. Method:	**IC59J04**	*Dilution Factor:*	**1**
Recording Time:	**10/6/2016 12:41**	*Sample Weight:*	**1.0000**
Run Time (min):	**8.00**	*Sample Amount:*	**1.0000**



No.	Ret.Time min	Peak Name	Height AU	Area AU*min	Rel.Area %	Amount	Type
1	4.92	Cr6	0.0028070	0.0007193	100.00	6.386	BMB
Total:			0.003	0.001	100.00	6.386	

October 21, 2016

Dan Bush
ARCADIS U.S., Inc. - California
1410 Rocky Ridge Dr #330
Roseville, CA 95661

TEL: (916) 786-3302
FAX:

Workorder No.: N021185

RE: PG&E Topock - GMP, RC000753.801A

Attention: Dan Bush

Enclosed are the results for sample(s) received on October 06, 2016 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 Ribucas for

Puri Romualdo
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.

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 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 further dilution and internal standard met method criteria. Affected analytes for this failed internal standard were reported at dilution that meet internal standard recovery limit.

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
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

ASSET Laboratories

Date: *21-Oct-16*

CLIENT: ARCADIS U.S., Inc. - California
Project: PG&E Topock - GMP, RC000753.801A
Lab Order: N021185
Contract No:

Work Order Sample Summary

Lab Sample ID	Client Sample ID	Matrix	Collection Date	Date Received	Date Reported
N021185-001A	MW-44-115-Q316	Groundwater	10/6/2016 10:09:00 AM	10/6/2016	10/21/2016
N021185-001B	MW-44-115-Q316	Groundwater	10/6/2016 10:09:00 AM	10/6/2016	10/21/2016
N021185-001C	MW-44-115-Q316	Groundwater	10/6/2016 10:09:00 AM	10/6/2016	10/21/2016
N021185-002A	MW-901-Q316	Groundwater	10/6/2016 10:19:00 AM	10/6/2016	10/21/2016
N021185-002B	MW-901-Q316	Groundwater	10/6/2016 10:19:00 AM	10/6/2016	10/21/2016
N021185-002C	MW-901-Q316	Groundwater	10/6/2016 10:19:00 AM	10/6/2016	10/21/2016
N021185-003A	MW-46-175-Q316	Groundwater	10/6/2016 11:37:00 AM	10/6/2016	10/21/2016
N021185-003B	MW-46-175-Q316	Groundwater	10/6/2016 11:37:00 AM	10/6/2016	10/21/2016
N021185-003C	MW-46-175-Q316	Groundwater	10/6/2016 11:37:00 AM	10/6/2016	10/21/2016
N021185-004A	MW-34-100-Q316	Groundwater	10/6/2016 9:03:00 AM	10/6/2016	10/21/2016
N021185-004B	MW-34-100-Q316	Groundwater	10/6/2016 9:03:00 AM	10/6/2016	10/21/2016
N021185-004C	MW-34-100-Q316	Groundwater	10/6/2016 9:03:00 AM	10/6/2016	10/21/2016

CLIENT:	ARCADIS U.S., Inc. - California	**Client Sample ID:**	MW-44-115-Q316
Lab Order:	N021185	**Collection Date:**	10/6/2016 10:09:00 AM
Project:	PG&E Topock - GMP, RC000753.801A	**Matrix:**	GROUNDWATER
Lab ID:	N021185-001		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
HEXAVALENT CHROMIUM BY IC							
			EPA 218.6				
RunID: **NV00922-IC7_161013B** QC Batch: **R111101**				PrepDate			Analyst: **RAB**
Hexavalent Chromium	16	0.33	1.0		µg/L	5	10/13/2016 02:08 PM
DISSOLVED METALS BY ICP-MS							
			EPA 3010A		**EPA 6020**		
RunID: **NV00922-ICP7_161010B** QC Batch: **59902**				PrepDate	**10/7/2016**		Analyst: **CEI**
Chromium	18	0.019	1.0		µg/L	1	10/11/2016 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

CLIENT:	ARCADIS U.S., Inc. - California	**Client Sample ID:**	MW-901-Q316
Lab Order:	N021185	**Collection Date:**	10/6/2016 10:19:00 AM
Project:	PG&E Topock - GMP, RC000753.801A	**Matrix:**	GROUNDWATER
Lab ID:	N021185-002		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
HEXAVALENT CHROMIUM BY IC							
			EPA 218.6				
RunID: **NV00922-IC7_161013B** QC Batch: **R111101**				PrepDate			Analyst: **RAB**
Hexavalent Chromium	16	0.33	1.0		µg/L	5	10/13/2016 02:19 PM
DISSOLVED METALS BY ICP-MS							
			EPA 3010A		**EPA 6020**		
RunID: **NV00922-ICP7_161010B** QC Batch: **59902**				PrepDate	**10/7/2016**		Analyst: **CEI**
Chromium	18	0.019	1.0		µg/L	1	10/11/2016 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

CLIENT:	ARCADIS U.S., Inc. - California	**Client Sample ID:**	MW-46-175-Q316
Lab Order:	N021185	**Collection Date:**	10/6/2016 11:37:00 AM
Project:	PG&E Topock - GMP, RC000753.801A	**Matrix:**	GROUNDWATER
Lab ID:	N021185-003		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
HEXAVALENT CHROMIUM BY IC							
			EPA 218.6				
RunID: **NV00922-IC7_161013B**	QC Batch: **R111101**			PrepDate			Analyst: **RAB**
Hexavalent Chromium	9.1	0.33	1.0		µg/L	5	10/13/2016 11:05 PM
DISSOLVED METALS BY ICP-MS							
	EPA 3010A		**EPA 6020**				
RunID: **NV00922-ICP7_161010B**	QC Batch: **59902**			PrepDate	**10/7/2016**		Analyst: **CEI**
Chromium	10	0.019	1.0		µg/L	1	10/11/2016 02:33 AM

Qualifiers:

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

CLIENT:	ARCADIS U.S., Inc. - California	**Client Sample ID:**	MW-34-100-Q316
Lab Order:	N021185	**Collection Date:**	10/6/2016 9:03:00 AM
Project:	PG&E Topock - GMP, RC000753.801A	**Matrix:**	GROUNDWATER
Lab ID:	N021185-004		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
HEXAVALENT CHROMIUM BY IC							
			EPA 218.6				
RunID: **NV00922-IC7_161014B** QC Batch: **R111102**				PrepDate			Analyst: **RAB**
Hexavalent Chromium	1.3	0.33	1.0		µg/L	5	10/14/2016 05:09 PM
DISSOLVED METALS BY ICP-MS							
		EPA 3010A		**EPA 6020**			
RunID: **NV00922-ICP7_161010B** QC Batch: **59902**				PrepDate	**10/7/2016**		Analyst: **CEI**
Chromium	1.7	0.019	1.0		µg/L	1	10/11/2016 02:45 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

CLIENT: ARCADIS U.S., Inc. - California
Work Order: N021185
Project: PG&E Topock - GMP, RC000753.801A

ANALYTICAL QC SUMMARY REPORT

TestCode: 218.6_WPGE

Sample ID **LCS-R111101**	SampType: **LCS**	TestCode: **218.6_WPGE**	Units: **µg/L**	Prep Date:	RunNo: **111101**
Client ID: **LCSW**	Batch ID: **R111101**	TestNo: **EPA 218.6**		Analysis Date: **10/13/2016**	SeqNo: **2450321**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	4.914	0.20	5.000	0	98.3	90	110				

Sample ID **MB-R111101**	SampType: **MBLK**	TestCode: **218.6_WPGE**	Units: **µg/L**	Prep Date:	RunNo: **111101**
Client ID: **PBW**	Batch ID: **R111101**	TestNo: **EPA 218.6**		Analysis Date: **10/13/2016**	SeqNo: **2450322**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	ND	0.20									

Sample ID **N021186-001AMS**	SampType: **MS**	TestCode: **218.6_WPGE**	Units: **µg/L**	Prep Date:	RunNo: **111101**
Client ID: **ZZZZZZ**	Batch ID: **R111101**	TestNo: **EPA 218.6**		Analysis Date: **10/13/2016**	SeqNo: **2450330**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	1.578	0.20	1.000	0.5654	101	90	110				

Sample ID **N021186-002AMS**	SampType: **MS**	TestCode: **218.6_WPGE**	Units: **µg/L**	Prep Date:	RunNo: **111101**
Client ID: **ZZZZZZ**	Batch ID: **R111101**	TestNo: **EPA 218.6**		Analysis Date: **10/13/2016**	SeqNo: **2450331**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	1.801	0.20	1.000	0.8186	98.2	90	110				

Sample ID **N021186-003AMS**	SampType: **MS**	TestCode: **218.6_WPGE**	Units: **µg/L**	Prep Date:	RunNo: **111101**
Client ID: **ZZZZZZ**	Batch ID: **R111101**	TestNo: **EPA 218.6**		Analysis Date: **10/13/2016**	SeqNo: **2450332**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	847.660	10	250.0	577.9	108	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: N021185
Project: PG&E Topock - GMP, RC000753.801A

ANALYTICAL QC SUMMARY REPORT

TestCode: 218.6_WPGE

Sample ID **N021185-001AMS** SampType: **MS** TestCode: **218.6_WPGE** Units: **µg/L** Prep Date: RunNo: **111101**
Client ID: **ZZZZZZ** Batch ID: **R111101** TestNo: **EPA 218.6** Analysis Date: **10/13/2016** SeqNo: **2450333**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	40.489	1.0	25.00	16.01	97.9	90	110				

Sample ID **N021185-001AMSD** SampType: **MSD** TestCode: **218.6_WPGE** Units: **µg/L** Prep Date: RunNo: **111101**
Client ID: **ZZZZZZ** Batch ID: **R111101** TestNo: **EPA 218.6** Analysis Date: **10/13/2016** SeqNo: **2450334**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	40.996	1.0	25.00	16.01	99.9	90	110	40.49	1.24	20	

Sample ID **N021185-002ADUP** SampType: **DUP** TestCode: **218.6_WPGE** Units: **µg/L** Prep Date: RunNo: **111101**
Client ID: **ZZZZZZ** Batch ID: **R111101** TestNo: **EPA 218.6** Analysis Date: **10/13/2016** SeqNo: **2450335**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	16.696	1.0						16.25	2.71	20	

Sample ID **N021185-002AMS** SampType: **MS** TestCode: **218.6_WPGE** Units: **µg/L** Prep Date: RunNo: **111101**
Client ID: **ZZZZZZ** Batch ID: **R111101** TestNo: **EPA 218.6** Analysis Date: **10/13/2016** SeqNo: **2450336**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	41.640	1.0	25.00	16.25	102	90	110				

Sample ID **N021185-003AMS** SampType: **MS** TestCode: **218.6_WPGE** Units: **µg/L** Prep Date: RunNo: **111101**
Client ID: **ZZZZZZ** Batch ID: **R111101** TestNo: **EPA 218.6** Analysis Date: **10/13/2016** SeqNo: **2450342**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	14.292	1.0	5.000	9.083	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: N021185
Project: PG&E Topock - GMP, RC000753.801A

ANALYTICAL QC SUMMARY REPORT

TestCode: 218.6_WPGE

Sample ID	LCS-R111102	SampType:	LCS	TestCode:	218.6_WPGE	Units:	µg/L	Prep Date:		RunNo:	111102		
Client ID:	LCSW	Batch ID:	R111102	TestNo:	EPA 218.6			Analysis Date:	10/14/2016	SeqNo:	2450351		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual		
Hexavalent Chromium	5.097	0.20	5.000	0	102	90	110						

Sample ID	MB-R111102	SampType:	MBLK	TestCode:	218.6_WPGE	Units:	µg/L	Prep Date:		RunNo:	111102		
Client ID:	PBW	Batch ID:	R111102	TestNo:	EPA 218.6			Analysis Date:	10/14/2016	SeqNo:	2450352		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual		
Hexavalent Chromium	ND	0.20											

Sample ID	N021185-004AMS	SampType:	MS	TestCode:	218.6_WPGE	Units:	µg/L	Prep Date:		RunNo:	111102		
Client ID:	ZZZZZZ	Batch ID:	R111102	TestNo:	EPA 218.6			Analysis Date:	10/14/2016	SeqNo:	2450354		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual		
Hexavalent Chromium	6.315	1.0	5.000	1.269	101	90	110						

Sample ID	N021243-001AMS	SampType:	MS	TestCode:	218.6_WPGE	Units:	µg/L	Prep Date:		RunNo:	111102		
Client ID:	ZZZZZZ	Batch ID:	R111102	TestNo:	EPA 218.6			Analysis Date:	10/14/2016	SeqNo:	2450362		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual		
Hexavalent Chromium	8.333	0.20	5.000	3.106	105	90	110						

Sample ID	N021243-001AMSD	SampType:	MSD	TestCode:	218.6_WPGE	Units:	µg/L	Prep Date:		RunNo:	111102		
Client ID:	ZZZZZZ	Batch ID:	R111102	TestNo:	EPA 218.6			Analysis Date:	10/14/2016	SeqNo:	2450363		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual		
Hexavalent Chromium	8.329	0.20	5.000	3.106	104	90	110	8.333	0.0540	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

CLIENT: ARCADIS U.S., Inc. - California
Work Order: N021185
Project: PG&E Topock - GMP, RC000753.801A

ANALYTICAL QC SUMMARY REPORT

TestCode: 218.6_WPGE

Sample ID	N021243-002ADUP	SampType:	DUP	TestCode:	218.6_WPGE	Units:	µg/L	Prep Date:		RunNo:	111102
Client ID:	ZZZZZZ	Batch ID:	R111102	TestNo:	EPA 218.6			Analysis Date:	10/14/2016	SeqNo:	2450364

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	3.067	0.20						3.110	1.38	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
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: ARCADIS U.S., Inc. - California
Work Order: N021185
Project: PG&E Topock - GMP, RC000753.801A

ANALYTICAL QC SUMMARY REPORT

TestCode: 6020DIS_CrPGE

Sample ID	MB-59902	SampType:	MBLK	TestCode:	6020DIS_CrP	Units:	µg/L	Prep Date:	10/7/2016	RunNo:	111023
Client ID:	PBW	Batch ID:	59902	TestNo:	EPA 6020	EPA 3010A		Analysis Date:	10/10/2016	SeqNo:	2446120

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium	ND	1.0									

Sample ID	LCS-59902	SampType:	LCS	TestCode:	6020DIS_CrP	Units:	µg/L	Prep Date:	10/7/2016	RunNo:	111023
Client ID:	LCSW	Batch ID:	59902	TestNo:	EPA 6020	EPA 3010A		Analysis Date:	10/10/2016	SeqNo:	2446121

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium	10.380	1.0	10.00	0	104	85	115				

Sample ID	N021182-001B-MS	SampType:	MS	TestCode:	6020DIS_CrP	Units:	µg/L	Prep Date:	10/7/2016	RunNo:	111023
Client ID:	ZZZZZZ	Batch ID:	59902	TestNo:	EPA 6020	EPA 3010A		Analysis Date:	10/10/2016	SeqNo:	2446127

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium	10.248	1.0	10.00	0.1760	101	75	125				

Sample ID	N021182-001B-MSD	SampType:	MSD	TestCode:	6020DIS_CrP	Units:	µg/L	Prep Date:	10/7/2016	RunNo:	111023
Client ID:	ZZZZZZ	Batch ID:	59902	TestNo:	EPA 6020	EPA 3010A		Analysis Date:	10/10/2016	SeqNo:	2446129

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium	10.204	1.0	10.00	0.1760	100	75	125	10.25	0.433	20	

Sample ID	N021183-005B-MS	SampType:	MS	TestCode:	6020DIS_CrP	Units:	µg/L	Prep Date:	10/7/2016	RunNo:	111023
Client ID:	ZZZZZZ	Batch ID:	59902	TestNo:	EPA 6020	EPA 3010A		Analysis Date:	10/11/2016	SeqNo:	2446146

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium	11.850	1.0	10.00	2.228	96.2	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
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT:	ARCADIS U.S., Inc. - California	**Client Sample ID:**	MW-44-115-Q316
Lab Order:	N021185	**Collection Date:**	10/6/2016 10:09:00 AM
Project:	PG&E Topock - GMP, RC000753.801A	**Matrix:**	GROUNDWATER
Lab ID:	N021185-001		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
NITRATE/NITRITE-N BY CADMIUM REDUCTION							
			SM4500-NO3F				
RunID: **NV00922-WC_161012D**	QC Batch: **R111089**		PrepDate				Analyst: **RB**
Nitrate/Nitrite as N	0.10	0.022	0.050		mg/L	1	10/12/2016

Qualifiers:

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

CLIENT:	ARCADIS U.S., Inc. - California	**Client Sample ID:**	MW-901-Q316
Lab Order:	N021185	**Collection Date:**	10/6/2016 10:19:00 AM
Project:	PG&E Topock - GMP, RC000753.801A	**Matrix:**	GROUNDWATER
Lab ID:	N021185-002		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
NITRATE/NITRITE-N BY CADMIUM REDUCTION							
			SM4500-NO3F				
RunID: **NV00922-WC_161020A**	QC Batch: **R111188**		PrepDate				Analyst: **RB**
Nitrate/Nitrite as N	0.072	0.022	0.050		mg/L	1	10/20/2016

Qualifiers:

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

CLIENT:	ARCADIS U.S., Inc. - California	**Client Sample ID:**	MW-46-175-Q316
Lab Order:	N021185	**Collection Date:**	10/6/2016 11:37:00 AM
Project:	PG&E Topock - GMP, RC000753.801A	**Matrix:**	GROUNDWATER
Lab ID:	N021185-003		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
NITRATE/NITRITE-N BY CADMIUM REDUCTION							
			SM4500-NO3F				
RunID: **NV00922-WC_161012D**	QC Batch: **R111089**		PrepDate				Analyst: **RB**
Nitrate/Nitrite as N	1.1	0.022	0.050		mg/L	1	10/12/2016

Qualifiers:

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

CLIENT:	ARCADIS U.S., Inc. - California	**Client Sample ID:**	MW-34-100-Q316
Lab Order:	N021185	**Collection Date:**	10/6/2016 9:03:00 AM
Project:	PG&E Topock - GMP, RC000753.801A	**Matrix:**	GROUNDWATER
Lab ID:	N021185-004		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
NITRATE/NITRITE-N BY CADMIUM REDUCTION							
			SM4500-NO3F				
RunID: **NV00922-WC_161012D**	QC Batch: **R111089**		PrepDate				Analyst: **RB**
Nitrate/Nitrite as N	ND	0.022	0.050		mg/L	1	10/12/2016

Qualifiers:

B	Analyte detected in 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		

CLIENT: ARCADIS U.S., Inc. - California
Work Order: N021185
Project: PG&E Topock - GMP, RC000753.801A

ANALYTICAL QC SUMMARY REPORT

TestCode: 4500N03F_W

Sample ID	MB-R111089	SampType:	MBLK	TestCode:	4500N03F_W	Units:	mg/L	Prep Date:		RunNo:	111089
Client ID:	PBW	Batch ID:	R111089	TestNo:	SM4500-NO3			Analysis Date:	10/12/2016	SeqNo:	2449679

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrate/Nitrite as N	0.025	0.050									

Sample ID	LCS-R11089	SampType:	LCS	TestCode:	4500N03F_W	Units:	mg/L	Prep Date:		RunNo:	111089
Client ID:	LCSW	Batch ID:	R111089	TestNo:	SM4500-NO3			Analysis Date:	10/12/2016	SeqNo:	2449680

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	96.9	85	115				

Sample ID	N021156-001CDUP	SampType:	DUP	TestCode:	4500N03F_W	Units:	mg/L	Prep Date:		RunNo:	111089
Client ID:	ZZZZZZ	Batch ID:	R111089	TestNo:	SM4500-NO3			Analysis Date:	10/12/2016	SeqNo:	2449682

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						0.04220	0	20	

Sample ID	N021156-001CMS	SampType:	MS	TestCode:	4500N03F_W	Units:	mg/L	Prep Date:		RunNo:	111089
Client ID:	ZZZZZZ	Batch ID:	R111089	TestNo:	SM4500-NO3			Analysis Date:	10/12/2016	SeqNo:	2449683

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrate/Nitrite as N	0.511	0.050	0.5000	0.04220	93.8	75	125				

Sample ID	N021156-001CMSD	SampType:	MSD	TestCode:	4500N03F_W	Units:	mg/L	Prep Date:		RunNo:	111089
Client ID:	ZZZZZZ	Batch ID:	R111089	TestNo:	SM4500-NO3			Analysis Date:	10/12/2016	SeqNo:	2449684

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrate/Nitrite as N	0.526	0.050	0.5000	0.04220	96.7	75	125	0.5113	2.82	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
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: ARCADIS U.S., Inc. - California
Work Order: N021185
Project: PG&E Topock - GMP, RC000753.801A

ANALYTICAL QC SUMMARY REPORT

TestCode: 4500N03F_W

Sample ID	MB-R111188	SampType:	MBLK	TestCode:	4500N03F_W	Units:	mg/L	Prep Date:		RunNo:	111188
Client ID:	PBW	Batch ID:	R111188	TestNo:	SM4500-NO3			Analysis Date:	10/20/2016	SeqNo:	2453930

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-R111188	SampType:	LCS	TestCode:	4500N03F_W	Units:	mg/L	Prep Date:		RunNo:	111188
Client ID:	LCSW	Batch ID:	R111188	TestNo:	SM4500-NO3			Analysis Date:	10/20/2016	SeqNo:	2454006

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrate/Nitrite as N	0.503	0.050	0.5000	0	101	85	115				

Sample ID	N021186-002DDUP	SampType:	DUP	TestCode:	4500N03F_W	Units:	mg/L	Prep Date:		RunNo:	111188
Client ID:	ZZZZZZ	Batch ID:	R111188	TestNo:	SM4500-NO3			Analysis Date:	10/20/2016	SeqNo:	2454009

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	N021186-002DMS	SampType:	MS	TestCode:	4500N03F_W	Units:	mg/L	Prep Date:		RunNo:	111188
Client ID:	ZZZZZZ	Batch ID:	R111188	TestNo:	SM4500-NO3			Analysis Date:	10/20/2016	SeqNo:	2454010

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrate/Nitrite as N	0.509	0.050	0.5000	0	102	75	125				

Sample ID	N021186-002DMSD	SampType:	MSD	TestCode:	4500N03F_W	Units:	mg/L	Prep Date:		RunNo:	111188
Client ID:	ZZZZZZ	Batch ID:	R111188	TestNo:	SM4500-NO3			Analysis Date:	10/20/2016	SeqNo:	2454011

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrate/Nitrite as N	0.534	0.050	0.5000	0	107	75	125	0.5092	4.68	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

CLIENT:	ARCADIS U.S., Inc. - California	**Client Sample ID:**	MW-44-115-Q316
Lab Order:	N021185	**Collection Date:**	10/6/2016 10:09:00 AM
Project:	PG&E Topock - GMP, RC000753.801A	**Matrix:**	GROUNDWATER
Lab ID:	N021185-001		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
DISSOLVED METALS BY ICP-MS							
	EPA 3010A				**EPA 6020**		
RunID: **NV00922-ICP7_161010B**	QC Batch: **59902**				PrepDate	**10/7/2016**	Analyst: **CEI**
Arsenic	6.0	0.12	0.50		µg/L	5	10/11/2016 02:06 AM
Manganese	9.0	0.056	0.50		µg/L	1	10/11/2016 02:00 AM
Molybdenum	82	0.19	2.5		µg/L	5	10/11/2016 02:06 AM
Selenium	ND	0.14	2.5		µg/L	5	10/11/2016 02:06 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		

CLIENT:	ARCADIS U.S., Inc. - California	**Client Sample ID:**	MW-901-Q316
Lab Order:	N021185	**Collection Date:**	10/6/2016 10:19:00 AM
Project:	PG&E Topock - GMP, RC000753.801A	**Matrix:**	GROUNDWATER
Lab ID:	N021185-002		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
DISSOLVED METALS BY ICP-MS							
	EPA 3010A				**EPA 6020**		
RunID: **NV00922-ICP7_161010B**	QC Batch: **59902**				PrepDate	**10/7/2016**	Analyst: **CEI**
Arsenic	6.4	0.12	0.50		µg/L	5	10/11/2016 02:28 AM
Manganese	8.7	0.056	0.50		µg/L	1	10/11/2016 02:11 AM
Molybdenum	83	0.19	2.5		µg/L	5	10/11/2016 02:28 AM
Selenium	ND	0.14	2.5		µg/L	5	10/11/2016 02:28 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		

CLIENT:	ARCADIS U.S., Inc. - California	**Client Sample ID:**	MW-46-175-Q316
Lab Order:	N021185	**Collection Date:**	10/6/2016 11:37:00 AM
Project:	PG&E Topock - GMP, RC000753.801A	**Matrix:**	GROUNDWATER
Lab ID:	N021185-003		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
DISSOLVED METALS BY ICP-MS							
	EPA 3010A			**EPA 6020**			
RunID: **NV00922-ICP7_161010B**	QC Batch: **59902**			PrepDate	**10/7/2016**		Analyst: **CEI**
Molybdenum	170	0.19	2.5		µg/L	5	10/11/2016 02:39 AM
Selenium	ND	0.14	2.5		µg/L	5	10/11/2016 02:39 AM

Qualifiers:

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

CLIENT:	ARCADIS U.S., Inc. - California	**Client Sample ID:**	MW-34-100-Q316
Lab Order:	N021185	**Collection Date:**	10/6/2016 9:03:00 AM
Project:	PG&E Topock - GMP, RC000753.801A	**Matrix:**	GROUNDWATER
Lab ID:	N021185-004		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
DISSOLVED METALS BY ICP-MS							
	EPA 3010A				**EPA 6020**		
RunID: **NV00922-ICP7_161010B**	QC Batch: **59902**				PrepDate	**10/7/2016**	Analyst: **CEI**
Arsenic	1.3	0.12	0.50		µg/L	5	10/11/2016 02:50 AM
Manganese	51	0.056	0.50		µg/L	1	10/11/2016 02:45 AM
Molybdenum	44	0.19	2.5		µg/L	5	10/11/2016 02:50 AM
Selenium	ND	0.14	2.5		µg/L	5	10/11/2016 02:50 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		

CLIENT: ARCADIS U.S., Inc. - California
Work Order: N021185
Project: PG&E Topock - GMP, RC000753.801A

ANALYTICAL QC SUMMARY REPORT

TestCode: 6020_DIS

Sample ID **MB-59902**	SampType: **MBLK**	TestCode: **6020_DIS**	Units: **µg/L**	Prep Date: **10/7/2016**	RunNo: **111023**
Client ID: **PBW**	Batch ID: **59902**	TestNo: **EPA 6020**	**EPA 3010A**	Analysis Date: **10/10/2016**	SeqNo: **2446811**

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 **LCS-59902**	SampType: **LCS**	TestCode: **6020_DIS**	Units: **µg/L**	Prep Date: **10/7/2016**	RunNo: **111023**
Client ID: **LCSW**	Batch ID: **59902**	TestNo: **EPA 6020**	**EPA 3010A**	Analysis Date: **10/10/2016**	SeqNo: **2446812**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	9.797	0.10	10.00	0	98.0	85	115				
Manganese	100.987	0.50	100.0	0	101	85	115				
Molybdenum	9.909	0.50	10.00	0	99.1	85	115				
Selenium	9.786	0.50	10.00	0	97.9	85	115				

Sample ID **N021182-001B-MS**	SampType: **MS**	TestCode: **6020_DIS**	Units: **µg/L**	Prep Date: **10/7/2016**	RunNo: **111023**
Client ID: **ZZZZZZ**	Batch ID: **59902**	TestNo: **EPA 6020**	**EPA 3010A**	Analysis Date: **10/10/2016**	SeqNo: **2446818**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	14.046	0.10	10.00	4.509	95.4	75	125				
Molybdenum	15.430	0.50	10.00	4.495	109	75	125				
Selenium	8.561	0.50	10.00	0	85.6	75	125				

Sample ID **N021182-001B-MS**	SampType: **MS**	TestCode: **6020_DIS**	Units: **µg/L**	Prep Date: **10/7/2016**	RunNo: **111023**
Client ID: **ZZZZZZ**	Batch ID: **59902**	TestNo: **EPA 6020**	**EPA 3010A**	Analysis Date: **10/10/2016**	SeqNo: **2446819**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Manganese	492.353	2.5	100.0	373.3	119	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
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: ARCADIS U.S., Inc. - California
Work Order: N021185
Project: PG&E Topock - GMP, RC000753.801A

ANALYTICAL QC SUMMARY REPORT

TestCode: 6020_DIS

Sample ID	N021182-001B-MSD	SampType:	MSD	TestCode:	6020_DIS	Units:	µg/L	Prep Date:	10/7/2016	RunNo:	111023
Client ID:	ZZZZZZ	Batch ID:	59902	TestNo:	EPA 6020	EPA 3010A		Analysis Date:	10/10/2016	SeqNo:	2446820

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	14.035	0.10	10.00	4.509	95.3	75	125	14.05	0.0769	20	
Molybdenum	15.434	0.50	10.00	4.495	109	75	125	15.43	0.0264	20	
Selenium	9.054	0.50	10.00	0	90.5	75	125	8.561	5.60	20	

Sample ID	N021182-001B-MSD	SampType:	MSD	TestCode:	6020_DIS	Units:	µg/L	Prep Date:	10/7/2016	RunNo:	111023
Client ID:	ZZZZZZ	Batch ID:	59902	TestNo:	EPA 6020	EPA 3010A		Analysis Date:	10/11/2016	SeqNo:	2446823

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Manganese	491.306	2.5	100.0	373.3	118	75	125	492.4	0.213	20	

Sample ID	N021183-005B-MS	SampType:	MS	TestCode:	6020_DIS	Units:	µg/L	Prep Date:	10/7/2016	RunNo:	111023
Client ID:	ZZZZZZ	Batch ID:	59902	TestNo:	EPA 6020	EPA 3010A		Analysis Date:	10/11/2016	SeqNo:	2446837

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	10.762	0.10	10.00	0.4785	103	75	125				
Manganese	94.188	0.50	100.0	1.547	92.6	75	125				
Molybdenum	11.932	0.50	10.00	0.3892	115	75	125				
Selenium	11.378	0.50	10.00	1.323	101	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
DO	Surrogate Diluted Out		Calculations are based on raw values		

ASSET LABORATORIES
ANALYTICAL SUPPORT SERVICES FOR ENVIRONMENTAL TECHNOLOGIES

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

CHAIN OF CUSTODY RECORD

Page 1 of 1

Client: Arcadis	Report to: Dan Bush	Bill to: Marty Bloes	EDD Requirement: Excel EDD; Geotracker; Labspec; Others ✓; Specify: RWQCB
Address: 1410 Rocky Ridge Dr # 330	Company: Arcadis	Address:	QA/QC: RTNE; RWQCB ✓; CalTrans; LEVEL III; LEVEL IV; Regulatory
Address: Roseville, CA 95661	Email: dan.bush@arcadis.com; daniel.moore@arcadis.com	Address:	Global ID:
Phone: 916-786-3302 Fax:	Address: 1410 Rocky Ridge Dr # 330, Roseville, CA 95661	Email to: mbloes@pivox.com	P O.#
Submitted By: Jun Gatel		Phone: 949-727-1400, ext 200	Fax:
Title: Sample Tech	Phone: 916-786-3302 Fax:		Specify State:
Signature: Date: 10/6/16	Sampled By: Jason Mahon		

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

Project Name: PG&E Topock - GMP	Signature:	Date: 10/6/16	
Project Number: RC000753 801A			

Matrix: Ground Water; Potable Water; NPDES; Surface Water; Sediment; Soil; Other Solid

Sample Receipt Condition

	Y	N
1. Chilled	✓	
2. Headspace		
3. Container Intact		
4. Seal Present		
5. IR number	!	
6. Method of Cooling:	IC	
Sample Temp:	2-2°C	

Couner:

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 250 mL poly	Cr(VI) FF (E218.6); (NH4)2, SO4, NH4, OH 2 X 250 mL poly	Metals Dissolved (6020AFF); As; HNO3 500 mL poly	Metals Dissolved (6020AFF); Mo; HNO3 500 mL poly	Metals Dissolved (6020AFF); Se; HNO3 500 mL poly	Metals Dissolved (6020AFF); Cr; HNO3 500 mL poly	Metals Dissolved (6020AFF); Mn; HNO3 500 mL poly	Nitrate/Nitrite (SM4500NO3); Nitrate; H2SO4 125 mL poly	Turn Around Time	No. of Container	Container Type	PRESERVATION	Remarks
1	N021185 - 01	MW-44-115-Q316	10/6/16	1009		X		X	X	X	X	X	X	E	3	P	BNS	
2	- 02	MW-901-Q316		1619		X		X	X	X	X	X	X	E	3	P	BNS	
2	- 03	MW-46-175-Q316		1137		X			X	X	X		X	E	3	P	BNS	
3	- 04	MW-34-100-Q316		0903		X		X	X	X	X	X	X	E	3	P	BNS	
4																		
5																		
6																		
7																		
8																		
9																		
10																		
11																		
12																		
13		MW-710-Q316	10/6/16	1145		X								E	1	P	B	

Relinquished by (Signature and Printed Name)	Date/Time	Received by (Signature and Printed Name)	Date/Time
	10/6/16 1605		10/6/16 1605
	10/6/16 1905		10/6/16 1905

Turn Around Time (TAT)

- A = < 24 Hrs or Same Day TAT
- B = Next Workday
- C = 2 Workdays
- D = 3 Workdays
- X E = Routine 5-7 Workdays

TAT Starts at 8 AM the following day if samples received after 3.00PM

Special Instruction:

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=25%
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:				Container Type:		
H=HCL	N=HNO_3	S=H_2SO_4	C=4°C	T=Tube	V=VOA	P=Pint
Z=Zn(AC)$_2$	O=NaOH	T=$Na_2S_2O_3$		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

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:	10/6/2016	Workorder:	N021185
Rep sample Temp (Deg C):	2.2	IR Gun ID:	1
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 ☑	No ☐	Not Present ☐
2. Custody seals intact, signed, dated on shippping container/cooler?	Yes ☐	No ☐	Not Present ☑
3. Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
4. Chain of custody present?	Yes ☑	No ☐	
5. Sampler's name present in COC?	Yes ☑	No ☐	
6. Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
7. Chain of custody agrees with sample labels?	Yes ☑	No ☐	
8. Samples in proper container/bottle?	Yes ☑	No ☐	
9. Sample containers intact?	Yes ☑	No ☐	
10. Sufficient sample volume for indicated test?	Yes ☑	No ☐	
11. All samples received within holding time?	Yes ☑	No ☐	
12. Temperature of rep sample or Temp Blank within acceptable limit?	Yes ☑	No ☐	NA ☐
13. Water - VOA vials have zero headspace?	Yes ☐	No ☐	NA ☑
14. Water - pH acceptable upon receipt? Example: pH > 12 for (CN,S); pH<2 for Metals	Yes ☑	No ☐	NA ☐
15. Did the bottle labels indicate correct preservatives used?	Yes ☑	No ☐	NA ☐
16. Were there Non-Conformance issues at login?	Yes ☐	No ☐	NA ☑
Was Client notified?	Yes ☐	No ☐	NA ☑

Comments:

Checklist Completed By: HG 10/7/2016

Reviewed By: 10/9/2016

ASSET Laboratories

WORK ORDER Summary

09-Oct-16

WorkOrder: N021185

Client ID: ARCUS02

Project: PG&E Topock - GMP, RC000753.801A **QC Level:** Level IV **Date Received:** 10/6/2016

Comments:

Sample ID	Client Sample ID	Date Collected	Date Due	Matrix	Test No	Test Name	Hld	MS	Sub	Storage
N021185-001A	MW-44-115-Q316	10/6/2016 10:09:00 AM	10/20/2016	Groundwater	EPA 218.6	Hexavalent Chromium by IC	☐	☐	☐	WW
N021185-001B			10/20/2016		EPA 3010A	AQPREP TOTAL METALS: ICP, FLAA	☐	☐	☐	WW
			10/20/2016		EPA 6020	DISSOLVED METALS BY ICP-MS	☐	☐	☐	WW
			10/20/2016		EPA 6020	DISSOLVED METALS BY ICP-MS	☐	☐	☐	WW
N021185-001C			10/20/2016		SM4500-NO3F	NITRATE/NITRITE-N BY CADMIUM REDUCTION	☐	☐	☐	WW
N021185-002A	MW-901-Q316	10/6/2016 10:19:00 AM	10/20/2016		EPA 218.6	Hexavalent Chromium by IC	☐	☐	☐	WW
N021185-002B			10/20/2016		EPA 3010A	AQPREP TOTAL METALS: ICP, FLAA	☐	☐	☐	WW
			10/20/2016		EPA 6020	DISSOLVED METALS BY ICP-MS	☐	☐	☐	WW
			10/20/2016		EPA 6020	DISSOLVED METALS BY ICP-MS	☐	☐	☐	WW
N021185-002C			10/20/2016		SM4500-NO3F	NITRATE/NITRITE-N BY CADMIUM REDUCTION	☐	☐	☐	WW
N021185-003A	MW-46-175-Q316	10/6/2016 11:37:00 AM	10/20/2016		EPA 218.6	Hexavalent Chromium by IC	☐	☐	☐	WW
N021185-003B			10/20/2016		EPA 3010A	AQPREP TOTAL METALS: ICP, FLAA	☐	☐	☐	WW
			10/20/2016		EPA 6020	DISSOLVED METALS BY ICP-MS	☐	☐	☐	WW
			10/20/2016		EPA 6020	DISSOLVED METALS BY ICP-MS	☐	☐	☐	WW
N021185-003C			10/20/2016		SM4500-NO3F	NITRATE/NITRITE-N BY CADMIUM REDUCTION	☐	☐	☐	WW
N021185-004A	MW-34-100-Q316	10/6/2016 9:03:00 AM	10/20/2016		EPA 218.6	Hexavalent Chromium by IC	☐	☐	☐	WW
N021185-004B			10/20/2016		EPA 3010A	AQPREP TOTAL METALS: ICP, FLAA	☐	☐	☐	WW
			10/20/2016		EPA 6020	DISSOLVED METALS BY ICP-MS	☐	☐	☐	WW
			10/20/2016		EPA 6020	DISSOLVED METALS BY ICP-MS	☐	☐	☐	WW
N021185-004C			10/20/2016		SM4500-NO3F	NITRATE/NITRITE-N BY CADMIUM REDUCTION	☐	☐	☐	WW
N021185-005A	FOLDER		10/20/2016		EDD	RWQCB	☐	☐	☐	LAB

ASSET Laboratories

WORK ORDER Summary

09-Oct-16

WorkOrder: N021185

Client ID: ARCUS02

Project: PG&E Topock - GMP, RC000753.801A **QC Level:** Level IV **Date Received:** 10/6/2016

Comments:

Sample ID	Client Sample ID	Date Collected	Date Due	Matrix	Test No	Test Name	Hld	MS	Sub	Storage
N021185-005A	FOLDER		10/20/2016		Folder	Folder	☐	☐	☐	LAB

October 21, 2016

Dan Bush
ARCADIS U.S., Inc. - California
1410 Rocky Ridge Dr #330
Roseville, CA 95661

TEL: (916) 786-3302
FAX:

Workorder No.: N021186

RE: PG&E Topock - PMP, RC000753.801A

Attention: Dan Bush

Enclosed are the results for sample(s) received on October 06, 2016 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 Liburdi for

Puri Romualdo
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.

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 Duplicate (MSD) is outside recovery criteria for Sodium on QC sample N021186-002B-MSD2 since the analyte concentration in the sample is disproportionate to the spike level. The associated Laboratory Control Sample (LCS) recovery was acceptable.

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ORELAP/NELAP Cert 4046

ASSET Laboratories

Date: *21-Oct-16*

CLIENT: ARCADIS U.S., Inc. - California
Project: PG&E Topock - PMP, RC000753.801A
Lab Order: N021186
Contract No:

Work Order Sample Summary

Lab Sample ID	Client Sample ID	Matrix	Collection Date	Date Received	Date Reported
N021186-001A	PE-01-1016	Groundwater	10/6/2016 12:00:00 PM	10/6/2016	10/21/2016
N021186-001B	PE-01-1016	Groundwater	10/6/2016 12:00:00 PM	10/6/2016	10/21/2016
N021186-001C	PE-01-1016	Groundwater	10/6/2016 12:00:00 PM	10/6/2016	10/21/2016
N021186-001D	PE-01-1016	Groundwater	10/6/2016 12:00:00 PM	10/6/2016	10/21/2016
N021186-002A	MW-925-Q416	Groundwater	10/6/2016 12:10:00 PM	10/6/2016	10/21/2016
N021186-002B	MW-925-Q416	Groundwater	10/6/2016 12:10:00 PM	10/6/2016	10/21/2016
N021186-002C	MW-925-Q416	Groundwater	10/6/2016 12:10:00 PM	10/6/2016	10/21/2016
N021186-002D	MW-925-Q416	Groundwater	10/6/2016 12:10:00 PM	10/6/2016	10/21/2016
N021186-003A	TW-03D-1016	Groundwater	10/6/2016 12:15:00 PM	10/6/2016	10/21/2016
N021186-003B	TW-03D-1016	Groundwater	10/6/2016 12:15:00 PM	10/6/2016	10/21/2016
N021186-003C	TW-03D-1016	Groundwater	10/6/2016 12:15:00 PM	10/6/2016	10/21/2016
N021186-003D	TW-03D-1016	Groundwater	10/6/2016 12:15:00 PM	10/6/2016	10/21/2016

CLIENT:	ARCADIS U.S., Inc. - California	**Client Sample ID:**	PE-01-1016
Lab Order:	N021186	**Collection Date:**	10/6/2016 12:00:00 PM
Project:	PG&E Topock - PMP, RC000753.801A	**Matrix:**	GROUNDWATER
Lab ID:	N021186-001		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
SPECIFIC CONDUCTANCE							
			EPA 120.1				
RunID: **WETCHEM_161007C**	QC Batch: **R110978**			PrepDate			Analyst: **LR**
Specific Conductance	4500	0.10	0.10		umhos/cm	1	10/7/2016 10:30 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

CLIENT:	ARCADIS U.S., Inc. - California	**Client Sample ID:**	MW-925-Q416
Lab Order:	N021186	**Collection Date:**	10/6/2016 12:10:00 PM
Project:	PG&E Topock - PMP, RC000753.801A	**Matrix:**	GROUNDWATER
Lab ID:	N021186-002		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
SPECIFIC CONDUCTANCE							
			EPA 120.1				
RunID: **WETCHEM_161007C**	QC Batch: **R110978**			PrepDate			Analyst: **LR**
Specific Conductance	4500	0.10	0.10		umhos/cm	1	10/7/2016 10:30 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

ASSET Laboratories

ANALYTICAL RESULTS

Print Date: *21-Oct-16*

CLIENT:	ARCADIS U.S., Inc. - California	**Client Sample ID:**	TW-03D-1016
Lab Order:	N021186	**Collection Date:**	10/6/2016 12:15:00 PM
Project:	PG&E Topock - PMP, RC000753.801A	**Matrix:**	GROUNDWATER
Lab ID:	N021186-003		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
SPECIFIC CONDUCTANCE							
			EPA 120.1				
RunID: **WETCHEM_161007C**	QC Batch: **R110978**			PrepDate			Analyst: **LR**
Specific Conductance	7700	0.10	0.10		umhos/cm	1	10/7/2016 10:30 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

CLIENT: ARCADIS U.S., Inc. - California
Work Order: N021186
Project: PG&E Topock - PMP, RC000753.801A

ANALYTICAL QC SUMMARY REPORT

TestCode: 120.1_WPGE

Sample ID **N021186-003CDUP**	SampType: **DUP**	TestCode: **120.1_WPGE**	Units: **umhos/cm**	Prep Date:				RunNo: **110978**	
Client ID: **ZZZZZZ**	Batch ID: **R110978**	TestNo: **EPA 120.1**		Analysis Date: **10/7/2016**				SeqNo: **2443566**	

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Specific Conductance	7680.000	0.10						7730	0.649	10	

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis 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
Lab Order: N021186
Project: PG&E Topock - PMP, RC000753.801A
Lab ID: N021186-001

Client Sample ID: PE-01-1016
Collection Date: 10/6/2016 12:00:00 PM
Matrix: GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
PH							
			SM4500-H+B				
RunID: **WETCHEM_161007B**	QC Batch: **R110977**			PrepDate			Analyst: **LR**
pH	7.5	0.10	0.10	H	pH Units	1	10/7/2016 09:15 AM
Temp. at time of pH Analysis	17	0.10	0.10	H	°C	1	10/7/2016 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

CLIENT:	ARCADIS U.S., Inc. - California	**Client Sample ID:**	MW-925-Q416
Lab Order:	N021186	**Collection Date:**	10/6/2016 12:10:00 PM
Project:	PG&E Topock - PMP, RC000753.801A	**Matrix:**	GROUNDWATER
Lab ID:	N021186-002		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
PH							
			SM4500-H+B				
RunID: **WETCHEM_161007B**	QC Batch: **R110977**			PrepDate			Analyst: **LR**
pH	7.6	0.10	0.10	H	pH Units	1	10/7/2016 09:15 AM
Temp. at time of pH Analysis	17	0.10	0.10	H	°C	1	10/7/2016 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

CLIENT: ARCADIS U.S., Inc. - California
Lab Order: N021186
Project: PG&E Topock - PMP, RC000753.801A
Lab ID: N021186-003

Client Sample ID: TW-03D-1016
Collection Date: 10/6/2016 12:15:00 PM
Matrix: GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
PH							
			SM4500-H+B				
RunID: **WETCHEM_161007B**	QC Batch: **R110977**			PrepDate			Analyst: **LR**
pH	7.4	0.10	0.10	H	pH Units	1	10/7/2016 09:15 AM
Temp. at time of pH Analysis	17	0.10	0.10	H	°C	1	10/7/2016 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

CLIENT: ARCADIS U.S., Inc. - California
Work Order: N021186
Project: PG&E Topock - PMP, RC000753.801A

ANALYTICAL QC SUMMARY REPORT

TestCode: 150.1_4500H+B_W

Sample ID **N021186-003CDUP** SampType: **DUP** TestCode: **150.1_4500H** Units: **pH Units** Prep Date: RunNo: **110977**
Client ID: **ZZZZZZ** Batch ID: **R110977** TestNo: **SM4500-H+B** Analysis Date: **10/7/2016** SeqNo: **2443562**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
pH	7.360	0.10						7.390	0.407	10	H
Temp. at time of pH Analysis	16.700	0.10						17.20	2.95	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
DO	Surrogate Diluted Out		Calculations are based on raw values		

ASSET Laboratories

ANALYTICAL RESULTS

Print Date: *21-Oct-16*

CLIENT:	ARCADIS U.S., Inc. - California	**Client Sample ID:**	PE-01-1016
Lab Order:	N021186	**Collection Date:**	10/6/2016 12:00:00 PM
Project:	PG&E Topock - PMP, RC000753.801A	**Matrix:**	GROUNDWATER
Lab ID:	N021186-001		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
TOTAL FILTERABLE RESIDUE							
			SM2540C				
RunID: **NV00922-WC_161010C**	QC Batch: **59921**				PrepDate	**10/10/2016**	Analyst: **LR**
Total Dissolved Solids (Residue, Filterable)	2700	33	33		mg/L	1	10/10/2016 01:17 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		

ASSET Laboratories

ANALYTICAL RESULTS

Print Date: *21-Oct-16*

CLIENT:	ARCADIS U.S., Inc. - California	**Client Sample ID:**	MW-925-Q416
Lab Order:	N021186	**Collection Date:**	10/6/2016 12:10:00 PM
Project:	PG&E Topock - PMP, RC000753.801A	**Matrix:**	GROUNDWATER
Lab ID:	N021186-002		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
TOTAL FILTERABLE RESIDUE							
			SM2540C				
RunID: **NV00922-WC_161010C**	QC Batch: **59921**			PrepDate	**10/10/2016**		Analyst: **LR**
Total Dissolved Solids (Residue, Filterable)	2700	33	33		mg/L	1	10/10/2016 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

CLIENT:	ARCADIS U.S., Inc. - California	**Client Sample ID:**	TW-03D-1016
Lab Order:	N021186	**Collection Date:**	10/6/2016 12:15:00 PM
Project:	PG&E Topock - PMP, RC000753.801A	**Matrix:**	GROUNDWATER
Lab ID:	N021186-003		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
TOTAL FILTERABLE RESIDUE							
			SM2540C				
RunID: **NV00922-WC_161010C**	QC Batch: **59921**				PrepDate	**10/10/2016**	Analyst: **LR**
Total Dissolved Solids (Residue, Filterable)	4400	50	50		mg/L	1	10/10/2016 01:17 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		

CLIENT: ARCADIS U.S., Inc. - California
Work Order: N021186
Project: PG&E Topock - PMP, RC000753.801A

ANALYTICAL QC SUMMARY REPORT

TestCode: 160.1_2540C_W

Sample ID **LCS-59921**	SampType: **LCS**	TestCode: **160.1_2540C**	Units: **mg/L**	Prep Date: **10/10/2016**	RunNo: **111024**
Client ID: **LCSW**	Batch ID: **59921**	TestNo: **SM2540C**		Analysis Date: **10/10/2016**	SeqNo: **2446202**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	981.000	10	1000	0	98.1	80	120				

Sample ID **MB-59921**	SampType: **MBLK**	TestCode: **160.1_2540C**	Units: **mg/L**	Prep Date: **10/10/2016**	RunNo: **111024**
Client ID: **PBW**	Batch ID: **59921**	TestNo: **SM2540C**		Analysis Date: **10/10/2016**	SeqNo: **2446203**

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 **N021186-003CDUP**	SampType: **DUP**	TestCode: **160.1_2540C**	Units: **mg/L**	Prep Date: **10/10/2016**	RunNo: **111024**
Client ID: **ZZZZZZ**	Batch ID: **59921**	TestNo: **SM2540C**		Analysis Date: **10/10/2016**	SeqNo: **2446211**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	4410.000	50						4450	0.903	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
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT:	ARCADIS U.S., Inc. - California	**Client Sample ID:**	PE-01-1016
Lab Order:	N021186	**Collection Date:**	10/6/2016 12:00:00 PM
Project:	PG&E Topock - PMP, RC000753.801A	**Matrix:**	GROUNDWATER
Lab ID:	N021186-001		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
DISSOLVED METALS BY ICP							
			EPA 200.7				
RunID: **NV00922-ICP2_161013B**	QC Batch: **59938**			PrepDate	**10/12/2016**		Analyst: **CEI**
Calcium	130000	28	500		µg/L	1	10/13/2016 12:22 PM
Iron	ND	1.8	20		µg/L	1	10/13/2016 12:22 PM
Magnesium	29000	4.4	100		µg/L	1	10/13/2016 12:22 PM
Sodium	800000	1200	50000		µg/L	100	10/13/2016 09:51 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

CLIENT:	ARCADIS U.S., Inc. - California	**Client Sample ID:**	MW-925-Q416
Lab Order:	N021186	**Collection Date:**	10/6/2016 12:10:00 PM
Project:	PG&E Topock - PMP, RC000753.801A	**Matrix:**	GROUNDWATER
Lab ID:	N021186-002		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
DISSOLVED METALS BY ICP							
			EPA 200.7				
RunID: **NV00922-ICP2_161013B**	QC Batch: **59938**				PrepDate	**10/12/2016**	Analyst: **CEI**
Calcium	130000	28	500		µg/L	1	10/13/2016 12:53 PM
Iron	ND	1.8	20		µg/L	1	10/13/2016 12:53 PM
Magnesium	30000	4.4	100		µg/L	1	10/13/2016 12:53 PM
Sodium	790000	1200	50000		µg/L	100	10/13/2016 09:54 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		

CLIENT:	ARCADIS U.S., Inc. - California	**Client Sample ID:**	TW-03D-1016
Lab Order:	N021186	**Collection Date:**	10/6/2016 12:15:00 PM
Project:	PG&E Topock - PMP, RC000753.801A	**Matrix:**	GROUNDWATER
Lab ID:	N021186-003		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
DISSOLVED METALS BY ICP							
			EPA 200.7				
RunID: **NV00922-ICP2_161013B**	QC Batch: **59938**				PrepDate	**10/12/2016**	Analyst: **CEI**
Calcium	200000	28	500		µg/L	1	10/13/2016 01:00 PM
Iron	67	1.8	20		µg/L	1	10/13/2016 01:00 PM
Magnesium	26000	4.4	100		µg/L	1	10/13/2016 01:00 PM
Sodium	1400000	1200	50000		µg/L	100	10/13/2016 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

CLIENT: ARCADIS U.S., Inc. - California
Work Order: N021186
Project: PG&E Topock - PMP, RC000753.801A

ANALYTICAL QC SUMMARY REPORT

TestCode: 200.7_WDPGEPPB

Sample ID **MB-59938**	SampType: **MBLK**	TestCode: **200.7_WDPG**	Units: **µg/L**	Prep Date: **10/12/2016**	RunNo: **111085**
Client ID: **PBW**	Batch ID: **59938**	TestNo: **EPA 200.7**		Analysis Date: **10/13/2016**	SeqNo: **2449315**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Sodium	ND	500									

Sample ID **LCS2-59938**	SampType: **LCS**	TestCode: **200.7_WDPG**	Units: **µg/L**	Prep Date: **10/12/2016**	RunNo: **111085**
Client ID: **LCSW**	Batch ID: **59938**	TestNo: **EPA 200.7**		Analysis Date: **10/13/2016**	SeqNo: **2449316**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Sodium	20062.563	500	20000	0	100	85	115				

Sample ID **N021186-002B-MS2**	SampType: **MS**	TestCode: **200.7_WDPG**	Units: **µg/L**	Prep Date: **10/12/2016**	RunNo: **111085**
Client ID: **ZZZZZZ**	Batch ID: **59938**	TestNo: **EPA 200.7**		Analysis Date: **10/13/2016**	SeqNo: **2449328**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Sodium	807410.984	50000	20000	791100	81.6	75	125				

Sample ID **N021186-002B-MSD**	SampType: **MSD**	TestCode: **200.7_WDPG**	Units: **µg/L**	Prep Date: **10/12/2016**	RunNo: **111085**
Client ID: **ZZZZZZ**	Batch ID: **59938**	TestNo: **EPA 200.7**		Analysis Date: **10/13/2016**	SeqNo: **2449329**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Sodium	816919.752	50000	20000	791100	129	75	125	807400	1.17	20	S

Sample ID **MB-59938**	SampType: **MBLK**	TestCode: **200.7_WDPG**	Units: **µg/L**	Prep Date: **10/12/2016**	RunNo: **111086**
Client ID: **PBW**	Batch ID: **59938**	TestNo: **EPA 200.7**		Analysis Date: **10/13/2016**	SeqNo: **2449344**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Calcium	59.667	500									
Iron	6.014	20									
Magnesium	8.503	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
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: ARCADIS U.S., Inc. - California
Work Order: N021186
Project: PG&E Topock - PMP, RC000753.801A

ANALYTICAL QC SUMMARY REPORT

TestCode: 200.7_WDPGEPPB

Sample ID	LCS1-59938	SampType:	LCS	TestCode:	200.7_WDPG	Units:	µg/L	Prep Date:	10/12/2016	RunNo:	111086
Client ID:	LCSW	Batch ID:	59938	TestNo:	EPA 200.7			Analysis Date:	10/13/2016	SeqNo:	2449345

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Calcium	10071.634	500	10000	0	101	85	115				
Iron	106.349	20	100.0	0	106	85	115				
Magnesium	10727.473	100	10000	0	107	85	115				

Sample ID	N021186-001B-MS1	SampType:	MS	TestCode:	200.7_WDPG	Units:	µg/L	Prep Date:	10/12/2016	RunNo:	111086
Client ID:	ZZZZZZ	Batch ID:	59938	TestNo:	EPA 200.7			Analysis Date:	10/13/2016	SeqNo:	2449349

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Calcium	140495.866	500	10000	130800	97.4	75	125				
Iron	103.694	20	100.0	4.015	99.7	75	125				
Magnesium	38858.443	100	10000	29040	98.2	75	125				

Sample ID	N021186-001B-MSD	SampType:	MSD	TestCode:	200.7_WDPG	Units:	µg/L	Prep Date:	10/12/2016	RunNo:	111086
Client ID:	ZZZZZZ	Batch ID:	59938	TestNo:	EPA 200.7			Analysis Date:	10/13/2016	SeqNo:	2449350

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Calcium	141146.972	500	10000	130800	104	75	125	140500	0.462	20	
Iron	106.208	20	100.0	4.015	102	75	125	103.7	2.40	20	
Magnesium	38719.135	100	10000	29040	96.8	75	125	38860	0.359	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
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT:	ARCADIS U.S., Inc. - California	**Client Sample ID:**	PE-01-1016
Lab Order:	N021186	**Collection Date:**	10/6/2016 12:00:00 PM
Project:	PG&E Topock - PMP, RC000753.801A	**Matrix:**	GROUNDWATER
Lab ID:	N021186-001		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
DISSOLVED METALS BY ICPMS							
EPA 200.8							
RunID: **NV00922-ICP7_161013C** QC Batch: **59888** PrepDate **10/10/2016** Analyst: **CEI**							
Manganese	160	0.28	2.5		µg/L	5	10/13/2016 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

CLIENT:	ARCADIS U.S., Inc. - California	**Client Sample ID:**	MW-925-Q416
Lab Order:	N021186	**Collection Date:**	10/6/2016 12:10:00 PM
Project:	PG&E Topock - PMP, RC000753.801A	**Matrix:**	GROUNDWATER
Lab ID:	N021186-002		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
DISSOLVED METALS BY ICPMS							
EPA 200.8							
RunID: **NV00922-ICP7_161013C** QC Batch: **59888**				PrepDate	**10/10/2016**		Analyst: **CEI**
Manganese	150	0.056	0.50		µg/L	1	10/13/2016 09:09 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		

CLIENT:	ARCADIS U.S., Inc. - California	**Client Sample ID:**	TW-03D-1016
Lab Order:	N021186	**Collection Date:**	10/6/2016 12:15:00 PM
Project:	PG&E Topock - PMP, RC000753.801A	**Matrix:**	GROUNDWATER
Lab ID:	N021186-003		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
DISSOLVED METALS BY ICPMS							
EPA 200.8							
RunID: **NV00922-ICP7_161013C** QC Batch: **59888** PrepDate **10/10/2016** Analyst: **CEI**							
Manganese	11	0.056	0.50		µg/L	1	10/13/2016 09:20 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

CLIENT: ARCADIS U.S., Inc. - California
Work Order: N021186
Project: PG&E Topock - PMP, RC000753.801A

ANALYTICAL QC SUMMARY REPORT

TestCode: 200.8_WDISS

Sample ID **MB-59888**	SampType: **MBLK**	TestCode: **200.8_WDISS**	Units: **µg/L**	Prep Date: **10/10/2016**	RunNo: **111094**
Client ID: **PBW**	Batch ID: **59888**	TestNo: **EPA 200.8**		Analysis Date: **10/13/2016**	SeqNo: **2449871**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Manganese	ND	0.50									

Sample ID **LCS-59888**	SampType: **LCS**	TestCode: **200.8_WDISS**	Units: **µg/L**	Prep Date: **10/10/2016**	RunNo: **111094**
Client ID: **LCSW**	Batch ID: **59888**	TestNo: **EPA 200.8**		Analysis Date: **10/13/2016**	SeqNo: **2449872**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Manganese	104.144	0.50	100.0	0	104	85	115				

Sample ID **N021157-003C-MS**	SampType: **MS**	TestCode: **200.8_WDISS**	Units: **µg/L**	Prep Date: **10/10/2016**	RunNo: **111094**
Client ID: **ZZZZZZ**	Batch ID: **59888**	TestNo: **EPA 200.8**		Analysis Date: **10/13/2016**	SeqNo: **2449880**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Manganese	126.898	2.5	100.0	48.38	78.5	75	125				

Sample ID **N021157-003C-MSD**	SampType: **MSD**	TestCode: **200.8_WDISS**	Units: **µg/L**	Prep Date: **10/10/2016**	RunNo: **111094**
Client ID: **ZZZZZZ**	Batch ID: **59888**	TestNo: **EPA 200.8**		Analysis Date: **10/13/2016**	SeqNo: **2449883**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Manganese	133.619	2.5	100.0	48.38	85.2	75	125	126.9	5.16	20	

Sample ID **N021186-001B-MS**	SampType: **MS**	TestCode: **200.8_WDISS**	Units: **µg/L**	Prep Date: **10/10/2016**	RunNo: **111094**
Client ID: **ZZZZZZ**	Batch ID: **59888**	TestNo: **EPA 200.8**		Analysis Date: **10/13/2016**	SeqNo: **2449887**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Manganese	256.010	2.5	100.0	160.0	96.0	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
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: ARCADIS U.S., Inc. - California
Lab Order: N021186
Project: PG&E Topock - PMP, RC000753.801A
Lab ID: N021186-001

Client Sample ID: PE-01-1016
Collection Date: 10/6/2016 12:00:00 PM
Matrix: GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
HEXAVALENT CHROMIUM BY IC							
			EPA 218.6				
RunID: **NV00922-IC7_161013B**	QC Batch: **R111101**			PrepDate			Analyst: **RAB**
Hexavalent Chromium	0.57	0.066	0.20		µg/L	1	10/13/2016 04:12 PM
DISSOLVED METALS BY ICP-MS							
			EPA 200.8				
RunID: **NV00922-ICP7_161013C**	QC Batch: **59888**			PrepDate	**10/10/2016**		Analyst: **CEI**
Chromium	ND	0.019	1.0		µg/L	1	10/13/2016 06:16 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

ANALYTICAL RESULTS

Print Date: *21-Oct-16*

CLIENT:	ARCADIS U.S., Inc. - California	**Client Sample ID:**	MW-925-Q416
Lab Order:	N021186	**Collection Date:**	10/6/2016 12:10:00 PM
Project:	PG&E Topock - PMP, RC000753.801A	**Matrix:**	GROUNDWATER
Lab ID:	N021186-002		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
HEXAVALENT CHROMIUM BY IC							
			EPA 218.6				
RunID: **NV00922-IC7_161013B**	QC Batch: **R111101**			PrepDate			Analyst: **RAB**
Hexavalent Chromium	0.82	0.066	0.20		µg/L	1	10/13/2016 02:57 PM
DISSOLVED METALS BY ICP-MS							
			EPA 200.8				
RunID: **NV00922-ICP7_161017D**	QC Batch: **59888**			PrepDate	**10/10/2016**		Analyst: **CEI**
Chromium	ND	0.019	1.0		µg/L	1	10/17/2016 12:54 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

CLIENT:	ARCADIS U.S., Inc. - California	**Client Sample ID:**	TW-03D-1016
Lab Order:	N021186	**Collection Date:**	10/6/2016 12:15:00 PM
Project:	PG&E Topock - PMP, RC000753.801A	**Matrix:**	GROUNDWATER
Lab ID:	N021186-003		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
HEXAVALENT CHROMIUM BY IC							
			EPA 218.6				
RunID: **NV00922-IC7_161013B**	QC Batch: **R111101**			PrepDate			Analyst: **RAB**
Hexavalent Chromium	580	3.3	10		µg/L	50	10/13/2016 03:06 PM
DISSOLVED METALS BY ICP-MS							
			EPA 200.8				
RunID: **NV00922-ICP7_161017D**	QC Batch: **59888**			PrepDate	**10/10/2016**		Analyst: **CEI**
Chromium	650	0.096	5.0		µg/L	5	10/17/2016 01:00 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

CLIENT: ARCADIS U.S., Inc. - California
Work Order: N021186
Project: PG&E Topock - PMP, RC000753.801A

ANALYTICAL QC SUMMARY REPORT

TestCode: 200.8DIS_CrPGE

Sample ID	MB-59888	SampType:	MBLK	TestCode:	200.8DIS_Cr	Units:	µg/L	Prep Date:	10/10/2016	RunNo:	111094
Client ID:	PBW	Batch ID:	59888	TestNo:	EPA 200.8			Analysis Date:	10/13/2016	SeqNo:	2449813

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium	ND	1.0									

Sample ID	LCS-59888	SampType:	LCS	TestCode:	200.8DIS_Cr	Units:	µg/L	Prep Date:	10/10/2016	RunNo:	111094
Client ID:	LCSW	Batch ID:	59888	TestNo:	EPA 200.8			Analysis Date:	10/13/2016	SeqNo:	2449814

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium	10.774	1.0	10.00	0	108	85	115				

Sample ID	N021157-003C-MS	SampType:	MS	TestCode:	200.8DIS_Cr	Units:	µg/L	Prep Date:	10/10/2016	RunNo:	111094
Client ID:	ZZZZZZ	Batch ID:	59888	TestNo:	EPA 200.8			Analysis Date:	10/13/2016	SeqNo:	2449822

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium	11.326	5.0	10.00	2.748	85.8	75	125				

Sample ID	N021157-003C-MSD	SampType:	MSD	TestCode:	200.8DIS_Cr	Units:	µg/L	Prep Date:	10/10/2016	RunNo:	111094
Client ID:	ZZZZZZ	Batch ID:	59888	TestNo:	EPA 200.8			Analysis Date:	10/13/2016	SeqNo:	2449825

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium	11.790	5.0	10.00	2.748	90.4	75	125	11.33	4.02	20	

Sample ID	N021186-001B-MS	SampType:	MS	TestCode:	200.8DIS_Cr	Units:	µg/L	Prep Date:	10/10/2016	RunNo:	111094
Client ID:	ZZZZZZ	Batch ID:	59888	TestNo:	EPA 200.8			Analysis Date:	10/13/2016	SeqNo:	2449827

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium	9.861	1.0	10.00	0.6885	91.7	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
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: ARCADIS U.S., Inc. - California
Work Order: N021186
Project: PG&E Topock - PMP, RC000753.801A

ANALYTICAL QC SUMMARY REPORT

TestCode: 218.6_WPGE

Sample ID	LCS-R111101	SampType:	LCS	TestCode:	218.6_WPGE	Units:	µg/L	Prep Date:		RunNo:	111101	
Client ID:	LCSW	Batch ID:	R111101	TestNo:	EPA 218.6			Analysis Date:	10/13/2016	SeqNo:	2450321	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual	
Hexavalent Chromium	4.914	0.20	5.000	0	98.3	90	110					

Sample ID	MB-R111101	SampType:	MBLK	TestCode:	218.6_WPGE	Units:	µg/L	Prep Date:		RunNo:	111101	
Client ID:	PBW	Batch ID:	R111101	TestNo:	EPA 218.6			Analysis Date:	10/13/2016	SeqNo:	2450322	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual	
Hexavalent Chromium	ND	0.20										

Sample ID	N021186-001AMS	SampType:	MS	TestCode:	218.6_WPGE	Units:	µg/L	Prep Date:		RunNo:	111101	
Client ID:	ZZZZZZ	Batch ID:	R111101	TestNo:	EPA 218.6			Analysis Date:	10/13/2016	SeqNo:	2450330	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual	
Hexavalent Chromium	1.578	0.20	1.000	0.5654	101	90	110					

Sample ID	N021186-002AMS	SampType:	MS	TestCode:	218.6_WPGE	Units:	µg/L	Prep Date:		RunNo:	111101	
Client ID:	ZZZZZZ	Batch ID:	R111101	TestNo:	EPA 218.6			Analysis Date:	10/13/2016	SeqNo:	2450331	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual	
Hexavalent Chromium	1.801	0.20	1.000	0.8186	98.2	90	110					

Sample ID	N021186-003AMS	SampType:	MS	TestCode:	218.6_WPGE	Units:	µg/L	Prep Date:		RunNo:	111101	
Client ID:	ZZZZZZ	Batch ID:	R111101	TestNo:	EPA 218.6			Analysis Date:	10/13/2016	SeqNo:	2450332	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual	
Hexavalent Chromium	847.660	10	250.0	577.9	108	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: N021186
Project: PG&E Topock - PMP, RC000753.801A

ANALYTICAL QC SUMMARY REPORT

TestCode: 218.6_WPGE

Sample ID **N021185-001AMS** SampType: **MS** TestCode: **218.6_WPGE** Units: **µg/L** Prep Date: RunNo: **111101**
Client ID: **ZZZZZZ** Batch ID: **R111101** TestNo: **EPA 218.6** Analysis Date: **10/13/2016** SeqNo: **2450333**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	40.489	1.0	25.00	16.01	97.9	90	110				

Sample ID **N021185-001AMSD** SampType: **MSD** TestCode: **218.6_WPGE** Units: **µg/L** Prep Date: RunNo: **111101**
Client ID: **ZZZZZZ** Batch ID: **R111101** TestNo: **EPA 218.6** Analysis Date: **10/13/2016** SeqNo: **2450334**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	40.996	1.0	25.00	16.01	99.9	90	110	40.49	1.24	20	

Sample ID **N021185-002ADUP** SampType: **DUP** TestCode: **218.6_WPGE** Units: **µg/L** Prep Date: RunNo: **111101**
Client ID: **ZZZZZZ** Batch ID: **R111101** TestNo: **EPA 218.6** Analysis Date: **10/13/2016** SeqNo: **2450335**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	16.696	1.0						16.25	2.71	20	

Sample ID **N021185-002AMS** SampType: **MS** TestCode: **218.6_WPGE** Units: **µg/L** Prep Date: RunNo: **111101**
Client ID: **ZZZZZZ** Batch ID: **R111101** TestNo: **EPA 218.6** Analysis Date: **10/13/2016** SeqNo: **2450336**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	41.640	1.0	25.00	16.25	102	90	110				

Sample ID **N021185-003AMS** SampType: **MS** TestCode: **218.6_WPGE** Units: **µg/L** Prep Date: RunNo: **111101**
Client ID: **ZZZZZZ** Batch ID: **R111101** TestNo: **EPA 218.6** Analysis Date: **10/13/2016** SeqNo: **2450342**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	14.292	1.0	5.000	9.083	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	**Client Sample ID:**	PE-01-1016
Lab Order:	N021186	**Collection Date:**	10/6/2016 12:00:00 PM
Project:	PG&E Topock - PMP, RC000753.801A	**Matrix:**	GROUNDWATER
Lab ID:	N021186-001		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
ALKALINITY, SPECIATED							
			SM 2320 B				
RunID: **WETCHEM_161007A**	QC Batch: **R110976**			PrepDate			Analyst: **LR**
Alkalinity, Bicarbonate (As CaCO3)	240	1.2	5.0		mg/L	1	10/7/2016 09:25 AM
Alkalinity, Carbonate (As CaCO3)	ND	1.2	5.0		mg/L	1	10/7/2016 09:25 AM
Alkalinity, Hydroxide (As CaCO3)	ND	1.2	5.0		mg/L	1	10/7/2016 09:25 AM
Alkalinity, Total (As CaCO3)	240	1.2	5.0		mg/L	1	10/7/2016 09:25 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		

CLIENT:	ARCADIS U.S., Inc. - California	**Client Sample ID:**	MW-925-Q416
Lab Order:	N021186	**Collection Date:**	10/6/2016 12:10:00 PM
Project:	PG&E Topock - PMP, RC000753.801A	**Matrix:**	GROUNDWATER
Lab ID:	N021186-002		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
ALKALINITY, SPECIATED							
			SM 2320 B				
RunID: **WETCHEM_161007A**	QC Batch: **R110976**			PrepDate			Analyst: **LR**
Alkalinity, Bicarbonate (As CaCO3)	240	1.2	5.0		mg/L	1	10/7/2016 09:25 AM
Alkalinity, Carbonate (As CaCO3)	ND	1.2	5.0		mg/L	1	10/7/2016 09:25 AM
Alkalinity, Hydroxide (As CaCO3)	ND	1.2	5.0		mg/L	1	10/7/2016 09:25 AM
Alkalinity, Total (As CaCO3)	240	1.2	5.0		mg/L	1	10/7/2016 09:25 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		

CLIENT:	ARCADIS U.S., Inc. - California	**Client Sample ID:**	TW-03D-1016
Lab Order:	N021186	**Collection Date:**	10/6/2016 12:15:00 PM
Project:	PG&E Topock - PMP, RC000753.801A	**Matrix:**	GROUNDWATER
Lab ID:	N021186-003		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
ALKALINITY, SPECIATED							
			SM 2320 B				
RunID: **WETCHEM_161007A**	QC Batch: **R110976**			PrepDate			Analyst: **LR**
Alkalinity, Bicarbonate (As CaCO3)	150	1.2	5.0		mg/L	1	10/7/2016 09:25 AM
Alkalinity, Carbonate (As CaCO3)	ND	1.2	5.0		mg/L	1	10/7/2016 09:25 AM
Alkalinity, Hydroxide (As CaCO3)	ND	1.2	5.0		mg/L	1	10/7/2016 09:25 AM
Alkalinity, Total (As CaCO3)	150	1.2	5.0		mg/L	1	10/7/2016 09:25 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		

CLIENT: ARCADIS U.S., Inc. - California
Work Order: N021186
Project: PG&E Topock - PMP, RC000753.801A

ANALYTICAL QC SUMMARY REPORT

TestCode: 2320_W_SP

Sample ID **LCS-R110976** SampType: **LCS** TestCode: **2320_W_SP** Units: **mg/L** Prep Date: RunNo: **110976**
Client ID: **LCSW** Batch ID: **R110976** TestNo: **SM 2320 B** Analysis Date: **10/7/2016** SeqNo: **2443551**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Alkalinity, Bicarbonate (As CaCO3)	96.320	5.0	100.0	0	96.3	85	115				
Alkalinity, Total (As CaCO3)	98.485	5.0	100.0	0	98.5	85	115				

Sample ID **MB-R110976** SampType: **MBLK** TestCode: **2320_W_SP** Units: **mg/L** Prep Date: RunNo: **110976**
Client ID: **PBW** Batch ID: **R110976** TestNo: **SM 2320 B** Analysis Date: **10/7/2016** SeqNo: **2443552**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Alkalinity, Bicarbonate (As CaCO3)	ND	5.0									
Alkalinity, Carbonate (As CaCO3)	ND	5.0									
Alkalinity, Hydroxide (As CaCO3)	ND	5.0									
Alkalinity, Total (As CaCO3)	ND	5.0									

Sample ID **N021186-001CDUP** SampType: **DUP** TestCode: **2320_W_SP** Units: **mg/L** Prep Date: RunNo: **110976**
Client ID: **ZZZZZZ** Batch ID: **R110976** TestNo: **SM 2320 B** Analysis Date: **10/7/2016** SeqNo: **2443554**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Alkalinity, Bicarbonate (As CaCO3)	234.848	5.0						237.0	0.917	30	
Alkalinity, Carbonate (As CaCO3)	ND	5.0						0	0	30	
Alkalinity, Hydroxide (As CaCO3)	ND	5.0						0	0	30	
Alkalinity, Total (As CaCO3)	234.848	5.0						237.0	0.917	30	

Sample ID **N021186-003CMS** SampType: **MS** TestCode: **2320_W_SP** Units: **mg/L** Prep Date: RunNo: **110976**
Client ID: **ZZZZZZ** Batch ID: **R110976** TestNo: **SM 2320 B** Analysis Date: **10/7/2016** SeqNo: **2443557**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Alkalinity, Bicarbonate (As CaCO3)	241.342	5.0	100.0	147.2	94.2	75	125				
Alkalinity, Total (As CaCO3)	241.342	5.0	100.0	147.2	94.2	75	125				

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: N021186
Project: PG&E Topock - PMP, RC000753.801A

ANALYTICAL QC SUMMARY REPORT

TestCode: 2320_W_SP

Sample ID	N021186-003CMSD	SampType:	MSD	TestCode:	2320_W_SP	Units:	mg/L	Prep Date:		RunNo:	110976
Client ID:	ZZZZZZ	Batch ID:	R110976	TestNo:	SM 2320 B			Analysis Date:	10/7/2016	SeqNo:	2443558

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Alkalinity, Bicarbonate (As CaCO3)	242.424	5.0	100.0	147.2	95.2	75	125	241.3	0.447	20	
Alkalinity, Total (As CaCO3)	242.424	5.0	100.0	147.2	95.2	75	125	241.3	0.447	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
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: ARCADIS U.S., Inc. - California
Lab Order: N021186
Project: PG&E Topock - PMP, RC000753.801A
Lab ID: N021186-001

Client Sample ID: PE-01-1016
Collection Date: 10/6/2016 12:00:00 PM
Matrix: GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
ANIONS BY ION CHROMATOGRAPHY							
			EPA 300.0				
RunID: **NV00922-IC8_161007A** QC Batch: **R111001**				PrepDate			Analyst: **QBM**
Chloride	1200	3.9	100		mg/L	200	10/7/2016 01:22 PM
ANIONS BY ION CHROMATOGRAPHY							
			EPA 300.0				
RunID: **NV00922-IC8_161007A** QC Batch: **R111001**				PrepDate			Analyst: **QBM**
Sulfate	400	3.3	25		mg/L	50	10/7/2016 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

CLIENT:	ARCADIS U.S., Inc. - California	**Client Sample ID:**	MW-925-Q416
Lab Order:	N021186	**Collection Date:**	10/6/2016 12:10:00 PM
Project:	PG&E Topock - PMP, RC000753.801A	**Matrix:**	GROUNDWATER
Lab ID:	N021186-002		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
ANIONS BY ION CHROMATOGRAPHY							
EPA 300.0							
RunID: **NV00922-IC8_161007A** QC Batch: **R111001**				PrepDate			Analyst: **QBM**
Chloride	1200	3.9	100		mg/L	200	10/7/2016 01:38 PM
ANIONS BY ION CHROMATOGRAPHY							
EPA 300.0							
RunID: **NV00922-IC8_161007A** QC Batch: **R111001**				PrepDate			Analyst: **QBM**
Sulfate	400	3.3	25		mg/L	50	10/7/2016 03:55 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

CLIENT:	ARCADIS U.S., Inc. - California	**Client Sample ID:**	TW-03D-1016
Lab Order:	N021186	**Collection Date:**	10/6/2016 12:15:00 PM
Project:	PG&E Topock - PMP, RC000753.801A	**Matrix:**	GROUNDWATER
Lab ID:	N021186-003		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
ANIONS BY ION CHROMATOGRAPHY							
EPA 300.0							
RunID: **NV00922-IC8_161007A** QC Batch: **R111001**				PrepDate			Analyst: **QBM**
Chloride	2300	9.7	250		mg/L	500	10/7/2016 01:53 PM
ANIONS BY ION CHROMATOGRAPHY							
EPA 300.0							
RunID: **NV00922-IC8_161007A** QC Batch: **R111001**				PrepDate			Analyst: **QBM**
Sulfate	510	6.6	50		mg/L	100	10/7/2016 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

CLIENT: ARCADIS U.S., Inc. - California
Work Order: N021186
Project: PG&E Topock - PMP, RC000753.801A

ANALYTICAL QC SUMMARY REPORT

TestCode: 300_W_CLPGE

Sample ID	MB-R111001_CL	SampType:	MBLK	TestCode:	300_W_CLP	Units:	mg/L	Prep Date:		RunNo:	111001
Client ID:	PBW	Batch ID:	R111001	TestNo:	EPA 300.0			Analysis Date:	10/7/2016	SeqNo:	2444593

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride	ND	0.50									

Sample ID	LCS-R111001_CL	SampType:	LCS	TestCode:	300_W_CLP	Units:	mg/L	Prep Date:		RunNo:	111001
Client ID:	LCSW	Batch ID:	R111001	TestNo:	EPA 300.0			Analysis Date:	10/7/2016	SeqNo:	2444594

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride	2.048	0.50	2.000	0	102	90	110				

Sample ID	N021186-001CDUP	SampType:	DUP	TestCode:	300_W_CLP	Units:	mg/L	Prep Date:		RunNo:	111001
Client ID:	ZZZZZZ	Batch ID:	R111001	TestNo:	EPA 300.0			Analysis Date:	10/7/2016	SeqNo:	2444600

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride	1178.040	100						1179	0.0713	20	

Sample ID	N021186-003CMS	SampType:	MS	TestCode:	300_W_CLP	Units:	mg/L	Prep Date:		RunNo:	111001
Client ID:	ZZZZZZ	Batch ID:	R111001	TestNo:	EPA 300.0			Analysis Date:	10/7/2016	SeqNo:	2444601

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride	3353.800	250	1000	2254	110	80	120				

Sample ID	N021186-003CMSD	SampType:	MSD	TestCode:	300_W_CLP	Units:	mg/L	Prep Date:		RunNo:	111001
Client ID:	ZZZZZZ	Batch ID:	R111001	TestNo:	EPA 300.0			Analysis Date:	10/7/2016	SeqNo:	2444602

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride	3359.950	250	1000	2254	111	80	120	3354	0.183	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

CLIENT: ARCADIS U.S., Inc. - California
Work Order: N021186
Project: PG&E Topock - PMP, RC000753.801A

ANALYTICAL QC SUMMARY REPORT

TestCode: 300_W_SO4PGE

Sample ID	MB-R111001_SO4	SampType:	MBLK	TestCode:	300_W_SO4P	Units:	mg/L	Prep Date:		RunNo:	111001
Client ID:	PBW	Batch ID:	R111001	TestNo:	EPA 300.0			Analysis Date:	10/7/2016	SeqNo:	2444653

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Sulfate	ND	0.50									

Sample ID	LCS-R111001_SO4	SampType:	LCS	TestCode:	300_W_SO4P	Units:	mg/L	Prep Date:		RunNo:	111001
Client ID:	LCSW	Batch ID:	R111001	TestNo:	EPA 300.0			Analysis Date:	10/7/2016	SeqNo:	2444654

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Sulfate	4.042	0.50	4.000	0	101	90	110				

Sample ID	N021186-001CDUP	SampType:	DUP	TestCode:	300_W_SO4P	Units:	mg/L	Prep Date:		RunNo:	111001
Client ID:	ZZZZZZ	Batch ID:	R111001	TestNo:	EPA 300.0			Analysis Date:	10/7/2016	SeqNo:	2444660

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Sulfate	396.250	25						397.7	0.353	20	

Sample ID	N021186-003CMS	SampType:	MS	TestCode:	300_W_SO4P	Units:	mg/L	Prep Date:		RunNo:	111001
Client ID:	ZZZZZZ	Batch ID:	R111001	TestNo:	EPA 300.0			Analysis Date:	10/7/2016	SeqNo:	2444665

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Sulfate	922.800	50	400.0	511.8	103	80	120				

Sample ID	N021186-003CMSD	SampType:	MSD	TestCode:	300_W_SO4P	Units:	mg/L	Prep Date:		RunNo:	111001
Client ID:	ZZZZZZ	Batch ID:	R111001	TestNo:	EPA 300.0			Analysis Date:	10/7/2016	SeqNo:	2444666

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Sulfate	924.160	50	400.0	511.8	103	80	120	922.8	0.147	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

ASSET Laboratories

ANALYTICAL RESULTS

Print Date: *21-Oct-16*

CLIENT:	ARCADIS U.S., Inc. - California	**Client Sample ID:**	PE-01-1016
Lab Order:	N021186	**Collection Date:**	10/6/2016 12:00:00 PM
Project:	PG&E Topock - PMP, RC000753.801A	**Matrix:**	GROUNDWATER
Lab ID:	N021186-001		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
NITRATE/NITRITE-N BY CADMIUM REDUCTION							
			SM4500-NO3F				
RunID: **NV00922-WC_161012D**	QC Batch: **R111089**		PrepDate				Analyst: **RB**
Nitrate/Nitrite as N	ND	0.022	0.050		mg/L	1	10/12/2016

Qualifiers:

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

CLIENT:	ARCADIS U.S., Inc. - California	**Client Sample ID:**	MW-925-Q416
Lab Order:	N021186	**Collection Date:**	10/6/2016 12:10:00 PM
Project:	PG&E Topock - PMP, RC000753.801A	**Matrix:**	GROUNDWATER
Lab ID:	N021186-002		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
NITRATE/NITRITE-N BY CADMIUM REDUCTION							
			SM4500-NO3F				
RunID: **NV00922-WC_161020A**	QC Batch: **R111188**		PrepDate				Analyst: **RB**
Nitrate/Nitrite as N	ND	0.022	0.050		mg/L	1	10/20/2016

Qualifiers:

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

CLIENT:	ARCADIS U.S., Inc. - California	**Client Sample ID:**	TW-03D-1016
Lab Order:	N021186	**Collection Date:**	10/6/2016 12:15:00 PM
Project:	PG&E Topock - PMP, RC000753.801A	**Matrix:**	GROUNDWATER
Lab ID:	N021186-003		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
NITRATE/NITRITE-N BY CADMIUM REDUCTION							
			SM4500-NO3F				
RunID: **NV00922-WC_161012D**	QC Batch: **R111089**		PrepDate				Analyst: **RB**
Nitrate/Nitrite as N	2.9	0.11	0.25		mg/L	5	10/12/2016

Qualifiers:

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

CLIENT: ARCADIS U.S., Inc. - California
Work Order: N021186
Project: PG&E Topock - PMP, RC000753.801A

ANALYTICAL QC SUMMARY REPORT

TestCode: 4500N03F_W

Sample ID	MB-R111089	SampType:	MBLK	TestCode:	4500N03F_W	Units:	mg/L	Prep Date:		RunNo:	111089
Client ID:	PBW	Batch ID:	R111089	TestNo:	SM4500-NO3			Analysis Date:	10/12/2016	SeqNo:	2449679

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrate/Nitrite as N	0.025	0.050									

Sample ID	LCS-R11089	SampType:	LCS	TestCode:	4500N03F_W	Units:	mg/L	Prep Date:		RunNo:	111089
Client ID:	LCSW	Batch ID:	R111089	TestNo:	SM4500-NO3			Analysis Date:	10/12/2016	SeqNo:	2449680

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	96.9	85	115				

Sample ID	N021156-001CDUP	SampType:	DUP	TestCode:	4500N03F_W	Units:	mg/L	Prep Date:		RunNo:	111089
Client ID:	ZZZZZZ	Batch ID:	R111089	TestNo:	SM4500-NO3			Analysis Date:	10/12/2016	SeqNo:	2449682

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						0.04220	0	20	

Sample ID	N021156-001CMS	SampType:	MS	TestCode:	4500N03F_W	Units:	mg/L	Prep Date:		RunNo:	111089
Client ID:	ZZZZZZ	Batch ID:	R111089	TestNo:	SM4500-NO3			Analysis Date:	10/12/2016	SeqNo:	2449683

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrate/Nitrite as N	0.511	0.050	0.5000	0.04220	93.8	75	125				

Sample ID	N021156-001CMSD	SampType:	MSD	TestCode:	4500N03F_W	Units:	mg/L	Prep Date:		RunNo:	111089
Client ID:	ZZZZZZ	Batch ID:	R111089	TestNo:	SM4500-NO3			Analysis Date:	10/12/2016	SeqNo:	2449684

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrate/Nitrite as N	0.526	0.050	0.5000	0.04220	96.7	75	125	0.5113	2.82	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
DO	Surrogate Diluted Out		Calculations are based on raw values		

CLIENT: ARCADIS U.S., Inc. - California
Work Order: N021186
Project: PG&E Topock - PMP, RC000753.801A

ANALYTICAL QC SUMMARY REPORT

TestCode: 4500N03F_W

Sample ID	MB-R111188	SampType:	MBLK	TestCode:	4500N03F_W	Units:	mg/L	Prep Date:		RunNo:	111188
Client ID:	PBW	Batch ID:	R111188	TestNo:	SM4500-NO3			Analysis Date:	10/20/2016	SeqNo:	2453930

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-R111188	SampType:	LCS	TestCode:	4500N03F_W	Units:	mg/L	Prep Date:		RunNo:	111188
Client ID:	LCSW	Batch ID:	R111188	TestNo:	SM4500-NO3			Analysis Date:	10/20/2016	SeqNo:	2454006

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrate/Nitrite as N	0.503	0.050	0.5000	0	101	85	115				

Sample ID	N021186-002DDUP	SampType:	DUP	TestCode:	4500N03F_W	Units:	mg/L	Prep Date:		RunNo:	111188
Client ID:	ZZZZZZ	Batch ID:	R111188	TestNo:	SM4500-NO3			Analysis Date:	10/20/2016	SeqNo:	2454009

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	N021186-002DMS	SampType:	MS	TestCode:	4500N03F_W	Units:	mg/L	Prep Date:		RunNo:	111188
Client ID:	ZZZZZZ	Batch ID:	R111188	TestNo:	SM4500-NO3			Analysis Date:	10/20/2016	SeqNo:	2454010

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrate/Nitrite as N	0.509	0.050	0.5000	0	102	75	125				

Sample ID	N021186-002DMSD	SampType:	MSD	TestCode:	4500N03F_W	Units:	mg/L	Prep Date:		RunNo:	111188
Client ID:	ZZZZZZ	Batch ID:	R111188	TestNo:	SM4500-NO3			Analysis Date:	10/20/2016	SeqNo:	2454011

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrate/Nitrite as N	0.534	0.050	0.5000	0	107	75	125	0.5092	4.68	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

ASSET LABORATORIES
ANALYTICAL SUPPORT SERVICES FOR ENVIRONMENTAL TECHNOLOGIES

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CHAIN OF CUSTODY RECORD

Page 1 of 1

Client: Arcadis	Report to: Dan Bush	Bill to: Marty Bloes	EDD Requirement: Excel EDD; Geotracker; Labspec; Others ✓; Specify: RWQCB
Address: 1410 Rocky Ridge Dr # 330	Company: Arcadis	Address:	QA/QC: RTNE; RWQCB ✓; CalTrans; LEVEL III; LEVEL IV; Regulatory; Specify State:
Address: Roseville, CA 95661	Email: [redacted]	Address:	Sample Receipt Condition: Y N; 1. Chilled ✓; 2. Headspace; 3. Container Intact; 4. Seal Present; 5. IR number; 6. Method of Cooling: Ice
Phone: 916-786-3302 Fax:	Address: 1410 Rocky Ridge Dr # 330, Roseville, CA 95661	Email to: mbloes@pivox.com P.O.#	Global ID:
Submitted By: Joe Gastel	Phone: 916-786-3302 Fax:	Phone: 949-727-1400, ext 200 Fax:	Sample Temp: 2.2°C
Title: Sample Tech			
Signature: Joe Gastel Date: 10/6/16	Sampled By: Jason Mahn	Matrix: Ground x; Potable; NPDES; Surface; Sediment; Soil; Other Solid	Courier:
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		Tracking No.:
Project Name: PG&E Topock - PMP	Signature: [redacted] Date: 10/6/16		
Project Number: RC000753 801A			

Item No.	Laboratory Work Order No.	Sample ID/Location	Sample Date	Sample Time	Others	Cr(VI) FF (E218.6) (NH4)2 SO4, NH4, OH 250 mL poly	Cr(VI) FF (SM3500-CrB) (NH4)2 SO4, NH4, OH 250 mL poly	Dissolved metals (E200.8) FF: HNO3 500mL poly Cr, Mn	Dissolved metals (E200.7) FF: HNO3 500mL poly Ca, Mg, Na, Fe	Dissolved metals (SW6010B/SW6020Adis) FF: HNO3 500mL poly As, Mn, Fe, Se, Mo, Ba	Total metals (SW6010B): HNO3 500 mL poly Fe	Anions (E300.0): 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) Nitrate, H2SO4 125 mL poly	Turn Around Time	No. of Container	Container Type	PRESERVATION	Remarks
1	N021186 - 01	PE-01-1016	10-6-16	1200		X		X	X			X	X	X	X	X		X	E	4	P	BNS
2	- 02	MW-925-Q416	↓	1210		X		X	X			X	X	X	X	X		X	E	4	P	BNS
3	- 03	TW-03D-1016	↓	1215		X		X	X			X	X	X	X	X		X	E	4	P	BNS
4																						
5																						
6																						
7																						
8																						
9																						
10																						

Relinquished by (Signature and Printed Name)	Date/Time	Relinquished by (Signature and Printed Name)	Date/Time
[redacted]	10/6/16 1615	[redacted]	10/6/16 1615
[redacted]	10/6/16 1937	[redacted]	10/6/16 1937
[redacted]	Date/Time:	[redacted]	Date/Time:

Turn Around Time (TAT)

A	< 24 Hrs or Same Day TAT
B	= Next Workday
C	= 2 Workdays
D	= 3 Workdays
X	= Routine 5-7 Workdays

TAT Starts at 8 AM the following day if samples received after 3:00PM

Special Instruction:
Tittle 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 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:				Container Type:		
H=HCL	N=HNO_3	S=H_2SO_4	C=4°C	T=Tube	V=VOA	P=Pint
Z=Zn(AC)$_2$	O=NaOH	T=$Na_2S_2O_3$		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:	10/6/2016	Workorder:	N021186
Rep sample Temp (Deg C):	2.2	IR Gun ID:	1
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 ☑	No ☐	Not Present ☐
2. Custody seals intact, signed, dated on shippping container/cooler?	Yes ☐	No ☐	Not Present ☑
3. Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
4. Chain of custody present?	Yes ☑	No ☐	
5. Sampler's name present in COC?	Yes ☑	No ☐	
6. Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
7. Chain of custody agrees with sample labels?	Yes ☑	No ☐	
8. Samples in proper container/bottle?	Yes ☑	No ☐	
9. Sample containers intact?	Yes ☑	No ☐	
10. Sufficient sample volume for indicated test?	Yes ☑	No ☐	
11. All samples received within holding time?	Yes ☐	No ☑	
12. Temperature of rep sample or Temp Blank within acceptable limit?	Yes ☑	No ☐	NA ☐
13. Water - VOA vials have zero headspace?	Yes ☐	No ☐	NA ☑
14. Water - pH acceptable upon receipt? Example: pH > 12 for (CN,S); pH<2 for Metals	Yes ☑	No ☐	NA ☐
15. Did the bottle labels indicate correct preservatives used?	Yes ☑	No ☐	NA ☐
16. Were there Non-Conformance issues at login?	Yes ☑	No ☐	NA ☐
Was Client notified?	Yes ☐	No ☐	NA ☑

Comments: Sample for pH was past holding time upon receipt.

Checklist Completed By: HG 10/7/2016

Reviewed By: 10/9/2016

ASSET Laboratories

WORK ORDER Summary

09-Oct-16

WorkOrder: N021186

Client ID: ARCUS02

Project: PG&E Topock - PMP, RC000753.801A **QC Level:** Level IV **Date Received:** 10/6/2016

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
N021186-001A	PE-01-1016	10/6/2016 12:00:00 PM	10/20/2016	Groundwater	EPA 218.6	Hexavalent Chromium by IC	☐	☐	☐	WW
N021186-001B			10/20/2016			AQPREP TOTAL METALS: ICP, FLAA	☐	☐	☐	WW
			10/20/2016		EPA 200.7	DISSOLVED METALS BY ICP	☐	☐	☐	WW
			10/20/2016			AQPREP TOTAL METALS: ICP, FLAA	☐	☐	☐	WW
			10/20/2016		EPA 200.8	DISSOLVED METALS BY ICPMS	☐	☐	☐	WW
			10/20/2016		EPA 200.8	DISSOLVED METALS BY ICP-MS	☐	☐	☐	WW
N021186-001C			10/20/2016		EPA 120.1	SPECIFIC CONDUCTANCE	☐	☐	☐	WW
			10/20/2016		SM4500-H+B	pH	☐	☐	☐	WW
			10/20/2016		SM2540C	TOTAL FILTERABLE RESIDUE	☐	☐	☐	WW
			10/20/2016			Total Dissolved Solids Prep	☐	☐	☐	WW
			10/20/2016		SM 2320 B	ALKALINITY, SPECIATED	☐	☐	☐	WW
			10/20/2016		EPA 300.0	ANIONS BY ION CHROMATOGRAPHY	☐	☐	☐	WW
			10/20/2016		EPA 300.0	ANIONS BY ION CHROMATOGRAPHY	☐	☐	☐	WW
			10/20/2016		SM 1030F1	Cation-Anion Balance Calculation	☐	☐	☐	WW
N021186-001D			10/20/2016		SM4500-NO3F	NITRATE/NITRITE-N BY CADMIUM REDUCTION	☐	☐	☐	WW
N021186-002A	MW-925-Q416	10/6/2016 12:10:00 PM	10/20/2016		EPA 218.6	Hexavalent Chromium by IC	☐	☐	☐	WW
N021186-002B			10/20/2016			AQPREP TOTAL METALS: ICP, FLAA	☐	☐	☐	WW
			10/20/2016		EPA 200.7	DISSOLVED METALS BY ICP	☐	☐	☐	WW
			10/20/2016			AQPREP TOTAL METALS: ICP, FLAA	☐	☐	☐	WW
			10/20/2016		EPA 200.8	DISSOLVED METALS BY ICPMS	☐	☐	☐	WW
			10/20/2016		EPA 200.8	DISSOLVED METALS BY ICP-MS	☐	☐	☐	WW
N021186-002C			10/20/2016		EPA 120.1	SPECIFIC CONDUCTANCE	☐	☐	☐	WW

ASSET Laboratories

WORK ORDER Summary

09-Oct-16

WorkOrder: N021186

Client ID: ARCUS02

Project: PG&E Topock - PMP, RC000753.801A **QC Level:** Level IV **Date Received:** 10/6/2016

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
N021186-002C	MW-925-Q416	10/6/2016 12:10:00 PM	10/20/2016	Groundwater	SM4500-H+B	pH	☐	☐	☐	WW
			10/20/2016		SM2540C	TOTAL FILTERABLE RESIDUE	☐	☐	☐	WW
			10/20/2016			Total Dissolved Solids Prep	☐	☐	☐	WW
			10/20/2016		SM 2320 B	ALKALINITY, SPECIATED	☐	☐	☐	WW
			10/20/2016		EPA 300.0	ANIONS BY ION CHROMATOGRAPHY	☐	☐	☐	WW
			10/20/2016		EPA 300.0	ANIONS BY ION CHROMATOGRAPHY	☐	☐	☐	WW
			10/20/2016		SM 1030F1	Cation-Anion Balance Calculation	☐	☐	☐	WW
N021186-002D			10/20/2016		SM4500-NO3F	NITRATE/NITRITE-N BY CADMIUM REDUCTION	☐	☐	☐	WW
N021186-003A	TW-03D-1016	10/6/2016 12:15:00 PM	10/20/2016		EPA 218.6	Hexavalent Chromium by IC	☐	☐	☐	WW
N021186-003B			10/20/2016			AQPREP TOTAL METALS: ICP, FLAA	☐	☐	☐	WW
			10/20/2016		EPA 200.7	DISSOLVED METALS BY ICP	☐	☐	☐	WW
			10/20/2016			AQPREP TOTAL METALS: ICP, FLAA	☐	☐	☐	WW
			10/20/2016		EPA 200.8	DISSOLVED METALS BY ICPMS	☐	☐	☐	WW
			10/20/2016		EPA 200.8	DISSOLVED METALS BY ICP-MS	☐	☐	☐	WW
N021186-003C			10/20/2016		EPA 120.1	SPECIFIC CONDUCTANCE	☐	☐	☐	WW
			10/20/2016		SM4500-H+B	pH	☐	☐	☐	WW
			10/20/2016		SM2540C	TOTAL FILTERABLE RESIDUE	☐	☐	☐	WW
			10/20/2016			Total Dissolved Solids Prep	☐	☐	☐	WW
			10/20/2016		SM 2320 B	ALKALINITY, SPECIATED	☐	☐	☐	WW
			10/20/2016		EPA 300.0	ANIONS BY ION CHROMATOGRAPHY	☐	☐	☐	WW
			10/20/2016		EPA 300.0	ANIONS BY ION CHROMATOGRAPHY	☐	☐	☐	WW
			10/20/2016		SM 1030F1	Cation-Anion Balance Calculation	☐	☐	☐	WW

ASSET Laboratories

WORK ORDER Summary

09-Oct-16

WorkOrder: N021186

Client ID: ARCUS02

Project: PG&E Topock - PMP, RC000753.801A **QC Level:** Level IV **Date Received:** 10/6/2016

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
N021186-003D	TW-03D-1016	10/6/2016 12:15:00 PM	10/20/2016	Groundwater	SM4500-NO3F	NITRATE/NITRITE-N BY CADMIUM REDUCTION	☐	☐	☐	WW
N021186-004A	FOLDER		10/20/2016		EDD	RWQCB	☐	☐	☐	LAB
			10/20/2016		Folder	Folder	☐	☐	☐	LAB