Pacific Gas and Electric Company

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July 15, 2015

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Subject: Topock IM-3 Combined Second Quarter 2015 Monitoring, Semiannual January – June 2015 Operation and Maintenance Report
PG&E Topock Compressor Station, Needles, California
Interim Measure No. 3 Groundwater Treatment System
(Document ID: PGE20150715A)

Dear Ms. Innis and Mr. Perdue:

Enclosed is the Second Quarter 2015 Monitoring, Semiannual January – June 2015 Operation and Maintenance Report for the Pacific Gas and Electric Company (PG&E) Topock Compressor Station, Interim Measure No. 3 (IM-3) Groundwater Treatment System.

From July 2005 through September 2011 PG&E was operating the IM-3 groundwater treatment system as authorized by the Colorado River Basin Regional Water Quality Control Board (Regional Water Board) Order No. R7-2004-0103 (issued October 13, 2004); Order No. R7-2006-0060 (issued September 20, 2006); and the revised Monitoring and Reporting Program under Order No. R7-2006-0060 (issued August 28, 2008). Order No. R7-2006-0060 expired on September 20, 2011.

PG&E is currently operating the IM-3 groundwater treatment system as authorized by the U.S. Department of the Interior (DOI) Waste Discharge Applicable or Relevant and Appropriate Requirements (ARARs) as documented in Attachment A to the Letter Agreement issued July 26, 2011 from the Regional Water Board to DOI, and the subsequent Letter of Concurrence issued August 18, 2011 from DOI to the Regional Water Board. Quarterly monitoring reports are required to be submitted by the fifteenth day of the month following the end of the quarter.

The IM-3 groundwater extraction and treatment system has extracted and treated approximately 656,503,517 gallons of water and removed approximately 6,491 pounds of total chromium from August 1, 2005 through June 30, 2015.

The groundwater monitoring results for wells OW-1S/M/D, OW-2S/M/D, OW-5S/M/D, CW-1M/D, CW-2M/D, CW-3M/D, and CW-4M/D will be submitted under separate cover as part of the Compliance Monitoring Program.

If you have any questions regarding this report, please call me at (760) 326-5582.

Sincerely,

Curt Russell
Topock Site Manager

Enclosures:

Topock IM-3 Combined Second Quarter 2015 Monitoring, Semiannual January – June 2015 Operation and Maintenance Report

cc: Jose Cortez, Colorado River Basin Regional Water Board
Thomas Vandenberg, Colorado River Basin Regional Water Board
Aaron Yue, California Department of Toxic Substances Control

Topock Project Executive Abstract

Document Title: Topock IM-3 Second Quarter 2015 Monitoring, Semiannual January - June 2015 Operation and Maintenance Report Submitting Agency/Authored by: U.S. Department of the Interior and Regional Water Quality Control Board Final Document? ☒ Yes ☐ No	Date of Document: July 15, 2015 Who Created this Document?: (i.e. PG&E, DTSC, DOI, Other) PG&E Document ID Number: PGE20150715A
Priority Status: ☐ HIGH ☐ MED ☒ LOW Is this time critical? ☐ Yes ☒ No Type of Document: ☐ Draft ☒ Report ☐ Letter ☐ Memo ☐ Other / Explain:	Action Required: ☒ Information Only ☐ Review & Comment Return to: _____ By Date: _____ ☐ Other / Explain:
What does this information pertain to? ☐ Resource Conservation and Recovery Act (RCRA) Facility Assessment (RFA)/Preliminary Assessment (PA) ☐ RCRA Facility Investigation (RFI)/Remedial Investigation (RI) (including Risk Assessment) ☐ Corrective Measures Study (CMS)/Feasibility Study (FS) ☐ Corrective Measures Implementation (CMI)/Remedial Action ☐ California Environmental Quality Act (CEQA)/Environmental Impact Report (EIR) ☒ Interim Measures ☐ Other / Explain:	Is this a Regulatory Requirement? ☒ Yes ☐ No If no, why is the document needed?
What is the consequence of NOT doing this item? What is the consequence of DOING this item? Submittal of this report is a compliance requirement of the Applicable or Relevant and Appropriate Requirements (ARARs) for waste discharge as documented in Attachment A to the Letter Agreement issued July 26, 2011.	Other Justification/s: ☐ Permit ☐ Other / Explain:

Brief Summary of attached document:

This report covers the Interim Measures No. 3 (IM-3) groundwater treatment system monitoring activities during the Second Quarter 2015 period, and the operation and maintenance activities during the January 1, 2015 to June 30, 2015 semiannual period. The groundwater monitoring results for wells OW-1S/M/D, OW-2S/M/D, OW-5S/M/D, CW-1M/D, CW-2M/D, CW-3M/D, and CW-4M/D will be submitted under separate cover as part of the Compliance Monitoring Program. This report also covers the IM-3 operation and maintenance activities during the January – June 2015 semiannual period.

Written by: PG&E

Recommendations:
This report is for your information only.

How is this information related to the Final Remedy or Regulatory Requirements?

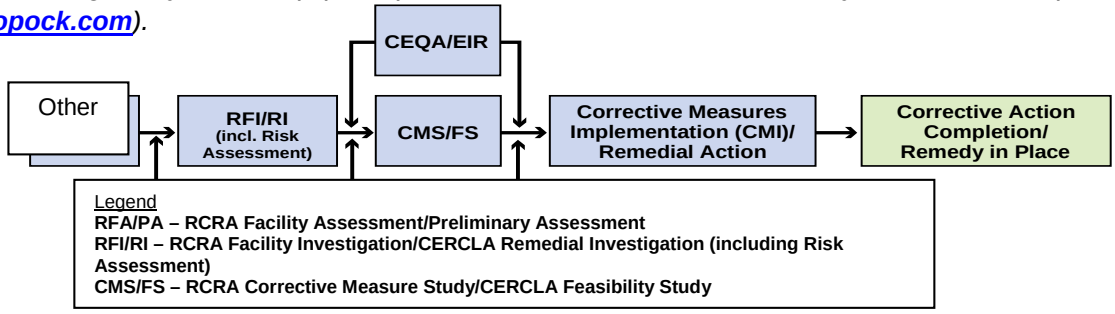
The Topock IM-3 Second Quarter 2015 Monitoring, Semiannual January - June 2015 Operation and Maintenance Report is related to the Interim Measure. PG&E is currently operating the IM-3 groundwater treatment system as authorized by the U.S. Department of the Interior (DOI) Waste Discharge ARARs as documented in Attachment A to the Letter Agreement issued July 26, 2011 from the Colorado River Basin Regional Water Quality Control Board (Regional Water Board) to DOI, and the subsequent Letter of Concurrence issued August 18, 2011 from DOI to the Regional Water Board.

Other requirements of this information?

None.

Related Reports and Documents:

*Click any boxes in the Regulatory Road Map (below) to be linked to the Documents Library on the DTSC Topock Web Site (**www.dtsc-topock.com**).*



Legend
RFA/PA – RCRA Facility Assessment/Preliminary Assessment
RFI/RI – RCRA Facility Investigation/CERCLA Remedial Investigation (including Risk Assessment)
CMS/FS – RCRA Corrective Measure Study/CERCLA Feasibility Study

Version 9

Combined Second Quarter 2015 Monitoring, Semiannual January – June 2015 Operation and Maintenance Report
Interim Measure No. 3 Groundwater Treatment System

Document ID: PGE20150715A

PG&E Topock Compressor Station
Needles, California

Prepared for

United States Department of the Interior
and
Colorado River Basin Regional Water Quality Control Board

on behalf of

Pacific Gas and Electric Company

July 15, 2015

CH2MHILL.
155 Grand Avenue, Suite 800
Oakland, CA 94612

Combined Second Quarter 2015 Monitoring, Semiannual January - June 2015 Operation and Maintenance Report Interim Measure No. 3 Groundwater Treatment System

PG&E Topock Compressor Station
Needles, California

Prepared for

United States Department of the Interior
and
Colorado River Basin Regional Water Quality Control Board

on behalf of

Pacific Gas and Electric Company

July 15, 2015

This report was prepared under the supervision of a California Certified Professional Engineer

John Porcella, P.E.
Project Engineer

REGISTERED PROFESSIONAL ENGINEER
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B Daily Volumes of Groundwater Treated
C Flowmeter Calibration Records
D Second Quarter 2015 Laboratory Analytical Reports

Acronyms and Abbreviations

ARARs	Applicable or Relevant and Appropriate Requirements
ASSET	ASSET Laboratories
DOI	United States Department of the Interior
gpm	gallons per minute
IM	Interim Measure
IM-3	Interim Measure No. 3
IW	injection well
MRP	Monitoring and Reporting Program
PG&E	Pacific Gas and Electric Company
PST	Pacific Standard Time
RCRA	Resource Conservations and Recovery Act
Regional Water Board	Colorado River Basin Regional Water Quality Control Board
RO	reverse osmosis
Truesdail	Laboratories, Inc.
WDR	Waste Discharge Requirements

SECTION 1

Introduction

Pacific Gas and Electric Company (PG&E) is implementing an Interim Measure (IM) to address chromium concentrations in groundwater at the Topock Compressor Station near Needles, California. The IM consists of groundwater extraction for hydraulic control of the plume boundaries in the Colorado River floodplain, treatment of extracted groundwater, and treated groundwater injection into injection wells located on San Bernardino County Assessor's Parcel No. 650-151-06. The groundwater extraction, treatment, and injection systems collectively are referred to as Interim Measure No. 3 (IM-3). Figure 1 provides a map of the project area. All figures are located at the end of this report.

From July 2005 through September 2011 PG&E was operating the IM-3 groundwater treatment system as authorized by the Colorado River Basin Regional Water Quality Control Board (Regional Water Board) Order No. R7-2004-0103 (issued October 13, 2004), Order No. R7-2006-0060 (issued September 20, 2006), and the revised Monitoring and Reporting Program (MRP) under Order No. R7-2006-0060 (issued August 28, 2008). Order No. R7-2006-0060 expired September 20, 2011.

PG&E is currently operating the IM-3 groundwater treatment system as authorized by the U.S. Department of the Interior (DOI) Waste Discharge Applicable or Relevant and Appropriate Requirements (ARARs) as documented in Attachment A to the Letter Agreement issued July 26, 2011 from the Regional Water Board to DOI, and the subsequent Letter of Concurrence issued August 18, 2011 from DOI to the Regional Water Board. Quarterly monitoring reports are required to be submitted by the fifteenth day of the month following the end of the quarter.

This report covers monitoring activities related to operation of the IM-3 groundwater treatment system during the Second Quarter 2015 and the operation and maintenance activities during the January 1, 2015 to June 30, 2015 semi-annual period. The groundwater monitoring results for wells OW-1S/M/D, OW-2S/M/D, OW-5S/M/D, CW-1M/D, CW-2M/D, CW-3M/D, and CW-4M/D will be submitted under separate cover, as part of the Compliance Monitoring Program.

SECTION 2

Sampling Station Locations

Table 1 lists the locations of sampling stations. (All tables are located at the end of this report.) Sampling station locations are shown on the process and instrumentation diagrams (Figures TP-PR-10-10-04, PR-10-03, PR-10-04, and TP-PR-10-10-06) provided at the end of this report.

SECTION 3

Description of Activities

The treatment system was initially operated between July 25 and July 28, 2005 for the Waste Discharge Requirement (WDR)-mandated startup phase. Discharge to the injection wells was initiated July 31, 2005 after successfully completing the startup phase in accordance with Order No. R7-2004-0103. Full-time operation of the treatment system commenced in August 2005.

This report describes Second Quarter 2015 monitoring activities and the January 1, 2015 through June 30, 2015 (First and Second Quarters) operation and maintenance activities related to the IM-3 groundwater treatment system. IM-3 monitoring activities from January 1, 2015 through March 31, 2015 (First Quarter) were presented in the First Quarter 2015 Monitoring Report for IM-3 submitted to the DOI and Regional Water Board April 15, 2015.

This report, therefore, serves as the Semiannual January – June 2015 Operation and Maintenance Report for IM-3.

3.1 Groundwater Treatment System

The treatment system was initially operated between July 25 and July 28, 2005 for the WDR-mandated startup phase. Discharge to the injection wells was initiated July 31, 2005 after successfully completing the startup phase in accordance with Order R7-2004-0103. Full-time operation of the treatment system commenced in August 2005.

Influent to the treatment facility, as listed in Attachment A, Waste Discharge ARARs, to the Letter Agreement issued July 26, 2011, includes the following:

- Groundwater from extraction wells TW-2S, TW-2D, TW-3D, and PE-1
- Purged groundwater and water generated from rinsing field equipment during monitoring events
- Groundwater generated during well installation, well development, and aquifer testing

Operation of the groundwater treatment system results in the following three effluent streams:

- **Treated Effluent:** Treated water that is discharged to the injection well(s)
- **Reverse Osmosis (RO) Concentrate (brine):** Treatment byproduct that is transported and disposed of offsite at a permitted facility
- **Sludge:** Treatment byproduct that is transported offsite for disposal at a permitted facility, which occurs either when a sludge waste storage bin reaches capacity, or within 90 days of the start date for accumulation in the storage container, whichever occurs first

3.2 Groundwater Treatment System Flow Rates for Second Quarter 2015

Downtime is defined as any periods when all extraction wells are not operating so that no groundwater is being extracted and piped into IM-3 as influent. Periods of planned and unplanned extraction system downtime are summarized in the Semiannual Operations and Maintenance Log provided in Appendix A. The times shown are in Pacific Standard Time to be consistent with other data collected (e.g., water level data) at the site. Periods of planned and unplanned extraction system downtime during the months January 2015 through March 2015 were originally reported in the First Quarter 2015 Monitoring Report for IM-3 submitted to the DOI and Regional Water Board on April 15, 2015, and are also included in Appendix A of this report.

Data regarding daily volumes of groundwater treated and discharged are provided in Appendix B. The IM-3 groundwater treatment system flowmeter calibration records are included in Appendix C.

3.2.1 Treatment System Influent

During the Second Quarter 2015, extraction wells TW-3D and PE-1 operated with a target pumping rate of 135 gallons per minute (gpm), excluding periods of planned and unplanned downtime. Extraction well TW-2D was operated for a brief time on May 3, 2015 for well rehabilitation. Extraction well TW-2S was not operated during Second Quarter 2015. The operational run time for the IM groundwater extraction system (combined or individual pumping), by month, was approximately:

- 86.9 percent during April 2015
- 87.7 percent during May 2015
- 98.8 percent during June 2015

The Second Quarter 2015 treatment system monthly average flow rates (influent, effluent, and RO concentrate) are presented in Table 2. The system influent flow rate was measured by flowmeters at groundwater extraction wells TW-2S, TW-2D, TW-3D, and PE-1 (Figure TP-PR-10-10-03).

The IM-3 facility treated approximately 16,152,830 gallons of extracted groundwater during Second Quarter 2015.

In addition to extracted groundwater, during Second Quarter 2015 the IM-3 facility treated 970 gallons of water generated from the groundwater monitoring program, 54,050 gallons of injection well development water, and 15,000 gallons of water from application of AquaGuard to extraction wells TW-2D and TW-3D during the April/May 2015 semi-annual scheduled maintenance event.

3.2.2 Effluent Streams

The treatment system effluent flow rate was measured by flowmeters in the piping leading to injection wells IW-2 and IW-3 (Figure TP-PR-10-10-11) and in the piping running from the treated water tank T-700 to the injection wells (Figure TP-PR-10-10-04). The IM-3 facility injected 16,066,826 gallons of treatment system effluent during Second Quarter 2015. The monthly average flow rate to injection wells is shown in Table 2.

The RO concentrate flow rate was measured by a flowmeter at the piping carrying water from RO concentrate tank T-701 to the truck load-out station (Figure PR-10-04). The IM-3 facility generated 122,060 gallons of RO concentrate during Second Quarter 2015. The monthly average RO concentrate flow rate is shown in Table 2.

The sludge flow rate is measured by the size and weight of containers shipped offsite. Five sludge containers were shipped offsite from the IM-3 facility during Second Quarter 2015. The shipment dates and approximate weights are provided in Section 5.3.

3.3 Sampling and Analytical Procedures

With the exception of pH, all samples were collected at the designated sampling locations and placed directly into containers provided by ASSET Laboratories (ASSET) and Truesdail Laboratories, Inc. (Truesdail). Sample containers were labeled and packaged according to standard sampling procedures.

The samples were stored in a sealed container chilled with ice and transported to ASSET or Truesdail via courier under chain-of-custody documentation. The laboratories confirmed the samples were received in chilled condition upon arrival.

ASSET is certified by the California Department of Health Services (Certification No. 2676) under the State of California's Environmental Laboratory Accreditation Program. Truesdail is certified by the California Department of Health Services (Certification No. 1237) under the State of California's Environmental Laboratory Accreditation Program. California-certified laboratory analyses were performed in accordance

with the latest edition of the *Guidelines Establishing Test Procedures for Analysis of Pollutants* (40 Code of Federal Regulations Part 136), promulgated by the U.S. Environmental Protection Agency.

Analysis of pH was conducted by field method pursuant to the Regional Water Board letter dated October 16, 2007 (subject: Clarification of Monitoring and Reporting Program Requirements) authorizing pH measurements to be conducted in the field. The field method pH samples were collected at the designated sampling locations and field tested within 15 minutes of sampling.

As required by the MRP, the analytical method selected for total chromium has a method detection limit of 1 part per billion, and the analytical method selected for hexavalent chromium has a method detection limit of 0.2 part per billion.

Influent, effluent, RO concentrate, and sludge sampling frequency were in accordance with the MRP. The Second Quarter 2015 sample collection schedule is shown in Table 3.

Groundwater quality is being monitored in observation and compliance wells according to Attachment A, Waste Discharge ARARs, to the Letter Agreement issued July 26, 2011, and the procedures and schedules approved in the *Groundwater Compliance Monitoring Plan for Interim Measures No. 3 Injection Area* submitted to the Regional Water Board on June 17, 2005. Quarterly groundwater monitoring analytical results for the injection area (wells OW-1S/M/D, OW-2S/M/D, OW-5S/M/D, CW-1M/D, CW-2M/D, CW-3M/D, and CW-4M/D) are reported in a separate document, in conjunction with groundwater level maps of the same monitoring wells.

SECTION 4

Analytical Results

The analytical results and laboratory reports for the IM-3 groundwater treatment system monitoring program were previously reported for the First Quarter of 2015 in the First Quarter 2015 Monitoring Report submitted to the DOI and Regional Water Board on April 15, 2015.

Laboratory reports for samples collected in Second Quarter 2015 were prepared by certified analytical laboratories, and are presented in Appendix D. The Second Quarter 2015 analytical results are presented in Tables 4, 5, 6, and 7:

- Influent analytical results are presented in Table 4.
- Effluent analytical results are presented in Table 5. There were no exceedances of effluent limitations during the reporting period.
- RO concentrate analytical results are presented in Table 6.
- Sludge analytical results are presented in Table 7.

The sludge is required to have an aquatic bioassay test annually. The most recent aquatic bioassay test was conducted on a September 2014 sample, and the results were presented in the Third Quarter 2014 Monitoring Report submitted to the DOI and the Regional Water Board on October 15, 2014. The next sludge aquatic bioassay test is scheduled for the Third Quarter 2015 sampling event.

Table 8 identifies the following information for each analysis:

- Sample location
- Sample identification number
- Sampler name
- Sample date
- Sample time
- Laboratory performing analysis
- Analysis method
- Analysis date
- Laboratory technician

SECTION 5

Semiannual Operation and Maintenance

This section includes the Semiannual Operation and Maintenance Report for the IM-3 groundwater treatment system for the period January 1, 2015 through June 30, 2015.

All operation and maintenance records are maintained at the facility, including site inspection forms, process monitoring records, hazardous waste generator records (i.e., waste manifests), and self-monitoring reports. These records will be maintained onsite for a period of at least 5 years. Operational programmable logic controller data (flow rates, system alarms, process monitoring data, etc.) are maintained electronically via data historian software. Operation and maintenance records are also archived using maintenance software. The subsections below summarize the operation and maintenance activities during this semiannual reporting period.

5.1 Flowmeter Calibration Records

The IM-3 groundwater treatment system flowmeter calibration records are included in Appendix C. Flowmeter calibrations are performed in a timely manner consistent with the use, flow, material, and manufacturer recommendations. The following flowmeters are used at the facility to measure groundwater flow:

Location	Flowmeter Location ID	Current Flowmeter Serial No.	Date of Calibration	Date of Installation
Extraction well PE-1	FIT-103	6C036F16000	8/6/2010	9/18/2013
Extraction well TW-3D	FIT-102	6C037316000	1/7/2013	9/4/2013
Extraction well TW-2D	FIT-101	6A022016000	9/20/2013	11/1/2013
Extraction well TW-2S	FIT-100	6A022116000	9/20/2013	11/1/2013
Injection well IW-02	FIT-1202	7700F216000	3/22/2014	4/14/2015
Injection well IW-03	FIT-1203	6C037216000	9/20/2013	10/1/2013
Combined IW-02 and IW-03	FIT-700	7700C616000	7/25/2011	8/31/2014
Reverse osmosis concentrate	FIT-701	6A021F16000	6/19/2012	7/14/2012

5.2 Volumes of Groundwater Treated

Data regarding daily volumes of groundwater treated between January 1, 2015 through June 30, 2015 are provided in Appendix B.

Approximately 33,250,548 gallons of groundwater were extracted and treated between January 1, 2015 and June 30, 2015. Treatment of this water at the IM-3 facility is being performed in accordance with the conditions of ARARs.

Additionally, approximately 1,120 gallons of well purge water (generated during well development, monitoring well sampling, and/or aquifer testing), 63,050 gallons of injection well re-development water, as well as 15,000 gallons of water from application of AquaGuard to extraction wells TW-2D and TW-3D were treated at the IM-3 facility during the January 1, 2015 through June 30, 2015 semiannual period.

A total of approximately 32,984,436 gallons of treated groundwater were injected back into the Alluvial Aquifer between January 1, 2015 and June 30, 2015.

5.3 Residual Solids Generated (Sludge)

During the January 1, 2015 through June 30, 2015 reporting period, 13 containers of sludge were shipped offsite for disposal. The sludge was shipped to U.S. Ecology in Beatty, Nevada for disposal. A listing of each shipment during the reporting period is provided below.

Date Sludge Bin Removed from Site	Approximate Quantity from Waste Manifests (cubic yards)	Type of Shipment
1/20/2015	8	Non-RCRA hazardous waste
1/20/2015	8	Non-RCRA hazardous waste
2/11/2015	8	Non-RCRA hazardous waste
2/11/2015	8	Non-RCRA hazardous waste
3/11/2015	8	Non-RCRA hazardous waste
3/11/2015	8	Non-RCRA hazardous waste
3/26/2015	8	Non-RCRA hazardous waste
3/26/2015	8	Non-RCRA hazardous waste
4/22/2015	8	Non-RCRA hazardous waste
4/22/2015	8	Non-RCRA hazardous waste
5/26/2015	8	Non-RCRA hazardous waste
5/27/2015	8	Non-RCRA hazardous waste
5/27/2015	8	Non-RCRA hazardous waste

Note:
RCRA = Resource Conservation and Recovery Act

5.4 Reverse Osmosis Concentrate Generated

Data regarding daily volumes of RO concentrate generated are provided in Appendix B, as measured by flowmeter FIT-701 (Figures PR-10-03 and PR-10-04). From January 1, 2015 through June 30, 2015, approximately 227,941 gallons of RO concentrate were transported to Liquid Environmental Solutions in Phoenix, Arizona for disposal.

5.5 Summary of ARARs Compliance

No ARAR violations were identified during the January 1, 2015 through June 30, 2015 semiannual reporting period.

5.6 Operation and Maintenance – Required Shutdowns

Records of routine maintenance are kept onsite.

Appendix A contains a summary of the operation or maintenance issues that required the groundwater extraction system to be shut down during the January 1, 2015 through June 30, 2015 semiannual reporting period.

Activities during the Second Quarter 2015 included one extended shutdown. The extraction system downtime was 5 days, 21 hours, 40 minutes, and it occurred from April 28, 2015 to May 4, 2015 for scheduled semiannual facility maintenance.

5.7 Treatment Facility Modifications

No modifications were made to the IM-3 treatment facility that resulted in a material change in the quality or quantity of wastewater treated or discharged, nor resulted in a material change in the location of discharge, during the January 1, 2015 through June 30, 2015 semiannual period.

SECTION 6

Conclusions

There were no exceedances of effluent limitations during the reporting period.

In addition, no incidents of non-compliance were identified during the reporting period. No events that caused an immediate or potential threat to human health or the environment, and no new releases of hazardous waste or hazardous waste constituents, or new solid waste management units, were identified during the reporting period.

SECTION 7

Certification

Certification Statement:

I declare under the penalty of law that I have personally examined and am familiar with the information submitted in this document, and that based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of a fine and imprisonment for knowing violations.

Signature: _____

Name: Curt Russell

Company: Pacific Gas and Electric Company

Title: Topock Site Manager

Date: July 15, 2015

Tables

TABLE 1
Sampling Station Descriptions
Second Quarter 2015 Monitoring Report for Interim Measure No. 3 Groundwater Treatment System

Sample Station	Sample ID[a]	Location
Sampling Station A: Groundwater Treatment System Influent	SC-100B-WDR-###	Sample collected from tap on pipe into T-100 (see Figure TP-RP-10-10-04).
Sampling Station B: Groundwater Treatment System Effluent	SC-700B-WDR-###	Sample collected from tap on pipe downstream from T-700 (see Figure TP-RP-10-10-04).
Sampling Station D: Groundwater Treatment System Reverse Osmosis Concentrate	SC-701-WDR-###	Sample collected from tap on pipe into T-701 (see Figure PR-10-03 and PR-10-04).
Sampling Station E: Groundwater Treatment System Sludge	SC-SLUDGE-WDR-###	Sample collected from sludge accumulated in the phase separator used this quarter (see Figure TP-RP-10-10-06).

Notes:

= Sequential sample identification number at each sample station

[a] The sample event number is included at the end of the sample ID (e.g., SC-100B-WDR-015).

TABLE 2
Flow Monitoring Results
Second Quarter 2015 Monitoring Report for Interim Measure No. 3 Groundwater Treatment System

Parameter	System Influent[a,b] (gpm)	System Effluent[b] (gpm)	Reverse Osmosis Concentrate[b] (gpm)
April 2015 Average Monthly Flowrate	117.01	116.43	0.77
May 2015 Average Monthly Flowrate	119.68	118.65	0.78
June 2015 Average Monthly Flowrate	133.24	132.87	1.26

Notes:

gpm: gallons per minute

[a] Extraction wells TW-3D and PE-1 were operated during the Second Quarter 2015. Extraction well TW-2D was operated for a brief time on May 3, 2015 for well rehabilitation. Extraction well TW-2S did not operate during Second Quarter 2015.

[b] The difference between influent flow rate and the sum of the effluent and reverse osmosis concentrate flow rates during the Second Quarter 2015 is approximately 0.22 percent.

TABLE 3
Sample Collection Dates
Second Quarter 2015 Monitoring Report for Interim Measure No. 3 Groundwater Treatment System

Parameter	Sample Collection Dates	Results
Influent	April 7, 2015	See Table 4
	May 5, 2014	
	June 2, 2014	
Effluent	April 7, 2015	See Table 5
	April 14, 2015	
	April 21, 2015	
	April 28, 2015	
	May 4, 2015	
	May 5, 2015	
	May 12, 2015	
	May 19, 2015	
	May 26, 2015	
	June 2, 2015	
	June 9, 2015	
	June 16, 2015	
	June 23, 2015	
	June 30, 2015	
Reverse Osmosis Concentrate	April 7, 2015	See Table 6
Sludge[a]	Composite collected from each bin sent off-site during the Second Quarter	See Table 7

Notes:

[a] Sludge samples analysis is required quarterly by composite.

TABLE 4
Topock IM-3 Waste Discharge Applicable or Relevant and Appropriate Requirements (ARARs)
Influent Monitoring Results [a]
Second Quarter 2015 Monitoring Report for Interim Measure No.3 Groundwater Treatment System

Sampling Frequency		Monthly																					
Sample ID	Date / Analytes	TDS	Turbidity	Specific Conductance	Field pH [c]	Chromium	Hexavalent Chromium	Aluminium	Ammonia (as N)	Antimony	Arsenic	Barium	Boron	Copper	Fluoride	Lead	Manganese	Molybdenum	Nickel	Nitrate/Nitrite (as N)	Sulfate	Iron	Zinc
	Units [b]	mg/L	NTU	µmhos/cm	pH units	µg/L	µg/L	µg/L	mg/L	µg/L	µg/L	µg/L	mg/L	µg/L	mg/L	µg/L	µg/L	µg/L	µg/L	mg/L	mg/L	µg/L	µg/L
	MDL	50.0	0.100	0.100	---	0.150	1.50	12.0	0.0318	0.0260	0.0160	0.0300	0.0110	0.0400	0.120	0.0530	0.0230	0.0290	0.0320	0.110	1.60	1.30	0.0390
SC-100B-WDR-515	**4/7/2015**	**4400**	**0.160**	**7600**	**7.3**	**580**	**570**	**ND (50.0)**	**ND (0.500)**	**ND (2.50)**	**2.90**	**27.0**	**1.00**	**ND (1.00)**	**2.60**	**ND (5.00)**	**ND (0.500)**	**22.0**	**ND (1.00)**	**2.40**	**480**	**ND (20.0)**	**ND (10.0)**
RL		50.0	0.100	0.100	---	5.00	20.0	50.0	0.500	2.50	0.100	1.00	0.100	1.00	1.00	5.00	0.500	2.50	1.00	0.250	25.0	20.0	10.0
SC-100B-WDR-520	**5/5/2015**	**4000**	**0.230**	**6800**	**7.2**	**500**	**530**	**ND (50.0)**	**ND (0.0500)**	**ND (0.500)**	**3.70**	**29.0**	**0.900**	**ND (1.00)**	**2.60**	**ND (5.00)**	**ND (0.500)**	**20.0**	**ND (1.00)**	**2.50**	**460**	**ND (20.0)**	**ND (10.0)**
RL		50.0	0.100	0.100	---	5.00	20.0	50.0	0.0500	0.500	0.100	1.00	0.100	1.00	1.00	5.00	0.500	0.500	1.00	0.250	25.0	20.0	10.0
SC-100B-WDR-524	**6/2/2015**	**4100**	**0.260**	**6900**	**7.3**	**540**	**520**	**ND (50.0)**	**ND (0.0500)**	**ND (0.500)**	**3.10**	**25.0**	**1.00**	**ND (1.00)**	**2.50**	**ND (5.00)**	**ND (0.500)**	**21.0**	**ND (1.00)**	**3.00**	**440**	**ND (20.0)**	**ND (10.0)**
RL		50.0	0.100	0.100	---	5.00	20.0	50.0	0.0500	0.500	0.100	1.00	0.100	1.00	1.00	5.00	0.500	0.500	1.00	0.250	25.0	20.0	10.0

NOTES:

(---) = not required by the ARARs Monitoring and Reporting Program
J = concentration or reporting limits estimated by laboratory or validation
MDL = method detection limit
mg/L = milligrams per liter
N = nitrogen
ND = parameter not detected at the listed value
NTU = nephelometric turbidity units
RL = project reporting limit
µg/L = micrograms per liter
µmhos/cm = micromhos per centimeter

[a] Sampling Location for all influent samples is tap on pipe from extraction wells into tank T-100 (see attached P&ID TP-PR-10-10-04).

[b] Units reported in this table are those units required in the ARARs.

[c] Starting 11/20/2007, analysis of pH was switched from California certified laboratory analysis to field method pursuant to the Water Board letter dated October 16, 2007 – Clarification of Monitoring and Reporting Program Requirements, stating that pH measurements may be conducted in the field.

TABLE 5
Topock IM-3 Waste Discharge Applicable or Relevant and Appropriate Requirements (ARARs)
Effluent Monitoring Results[a]
Second Quarter 2015 Monitoring Report for Interim Measure No.3 Groundwater Treatment System

Sample ID	Date	TDS	Turbidity	Specific Conductance	Field pH[e]	Chromium	Hexavalent Chromium	Aluminium	Ammonia (as N)	Antimony	Arsenic	Barium	Boron	Copper	Fluoride	Lead	Manganese	Molybdenum	Nickel	Nitrate/Nitrite (as N)	Sulfate	Iron	Zinc
Effluent Limits[b]	Ave. Monthly	NA	NA	NA	6.5-8.4	25	8	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	Max Daily	NA	NA	NA	6.5-8.4	50	16	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Sampling Frequency		Weekly						Monthly															
Analytes		TDS	Turbidity	Specific Conductance	Field pH	Chromium	Hexavalent Chromium	Aluminium	Ammonia (as N)	Antimony	Arsenic	Barium	Boron	Copper	Fluoride	Lead	Manganese	Molybdenum	Nickel	Nitrate/Nitrite (as N)	Sulfate	Iron	Zinc
Units[c]		mg/L	NTU	µmhos/cm	pH units	µg/L	µg/L	µg/L	mg/L	µg/L	µg/L	µg/L	mg/L	µg/L	mg/L	µg/L	µg/L	µg/L	µg/L	mg/L	mg/L	µg/L	µg/L
MDL[d]		50.0	0.100	0.100	---	0.0300	0.0150	12.0	0.0318	0.0260	0.0160	0.0300	0.0110	0.0400	0.120	0.0530	0.0230	0.0290	0.0320	0.110	1.60	1.30	0.0390
SC-700B-WDR-515	**4/7/2015**	**4400**	**0.170**	**7700**	**7.53**	**ND (1.00)**	**ND (0.200)**	**ND (50.0)**	**ND (0.500)**	**ND (2.50)**	**ND (0.100)**	**11.0**	**0.870**	**ND (1.00)**	**2.50**	**ND (5.00)**	**13.0**	**16.0**	**3.00**	**2.30**	**470**	**ND (20.0)**	**ND (10.0)**
RL		50.0	0.100	0.100	---	1.00	0.200	50.0	0.500	2.50	0.100	1.00	0.100	1.00	1.00	5.00	0.500	2.50	1.00	0.250	25.0	20.0	10.0
SC-700B-WDR-516	**4/14/2015**	**4100**	**0.130**	**7400**	**7.14**	**ND (1.00)**	**ND (0.200)**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**ND (0.500)**	**---**	**---**	**---**	**---**	**---**	**---**
RL		50.0	0.100	0.100	---	1.00	0.200	---	---	---	---	---	---	---	---	---	0.500	---	---	---	---	---	---
SC-700B-WDR-517	**4/21/2015**	**4100**	**0.180**	**6800**	**7.03**	**ND (1.00)**	**ND (0.200)**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**ND (0.500)**	**---**	**---**	**---**	**---**	**---**	**---**
RL		50.0	0.100	0.100	---	1.00	0.200	---	---	---	---	---	---	---	---	---	0.500	---	---	---	---	---	---
SC-700B-WDR-518	**4/28/2015**	**4100**	**0.210**	**7200**	**7.05**	**ND (1.00)**	**ND (0.200)**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**ND (0.500)J**	**---**	**---**	**---**	**---**	**---**	**---**
RL		50.0	0.100	0.100	---	1.00	0.200	---	---	---	---	---	---	---	---	---	0.500	---	---	---	---	---	---
SC-700B-WDR-519	**5/4/2015**	**4400**	**0.170**	**7300**	**---**	**ND (1.00)**	**0.570**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**ND (0.500)**	**---**	**---**	**---**	**---**	**---**	**---**
RL		50.0	0.100	0.100	---	1.00	0.200	---	---	---	---	---	---	---	---	---	0.500	---	---	---	---	---	---
SC-700B-WDR-520	**5/5/2015**	**4100**	**0.180**	**6800**	**7.05**	**ND (1.00)**	**ND (0.200)**	**ND (50.0)**	**0.0667**	**ND (0.500)**	**ND (0.100)**	**8.40**	**0.920**	**ND (1.00)**	**2.30**	**ND (5.00)**	**ND (0.500)**	**21.0**	**1.50**	**2.60**	**450**	**ND (20.0)**	**ND (10.0)**
RL		50.0	0.100	0.100	---	1.00	0.200	50.0	0.0500	0.500	0.100	1.00	0.100	1.00	1.00	5.00	0.500	0.500	1.00	0.250	25.0	20.0	10.0
SC-700B-WDR-521	**5/12/2015**	**4100**	**0.110**	**6100**	**6.97**	**ND (1.00)**	**ND (0.200)**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**ND (0.500)J**	**---**	**---**	**---**	**---**	**---**	**---**
RL		50.0	0.100	0.100	---	1.00	0.200	---	---	---	---	---	---	---	---	---	0.500	---	---	---	---	---	---
SC-700B-WDR-522	**5/19/2015**	**3900**	**0.170**	**6600**	**7.03**	**ND (1.00)**	**ND (0.200)**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**ND (0.500)**	**---**	**---**	**---**	**---**	**---**	**---**
RL		50.0	0.100	0.100	---	1.00	0.200	---	---	---	---	---	---	---	---	---	0.500	---	---	---	---	---	---
SC-700B-WDR-523	**5/26/2015**	**4000**	**0.130**	**6500**	**6.98**	**ND (1.00)**	**ND (0.200)**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**ND (0.500)J**	**---**	**---**	**---**	**---**	**---**	**---**
RL		50.0	0.100	0.100	---	1.00	0.200	---	---	---	---	---	---	---	---	---	0.500	---	---	---	---	---	---
SC-700B-WDR-524	**6/2/2015**	**3900**	**0.290**	**7000**	**6.91**	**ND (1.00)**	**ND (0.200)**	**ND (50.0)**	**0.0581**	**ND (0.500)**	**ND (0.100)**	**8.30**	**1.00**	**ND (1.00)**	**2.00**	**ND (5.00)**	**ND (0.500)**	**19.0**	**ND (1.00)**	**2.60**	**430**	**ND (20.0)**	**ND (10.0)**
RL		50.0	0.100	0.100	---	1.00	0.200	50.0	0.0500	0.500	0.100	1.00	0.100	1.00	1.00	5.00	0.500	0.500	1.00	0.250	25.0	20.0	10.0
SC-700B-WDR-525	**6/9/2015**	**4000**	**0.220**	**6900**	**6.90**	**ND (1.00)**	**ND (0.200)**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**ND (0.500)**	**---**	**---**	**---**	**---**	**---**	**---**
RL		50.0	0.100	0.100	---	1.00	0.200	---	---	---	---	---	---	---	---	---	0.500	---	---	---	---	---	---
SC-700B-WDR-526	**6/16/2015**	**3900**	**0.200**	**6500**	**7.39**	**ND (1.00)**	**ND (0.200)**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**7.10**	**---**	**---**	**---**	**---**	**---**	**---**
RL		50.0	0.100	0.100	---	1.00	0.200	---	---	---	---	---	---	---	---	---	0.500	---	---	---	---	---	---
SC-700B-WDR-527	**6/23/2015**	**3800**	**0.220**	**7000**	**7.01**	**ND (1.00)**	**ND (0.200)**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**ND (0.500)**	**---**	**---**	**---**	**---**	**---**	**---**
RL		50.0	0.100	0.100	---	1.00	0.200	---	---	---	---	---	---	---	---	---	0.500	---	---	---	---	---	---
SC-700B-WDR-528	**6/30/2015**	**4100**	**0.140**	**6500**	**7.20**	**ND (1.00)**	**ND (0.200)**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**ND (0.500)J**	**---**	**---**	**---**	**---**	**---**	**---**
RL		50.0	0.100	0.100	---	1.00	0.200	---	---	---	---	---	---	---	---	---	0.500	---	---	---	---	---	---

NOTES:

(---) = not required by the ARARs Monitoring and Reporting Program
J = concentration or reporting limits estimated by laboratory or validation
MDL = method detection limit
mg/L = milligrams per liter
N = nitrogen
NA = not applicable
ND = parameter not detected at the listed value
NTU = nephelometric turbidity units
RL = project reporting limit
µg/L = micrograms per liter
µmhos/cm = micromhos per centimeter

[a] Sampling location for all effluent samples is tap on pipe downstream from tank T-700 to injection wells (see attached P&ID TP-PR-10-10-04).

[b] In addition to the listed effluent limits, the ARARs state that the effluent shall not contain heavy metals, chemicals, pesticides or other constituents in concentrations toxic to human health.

[c] Units reported in this table are those units required in the ARARs.

[d] MDL listed is the target MDL by analysis method; however, the MDL may change for each sample analysis due to the dilution required by the matrix to meet the method QC requirements. The target MDL for each method/analyte combination is calculated annually.

[e] Starting 11/20/2007, analysis of pH was switched from California certified laboratory analysis to field method pursuant to the Water Board letter dated October 16, 2007 – Clarification of Monitoring and Reporting Program Requirements, stating that pH measurements may be conducted in the field.

TABLE 6
Topock IM-3 Waste Discharge Applicable or Relevant and Appropriate Requirements (ARARs)
Reverse Osmosis Concentrate Monitoring Results [a]
Second Quarter 2015 Monitoring Report for Interim Measure No.3 Groundwater Treatment System

Sampling Frequency		Quarterly																					
Analytes		TDS	Specific Conductance	Field pH [c]	Chromium	Hexavalent Chromium	Antimony	Arsenic	Barium	Beryllium	Cadmium	Cobalt	Copper	Fluoride	Lead	Molybdenum	Mercury	Nickel	Selenium	Silver	Thallium	Vanadium	Zinc
Units [b]		mg/L	µmhos/cm	pH units	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
MDL		500	0.100	---	0.00015	0.000075	0.0046	0.00013	0.00075	0.00025	0.00033	0.000084	0.00099	0.620	0.00026	0.0038	0.000015	0.00016	0.0017	0.0024	0.00020	0.00079	0.0012
Sample ID	Date																						
SC-701-WDR-515	**4/7/2015**	**19000**	**33000**	**8.2**	**ND (0.0050)**	**ND (0.0010)**	**ND (0.0120)**	**ND (0.00050)**	**0.0560**	**ND (0.0120)**	**ND (0.0120)**	**ND (0.0025)**	**ND (0.0250)**	**12.0**	**ND (0.0250)**	**0.110**	**ND (0.00020)**	**0.0130**	**0.0180**	**ND (0.0120)**	**ND (0.0120)**	**ND (0.0050)**	**ND (0.0500)**
RL		500	0.100	---	0.0050	0.0010	0.0120	0.00050	0.0250	0.0120	0.0120	0.0025	0.0250	5.00	0.0250	0.0120	0.00020	0.0050	0.0120	0.0120	0.0120	0.0050	0.0500

NOTES:
(---) = not required by the ARARs Monitoring and Reporting Program
MDL = method detection limit
mg/L = milligrams per liter
ND = parameter not detected at the listed value
RL = project reporting limit
µg/L = micrograms per liter
µmhos/cm = micromhos per centimeter

[a] Sampling location for all reverse osmosis samples is tap on pipe T-701 (see attached P&ID PR-10-04).

[b] Units reported in this table are those units required in the ARARs.

[c] Starting 11/20/2007, analysis of pH was switched from California certified laboratory analysis to field method pursuant to the Water Board letter dated October 16, 2007 – Clarification of Monitoring and Reporting Program Requirements, stating that pH measurements may be conducted in the field.

TABLE 7
Topock IM-3 Waste Discharge Applicable or Relevant and Appropriate Requirements (ARARs)
Sludge Monitoring Results[a]
Second Quarter 2015 Monitoring Report for Interim Measure No.3 Groundwater Treatment System

Sampling Frequency		Quarterly																		
Analytes		Chromium	Hexavalent Chromium	Antimony	Arsenic	Barium	Beryllium	Cadmium	Cobalt	Copper	Fluoride	Lead	Molybdenum	Mercury	Nickel	Selenium	Silver	Thallium	Vanadium	Zinc
Units[b]		mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
MDL		0.210	0.170	0.230	0.170	0.0250	0.0530	0.170	0.0840	0.130	0.790	0.120	0.0600	0.0100	0.0430	0.220	0.0500	0.160	0.250	0.270
Sample ID	**Date**																			
Phase Separator-Sludge-528	**7/9/2015**	**2900**	**81.0**	**ND (6.60)**	**12.0**	**56.0**	**ND (3.30)**	**ND (3.30)**	**6.80**	**250**	**40.0**	**ND (3.30)**	**10.0**	**ND (0.330)**	**53.0**	**6.00**	**ND (3.30)**	**ND (6.60)**	**30.0**	**22.0**
RL		3.30	3.30	6.60	3.30	3.30	3.30	3.30	3.30	6.60	3.30	3.30	3.30	0.330	3.30	3.30	3.30	6.60	3.30	3.30

NOTES:

(---) = not required by the ARARs Monitoring and Reporting Program
J = concentration or reporting limits estimated by laboratory or validation
mg/kg = milligrams per killogram
mg/L = milligrams per liter
MDL = method detection limit
ND = parameter not detected at the listed reporting limit
RL = project reporting limit

[a] Sampling location for all sludge samples is the sludge collection bin (see attached P&ID TP-PR-10-10-06).

[b] Units reported in this table are those units required in the ARARs.

TABLE 8
Topock IM-3 Waste Discharge Applicable or Relevant and Appropriate Requirements (ARARs)
Monitoring Information
Second Quarter 2015 Monitoring Report for Interim Measure No.3 Groundwater Treatment System

Location	Sample ID	Sampler Name	Sample Date	Sample Time	Lab	Analysis Method	Parameter	Analysis Date	Lab Technician
SC-100B	SC-100B-WDR-515	Ryan Phelps	4/7/2015	11:10:00 AM	ASSET	EPA 120.1	SC	4/8/2015	Lilia Ramit
					ASSET	EPA 200.7	AL	4/8/2015	Jasper Aquino
					ASSET	EPA 200.7	B	4/8/2015	Jasper Aquino
					ASSET	EPA 200.7	FE	4/8/2015	Jasper Aquino
					ASSET	EPA 200.8	AS	4/8/2015	Claire Ignacio
					ASSET	EPA 200.8	BA	4/10/2015	Claire Ignacio
					ASSET	EPA 200.8	CR	4/8/2015	Claire Ignacio
					ASSET	EPA 200.8	CU	4/10/2015	Claire Ignacio
					ASSET	EPA 200.8	MN	4/8/2015	Claire Ignacio
					ASSET	EPA 200.8	MO	4/8/2015	Claire Ignacio
					ASSET	EPA 200.8	NI	4/8/2015	Claire Ignacio
					ASSET	EPA 200.8	PB	4/8/2015	Claire Ignacio
					ASSET	EPA 200.8	SB	4/8/2015	Claire Ignacio
					ASSET	EPA 200.8	ZN	4/8/2015	Claire Ignacio
					ASSET	EPA 218.6	CR6	4/9/2015	Ryan Balilu
					ASSET	EPA 300.0	FL	4/9/2015	Quennie Manimtim
					ASSET	EPA 300.0	SO4	4/9/2015	Quennie Manimtim
					FIELD	HACH	PH	4/7/2015	Ryan Phelps
					ASSET	SM 2540C	TDS	4/8/2015	Lilia Ramit
					ASSET	SM 4500-NO3F	NO3NO2N	4/21/2015	Ryan Balilu
					ASSET	SM2130B	TRB	4/8/2015	Lilia Ramit
					TLI	SM4500NH3D	NH3N	4/13/2015	Naheed Eidinejad
SC-100B	SC-100B-WDR-520	J.Aide	5/5/2015	7:10:00 AM	ASSET	EPA 120.1	SC	5/6/2015	Lilia Ramit
					ASSET	EPA 200.7	AL	5/7/2015	Jasper Aquino
					ASSET	EPA 200.7	B	5/7/2015	Jasper Aquino
					ASSET	EPA 200.7	CAD	5/7/2015	Jasper Aquino
					ASSET	EPA 200.7	FE	5/7/2015	Jasper Aquino
					ASSET	EPA 200.7	FETD	5/7/2015	Jasper Aquino
					ASSET	EPA 200.7	MGD	5/7/2015	Jasper Aquino
					ASSET	EPA 200.7	NAD	5/8/2015	Jasper Aquino
					ASSET	EPA 200.8	AS	5/6/2015	Claire Ignacio
					ASSET	EPA 200.8	BA	5/7/2015	Claire Ignacio
					ASSET	EPA 200.8	CR	5/7/2015	Claire Ignacio
					ASSET	EPA 200.8	CU	5/6/2015	Claire Ignacio
					ASSET	EPA 200.8	MN	5/6/2015	Claire Ignacio
					ASSET	EPA 200.8	MO	5/7/2015	Claire Ignacio

TABLE 8
Topock IM-3 Waste Discharge Applicable or Relevant and Appropriate Requirements (ARARs)
Monitoring Information
Second Quarter 2015 Monitoring Report for Interim Measure No.3 Groundwater Treatment System

Location	Sample ID	Sampler Name	Sample Date	Sample Time	Lab	Analysis Method	Parameter	Analysis Date	Lab Technician
SC-100B	SC-100B-WDR-520	J.Aide	5/5/2015	7:10:00 AM	ASSET	EPA 200.8	NI	5/6/2015	Claire Ignacio
					ASSET	EPA 200.8	PB	5/7/2015	Claire Ignacio
					ASSET	EPA 200.8	SB	5/7/2015	Claire Ignacio
					ASSET	EPA 200.8	ZN	5/6/2015	Claire Ignacio
					ASSET	EPA 218.6	CR6	5/6/2015	Ryan Balilu
					ASSET	EPA 300.0	FL	5/13/2015	Quennie Manimtim
					ASSET	EPA 300.0	SO4	5/13/2015	Quennie Manimtim
					FIELD	HACH	PH	5/5/2015	J.Aide
					ASSET	SM 2320B	ALKB	5/6/2015	Lilia Ramit
					ASSET	SM 2320B	ALKC	5/6/2015	Lilia Ramit
					ASSET	SM 2320B	HYDX	5/6/2015	Lilia Ramit
					ASSET	SM 2540C	TDS	5/6/2015	Lilia Ramit
					ASSET	SM 4500-NO3F	NO3NO2N	5/15/2015	Ryan Balilu
					ASSET	SM2130B	TRB	5/6/2015	Lilia Ramit
					TLI	SM4500NH3D	NH3N	6/2/2015	Alex Luna
					TLI	SM4500Si-D	SILC	5/7/2015	Jenny Tankunakorn
SC-100B	SC-100B-WDR-524	Josh Rosenberg	6/2/2015	10:30:00 AM	ASSET	EPA 120.1	SC	6/3/2015	Lilia Ramit
					ASSET	EPA 200.7	AL	6/4/2015	Claire Ignacio
					ASSET	EPA 200.7	B	6/4/2015	Claire Ignacio
					ASSET	EPA 200.7	CAD	6/4/2015	Claire Ignacio
					ASSET	EPA 200.7	FE	6/4/2015	Claire Ignacio
					ASSET	EPA 200.7	FETD	6/4/2015	Claire Ignacio
					ASSET	EPA 200.7	MGD	6/4/2015	Claire Ignacio
					ASSET	EPA 200.7	NAD	6/9/2015	Claire Ignacio
					ASSET	EPA 200.8	AS	6/4/2015	Claire Ignacio
					ASSET	EPA 200.8	BA	6/5/2015	Claire Ignacio
					ASSET	EPA 200.8	CR	6/4/2015	Claire Ignacio
					ASSET	EPA 200.8	CU	6/5/2015	Claire Ignacio
					ASSET	EPA 200.8	MN	6/4/2015	Claire Ignacio
					ASSET	EPA 200.8	MO	6/4/2015	Claire Ignacio
					ASSET	EPA 200.8	NI	6/4/2015	Claire Ignacio
					ASSET	EPA 200.8	PB	6/5/2015	Claire Ignacio
					ASSET	EPA 200.8	SB	6/4/2015	Claire Ignacio
					ASSET	EPA 200.8	ZN	6/5/2015	Claire Ignacio
					ASSET	EPA 218.6	CR6	6/3/2015	Ryan Balilu
					ASSET	EPA 300.0	FL	6/5/2015	Quennie Manimtim

TABLE 8
Topock IM-3 Waste Discharge Applicable or Relevant and Appropriate Requirements (ARARs)
Monitoring Information
Second Quarter 2015 Monitoring Report for Interim Measure No.3 Groundwater Treatment System

Location	Sample ID	Sampler Name	Sample Date	Sample Time	Lab	Analysis Method	Parameter	Analysis Date	Lab Technician
SC-100B	SC-100B-WDR-524	Josh Rosenberg	6/2/2015	10:30:00 AM	ASSET	EPA 300.0	SO4	6/5/2015	Quennie Manimtim
					FIELD	HACH	PH	6/2/2015	Josh Rosenberg
					ASSET	SM 2320B	ALKB	6/3/2015	Lilia Ramit
					ASSET	SM 2320B	ALKC	6/3/2015	Lilia Ramit
					ASSET	SM 2320B	HYDX	6/3/2015	Lilia Ramit
					ASSET	SM 2540C	TDS	6/3/2015	Lilia Ramit
					ASSET	SM 4500-NO3F	NO3NO2N	6/16/2015	Ryan Balilu
					ASSET	SM2130B	TRB	6/3/2015	Lilia Ramit
					TLI	SM4500NH3E	NH3N	6/17/2015	Alex Luna
					TLI	SM4500Si-D	SILC	6/12/2015	Jenny Tankunakorn
SC-700B	SC-700B-WDR-515	Ryan Phelps	4/7/2015	11:15:00 AM	ASSET	EPA 120.1	SC	4/8/2015	Lilia Ramit
					ASSET	EPA 200.7	AL	4/8/2015	Jasper Aquino
					ASSET	EPA 200.7	B	4/8/2015	Jasper Aquino
					ASSET	EPA 200.7	FE	4/8/2015	Jasper Aquino
					ASSET	EPA 200.8	AS	4/8/2015	Claire Ignacio
					ASSET	EPA 200.8	BA	4/10/2015	Claire Ignacio
					ASSET	EPA 200.8	CR	4/8/2015	Claire Ignacio
					ASSET	EPA 200.8	CU	4/10/2015	Claire Ignacio
					ASSET	EPA 200.8	MN	4/8/2015	Claire Ignacio
					ASSET	EPA 200.8	MO	4/8/2015	Claire Ignacio
					ASSET	EPA 200.8	NI	4/8/2015	Claire Ignacio
					ASSET	EPA 200.8	PB	4/8/2015	Claire Ignacio
					ASSET	EPA 200.8	SB	4/8/2015	Claire Ignacio
					ASSET	EPA 200.8	ZN	4/8/2015	Claire Ignacio
					ASSET	EPA 218.6	CR6	4/9/2015	Ryan Balilu
					ASSET	EPA 300.0	FL	4/9/2015	Quennie Manimtim
					ASSET	EPA 300.0	SO4	4/9/2015	Quennie Manimtim
					FIELD	HACH	PH	4/7/2015	Ryan Phelps
					ASSET	SM 2540C	TDS	4/8/2015	Lilia Ramit
					ASSET	SM 4500-NO3F	NO3NO2N	4/21/2015	Ryan Balilu
					ASSET	SM2130B	TRB	4/8/2015	Lilia Ramit
					TLI	SM4500NH3D	NH3N	4/13/2015	Naheed Eidinejad
SC-700B	SC-700B-WDR-516	Chris Lentz	4/14/2015		ASSET	EPA 120.1	SC	4/15/2015	Lilia Ramit
					ASSET	EPA 200.8	CR	4/17/2015	Claire Ignacio
					ASSET	EPA 200.8	MN	4/17/2015	Claire Ignacio

TABLE 8
Topock IM-3 Waste Discharge Applicable or Relevant and Appropriate Requirements (ARARs)
Monitoring Information
Second Quarter 2015 Monitoring Report for Interim Measure No.3 Groundwater Treatment System

Location	Sample ID	Sampler Name	Sample Date	Sample Time	Lab	Analysis Method	Parameter	Analysis Date	Lab Technician
SC-700B	SC-700B-WDR-516	Chris Lentz	4/14/2015		ASSET	EPA 218.6	CR6	4/15/2015	Ryan Balilu
					FIELD	HACH	PH	4/14/2015	Chris Lentz
					ASSET	SM 2540C	TDS	4/15/2015	Lilia Ramit
					ASSET	SM2130B	TRB	4/15/2015	Lilia Ramit
SC-700B	SC-700B-WDR-517	Ryan Phelps	4/21/2015	1:08:00 PM	ASSET	EPA 120.1	SC	4/22/2015	Lilia Ramit
					ASSET	EPA 200.8	CR	4/22/2015	Claire Ignacio
					ASSET	EPA 200.8	MN	4/22/2015	Claire Ignacio
					ASSET	EPA 218.6	CR6	4/22/2015	Ryan Balilu
					FIELD	HACH	PH	4/21/2015	Ryan Phelps
					ASSET	SM 2540C	TDS	4/22/2015	Lilia Ramit
					ASSET	SM2130B	TRB	4/22/2015	Lilia Ramit
SC-700B	SC-700B-WDR-518	Ryan Phelps	4/28/2015	9:55:00 AM	ASSET	EPA 120.1	SC	4/29/2015	Lilia Ramit
					ASSET	EPA 200.8	CR	4/30/2015	Claire Ignacio
					ASSET	EPA 200.8	MN	4/30/2015	Claire Ignacio
					ASSET	EPA 218.6	CR6	4/29/2015	Ryan Balilu
					FIELD	HACH	PH	4/28/2015	Ryan Phelps
					ASSET	SM 2540C	TDS	4/29/2015	Lilia Ramit
					ASSET	SM2130B	TRB	4/29/2015	Lilia Ramit
SC-700B	SC-700B-WDR-519	Ryan Phelps	5/4/2015	9:30:00 AM	ASSET	EPA 120.1	SC	5/6/2015	Lilia Ramit
					ASSET	EPA 200.8	CR	5/6/2015	Claire Ignacio
					ASSET	EPA 200.8	MN	5/6/2015	Claire Ignacio
					ASSET	EPA 218.6	CR6	5/6/2015	Ryan Balilu
					ASSET	SM 2540C	TDS	5/6/2015	Lilia Ramit
					ASSET	SM2130B	TRB	5/6/2015	Lilia Ramit
SC-700B	SC-700B-WDR-520	J.Aide	5/5/2015	7:12:00 AM	ASSET	EPA 120.1	SC	5/6/2015	Lilia Ramit
					ASSET	EPA 200.7	AL	5/7/2015	Jasper Aquino
					ASSET	EPA 200.7	B	5/7/2015	Jasper Aquino
					ASSET	EPA 200.7	FE	5/7/2015	Jasper Aquino
					ASSET	EPA 200.8	AS	5/6/2015	Claire Ignacio
					ASSET	EPA 200.8	BA	5/7/2015	Claire Ignacio
					ASSET	EPA 200.8	CR	5/6/2015	Claire Ignacio
					ASSET	EPA 200.8	CU	5/6/2015	Claire Ignacio
					ASSET	EPA 200.8	MN	5/6/2015	Claire Ignacio
					ASSET	EPA 200.8	MO	5/7/2015	Claire Ignacio
					ASSET	EPA 200.8	NI	5/6/2015	Claire Ignacio

TABLE 8
Topock IM-3 Waste Discharge Applicable or Relevant and Appropriate Requirements (ARARs)
Monitoring Information
Second Quarter 2015 Monitoring Report for Interim Measure No.3 Groundwater Treatment System

Location	Sample ID	Sampler Name	Sample Date	Sample Time	Lab	Analysis Method	Parameter	Analysis Date	Lab Technician
SC-700B	SC-700B-WDR-520	J.Aide	5/5/2015	7:12:00 AM	ASSET	EPA 200.8	PB	5/7/2015	Claire Ignacio
					ASSET	EPA 200.8	SB	5/7/2015	Claire Ignacio
					ASSET	EPA 200.8	ZN	5/6/2015	Claire Ignacio
					ASSET	EPA 218.6	CR6	5/6/2015	Ryan Balilu
					ASSET	EPA 300.0	FL	5/13/2015	Quennie Manimtim
					ASSET	EPA 300.0	SO4	5/13/2015	Quennie Manimtim
					FIELD	HACH	PH	5/5/2015	J.Aide
					ASSET	SM 2540C	TDS	5/6/2015	Lilia Ramit
					ASSET	SM 4500-NO3F	NO3NO2N	5/15/2015	Ryan Balilu
					ASSET	SM2130B	TRB	5/6/2015	Lilia Ramit
					TLI	SM4500NH3D	NH3N	6/2/2015	Alex Luna
SC-700B	SC-700B-WDR-521	Ryan Phelps	5/12/2015	2:15:00 PM	ASSET	EPA 120.1	SC	5/13/2015	Lilia Ramit
					ASSET	EPA 200.8	CR	5/14/2015	Claire Ignacio
					ASSET	EPA 200.8	MN	5/14/2015	Claire Ignacio
					ASSET	EPA 218.6	CR6	5/13/2015	Ryan Balilu
					FIELD	HACH	PH	5/12/2015	Ryan Phelps
					ASSET	SM 2540C	TDS	5/13/2015	Lilia Ramit
					ASSET	SM2130B	TRB	5/13/2015	Lilia Ramit
SC-700B	SC-700B-WDR-522	Ryan Phelps	5/19/2015	1:00:00 PM	ASSET	EPA 120.1	SC	5/20/2015	Lilia Ramit
					ASSET	EPA 200.8	CR	5/21/2015	Claire Ignacio
					ASSET	EPA 200.8	MN	5/21/2015	Claire Ignacio
					ASSET	EPA 218.6	CR6	5/20/2015	Ryan Balilu
					FIELD	HACH	PH	5/19/2015	Ryan Phelps
					ASSET	SM 2540C	TDS	5/20/2015	Lilia Ramit
					ASSET	SM2130B	TRB	5/20/2015	Lilia Ramit
SC-700B	SC-700B-WDR-523	Chris Lentz	5/26/2015	8:40:00 AM	ASSET	EPA 120.1	SC	5/27/2015	Lilia Ramit
					ASSET	EPA 200.8	CR	5/28/2015	Claire Ignacio
					ASSET	EPA 200.8	MN	5/28/2015	Claire Ignacio
					ASSET	EPA 218.6	CR6	5/27/2015	Ryan Balilu
					FIELD	HACH	PH	5/26/2015	Chris Lentz
					ASSET	SM 2540C	TDS	5/27/2015	Lilia Ramit
					ASSET	SM2130B	TRB	5/27/2015	Lilia Ramit
SC-700B	SC-700B-WDR-524	Josh Rosenberg	6/2/2015	10:45:00 AM	ASSET	EPA 120.1	SC	6/3/2015	Lilia Ramit
					ASSET	EPA 200.7	AL	6/4/2015	Claire Ignacio
					ASSET	EPA 200.7	B	6/4/2015	Claire Ignacio

TABLE 8
Topock IM-3 Waste Discharge Applicable or Relevant and Appropriate Requirements (ARARs)
Monitoring Information
Second Quarter 2015 Monitoring Report for Interim Measure No.3 Groundwater Treatment System

Location	Sample ID	Sampler Name	Sample Date	Sample Time	Lab	Analysis Method	Parameter	Analysis Date	Lab Technician
SC-700B	SC-700B-WDR-524	Josh Rosenberg	6/2/2015	10:45:00 AM	ASSET	EPA 200.7	FE	6/4/2015	Claire Ignacio
					ASSET	EPA 200.8	AS	6/4/2015	Claire Ignacio
					ASSET	EPA 200.8	BA	6/5/2015	Claire Ignacio
					ASSET	EPA 200.8	CR	6/4/2015	Claire Ignacio
					ASSET	EPA 200.8	CU	6/5/2015	Claire Ignacio
					ASSET	EPA 200.8	MN	6/4/2015	Claire Ignacio
					ASSET	EPA 200.8	MO	6/4/2015	Claire Ignacio
					ASSET	EPA 200.8	NI	6/4/2015	Claire Ignacio
					ASSET	EPA 200.8	PB	6/5/2015	Claire Ignacio
					ASSET	EPA 200.8	SB	6/4/2015	Claire Ignacio
					ASSET	EPA 200.8	ZN	6/5/2015	Claire Ignacio
					ASSET	EPA 218.6	CR6	6/3/2015	Ryan Balilu
					ASSET	EPA 300.0	FL	6/5/2015	Quennie Manimtim
					ASSET	EPA 300.0	SO4	6/5/2015	Quennie Manimtim
					FIELD	HACH	PH	6/2/2015	Josh Rosenberg
					ASSET	SM 2540C	TDS	6/3/2015	Lilia Ramit
					ASSET	SM 4500-NO3F	NO3NO2N	6/16/2015	Ryan Balilu
					ASSET	SM2130B	TRB	6/3/2015	Lilia Ramit
					TLI	SM4500NH3E	NH3N	6/17/2015	Alex Luna
SC-700B	SC-700B-WDR-525	Ryan Phelps	6/9/2015	1:25:00 PM	ASSET	EPA 120.1	SC	6/10/2015	Lilia Ramit
					ASSET	EPA 200.8	CR	6/12/2015	Claire Ignacio
					ASSET	EPA 200.8	MN	6/15/2015	Claire Ignacio
					ASSET	EPA 218.6	CR6	6/10/2015	Ryan Balilu
					FIELD	HACH	PH	6/9/2015	Ryan Phelps
					ASSET	SM 2540C	TDS	6/10/2015	Lilia Ramit
					ASSET	SM2130B	TRB	6/10/2015	Lilia Ramit
SC-700B	SC-700B-WDR-526	Josh Rosenberg	6/16/2015	1:20:00 PM	ASSET	EPA 120.1	SC	6/16/2015	Lilia Ramit
					ASSET	EPA 200.8	CR	6/24/2015	Claire Ignacio
					ASSET	EPA 200.8	MN	6/24/2015	Claire Ignacio
					ASSET	EPA 218.6	CR6	6/17/2015	Ryan Balilu
					FIELD	HACH	PH	6/16/2015	Josh Rosenberg
					ASSET	SM 2540C	TDS	6/16/2015	Lilia Ramit
					ASSET	SM2130B	TRB	6/16/2015	Lilia Ramit
SC-700B	SC-700B-WDR-527	Josh Rosenberg	6/23/2015	2:20:00 PM	ASSET	EPA 120.1	SC	6/24/2015	Lilia Ramit
					ASSET	EPA 200.8	CR	6/25/2015	Claire Ignacio

TABLE 8
Topock IM-3 Waste Discharge Applicable or Relevant and Appropriate Requirements (ARARs)
Monitoring Information
Second Quarter 2015 Monitoring Report for Interim Measure No.3 Groundwater Treatment System

Location	Sample ID	Sampler Name	Sample Date	Sample Time	Lab	Analysis Method	Parameter	Analysis Date	Lab Technician
SC-700B	SC-700B-WDR-527	Josh Rosenberg	6/23/2015	2:20:00 PM	ASSET	EPA 200.8	MN	6/25/2015	Claire Ignacio
					ASSET	EPA 218.6	CR6	6/24/2015	Ryan Balilu
					FIELD	HACH	PH	6/23/2015	Josh Rosenberg
					ASSET	SM 2540C	TDS	6/24/2015	Lilia Ramit
					ASSET	SM2130B	TRB	6/24/2015	Lilia Ramit
SC-700B	SC-700B-WDR-528	Chris Lentz	6/30/2015	2:20:00 PM	ASSET	EPA 120.1	SC	6/30/2015	Lilia Ramit
					ASSET	EPA 200.8	CR	7/2/2015	Claire Ignacio
					ASSET	EPA 200.8	MN	7/2/2015	Claire Ignacio
					ASSET	EPA 218.6	CR6	7/6/2015	Ryan Balilu
					FIELD	HACH	PH	6/30/2015	Chris Lentz
					ASSET	SM 2540C	TDS	7/1/2015	Lilia Ramit
					ASSET	SM2130B	TRB	6/30/2015	Lilia Ramit
SC-701	SC-701-WDR-515	Ryan Phelps	4/7/2015	11:05:00 AM	ASSET	EPA 120.1	SC	4/8/2015	Lilia Ramit
					ASSET	EPA 200.8	AG	4/8/2015	Claire Ignacio
					ASSET	EPA 200.8	AS	4/8/2015	Claire Ignacio
					ASSET	EPA 200.8	BA	4/10/2015	Claire Ignacio
					ASSET	EPA 200.8	BE	4/10/2015	Claire Ignacio
					ASSET	EPA 200.8	CD	4/8/2015	Claire Ignacio
					ASSET	EPA 200.8	CO	4/8/2015	Claire Ignacio
					ASSET	EPA 200.8	CR	4/8/2015	Claire Ignacio
					ASSET	EPA 200.8	CU	4/10/2015	Claire Ignacio
					ASSET	EPA 200.8	MN	4/8/2015	Claire Ignacio
					ASSET	EPA 200.8	MO	4/8/2015	Claire Ignacio
					ASSET	EPA 200.8	NI	4/8/2015	Claire Ignacio
					ASSET	EPA 200.8	PB	4/8/2015	Claire Ignacio
					ASSET	EPA 200.8	SB	4/8/2015	Claire Ignacio
					ASSET	EPA 200.8	SE	4/10/2015	Claire Ignacio
					ASSET	EPA 200.8	TL	4/8/2015	Claire Ignacio
					ASSET	EPA 200.8	V	4/8/2015	Claire Ignacio
					ASSET	EPA 200.8	ZN	4/8/2015	Claire Ignacio
					ASSET	EPA 218.6	CR6	4/9/2015	Ryan Balilu
					ASSET	EPA 245.1	HG	4/10/2015	Claire Ignacio
					ASSET	EPA 300.0	FL	4/9/2015	Quennie Manimtim
					FIELD	HACH	PH	4/7/2015	Ryan Phelps
					ASSET	SM 2540C	TDS	4/8/2015	Lilia Ramit

TABLE 8
Topock IM-3 Waste Discharge Applicable or Relevant and Appropriate Requirements (ARARs)
Monitoring Information
Second Quarter 2015 Monitoring Report for Interim Measure No.3 Groundwater Treatment System

Location	Sample ID	Sampler Name	Sample Date	Sample Time	Lab	Analysis Method	Parameter	Analysis Date	Lab Technician
Phase Separator	Phase Separator-Sludge-528	Ryan P.	7/9/2015	1:30:00 PM	ASSET	EPA 300.0	FL	7/13/2015	Quennie Manimtim
					ASSET	EPA 6010B	AG	7/12/2015	Claire Ignacio
					ASSET	EPA 6010B	AS	7/12/2015	Claire Ignacio
					ASSET	EPA 6010B	BA	7/12/2015	Claire Ignacio
					ASSET	EPA 6010B	BE	7/12/2015	Claire Ignacio
					ASSET	EPA 6010B	CD	7/12/2015	Claire Ignacio
					ASSET	EPA 6010B	CO	7/12/2015	Claire Ignacio
					ASSET	EPA 6010B	CR	7/12/2015	Claire Ignacio
					ASSET	EPA 6010B	CU	7/12/2015	Claire Ignacio
					ASSET	EPA 6010B	MN	7/12/2015	Claire Ignacio
					ASSET	EPA 6010B	MO	7/12/2015	Claire Ignacio
					ASSET	EPA 6010B	NI	7/12/2015	Claire Ignacio
					ASSET	EPA 6010B	PB	7/12/2015	Claire Ignacio
					ASSET	EPA 6010B	SB	7/12/2015	Claire Ignacio
					ASSET	EPA 6010B	SE	7/12/2015	Claire Ignacio
					ASSET	EPA 6010B	TL	7/12/2015	Claire Ignacio
					ASSET	EPA 6010B	V	7/12/2015	Claire Ignacio
					ASSET	EPA 6010B	ZN	7/12/2015	Claire Ignacio
					ASSET	EPA 7471A	HG	7/13/2015	Claire Ignacio
					ASSET	SW 7199	CR6	7/13/2015	Ryan Balilu

NOTES:

SC-700B = Sampling location for all effluent samples is tap on pipe downstream from tank T-700 to injection well IW-2 (see attached P&ID TP-PR-10-10-04).

SC-100B = Sampling location for all influent samples is tap on pipe from extraction wells into tank T-100 (see attached P&ID TP-PR-10-10-04).

SC-701 = Sampling location for all reverse osmosis samples is tap on pipe T-701 (see attached P&ID PR-10-04).

Prior to April 11, 2007 the analytical methods listed in the 40 CFR Part 136 for pH and TDS were E150.1 and E160.1, respectively. Per EPA and Department of Health Services guidelines, the analytical methods listed in the current 40 CFR Part 136 have changed to SM4500-H B and SM2540C as shown on the table.

ALKB =	alkalinity, bicarb as CaCO3	MO =	molybdenum
ALKC =	alkalinity, carb as CaCO3	MOIST =	moisture
AL =	aluminum	NH3N =	ammonia (as N)
Ag =	silver	NI =	nickel
AS =	arsenic	NO3NO2N =	nitrate/nitrite (as N)
B =	boron	PB =	lead
BA =	barium	PH =	pH
BE =	beryllium	SB =	antimony
CD =	cadmium	SC =	specific conductance
CO =	cobalt	SE =	selenium
CR =	chromium	SO4 =	sulfate
CR6 =	hexavalent chromium	TDS =	total dissolved solids
CU =	copper	TL =	thallium
FE =	iron	TLI =	Truesdail Laboratories, Inc.
FETD =	iron, dissolved	TRB =	turbidity
FL =	fluoride	V =	vanadium
HG =	mercury	ZN =	zinc
MN =	manganese		
MND =	manganese, dissolved		

Figures

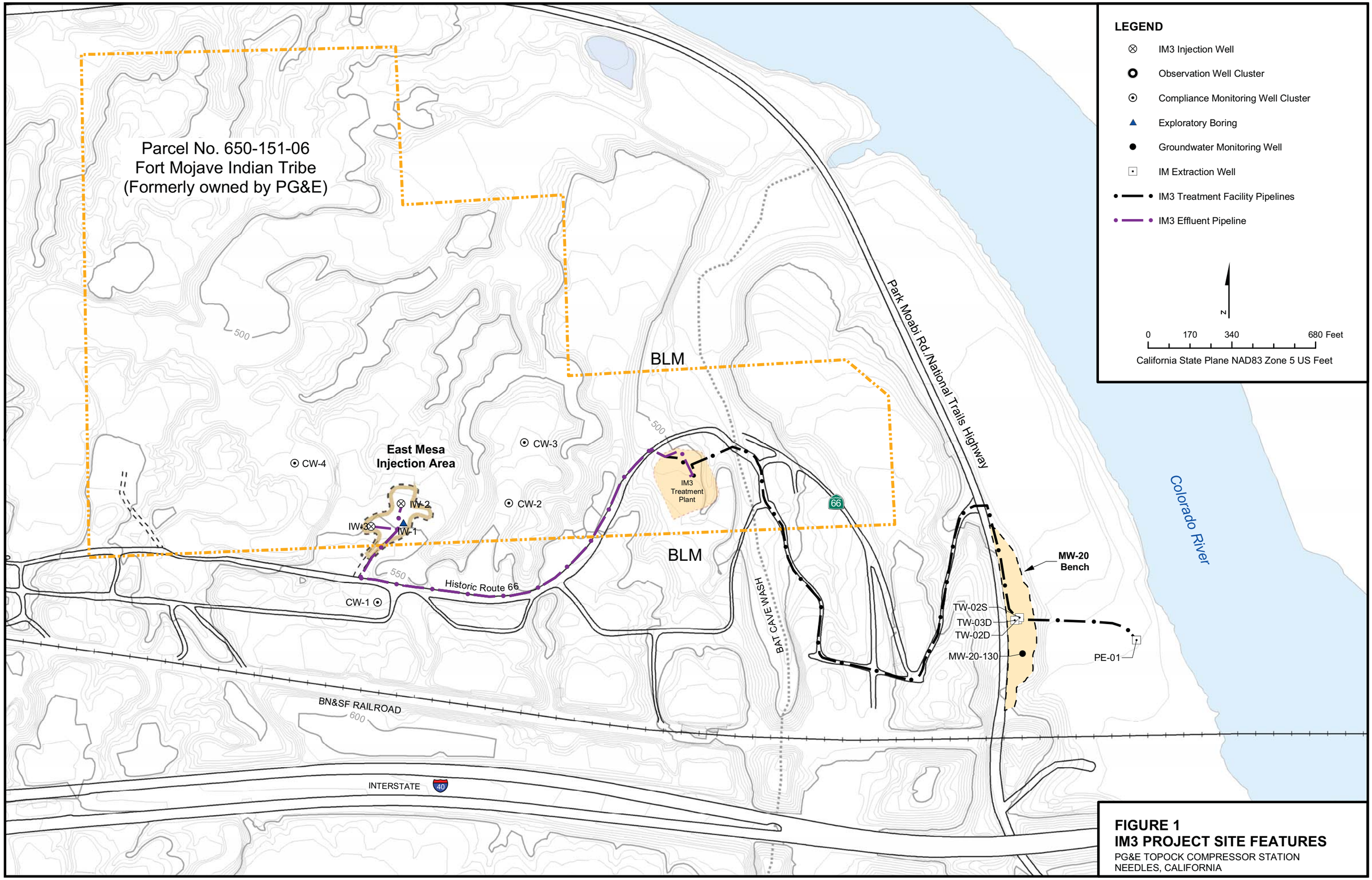
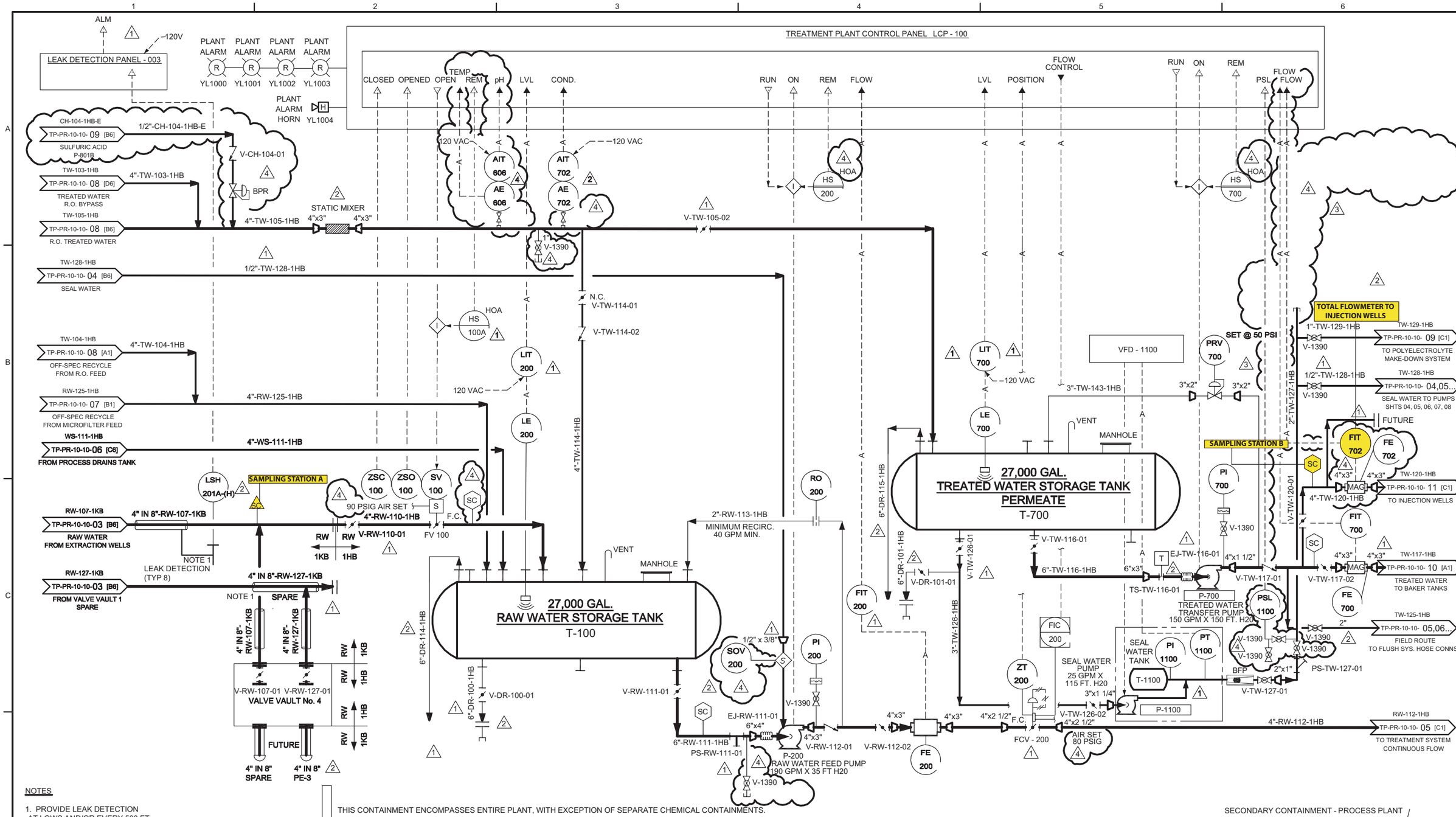


FIGURE 1
IM3 PROJECT SITE FEATURES
PG&E TOPOCK COMPRESSOR STATION
NEEDLES, CALIFORNIA

\\ZINFANDEL\PROJ\PACIFICGASELECTRICCO\TOPOCKPROGRAM\GIS\MAPFILES\2010\IM3\IM3_PROJECT_AREA_APRIL10.MXD JLAMANTI 10/8/2010 12:12:30



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NO.	DATE	REVISION	BY	CHK
D	07/28/04	FOR INTERNAL REVIEW	EFC	AJ
0	09/03/04	APPROVED FOR CONSTRUCTION	EFC	AJ
1	10/13/04	REVISED AND APPROVED FOR CONSTRUCTION	EFC	AJ
2	01/23/05	REVISED AND APPROVED FOR CONSTRUCTION	EFC	AJ
3	02/14/05	ADDED RECIRC. LINE AND PRV VALVE TO T-700 - APPROVED FOR CONSTRUCTION	EFC	AJ
4	09/21/05	REVISED PER AS-BUILT CONDITIONS	EFC	AJ

REVISION APPROVAL		REV 4	DATE 09/21/05	PRINT DISTRIBUTION
DISCIPLINE	REVIEWED	DISCIPLINE	REVIEWED	DATE
CIVIL		ELECTRICAL		STATUS
STRUCTURAL		INST & CONTROL		REV.
MECHANICAL		ARCHITECTURAL		CLIENT
PROCESS		ENVIRONMENTAL		FIELD
PIPING		GEN. ARRANG.		INTRA CO.

RESPONSIBLE ENGINEER: Kenneth L. Martins CH4876 Exp. 6-30-05 PE #

STATUS	REV	DATE	SDE	PEM
ISSUED				
PRELIMINARY				
FOR REVIEW AND APPROVAL	D	07/28/04		
APPROVED FOR CONSTRUCTION	0	09/03/04	KLM	TP
REVISED & APPROVED FOR CONSTRUCTION	4	/ /		

SCALE NONE

PACIFIC GAS & ELECTRIC CO.
TOPOCK COMPRESSOR STATION
INTERIM MEASURE 3
EXPANDED GROUNDWATER EXTRACTION AND TREATMENT SYSTEM

PROJ NO. 315994

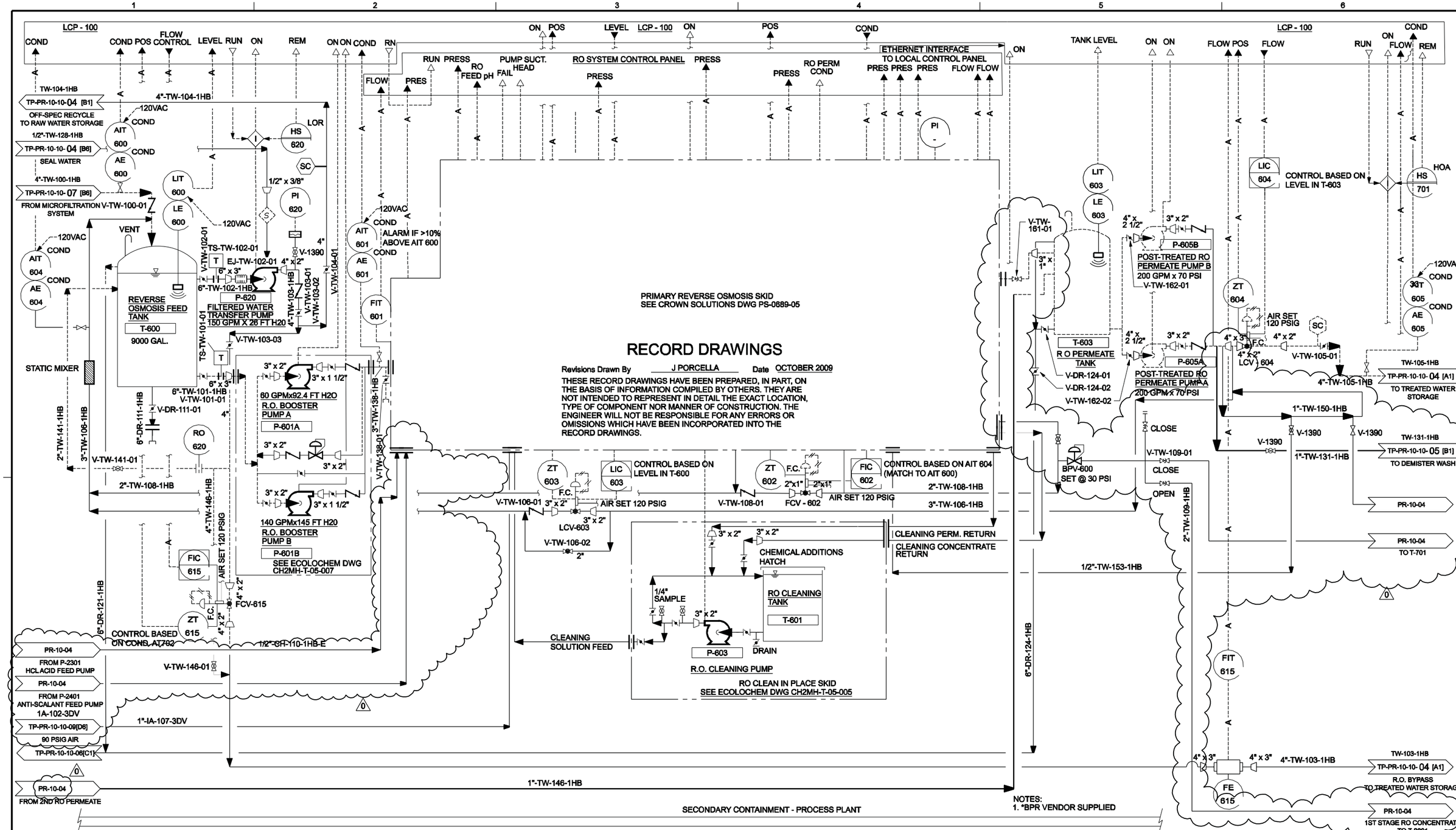
CH2MHILL

PROCESS AND INSTRUMENTATION DIAGRAM
SHEET 04
STORAGE AREA

DWG. NO. TP-PR-10-10-04 REV. 4

BAR IS ONE INCH ON ORIGINAL DRAWING

FILENAME: tppr101004.dwg PLOT DATE: 21-SEP-2005 PLOT TIME:



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REUSE OF DOCUMENTS:

**
ORIGINALLY STAMPED AND SIGNED BY:
JOHN PORCELLA
CALIFORNIA PE NO. C70145
ON 04-01-2009
**

RESPONSIBLE ENGINEER: John Porcella C70145 Exp. 9-30-10 PE#

NO.	DATE	REVISION	BY	CHK
A	2/12/09	INTERNAL REVIEW		
B	2/12/09	CLIENT REVIEW		
C	4/01/09	FOR REVIEW AND APPROVAL	JR	JP
0	11/17/09	FINAL RECORD ISSUE	JR	JP

REVISION APPROVAL		REV 0	DATE 10/02/09
DISCIPLINE	REVIEWED	DISCIPLINE	REVIEWED
CIVIL	SJ	ELECTRICAL	FH
STRUCTURAL		INST & CONTROL	JG
MECHANICAL	SJ	ARCHITECTURAL	
PROCESS	DF	ENVIRONMENTAL	
PIPING	SJ	GEN. ARRANG.	SJ

PRINT DISTRIBUTION
DATE
STATUS
REV.
CLIENT
FIELD
INTRA CO.

STATUS				
ISSUED	REV	DATE	SDE	PEM
PRELIMINARY	A	2/12/09	JP	JP
FOR REVIEW AND APPROVAL	C	4/01/09	JP	JP
APPROVED FOR CONSTRUCTION				
REVISED & APPROVED FOR CONSTRUCTION	0	10/02/09	JP	JP

SCALE NONE

PACIFIC GAS & ELECTRIC CO.
TOPOCK COMPRESSOR STATION
INTERIM MEASURE 3
PLANT PERFORMANCE IMPROVEMENTS

PROJ NO. 362032

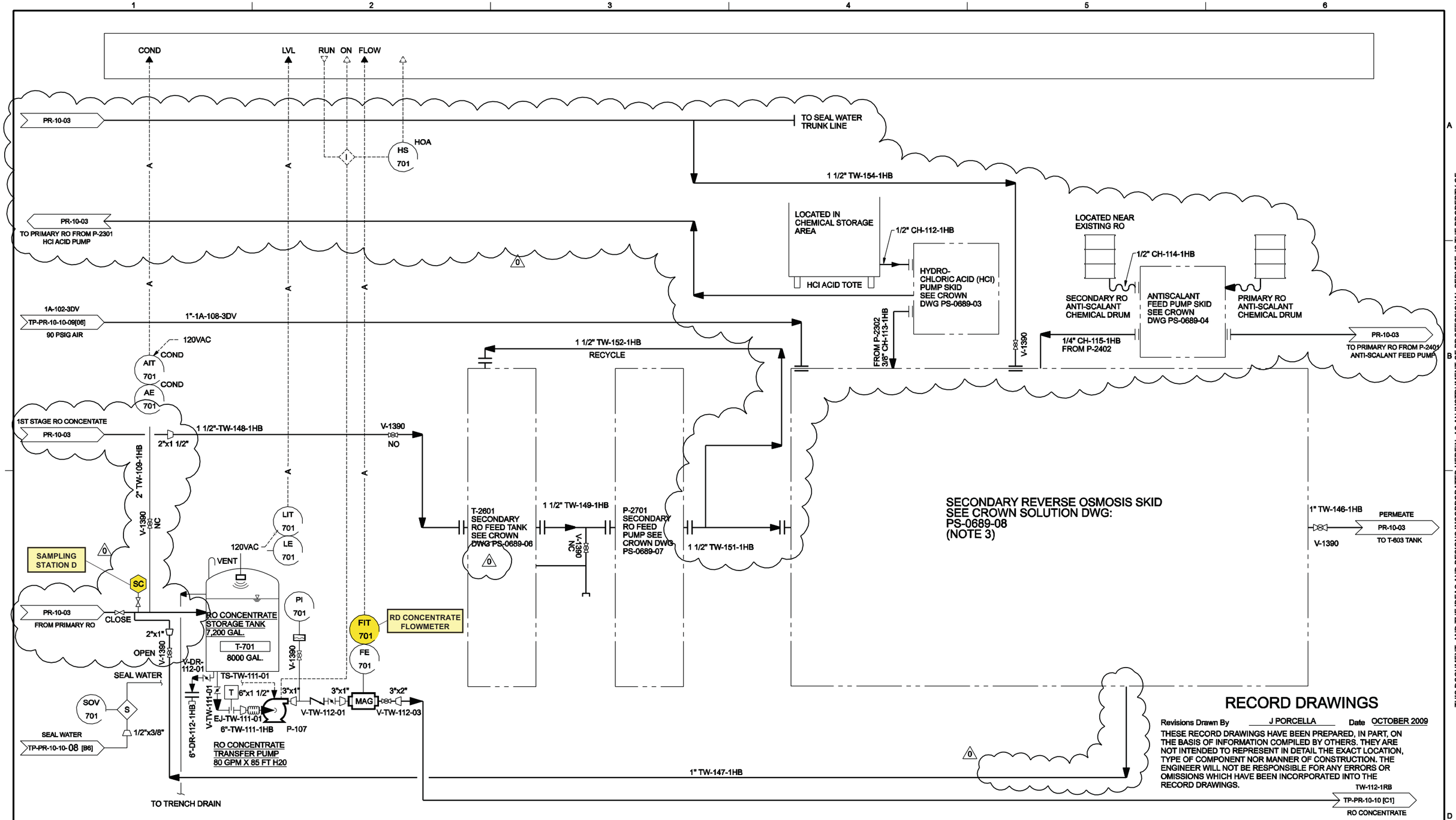
CH2MHILL

PROCESS AND INSTRUMENTATION DIAGRAM
REVERSE OSMOSIS SYSTEM
SHEET ONE OF TWO

DWG. NO. PR-10-03 REV. 0

BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"

FILENAME: PR-10-03.dgn PLOT DATE: 11/19/2009 PLOT TIME: 10:27:54 AM



RECORD DRAWINGS

Revisions Drawn By J PORCELLA Date OCTOBER 2009

THESE RECORD DRAWINGS HAVE BEEN PREPARED, IN PART, ON THE BASIS OF INFORMATION COMPILED BY OTHERS. THEY ARE NOT INTENDED TO REPRESENT IN DETAIL THE EXACT LOCATION, TYPE OF COMPONENT NOR MANNER OF CONSTRUCTION. THE ENGINEER WILL NOT BE RESPONSIBLE FOR ANY ERRORS OR OMISSIONS WHICH HAVE BEEN INCORPORATED INTO THE RECORD DRAWINGS.

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** ORIGINALLY STAMPED AND SIGNED BY: JOHN PORCELLA CALIFORNIA PE NO. C70145 ON 04-01-2009 **

RESPONSIBLE ENGINEER: John Porcella C70145 Exp. 9-30-10

PE#

NO.	DATE	REVISION	BY	CHK
A	2/12/09	INTERNAL REVIEW		
B	2/12/09	CLIENT REVIEW		
C	4/01/09	FOR REVIEW AND APPROVAL	JR	JP
0	11/17/09	FINAL RECORD ISSUE	JR	JP

REVISION APPROVAL				REV 0	DATE 10/02/09
DISCIPLINE	REVIEWED	DISCIPLINE	REVIEWED		
CIVIL	SJ	ELECTRICAL	FH		
STRUCTURAL		INST & CONTROL	JG		
MECHANICAL	SJ	ARCHITECTURAL			
PROCESS	DF	ENVIRONMENTAL			
PIPING	SJ	GEN. ARRANG.	SJ		

PRINT DISTRIBUTION	
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STATUS	
REV.	
CLIENT	
FIELD	
INTRA CO.	

STATUS				
ISSUED	REV	DATE	SDE	PEM
PRELIMINARY	A	2/12/09	JP	JP
FOR REVIEW AND APPROVAL	C	4/01/09	JP	JP
APPROVED FOR CONSTRUCTION				
REVISED & APPROVED FOR CONSTRUCTION	0	10/02/09	JP	JP

SCALE NONE

PACIFIC GAS & ELECTRIC CO.
TOPOCK COMPRESSOR STATION
INTERIM MEASURE 3
PLANT PERFORMANCE IMPROVEMENTS

PROJ NO. 362032

CH2MHILL

PROCESS AND INSTRUMENTATION DIAGRAM
REVERSE OSMOSIS SYSTEM
SHEET TWO OF TWO

DWG. NO. PR-10-04 REV. 0

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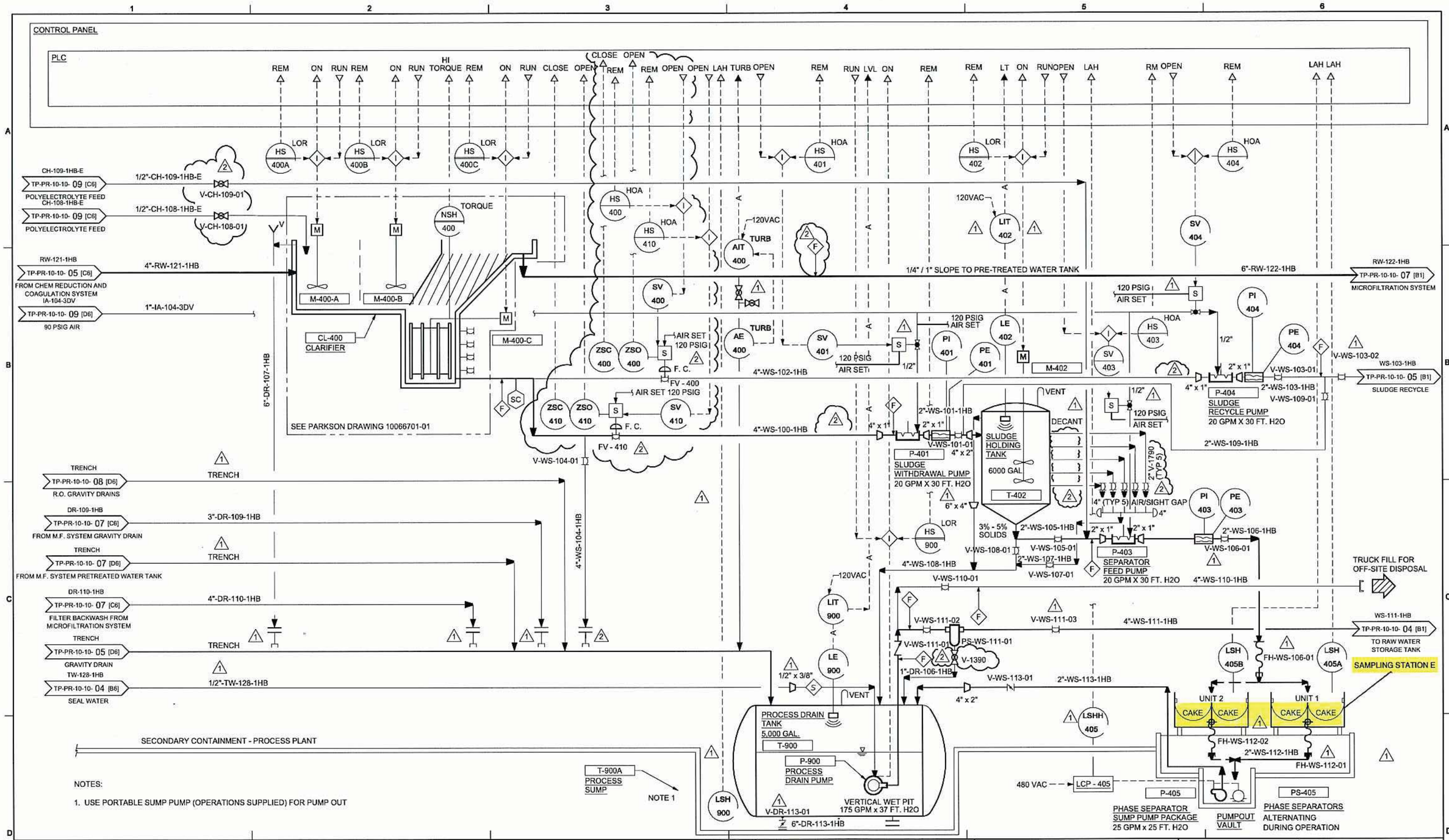

NOTES:

1. USE PORTABLE SUMP PUMP (OPERATIONS SUPPLIED) FOR PUMP OUT

NO.	DATE	REVISION	BY	CHK
0	07/28/04	FOR INTERNAL REVIEW	EFC	AJ
0	09/03/04	APPROVED FOR CONSTRUCTION	EFC	AJ
1	10/13/04	REVISED AND APPROVED FOR CONSTRUCTION	EFC	AJ
2	01/23/05	REVISED AND APPROVED FOR CONSTRUCTION	EFC	AJ

REVISION APPROVAL		REV 2	DATE 01/23/05
DISCIPLINE	REVIEWED	DISCIPLINE	REVIEWED
CIVIL		ELECTRICAL	
STRUCTURAL		INST & CONTROL	
MECHANICAL		ARCHITECTURAL	
PROCESS		ENVIRONMENTAL	
PIPING		GEN. ARRANG.	

PRINT DISTRIBUTION: DATE, STATUS, REV., CLIENT, FIELD, INTRA CO.

STATUS	REV	DATE	SDE	PEM
PRELIMINARY				
FOR REVIEW AND APPROVAL	D	07/28/04		
APPROVED FOR CONSTRUCTION	0	09/03/04	KLM	TP
REVISED & APPROVED FOR CONSTRUCTION	2	01/23/05		

SCALE NONE

RESPONSIBLE ENGINEER: Kenneth L. Martins PE # CH4876 Exp. 6-30-05

PACIFIC GAS & ELECTRIC CO.
TOPOCK COMPRESSOR STATION
INTERIM MEASURE 3
EXPANDED GROUNDWATER EXTRACTION AND TREATMENT SYSTEM

PROJ NO. 315994

CH2MHILL

PROCESS AND INSTRUMENTATION DIAGRAM
SHEET 06
CLARIFICATION AND SLUDGE REMOVAL

DWG. NO. TP-PR-10-10-06 REV. 2

FILENAME: tppr101006.dwg PLOT DATE: 23-JAN-2005 PLOT TIME:

BAR IS ONE INCH ON ORIGINAL DRAWING. 0 1"

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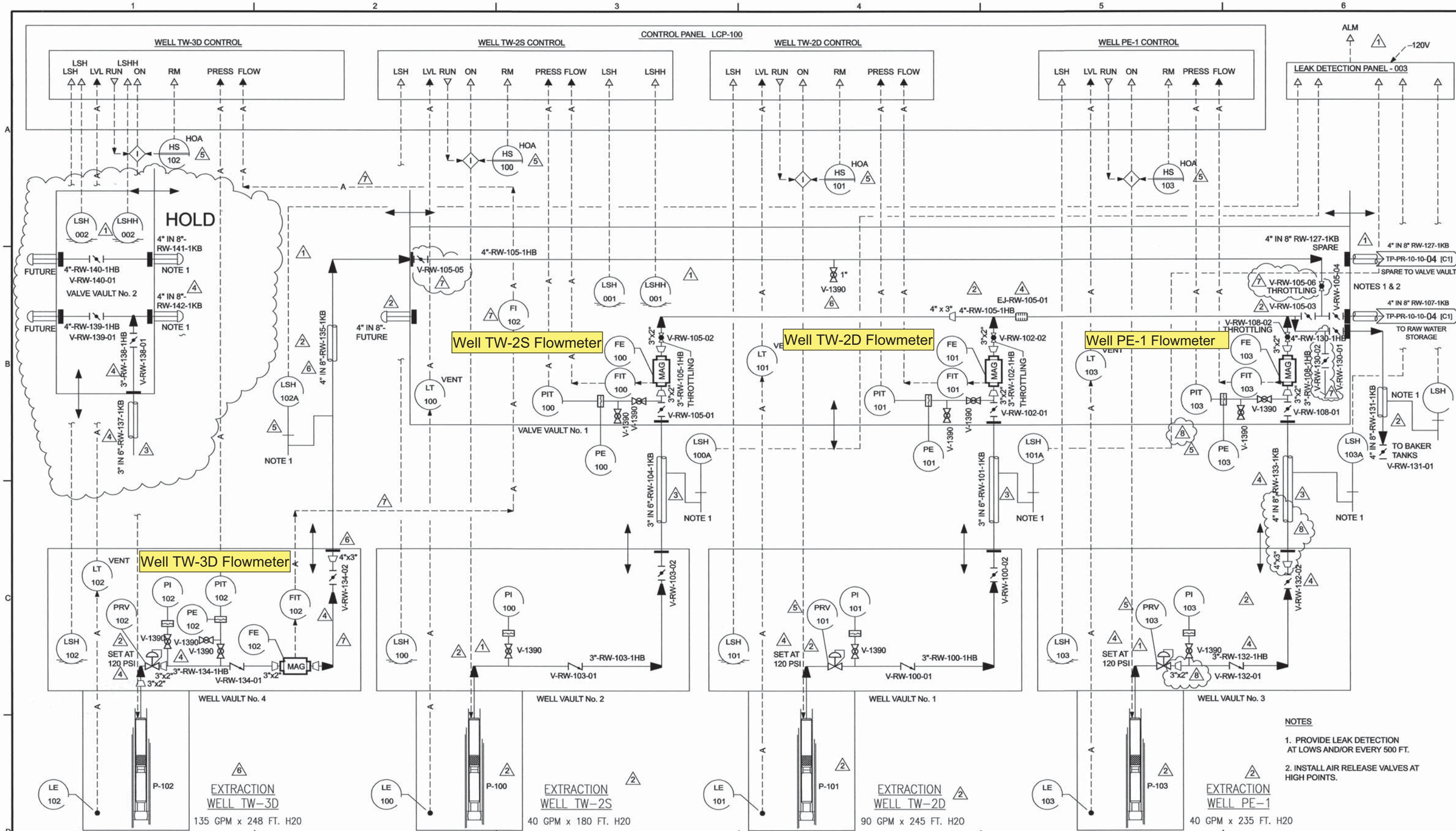

NOTES

1. PROVIDE LEAK DETECTION AT LOWS AND/OR EVERY 500 FT.
2. INSTALL AIR RELEASE VALVES AT HIGH POINTS.

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REGISTERED PROFESSIONAL ENGINEER — KENNETH L. MARTINS — No. CH4876 — Exp. 6-30-06 — CIVIL — STATE OF CALIFORNIA

RESPONSIBLE ENGINEER: Kenneth L. Martins
PE # CH4876 Exp. 6-30-06

NO.	DATE	REVISION	BY	CHK
8	12/07/05	REMOVED PE-1 HOLDS	JBW	SDH
1	10/13/04	REVISED AND APPROVED FOR CONSTRUCTION	EFC	AJ
2	01/23/05	REVISED AND APPROVED FOR CONSTRUCTION	EFC	AJ
3	03/16/05	DELETED NOTES. APPROVED FOR CONSTRUCTION	EFC	AJ
4	07/20/05	RELIEF VALVE SETTINGS. WELL PE-1 LINE TAGS. HOLDS REMOVED. APPROVED FOR CONSTRUCTION	EFC	AJ
5	09/27/05	FINAL RECORD ISSUE	EFC	AJ
6	10/06/05	REVISED FINAL RECORD - ADDED TW-3D	EFC	AJ
7	10/19/05	REVISED AS NOTED	EFC	AJ

REVISION APPROVAL		REV 8	DATE 12/06/05
DISCIPLINE	REVIEWED	DISCIPLINE	REVIEWED
CIVIL	—	ELECTRICAL	—
STRUCTURAL	—	INST & CONTROL	—
MECHANICAL	AJ	ARCHITECTURAL	—
PROCESS	—	ENVIRONMENTAL	—
PIPING	SDH	GEN. ARRANG.	—

PRINT DISTRIBUTION	
DATE	
STATUS	
REV.	
CLIENT	
FIELD	
INTRA CO.	

STATUS				
ISSUED	REV	DATE	SDE	PEM
PRELIMINARY				
FOR REVIEW AND APPROVAL	D	07/28/04		
APPROVED FOR CONSTRUCTION	0	09/03/04	KLM	TP
REVISED & APPROVED FOR CONSTRUCTION	7	12/19/05	AJ for KLM	AJ

SCALE NONE

PACIFIC GAS & ELECTRIC CO.
TOPOCK COMPRESSOR STATION
INTERIM MEASURE 3
EXPANDED GROUNDWATER EXTRACTION AND TREATMENT SYSTEM

PROJ NO. 315994

CH2MHILL

PROCESS AND INSTRUMENTATION DIAGRAM
SHEET 03
EXTRACTION WELLS
PE-1, TW-2D, TW-2S AND TW-3D

DWG. NO. TP-PR-10-10-03 REV. 8

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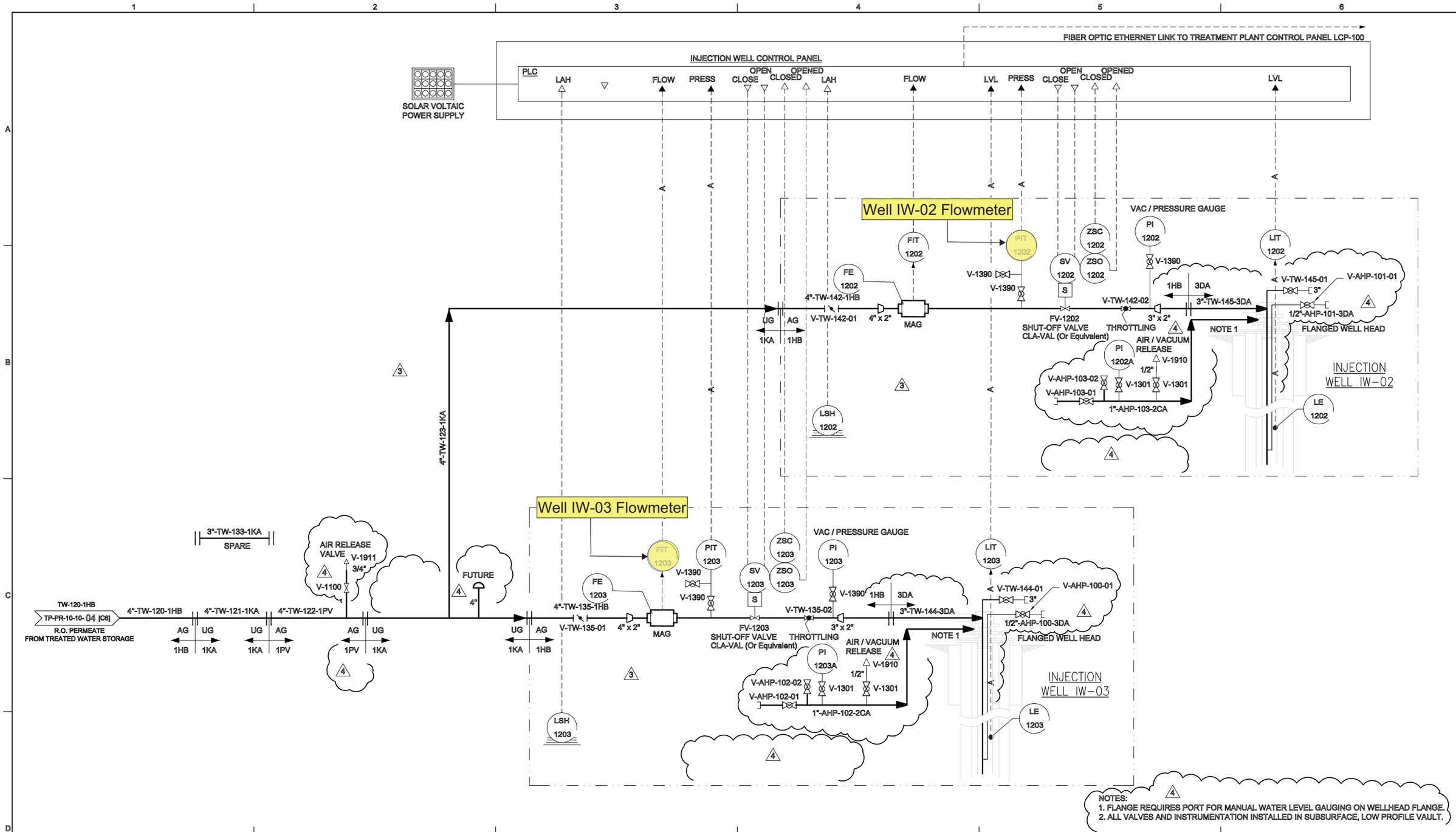
FILENAME: tppr101003.dwg PLOT DATE: 19-OCT-2005 PLOT TIME:



NOTES:
1. FLANGE REQUIRES PORT FOR MANUAL WATER LEVEL GAUGING ON WELLHEAD FLANGE.
2. ALL VALVES AND INSTRUMENTATION INSTALLED IN SUBSURFACE, LOW PROFILE VAULT.

RESPONSIBLE ENGINEER: Kenneth L. Martins CH4876 Exp. 6-30-05 PE #

NO.	DATE	REVISION	BY	CHK
A	07/28/04	FOR INTERNAL REVIEW	EFC	AJ
0	09/03/04	APPROVED FOR CONSTRUCTION	EFC	AJ
1	10/13/04	REVISED AND APPROVED FOR CONSTRUCTION	EFC	AJ
2	01/23/05	REVISED AND APPROVED FOR CONSTRUCTION	EFC	AJ
3	02/14/05	REVISED AND APPROVED FOR CONSTRUCTION	EFC	AJ
4	03/10/05	REMOVED HOLD AND APPROVED FOR CONSTRUCTION	EFC	AJ

REVISION APPROVAL		REV 4	DATE 03/10/05	PRINT DISTRIBUTION	
DISCIPLINE	REVIEWED	DISCIPLINE	REVIEWED	DATE	
CIVIL		ELECTRICAL		STATUS	
STRUCTURAL		INST & CONTROL		REV.	
MECHANICAL		ARCHITECTURAL		CLIENT	
PROCESS		ENVIRONMENTAL		FIELD	
PIPING		GEN. ARRANG.		INTRA CO.	

STATUS				
ISSUED	REV	DATE	SDE	PEM
PRELIMINARY				
FOR REVIEW AND APPROVAL	A	07/28/04		
APPROVED FOR CONSTRUCTION	0	09/03/04	KLM	TP
REVISED & APPROVED FOR CONSTRUCTION	4	/ /		

SCALE NONE

PACIFIC GAS & ELECTRIC CO.
TOPOCK COMPRESSOR STATION
INTERIM MEASURE 3
EXPANDED GROUNDWATER EXTRACTION AND TREATMENT SYSTEM

PROJ NO. 315994

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PROCESS AND INSTRUMENTATION DIAGRAM
SHEET 11
INJECTION WELLS

DWG. NO. TP-PR-10-10-11 REV. 4

BAR IS ONE INCH ON ORIGINAL DRAWING. 0 1"

FILENAME: tppr101011.dwg PLOT DATE: 10-MAR-2005 PLOT TIME:

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Appendix A
Semiannual Operations and Maintenance Log, January 1, 2015 through June 30, 2015

APPENDIX A

Semiannual Operations and Maintenance Log, January 1, 2015 through June 30, 2015

Downtime is defined as any period when all extraction wells are not operating, so that no groundwater is being extracted and piped into IM-3 as influent. Periods of planned and unplanned extraction system downtime are summarized here. The times shown are in Pacific Standard Time to be consistent with other data collected at the site.

January 2015

During January 2015, extraction wells TW-3D and PE-1 operated at a target pump rate of 135 gallons per minute (gpm), excluding periods of planned and unplanned downtime. Extraction wells TW-2D and TW-2S were not operated during January 2015. The operational run time for the IM-3 groundwater extraction system (combined or individual pumping) was 97.1 percent during the January 2015 reporting period.

The IM-3 facility treated approximately 5,839,161 gallons of extracted groundwater during January 2015. The IM-3 facility treated 2,700 gallons of injection well backwashing/re-development water. Two containers of solids from the IM-3 facility were transported offsite during January 2015.

Periods of planned and unplanned extraction system downtime (that together resulted in approximately 2.9 percent downtime during January 2015) are summarized below. The times shown are in PST to be consistent with other data collected (for example, water level data) at the site.

- **January 5, 2015 (unplanned):** The extraction well system was offline from 1:20 a.m. to 3:08 a.m. due to the failure of a belt on the air compressor. Extraction system downtime was 1 hour, 48 minutes.
- **January 7, 2015 (planned):** The extraction well system was offline from 2:40 p.m. to 2:42 p.m., 2:50 p.m. to 2:52 p.m., 3:00 p.m. to 3:02 p.m., 3:08 p.m. to 3:10 p.m., 3:12 p.m. to 3:14 p.m., 3:16 p.m. to 3:18 p.m., and 3:22 p.m. to 3:24 p.m. due to testing of critical alarms and leak detection system. Extraction system downtime was 14 minutes.
- **January 10, 2015 (unplanned):** The extraction well system was offline from 12:42 a.m. to 1:56 a.m., 2:44 a.m. to 3:46 a.m., and 4:10 a.m. to 7:00 a.m. to clean the microfilter and process drain tank (T-900) strainers and adjust pH levels in the flow to the treated water storage tank (T-700). Extraction system downtime was 5 hours, 6 minutes.
- **January 15, 2015 (unplanned):** The extraction well system was offline from 3:16 a.m. to 3:38 a.m. and 4:04 a.m. to 4:22 a.m. due to high-level alarms in the reverse osmosis feed tank (T-600). Extraction system downtime was 40 minutes.
- **January 16, 2015 (unplanned):** The extraction well system was offline from 2:22 a.m. to 2:26 a.m. due to the shutdown of the air compressor. Extraction system downtime was 4 minutes.
- **January 21, 2015 (unplanned):** The extraction well system was offline from 8:54 a.m. to 7:52 p.m. and 8:12 p.m. to 9:50 p.m. to replace the microfilter actuator valve and a seal in the recirculation pump (P-501). Extraction system downtime was 12 hours, 36 minutes.
- **January 31, 2015 (unplanned):** The extraction well system was offline from 6:04 p.m. to 7:06 p.m. due to loss of power from the City of Needles. Extraction system downtime was 1 hour, 2 minutes.

February 2015

During February 2015, extraction wells TW-3D and PE-1 operated at a target pump rate of 135 gpm, excluding periods of planned and unplanned downtime. Extraction wells TW-2D and TW-2S were not operated during February 2015. The operational run time for the IM-3 groundwater extraction system (combined or individual pumping) was 99.9 percent during the February 2015 reporting period.

The IM-3 facility treated approximately 5,431,317 gallons of extracted groundwater during February 2015. The IM-3 facility treated 2,700 gallons of injection well backwashing/re-development water and 150 gallons from groundwater monitoring well sampling. Two containers of solids from the IM-3 facility were transported offsite during February 2015.

Periods of planned and unplanned extraction system downtime (that together resulted in approximately 0.1 percent downtime during February 2015) are summarized below. The times shown are in PST to be consistent with other data collected (for example, water level data) at the site.

- **February 5, 2015 (planned):** The extraction well system was offline from 9:20 a.m. to 9:26 a.m., from 9:40 a.m. to 9:42 a.m., from 9:54 a.m. to 9:56 a.m., and from 10:08 a.m. to 10:10 a.m. due to testing of critical alarms and leak detection system. Extraction system downtime was 12 minutes.
- **February 5, 2015 (planned):** The extraction well system was offline from 12:58 p.m. to 1:06 p.m. to run specific capacity and injectivity tests on the injection wells. Extraction system downtime was 8 minutes.
- **February 10, 2015 (unplanned):** The extraction well system was offline from 10:24 a.m. to 10:52 a.m. to clean the raw water storage tank (T-100) strainer and the ferrous flow meter (FSL-201). Extraction system downtime was 28 minutes.

March 2015

During March 2015, extraction wells TW-3D and PE-1 operated at a target pump rate of 135 gpm, excluding periods of planned and unplanned downtime. Extraction well TW-2D was run for a brief time on March 10, 2015 to test a newly installed groundwater pump. Extraction well TW-2S was not operated during March 2015. The operational run time for the IM-3 groundwater extraction system (combined or individual pumping) was 96.0 percent during the March 2015 reporting period.

The IM-3 facility treated approximately 5,827,239 gallons of extracted groundwater during March 2015. The IM-3 facility treated 3,600 gallons of injection well backwashing/re-development water. Four containers of solids from the IM-3 facility was transported offsite during March 2015.

Periods of planned and unplanned extraction system downtime (that together resulted in approximately 4.0 percent downtime during March 2015) are summarized below. The times shown are in PST to be consistent with other data collected (for example, water level data) at the site.

- **March 8, 2015 (unplanned):** The extraction well system was offline from 8:50 p.m. to 10:56 p.m. due to shutdown of the air compressor. Extraction system downtime was 2 hours, 6 minutes.
- **March 10, 2015 (planned):** The extraction well system was offline from 11:08 a.m. to 11:10 a.m., 11:16 a.m. to 11:18 a.m., and 11:34 a.m. to 11:36 a.m. due to testing of critical alarms and leak detection system. Extraction system downtime was 6 minutes.
- **March 11, 2015 (planned):** The extraction well system was offline from 5:56 a.m. to 1:04 p.m. for maintenance activities, including removal of a blockage in the piping between the chromium reduction reactor (T-300) and the first iron oxidation reactor (T-301A), installation of a new microfilter pump

(P-501), repair of a microfilter pump (P-502), and repair of the clarifier feed pump (P-400). Extraction system downtime was 7 hours, 8 minutes.

- **March 11, 2015 (unplanned):** The extraction well system was offline from 9:34 a.m. to 9:46 a.m. due to a high-level alarm in the raw water storage tank (T-100). Extraction system downtime was 12 minutes.
- **March 11, 2015 (unplanned):** The extraction well system was offline from 11:16 p.m. to 11:38 p.m. due to failure of the raw water feed pump (P-200). Extraction system downtime was 22 minutes.
- **March 12, 2015 (unplanned):** The extraction well system was offline from 4:52 a.m. to 5:04 a.m. due to a high-level alarm in the raw water storage tank (T-100). Extraction system downtime was 12 minutes.
- **March 12, 2015 (planned):** The extraction well system was offline from 9:56 a.m. to 12:34 p.m. to perform maintenance at on the clarifier feed pump (P-400). Extraction system downtime was 2 hours, 38 minutes.
- **March 13, 2015 (unplanned):** The extraction well system was offline from 8:28 a.m. to 10:00 a.m. due to a high-level alarm in the third iron oxidation reactor (T-301C). Extraction system downtime was 1 hour, 32 minutes.
- **March 13, 2015 (unplanned):** The extraction well system was offline from 1:08 p.m. to 1:34 p.m. due to a high-level alarm in the third iron oxidation reactor (T-301C). Extraction system downtime was 26 minutes.
- **March 14, 2015 (unplanned):** The extraction well system was offline from 1:48 a.m. to 3:06 a.m. due to a high-level alarm in the third iron oxidation reactor (T-301C). Extraction system downtime was 1 hour, 18 minutes.
- **March 14, 2015 (unplanned):** The extraction well system was offline from 7:00 a.m. to 8:54 a.m. to repair the clarifier feed pump (P-400). Extraction system downtime was 1 hour, 54 minutes.
- **March 15, 2015 (unplanned):** The extraction well system was offline from 9:58 a.m. to 11:46 a.m. to change the microfilter modules. Extraction system downtime was 1 hour, 48 minutes.
- **March 15, 2015 (unplanned):** The extraction well system was offline from 10:54 p.m. to 11:12 p.m. due to a high-level alarm in the third iron oxidation reactor (T-301C). Extraction system downtime was 18 minutes.
- **March 16, 2015 (unplanned):** The extraction well system was offline from 9:20 a.m. to 3:44 p.m. to replace the clarifier feed pump (P-400). Extraction system downtime was 6 hours, 24 minutes.
- **March 17, 2015 (unplanned):** The extraction well system was offline from 10:28 a.m. to 11:00 a.m. due to a high-level alarm in the third iron oxidation reactor (T-301C). Extraction system downtime was 32 minutes.
- **March 17-18, 2015 (unplanned):** The extraction well system was offline from 11:46 p.m. on March 17, 2015 to 12:56 a.m. on March 18, 2015 due to a high level alarm in the third iron oxidation reactor (T-301C) and the raw water storage tank (T-100). Extraction system downtime was 1 hour, 10 minutes.
- **March 24, 2015 (unplanned):** The extraction well system was offline from 9:22 a.m. to 9:34 a.m. to clean the microfilter strainer. Extraction system downtime was 12 minutes.
- **March 25, 2015 (unplanned):** The extraction well system was offline from 8:22 a.m. to 8:36 a.m. and from 12:10 p.m. to 12:22 p.m. to repair the clarifier feed pump (P-400). Extraction system downtime was 26 minutes.

- **March 30, 2015 (unplanned):** The extraction well system was offline from 7:46 a.m. to 8:48 a.m. to change the microfilter modules. Extraction system downtime was 1 hour, 2 minutes.

April 2015

During April 2015, extraction wells TW-3D and PE-1 operated at a target pump rate of 135 gpm excluding periods of planned and unplanned downtime. Extraction wells TW-2S and TW-2D were not operated during April 2015. The operational run time for the IM-3 groundwater extraction system (combined or individual pumping) was 86.9 percent during the April 2015 reporting period.

The IM-3 facility treated approximately 5,054,278 gallons of extracted groundwater during April 2015. The IM-3 facility treated 27,050 gallons of injection well backwashing/re-development water. Two containers of solids from the IM-3 facility were transported offsite during April 2015.

Periods of planned and unplanned extraction system downtime (that together resulted in approximately 13.1 percent downtime during April 2015) are summarized below. The times shown are in PST to be consistent with other data collected (e.g., water level data) at the site.

- **April 1, 2015 (planned):** The extraction well system was offline from 9:50 a.m. to 10:08 a.m. to collect monthly influent and effluent samples. Extraction system downtime was 18 minutes.
- **April 2, 2015 (planned):** The extraction well system was offline from 8:42 a.m. to 9:20 a.m. due to testing of critical alarms and leak detection system. Extraction system downtime was 38 minutes.
- **April 4, 2015 (unplanned):** The extraction well system was offline from 12:10 a.m. to 1:22 a.m. to repair the level sensor in the Secondary RO Feed Tank (T-2601). Extraction system downtime was 1 hour, 12 minutes.
- **April 6, 2015 (unplanned):** The extraction well system was offline from 3:46 p.m. to 5:16 p.m. to replace the microfilter strainer. Extraction system downtime was 1 hour, 30 minutes.
- **April 11, 2015 (unplanned):** The extraction well system was offline from 9:52 a.m. to 10:00 a.m. due to a high level alarm in the raw water storage tank (T-100). Extraction system downtime was 8 minutes.
- **April 13, 2015 (unplanned):** The extraction well system was offline from 8:36 a.m. to 3:30 p.m. to replace the microfilter modules and remove a blockage in the chemical loop. Extraction system downtime was 6 hours, 54 minutes.
- **April 14, 2015 (unplanned):** The extraction well system was offline from 9:16 a.m. to 9:40 a.m. due to a high level alarm in the Pretreated Water Tank (T-500). Extraction system downtime was 24 minutes.
- **April 15, 2015 (unplanned):** The extraction well system was offline from 7:50 p.m. to 9:14 p.m. due to high level alarms in the Pretreated Water Tank (T-500), the RO Feed Tank (T-600), and the Raw Water Storage Tank (T-100). Extraction system downtime was 1 hour, 24 minutes.
- **April 16, 2015 (unplanned):** The extraction well system was offline from 1:48 a.m. to 12:16 p.m. due to a malfunction in the microfilter system. Extraction system downtime was 10 hours, 28 minutes.
- **April 20, 2015 (unplanned):** The extraction well system was offline from 5:02 p.m. to 5:26 p.m. and 5:56 p.m. to 7:22 p.m. to clean the microfilter strainer and repair a broken microfilter piping connection. Extraction system downtime was 1 hour, 50 minutes.
- **April 25, 2015 (unplanned):** The extraction well system was offline from 2:32 p.m. to 5:12 p.m. and 6:00 p.m. to 6:32 p.m. due to a malfunction in the microfilter system and cleaning of the microfilter strainer. Extraction system downtime was 3 hours, 12 minutes.

- **April 25-26, 2015 (unplanned):** The extraction well system was offline from 11:56 p.m. on April 25, 2015 to 1:04 a.m. on April 26, 2015 to diagnose a problem with the Post Treatment RO Permeate Pump (P-605). Extraction system downtime was 1 hour, 8 minutes.
- **April 26, 2015 (unplanned):** The extraction well system was offline from 11:26 a.m. to 11:28 a.m. due to loss of power from the City of Needles. Extraction system downtime was 2 minutes.
- **April 27, 2015 (unplanned):** The extraction well system was offline from 2:12 p.m. to 2:58 p.m. to replace the o-ring on the microfilter strainer. Extraction system downtime was 46 minutes.
- **April 27, 2015 (unplanned):** The extraction well system was offline from 8:54 p.m. to 9:56 p.m. and 10:20 p.m. to 10:50 p.m. due to loss of power from the City of Needles. The facility was transferred to backup generator power during this time. Extraction system downtime was 1 hour, 32 minutes.
- **April 28, 2015 (unplanned):** The extraction well system was offline from 12:40 a.m. to 12:48 a.m. to return the facility to power from the City of Needles. Extraction system downtime was 8 minutes.
- **April 28-30, 2015 (planned):** The extraction well system was offline from 9:10 a.m. on April 28, 2015 through 11:59 p.m. on April 30, 2015 for semiannual scheduled maintenance. Extraction system downtime was 2 days, 14 hours and 50 minutes.

May 2015

During May 2015, extraction wells TW-3D and PE-1 operated at a target pump rate of 135 gpm excluding periods of planned and unplanned downtime. Extraction well TW-2D was operated for a brief time on May 3, 2015 for well rehabilitation. Extraction well TW-2S was not operated during May 2015. The operational run time for the IM-3 groundwater extraction system (combined or individual pumping) was 87.7 percent during the May 2015 reporting period.

The IM-3 facility treated approximately 5,342,536 gallons of extracted groundwater during May 2015. The IM-3 facility treated 670 gallons of water from groundwater monitoring well sampling. Three containers of solids from the IM-3 facility were transported offsite during May 2015.

Periods of planned and unplanned extraction system downtime (that together resulted in approximately 12.3 percent downtime during May 2015) are summarized below. The times shown are in PST to be consistent with other data collected (e.g., water level data) at the site.

- **May 1-4, 2015 (planned):** The extraction well system was offline from 12:00 a.m. on May 1, 2015 through 10:16 a.m. on May 4, 2015 for semiannual scheduled maintenance. Extraction wells TW-2D and TW-3D underwent rehabilitation during this time and water was pumped from the wells for a combined 3 hours, 26 minutes during this work. Extraction system downtime was 3 days, 6 hours and 50 minutes.
- **May 4, 2015 (planned):** The extraction well system was offline from 12:22 p.m. to 12:32 p.m. due to loss of power from the City of Needles. Extraction system downtime was 10 minutes.
- **May 7, 2015 (unplanned):** The extraction well system was offline from 3:06 p.m. to 3:10 p.m. due to loss of power from the City of Needles. The facility was transferred to backup generator power during this time. Extraction system downtime was 4 minutes.
- **May 7, 2015 (unplanned):** The extraction well system was offline from 9:34 p.m. to 9:42 p.m., 9:48 p.m. to 9:50 p.m., and 9:54 p.m. to 10:06 p.m. to return the facility to power from the City of Needles. Extraction system downtime was 22 minutes.

- **May 9, 2015 (unplanned):** The extraction well system was offline from 4:48 a.m. to 6:08 a.m. due to the failure of the ferrous flow meter. Extraction system downtime was 1 hour, 20 minutes.
- **May 9, 2015 (planned):** The extraction well system was offline from 11:14 a.m. to 11:16 a.m., 11:26 a.m. to 11:28 a.m., and 11:30 a.m. to 11:32 a.m. due to testing of critical alarms and the leak detection system. Extraction system downtime was 6 minutes.
- **May 9, 2015 (unplanned):** The extraction well system was offline from 5:40 p.m. to 9:18 p.m. due to the failure of the ferrous flow meter. Extraction system downtime was 3 hours, 38 minutes.
- **May 14, 2015 (unplanned):** The extraction well system was offline from 3:18 p.m. to 3:26 p.m. due to loss of power from the City of Needles. The facility was transferred to backup generator power during this time. Extraction system downtime was 8 minutes.
- **May 14, 2015 (unplanned):** The extraction well system was offline from 6:14 p.m. to 7:26 p.m. to return the facility to power from the City of Needles. Extraction system downtime was 1 hour, 12 minutes.
- **May 21, 2015 (unplanned):** The extraction well system was offline from 11:08 a.m. to 11:14 a.m. due to loss of power from the City of Needles. The facility was transferred to backup generator power during this time. Extraction system downtime was 6 minutes.
- **May 21, 2015 (unplanned):** The extraction well system was offline from 2:22 p.m. to 2:30 p.m. to return the facility to power from the City of Needles. Extraction system downtime was 8 minutes.
- **May 26, 2015 (unplanned):** The extraction well system was offline from 1:22 p.m. to 1:42 p.m. due to loss of power from the City of Needles. The facility was transferred to backup generator power during this time. Extraction system downtime was 20 minutes.
- **May 26, 2015 (unplanned):** The extraction well system was offline from 4:36 p.m. to 4:42 p.m. to return the facility to power from the City of Needles. Extraction system downtime was 6 minutes.
- **May 31, 2015 (unplanned):** The extraction well system was offline from 6:56 a.m. to 12:02 p.m. to change the microfilter modules and replace the breaker in the Post Treatment RO Permeate Pump (P-605). Extraction system downtime was 5 hours, 6 minutes.

June 2015

During June 2015, extraction wells TW-3D and PE-1 operated at a target pump rate of 135 gpm excluding periods of planned and unplanned downtime. Extraction wells TW-2S and TW-2D were not operated during June 2015. The operational run time for the IM-3 groundwater extraction system (combined or individual pumping) was 98.8 percent during the June 2015 reporting period.

The IM-3 facility treated approximately 5,756,016 gallons of extracted groundwater during June 2015. The IM-3 facility treated 300 gallons of water from groundwater monitoring well sampling, 27,000 gallons of injection well backwashing/re-development water, and 15,000 gallons of water from application of AquaGuard to extraction wells TW-2D and TW-3D.

Periods of planned and unplanned extraction system downtime (that together resulted in approximately 1.2 percent downtime during June 2015) are summarized below. The times shown are in PST to be consistent with other data collected (e.g., water level data) at the site.

- **June 1, 2015 (unplanned):** The extraction well system was offline from 4:18 a.m. to 4:20 a.m. due to loss of power from the City of Needles. Extraction system downtime was 2 minutes.

- **June 1, 2015 (unplanned):** The extraction well system was offline from 11:56 a.m. to 1:02 p.m. due to a high level alarm in the raw water storage tank (T-100). Extraction system downtime was 1 hour, 14 minutes.
- **June 8, 2015 (planned):** The extraction well system was offline from 1:00 p.m. to 1:02 pm, from 1:04 p.m. to 1:08 pm, from 1:10 p.m. to 1:14 pm, from 1:16 p.m. to 1:18 pm, and from 1:22 p.m. to 1:24 p.m. due to testing of critical alarms and the leak detection system. Extraction system downtime was 14 minutes.
- **June 13, 2015 (unplanned):** The extraction well system was offline from 4:06 p.m. to 4:50 p.m. due to loss of power from the City of Needles. Extraction system downtime was 44 minutes.
- **June 14, 2015 (unplanned):** The extraction well system was offline from 3:44 p.m. to 4:38 p.m. due to the failure of the air compressor. Extraction system downtime was 54 minutes.
- **June 14, 2015 (unplanned):** The extraction well system was offline from 9:46 p.m. to 10:20 p.m. due to the failure of the air compressor. Extraction system downtime was 34 minutes.
- **June 15, 2015 (unplanned):** The extraction well system was offline from 12:24 a.m. to 1:30 a.m. due to the failure of the air compressor. Extraction system downtime was 1 hour, 6 minutes.
- **June 15, 2015 (unplanned):** The extraction well system was offline from 5:54 a.m. to 8:00 a.m. due to the failure of the air compressor. Extraction system downtime was 2 hours, 6 minutes.
- **June 27, 2015 (unplanned):** The extraction well system was offline from 1:44 p.m. to 3:36 p.m. due to a high level alarm in the raw water storage tank (T-100). Extraction system downtime was 1 hour, 52 minutes.
- **June 28, 2015 (unplanned):** The extraction well system was offline from 4:40 p.m. to 4:46 p.m. due to loss of power from the City of Needles. Extraction system downtime was 6 minutes.

Appendix B
Daily Volumes of Groundwater Treated

January 2015 Operational Data
IM-3 Groundwater Extraction and Treatment System
PG&E Topock Compressor Station, Needles, California

			Extraction Well System					Injection Well System			RO Brine
Month	**Day**	**Year**	**TW-2S (gallons)**	**TW-2D (gallons)**	**TW-3D (gallons)**	**PE-1 (gallons)**	**Total (gallons)**	**IW-02 (gallons)**	**IW-03 (gallons)**	**Total (gallons)**	**(gallons)**
January	1	2015	--	--	153,483	40,311	193,793	186,783	0	186,783	0
January	2	2015	--	--	153,241	40,196	193,436	190,954	0	190,954	2,186
January	3	2015	--	--	153,098	40,225	193,323	199,688	0	199,688	655
January	4	2015	--	--	152,958	40,144	193,102	188,083	0	188,083	0
January	5	2015	--	--	141,368	37,741	179,109	173,520	0	173,520	0
January	6	2015	--	--	152,678	40,619	193,297	195,870	0	195,870	3,148
January	7	2015	--	--	150,863	40,427	191,290	194,063	0	194,063	0
January	8	2015	--	--	152,411	40,540	192,951	191,838	0	191,838	0
January	9	2015	--	--	152,122	40,516	192,639	192,148	0	192,148	0
January	10	2015	--	--	119,798	32,298	152,097	143,308	1,134	144,442	2,985
January	11	2015	--	--	152,453	40,607	193,060	194,933	0	194,933	0
January	12	2015	--	--	152,360	40,474	192,834	189,551	0	189,551	2,936
January	13	2015	--	--	152,377	40,427	192,804	190,196	0	190,196	0
January	14	2015	--	--	152,510	40,310	192,820	110,226	82,888	193,113	0
January	15	2015	--	--	148,557	39,430	187,987	0	177,026	177,026	2,828
January	16	2015	--	--	152,657	41,039	193,697	0	190,284	190,284	0
January	17	2015	--	--	153,242	41,245	194,487	1,063	191,998	193,061	2,804
January	18	2015	--	--	153,295	41,042	194,337	0	195,709	195,709	0
January	19	2015	--	--	153,157	41,170	194,326	0	197,419	197,419	2,677
January	20	2015	--	--	153,057	40,934	193,991	0	195,342	195,342	0
January	21	2015	--	--	72,403	19,620	92,023	0	86,668	86,668	0
January	22	2015	--	--	152,952	41,032	193,984	0	191,550	191,550	3,039
January	23	2015	--	--	152,728	40,936	193,665	0	193,608	193,608	0
January	24	2015	--	--	152,463	40,969	193,431	0	193,667	193,667	2,762
January	25	2015	--	--	152,478	40,856	193,335	0	188,656	188,656	0
January	26	2015	--	--	153,545	40,849	194,394	0	194,754	194,754	2,685
January	27	2015	--	--	154,605	41,357	195,962	252	197,295	197,548	0
January	28	2015	--	--	154,816	41,664	196,480	0	186,264	186,264	2,831
January	29	2015	--	--	154,901	41,455	196,356	0	194,312	194,312	0
January	30	2015	--	--	154,911	41,419	196,329	0	196,387	196,387	2,719
January	31	2015	--	--	148,319	39,501	187,820	0	189,693	189,693	0
Total Monthly Volumes (gallons)			**0**	**0**	**4,609,807**	**1,229,354**	**5,839,162**	**2,542,475**	**3,244,654**	**5,787,130**	**34,253**
Average Pump/Injection Rates (gpm)			**0.0**	**0.0**	**103.3**	**27.5**	**130.8**	**57.0**	**72.7**	**129.6**	**0.8**

NOTES: gpm: gallons per minute RO: Reverse Osmosis

a. Extraction wells TW-3D and PE-1 were operated during January 2015 at a target pump rate of 135 gpm excluding periods of planned and unplanned downtime. Extraction wells TW-2D and TW-2S were not operated during January 2015.

b. Effluent was discharged into injection wells IW-02 and IW-03.

c. The difference between influent flow rate and the sum of the effluent and reverse osmosis concentrate flow rates during January 2015 is approximately 0.3 percent. This percentage difference includes instrument noise in the system, but is within the accuracy of the flow meters. A well is considered to be offline if the daily reported flow is 140 gallons per day or less.

February 2015 Operational Data
IM-3 Groundwater Extraction and Treatment System
PG&E Topock Compressor Station, Needles, California

			Extraction Well System					Injection Well System			RO Brine
Month	Day	Year	TW-2S (gallons)	TW-2D (gallons)	TW-3D (gallons)	PE-1 (gallons)	Total (gallons)	IW-02 (gallons)	IW-03 (gallons)	Total (gallons)	(gallons)
February	1	2015	--	--	154,815	41,231	196,046	0	190,768	190,768	2,854
February	2	2015	--	--	154,612	41,102	195,714	0	192,344	192,344	0
February	3	2015	--	--	154,347	41,063	195,411	0	190,906	190,906	2,699
February	4	2015	--	--	154,160	40,927	195,087	0	196,897	196,897	0
February	5	2015	--	--	151,605	40,154	191,759	2,045	180,138	182,184	2,300
February	6	2015	--	--	154,366	40,449	194,814	0	190,219	190,219	0
February	7	2015	--	--	154,196	40,382	194,578	0	191,569	191,569	3,203
February	8	2015	--	--	154,307	40,424	194,731	0	190,797	190,797	0
February	9	2015	--	--	154,223	40,445	194,668	0	192,300	192,300	3,001
February	10	2015	--	--	154,322	40,289	194,611	0	197,138	197,138	0
February	11	2015	--	--	154,242	40,224	194,466	0	188,652	188,652	3,060
February	12	2015	--	--	154,097	40,232	194,328	0	192,380	192,380	0
February	13	2015	--	--	153,992	40,168	194,160	0	193,040	193,040	0
February	14	2015	--	--	153,872	40,173	194,045	0	193,801	193,801	3,084
February	15	2015	--	--	153,609	40,201	193,810	0	187,232	187,232	0
February	16	2015	--	--	153,385	40,321	193,706	0	197,489	197,489	2,756
February	17	2015	--	--	153,314	40,211	193,526	0	190,399	190,399	0
February	18	2015	--	--	153,184	40,011	193,196	0	186,175	186,175	0
February	19	2015	--	--	153,079	40,019	193,098	19,112	165,583	184,695	2,942
February	20	2015	--	--	152,999	40,306	193,305	0	198,497	198,497	0
February	21	2015	--	--	152,970	40,291	193,261	0	192,725	192,725	2,826
February	22	2015	--	--	152,797	40,310	193,107	0	188,394	188,394	0
February	23	2015	--	--	152,654	40,135	192,789	0	183,381	183,381	3,035
February	24	2015	--	--	152,490	40,225	192,716	0	185,433	185,433	0
February	25	2015	--	--	150,549	39,637	190,186	0	177,700	177,700	0
February	26	2015	--	--	154,646	40,093	194,739	0	200,883	200,883	2,758
February	27	2015	--	--	154,563	40,204	194,767	0	200,649	200,649	0
February	28	2015	--	--	154,433	40,263	194,696	0	195,323	195,323	2,968
Total Monthly Volumes (gallons)			**0**	**0**	**4,301,829**	**1,129,488**	**5,431,317**	**21,158**	**5,330,813**	**5,351,970**	**37,486**
Average Pump/Injection Rates (gpm)			**0.0**	**0.0**	**106.7**	**28.0**	**134.7**	**0.5**	**132.2**	**132.7**	**0.9**

NOTES: gpm: gallons per minute RO: Reverse Osmosis

a. Extraction wells TW-3D and PE-1 were operated during February 2015 at a target pump rate of 135 gpm excluding periods of planned and unplanned downtime. Extraction wells TW-2D and TW-2S were not operated during February 2015.

b. Effluent was discharged into injection wells IW-02 and IW-03.

c. The difference between influent flow rate and the sum of the effluent and reverse osmosis concentrate flow rates during February 2015 is approximately 0.77 percent. This percentage difference includes instrument noise in the system, but is within the accuracy of the flow meters. A well is considered to be offline if the daily reported flow is 140 gallons per day or less.

March 2015 Operational Data
IM-3 Groundwater Extraction and Treatment System
PG&E Topock Compressor Station, Needles, California

			Extraction Well System					Injection Well System			RO Brine
Month	**Day**	**Year**	**TW-2S (gallons)**	**TW-2D (gallons)**	**TW-3D (gallons)**	**PE-1 (gallons)**	**Total (gallons)**	**IW-02 (gallons)**	**IW-03 (gallons)**	**Total (gallons)**	**(gallons)**
March	1	2015	--	--	154,323	40,381	194,704	0	183,190	183,190	0
March	2	2015	--	--	154,138	40,532	194,670	0	199,143	199,143	0
March	3	2015	--	--	154,037	40,418	194,455	0	184,280	184,280	3,037
March	4	2015	--	--	153,872	40,299	194,171	90,509	109,276	199,785	0
March	5	2015	--	--	153,754	40,179	193,933	197,471	0	197,471	2,758
March	6	2015	--	--	153,646	40,184	193,829	187,689	4,965	192,654	0
March	7	2015	--	--	153,633	39,919	193,553	187,681	0	187,681	2,931
March	8	2015	--	--	140,124	36,899	177,024	187,190	0	187,190	0
March	9	2015	--	--	154,084	41,121	195,205	181,783	0	181,783	0
March	10	2015	--	317	153,084	40,839	194,240	194,615	0	194,615	2,916
March	11	2015	--	--	104,830	27,904	132,734	127,878	0	127,878	0
March	12	2015	--	--	136,254	36,454	172,708	170,565	0	170,565	2,944
March	13	2015	--	--	142,182	37,982	180,163	185,506	0	185,506	0
March	14	2015	--	--	134,398	36,025	170,422	161,020	0	161,020	2,854
March	15	2015	--	--	141,473	38,300	179,774	177,416	0	177,416	0
March	16	2015	--	--	113,737	30,606	144,343	146,786	0	146,786	0
March	17	2015	--	--	149,873	41,036	190,909	182,633	0	182,633	2,257
March	18	2015	--	--	148,109	41,197	189,306	194,053	0	194,053	0
March	19	2015	--	--	154,114	42,741	196,855	205,053	0	205,053	0
March	20	2015	--	--	153,908	42,767	196,674	188,629	0	188,629	2,967
March	21	2015	--	--	153,871	42,695	196,565	193,294	0	193,294	0
March	22	2015	--	--	153,877	42,786	196,664	195,286	0	195,286	2,841
March	23	2015	--	--	154,034	42,623	196,657	194,271	0	194,271	0
March	24	2015	--	--	153,070	41,992	195,062	193,297	0	193,297	0
March	25	2015	--	--	151,465	41,699	193,164	187,564	0	187,564	2,811
March	26	2015	--	--	154,166	42,654	196,820	200,695	0	200,695	0
March	27	2015	--	--	153,836	42,960	196,796	199,817	0	199,817	0
March	28	2015	--	--	153,525	42,738	196,263	182,875	0	182,875	2,818
March	29	2015	--	--	153,215	42,947	196,162	197,528	0	197,528	0
March	30	2015	--	--	146,725	40,861	187,586	195,276	0	195,276	905
March	31	2015	--	--	153,431	42,397	195,828	191,275	0	191,275	2,102
Total Monthly Volumes (gallons)			**0**	**317**	**4,584,787**	**1,242,135**	**5,827,239**	**5,097,657**	**680,854**	**5,778,510**	**34,142**
Average Pump/Injection Rates (gpm)			**0.0**	**0.0**	**102.7**	**27.8**	**130.5**	**114.2**	**15.3**	**129.4**	**0.8**

NOTES: gpm: gallons per minute RO: Reverse Osmosis

a. Extraction wells TW-3D and PE-1 were operated during March 2015 at a target pump rate of 135 gpm excluding periods of planned and unplanned downtime. Extraction well TW-2S was not operated during March 2015.

b. Effluent was discharged into injection wells IW-02 and IW-03.

c. The difference between influent flow rate and the sum of the effluent and reverse osmosis concentrate flow rates during March 2015 is approximately 0.25 percent. This percentage difference includes instrument noise in the system, but is within the accuracy of the flow meters. A well is considered to be offline if the daily reported flow is 140 gallons per day or less.

April 2015 Operational Data
IM-3 Groundwater Extraction and Treatment System
PG&E Topock Compressor Station, Needles, California

			Extraction Well System					Injection Well System			RO Brine
Month	**Day**	**Year**	**TW-2S (gallons)**	**TW-2D (gallons)**	**TW-3D (gallons)**	**PE-1 (gallons)**	**Total (gallons)**	**IW-02 (gallons)**	**IW-03 (gallons)**	**Total (gallons)**	**(gallons)**
April	1	2015	--	--	151,014	41,491	192,504	86,989	95,924	182,913	0
April	2	2015	--	--	149,533	40,423	189,957	0	190,974	190,974	3,051
April	3	2015	--	--	153,578	41,394	194,972	0	197,607	197,607	0
April	4	2015	--	--	145,625	39,874	185,499	0	174,827	174,827	0
April	5	2015	--	--	153,257	41,847	195,104	0	196,115	196,115	5,209
April	6	2015	--	--	143,532	39,489	183,020	0	184,943	184,943	0
April	7	2015	--	--	153,042	42,526	195,568	110,203	84,919	195,122	0
April	8	2015	--	--	153,004	42,417	195,420	115,573	80,718	196,290	0
April	9	2015	--	--	153,056	42,142	195,198	0	195,308	195,308	4,200
April	10	2015	--	--	139,762	42,476	182,239	84,176	112,164	196,340	0
April	11	2015	--	--	152,162	42,214	194,376	82,426	100,846	183,272	2,937
April	12	2015	--	--	154,096	42,304	196,400	0	191,532	191,532	0
April	13	2015	--	--	109,807	29,959	139,766	0	140,178	140,178	3,290
April	14	2015	--	--	124,430	41,294	165,724	0	163,029	163,029	0
April	15	2015	--	--	145,024	40,018	185,043	0	183,474	183,474	0
April	16	2015	--	--	86,917	23,682	110,599	0	106,022	106,022	2,848
April	17	2015	--	--	154,313	41,831	196,144	0	192,456	192,456	0
April	18	2015	--	--	154,235	41,548	195,783	0	192,844	192,844	2,972
April	19	2015	--	--	154,185	41,545	195,730	0	196,085	196,085	0
April	20	2015	--	--	142,226	38,622	180,849	0	184,144	184,144	0
April	21	2015	--	--	154,307	41,368	195,675	0	188,559	188,559	0
April	22	2015	--	--	154,177	41,263	195,440	0	194,795	194,795	3,535
April	23	2015	--	--	154,138	41,221	195,359	0	194,751	194,751	0
April	24	2015	--	--	154,069	40,981	195,050	0	195,095	195,095	2,065
April	25	2015	--	--	132,936	35,846	168,782	0	168,680	168,680	0
April	26	2015	--	--	147,192	39,906	187,098	0	175,866	175,866	1,135
April	27	2015	--	--	139,457	37,810	177,267	0	183,358	183,358	1,862
April	28	2015	--	--	60,557	9,157	69,715	0	85,396	85,396	0
April	29	2015	--	--	0	0	0	0	0	0	0
April	30	2015	--	--	0	0	0	0	0	0	0
Total Monthly Volumes (gallons)			**0**	**0**	**3,969,631**	**1,084,647**	**5,054,278**	**479,366**	**4,550,611**	**5,029,977**	**33,104**
Average Pump/Injection Rates (gpm)			**0.0**	**0.0**	**91.9**	**25.1**	**117.0**	**11.1**	**105.3**	**116.4**	**0.8**

NOTES: gpm: gallons per minute RO: Reverse Osmosis

a. Extraction wells TW-3D and PE-1 were operated during April 2015 at a target pump rate of 135 gpm excluding periods of planned and unplanned downtime. Extraction wells TW-2D and TW-2S were not operated during April 2015.

b. Effluent was discharged into injection wells IW-02 and IW-03.

c. The difference between influent flow rate and the sum of the effluent and reverse osmosis concentrate flow rates during April 2015 is approximately 0.17 percent. This percentage difference includes instrument noise in the system, but is within the accuracy of the flow meters. A well is considered to be offline if the daily reported flow is 140 gallons per day or less.

May 2015 Operational Data
IM-3 Groundwater Extraction and Treatment System
PG&E Topock Compressor Station, Needles, California

			Extraction Well System					Injection Well System			RO Brine
Month	Day	Year	TW-2S (gallons)	TW-2D (gallons)	TW-3D (gallons)	PE-1 (gallons)	Total (gallons)	IW-02 (gallons)	IW-03 (gallons)	Total (gallons)	(gallons)
May	1	2015	--	--	0	0	0	0	0	0	0
May	2	2015	--	--	2,166	0	2,166	0	0	0	0
May	3	2015	--	853	22,380	0	23,233	0	0	0	0
May	4	2015	--	--	92,153	20,284	112,437	0	114,679	114,679	0
May	5	2015	--	--	156,801	41,276	198,077	0	200,285	200,285	2,849
May	6	2015	--	--	156,923	40,890	197,813	0	199,988	199,988	0
May	7	2015	--	--	157,694	36,396	194,090	0	200,700	200,700	0
May	8	2015	--	--	170,034	26,599	196,633	0	196,269	196,269	3,261
May	9	2015	--	--	123,020	31,699	154,719	0	149,519	149,519	0
May	10	2015	--	--	156,535	41,449	197,984	0	196,707	196,707	0
May	11	2015	--	--	156,777	41,245	198,022	0	200,256	200,256	0
May	12	2015	--	--	156,720	41,271	197,991	0	194,988	194,988	0
May	13	2015	--	--	156,685	41,156	197,841	0	193,861	193,861	4,727
May	14	2015	--	--	142,239	38,604	180,843	0	194,656	194,656	0
May	15	2015	--	--	156,619	41,245	197,864	0	195,221	195,221	3,021
May	16	2015	--	--	156,544	40,892	197,436	0	195,038	195,038	0
May	17	2015	--	--	156,640	40,569	197,209	0	195,296	195,296	2,932
May	18	2015	--	--	156,497	40,539	197,036	0	197,176	197,176	0
May	19	2015	--	--	156,232	40,769	197,000	0	200,340	200,340	2,826
May	20	2015	--	--	156,180	40,835	197,015	0	193,575	193,575	0
May	21	2015	--	--	156,152	37,249	193,401	0	193,061	193,061	2,948
May	22	2015	--	--	155,996	41,300	197,296	0	191,644	191,644	0
May	23	2015	--	--	155,905	41,192	197,098	0	191,220	191,220	3,143
May	24	2015	--	--	155,798	40,752	196,550	0	195,703	195,703	0
May	25	2015	--	--	155,647	40,863	196,510	0	195,932	195,932	2,988
May	26	2015	--	--	154,747	35,292	190,039	0	194,579	194,579	0
May	27	2015	--	--	156,074	38,717	194,792	0	191,976	191,976	2,830
May	28	2015	--	--	154,922	41,243	196,165	0	180,565	180,565	0
May	29	2015	--	--	154,965	40,514	195,479	0	195,278	195,278	3,140
May	30	2015	--	--	154,477	41,248	195,725	0	195,761	195,761	0
May	31	2015	--	--	121,512	32,561	154,073	0	152,459	152,459	0
Total Monthly Volumes (gallons)			**0**	**853**	**4,265,034**	**1,076,649**	**5,342,536**	**0**	**5,296,731**	**5,296,731**	**34,665**
Average Pump/Injection Rates (gpm)			**0.0**	**0.0**	**95.5**	**24.1**	**119.7**	**0.0**	**118.7**	**118.7**	**0.8**

NOTES: gpm: gallons per minute RO: Reverse Osmosis

a. Extraction wells TW-3D and PE-1 were operated during May 2015 at a target pump rate of 135 gpm excluding periods of planned and unplanned downtime. Extraction well TW-2S was not operated during May 2015. Extraction well TW-2D was operated for a brief time on May 3, 2015 for well rehabilitation.

b. Effluent was discharged into injection well IW-03.

c. The difference between influent flow rate and the sum of the effluent and reverse osmosis concentrate flow rates during May 2015 is approximately 0.21 percent. This percentage difference includes instrument noise in the system, but is within the accuracy of the flow meters. A well is considered to be offline if the daily reported flow is 140 gallons per day or less.

June 2015 Operational Data
IM-3 Groundwater Extraction and Treatment System
PG&E Topock Compressor Station, Needles, California

			Extraction Well System					Injection Well System			RO Brine
Month	Day	Year	TW-2S (gallons)	TW-2D (gallons)	TW-3D (gallons)	PE-1 (gallons)	Total (gallons)	IW-02 (gallons)	IW-03 (gallons)	Total (gallons)	(gallons)
June	1	2015	--	--	142,956	38,575	181,531	0	194,383	194,383	4,104
June	2	2015	--	--	153,366	41,183	194,550	0	196,457	196,457	0
June	3	2015	--	--	154,704	41,146	195,849	0	194,907	194,907	3,314
June	4	2015	--	--	154,738	40,963	195,701	0	188,844	188,844	0
June	5	2015	--	--	154,765	40,765	195,530	0	189,784	189,784	3,143
June	6	2015	--	--	154,726	40,715	195,441	0	196,582	196,582	0
June	7	2015	--	--	154,860	40,753	195,613	0	197,041	197,041	3,175
June	8	2015	--	--	153,217	40,465	193,682	0	195,804	195,804	0
June	9	2015	--	--	154,842	40,503	195,345	0	195,231	195,231	2,744
June	10	2015	--	--	151,731	40,671	192,402	80,272	112,222	192,494	0
June	11	2015	--	--	154,120	40,892	195,012	108,690	84,232	192,922	3,187
June	12	2015	--	--	153,801	40,763	194,563	0	189,534	189,534	0
June	13	2015	--	--	148,834	39,656	188,490	0	187,095	187,095	3,224
June	14	2015	--	--	143,722	38,598	182,319	0	187,438	187,438	0
June	15	2015	--	--	132,597	36,217	168,814	0	154,416	154,416	3,002
June	16	2015	--	--	153,190	41,412	194,602	0	196,456	196,456	2,875
June	17	2015	--	--	153,004	41,320	194,324	0	196,421	196,421	0
June	18	2015	--	--	154,820	35,426	190,246	0	195,543	195,543	2,751
June	19	2015	--	--	153,235	39,837	193,072	0	185,840	185,840	0
June	20	2015	--	--	152,411	41,018	193,429	0	189,972	189,972	3,038
June	21	2015	--	--	152,173	41,018	193,191	0	192,821	192,821	0
June	22	2015	--	--	151,929	41,030	192,959	0	193,289	193,289	2,923
June	23	2015	--	--	151,711	40,838	192,550	0	188,971	188,971	2,872
June	24	2015	--	--	151,461	40,620	192,080	0	188,424	188,424	0
June	25	2015	--	--	152,596	40,790	193,386	74,021	115,041	189,062	2,954
June	26	2015	--	--	155,710	40,757	196,467	116,381	76,589	192,971	3,082
June	27	2015	--	--	147,009	27,546	174,555	0	195,242	195,242	2,288
June	28	2015	--	--	155,897	38,993	194,890	33,232	160,472	193,704	2,863
June	29	2015	--	--	155,420	42,273	197,693	0	193,628	193,628	2,755
June	30	2015	--	--	155,267	42,465	197,731	0	194,842	194,842	0
Total Monthly Volumes (gallons)			**0**	**0**	**4,558,810**	**1,197,206**	**5,756,016**	**412,595**	**5,327,522**	**5,740,117**	**54,291**
Average Pump/Injection Rates (gpm)			**0.0**	**0.0**	**105.5**	**27.7**	**133.2**	**9.6**	**123.3**	**132.9**	**1.3**

NOTES: gpm: gallons per minute RO: Reverse Osmosis

a. Extraction wells TW-3D and PE-1 were operated during June 2015 at a target pump rate of 135 gpm excluding periods of planned and unplanned downtime. Extraction wells TW-2D and TW-2S were not operated during June 2015.

b. Effluent was discharged into injection wells IW-02 and IW-03.

c. The difference between influent flow rate and the sum of the effluent and reverse osmosis concentrate flow rates during June 2015 is approximately 0.67 percent. This percentage difference includes instrument noise in the system, but is within the accuracy of the flow meters. A well is considered to be offline if the daily reported flow is 140 gallons per day or less.

Appendix C
Flowmeter Calibration Records

Endress+Hauser

People for Process Automation

Flow Calibration with Adjustment

30171212-1304705

WWRA-006931-F
Purchase order number

US-19068473-30 / Endress+Hauser Flowtec
Order N°/Manufacturer

23P50-AL1A1AA022AW
Order code

PROMAG 23 P 2"
Transmitter/Sensor

6C036F16000
Serial N°

FIT-1201
Tag N°

FCP-6.F
Calibration rig

155.6102 us.gal/min (≙ 100%)
Calibrated full scale

Current 4 - 20 mA
Calibrated output

0.9101
Calibration factor

-34
Zero point

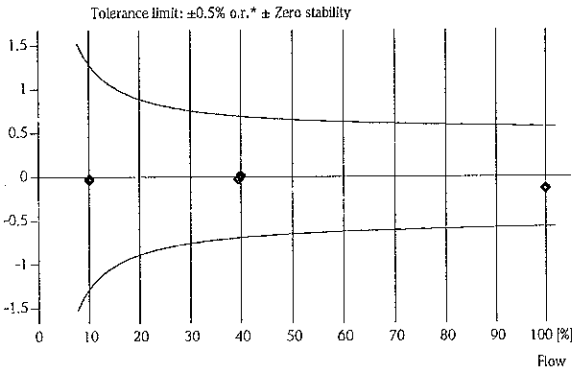
78.7 °F
Water temperature

Flow [%]	Flow [us.gal/min]	Duration [s]	V target [us.gal]	V meas. [us.gal]	Δ o.r.* [%]	Outp.** [mA]
10.1	15.7	30.2	7.8942	7.8921	-0.03	5.61
39.5	61.5	30.2	30.956	30.950	-0.02	10.32
39.9	62.1	30.2	31.263	31.268	0.02	10.39
100.0	155.7	30.2	78.338	78.232	-0.14	19.98
-	-	-	-	-	-	-
-	-	-	-	-	-	-
-	-	-	-	-	-	-
-	-	-	-	-	-	-
-	-	-	-	-	-	-
-	-	-	-	-	-	-

*o.r.: of rate

**Calculated value (4 - 20 mA)

Measured error % o.r.



For detailed data concerning output specifications of the unit under test, see technical informations (TI), chapter Performance characteristics.

The calibration is traceable to the N.I.S.T. through standards certified at preset intervals.

Endress+Hauser Flowtec operates ISO/IEC 17025 accredited calibration facilities in Reinach (CH), Cernay (FR), Greenwood (USA), Aurangabad (IN) and Suzhou (CN).

John Davis

08-06-2010
Date of calibration

John Davis
Operator

Endress+Hauser Flowtec, Division USA
2330 Endress Place
Greenwood, IN 46143

Certified acc. to
MIL-STD-45662A
ISO 9001, Reg.-N° 030502.2

Endress+Hauser

People for Process Automation

Flow Calibration with Adjustment

30258091-1304700

4600091011	FCP-7.1.E
Purchase order number	Calibration rig
US-3601523401-200 / Endress+Hauser Flowtec	155.6102 us.gal/min (≙ 100%)
Order N°/Manufacturer	Calibrated full scale
23P50-AL1A1AA022AW	Current 4 - 20 mA
Order code	Calibrated output
PROMAG 23 P 2"	0.9145
Transmitter/Sensor	Calibration factor
6C037316000	0
Serial N°	Zero point
FIT-1205	70.5 °F
Tag N°	Water temperature

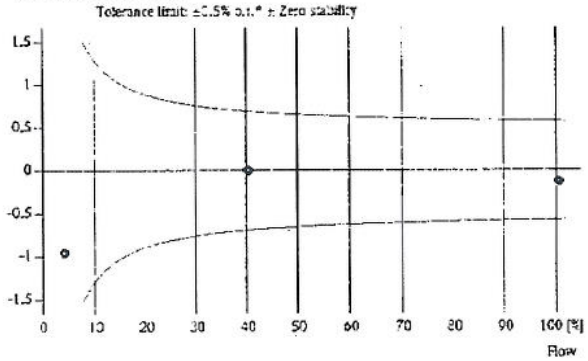
Flow [%]	Flow [us.gal/min]	Duration [s]	V target [us.gal]	V meas. [us.gal]	Δ o.r.* [%]	Outp.** [mA]
4.0	6.27	55.2	5.7720	5.7163	-0.96	4.64
40.2	62.5	30.2	31.439	31.439	0.00	10.43
40.3	62.6	30.2	31.498	31.497	0.00	10.44
100.7	156.7	30.2	78.760	78.656	-0.13	20.09
-	-	-	-	-	-	-
-	-	-	-	-	-	-
-	-	-	-	-	-	-
-	-	-	-	-	-	-
-	-	-	-	-	-	-
-	-	-	-	-	-	-

*o.r.: of rate

**Calculated value (4 - 20 mA)

Measured error % o.r.

Tolerance limit: ±0.5% o.r.* ± Zero stability



For detailed data concerning output specifications of the unit under test, see Technical Information (TI), chapter Performance characteristics.

The calibration is traceable to the N.I.S.T. through standards certified at preset intervals.

Endress+Hauser Flowtec operates ISO/IEC 17025 accredited calibration facilities in Reinach (CH), Cernay (FR), Greenwood (USA), Aurangabad (IN) and Suzhou (CN).

John Davis

01-07-2013

Date of calibration

John Davis

Operator

Endress+Hauser Flowtec, Division USA
2330 Endress Place
Greenwood, IN 46143

Certified acc. to
ISO 9001, Reg.-N° 030502.2
ISO 14001, Reg.-N° EMS561046

Endress+Hauser
People for Process Automation

Flow Calibration without Adjustment

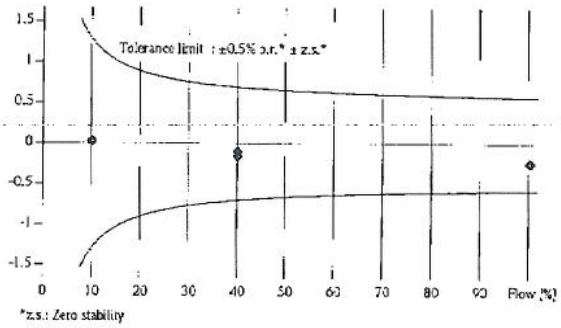
92004354-1275191

4017515743	FCP-8.2 US
Purchase order number	Calibration rig
US-3601525773-100 / Endress+Hauser Inc.	156 us.gal/min (≙ 100%)
Order N°/Manufacturer	Calibrated full scale
23P50-AL1A1RA022AW	Current 4 - 20 mA
Order code	Calibrated output
PROMAG 23 P 2"	0.9207
Transmitter/Sensor	Calibration factor
6A022016000	0
Serial N°	Zero point
FIT-101	72.6 °F
Tag N°	Water temperature

Flow [%]	Flow [us.gal/min]	Duration [sec]	V target [us.gal]	V meas. [us.gal]	Δ o.r.* [%]	Outp.** [mA]
10.0	15.661	60.0	15.672	15.677	0.03	5.61
40.1	62.621	60.0	62.668	62.570	-0.16	10.41
40.2	62.632	60.0	62.678	62.615	-0.10	10.42
100.4	156.615	60.0	156.730	156.360	-0.24	20.03
-	-	-	-	-	-	-
-	-	-	-	-	-	-
-	-	-	-	-	-	-
-	-	-	-	-	-	-
-	-	-	-	-	-	-

*o.r.: of rate
**Calculated value (4 - 20 mA)

Measured error % o.r.



*z.s.: Zero stability

For detailed data concerning output specifications of the unit under test, see Technical Information (TI), chapter Performance characteristics.
Traceability to the national standard for all test instruments used for the calibration is guaranteed.

Endress+Hauser Flowtec operates ISO/IEC 17025 accredited calibration facilities in Reinach (CH), Cernay (FR), Greenwood (USA), Aurangabad (IN) and Suzhou (CN).

Wesley Watkins

09-20-2013
Date of calibration

W. Watkins
Operator

Endress+Hauser Inc.
10057 Porter Road
La Porte, Texas 77571

Endress+Hauser
People for Process Automation

Flow Calibration without Adjustment

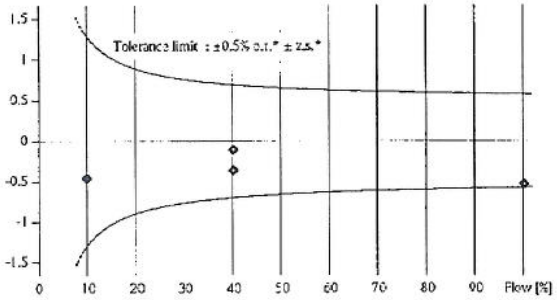
92004350-1275192

4017515743	FCP-8.2 US
Purchase order number	Calibration rig
US-3601525789-100 / Endress+Hauser Inc.	156 us.gal/min (≙ 100%)
Order N°/Manufacturer	Calibrated full scale
23P50-AL1A1RA022AW	Current 4 - 20 mA
Order code	Calibrated output
PROMAG 23 P 2"	0.9082
Transmitter/Sensor	Calibration factor
6A022116000	0
Serial N°	Zero point
FIT-102	72.3 °F
Tag N°	Water temperature

Flow [%]	Flow [us.gal/min]	Duration [sec]	V target [us.gal]	V meas. [us.gal]	Δ o.r.* [%]	Outp.** [mA]
10.0	15.643	60.0	15.654	15.582	-0.46	5.60
40.1	62.618	60.0	62.665	62.440	-0.36	10.40
40.2	62.628	60.0	62.673	62.607	-0.11	10.42
100.3	156.535	60.0	156.646	155.804	-0.54	19.97
-	-	-	-	-	-	-
-	-	-	-	-	-	-
-	-	-	-	-	-	-
-	-	-	-	-	-	-
-	-	-	-	-	-	-
-	-	-	-	-	-	-

*o.r.: of rate
**Calculated value (4 - 20 mA)

Measured error % o.r.



*z.s.: Zero stability

For detailed data concerning output specifications of the unit under test, see Technical Information (TI), chapter Performance characteristics.
Traceability to the national standard for all test instruments used for the calibration is guaranteed.

Endress+Hauser Flowtec operates ISO/IEC 17025 accredited calibration facilities in Reinach (CH), Cernay (FR), Greenwood (USA), Aurangabad (IN) and Suzhou (CN).

Wesley Watkins

09-20-2013
Date of calibration

W. Watkins
Operator

Endress+Hauser Inc.
10057 Porter Road
La Porte, Texas 77571

Endress+Hauser
People for Process Automation

Flow Calibration without Adjustment

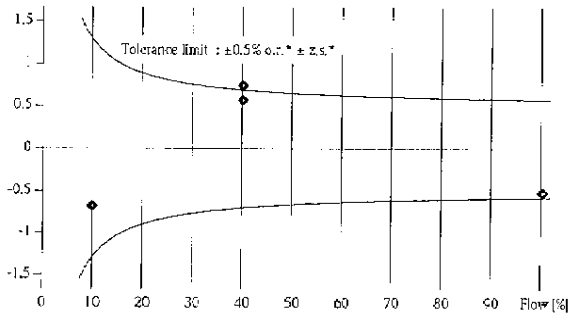
92004352-1304708

4017515743	FCP-8.2 US
Purchase order number	Calibration rig
US-3601525789-300 / Endress-Hauser Inc.	156 us.gal/min (≙ 100%)
Order N°/Manufacturer	Calibrated full scale
23P50-AL1A1AA022AW	Current 4 - 20 mA
Order code	Calibrated output
PROMAG 23 P 2"	0.9184
Transmitter/Sensor	Calibration factor
6C037216000	20
Serial N°	Zero point
FIT-1204	72.4 °F
Tag N°	Water temperature

Flow [%]	Flow [us.gal/min]	Duration [sec]	V target [us.gal]	V meas. [us.gal]	Δ o.r.* [%]	Outp.** [mA]
10.0	15.636	60.0	15.646	15.540	-0.68	5.59
40.2	62.632	60.1	62.693	63.163	0.75	10.47
40.2	62.630	60.0	62.671	63.033	0.58	10.46
100.4	156.630	60.0	156.742	155.931	-0.52	19.98
-	-	-	-	-	-	-
-	-	-	-	-	-	-
-	-	-	-	-	-	-
-	-	-	-	-	-	-
-	-	-	-	-	-	-
-	-	-	-	-	-	-

*o.r.: of rate
**Calculated value (4 - 20 mA)

Measured error % o.r.



*z.s.: Zero stability

For detailed data concerning output specifications of the unit under test, see Technical Information (TI), chapter Performance characteristics.
Traceability to the national standard for all test instruments used for the calibration is guaranteed.

Endress+Hauser Flowtec operates ISO/IEC 17025 accredited calibration facilities in Reinach (CH), Cernay (FR), Greenwood (USA), Aurangabad (IN) and Suzhou (CN).

Wesley Watkins

09-20-2013
Date of calibration

W. Watkins
Operator

Endress+Hauser Inc.
10057 Porter Road
La Porte, Texas 77571

Endress+Hauser
People for Process Automation

Flow Calibration without Adjustment

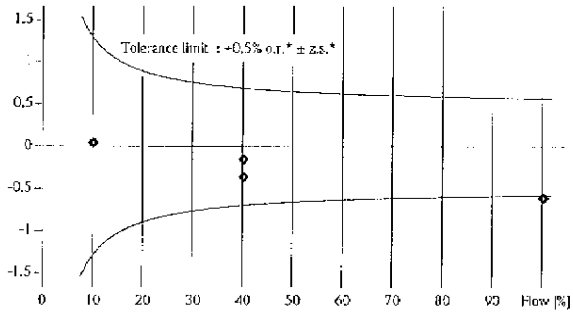
92005412-1385272

4017522194	FCP-8.2 US
Purchase order number	Calibration rig
US-3601527563-100 / Endress+Hauser Inc.	156 us.gal/min (≙ 100%)
Order N°/Manufacturer	Calibrated full scale
23P50-AL1A1AA022AW	Current 4 - 20 mA
Order code	Calibrated output
PROMAG 23 P 2"	0.9215
Transmitter/Sensor	Calibration factor
7700F216000	0
Serial N°	Zero point
-	75.4 °F
Tag N°	Water temperature

Flow [%]	Flow [us.gal/min]	Duration [sec]	V target [us.gal]	V meas. [us.gal]	Δ o.r.* [%]	Outp.** [mA]
10.1	15.699	60.0	15.710	15.717	0.04	5.61
40.2	62.675	60.0	62.718	62.490	-0.36	10.40
40.2	62.681	60.0	62.724	62.627	-0.15	10.42
100.4	156.590	60.0	156.696	155.730	-0.62	19.96
-	-	-	-	-	-	-
-	-	-	-	-	-	-
-	-	-	-	-	-	-
-	-	-	-	-	-	-
-	-	-	-	-	-	-
-	-	-	-	-	-	-

*o.r.: of rate
**Calculated value (4 - 20 mA)

Measured error % o.r.



*z.s.: Zero stability

For detailed data concerning output specifications of the unit under test, see Technical Information (TI), chapter Performance characteristics.
Traceability to the national standard for all test instruments used for the calibration is guaranteed.

Endress+Hauser Flowtec operates ISO/IEC 17025 accredited calibration facilities in Reinach (CH), Cernay (FR), Greenwood (USA), Aurangabad (IN) and Suzhou (CN).

Wesley Watkins

03-22-2014
Date of calibration

W. Watkins
Operator

Endress+Hauser Inc.
10057 Porter Road
La Porte, Texas 77571

Endress+Hauser

People for Process Automation

Flow Calibration with Adjustment

30202337-1385113

WWRA008929F Purchase order number	FCP-7.1.B Calibration rig
US-465002382-30 / Endress+Hauser Flowtec Order N°/Manufacturer	398.3621 us.gal/min (≙ 100%) Calibrated full scale
23P80-AL1A1AA022AW Order code	Current 4 - 20 mA Calibrated output
PROMAG 23 P 3" Transmitter/Sensor	1.1670 Calibration factor
7700C616000 Serial N°	35 Zero point
– Tag N°	82.3 °F Water temperature

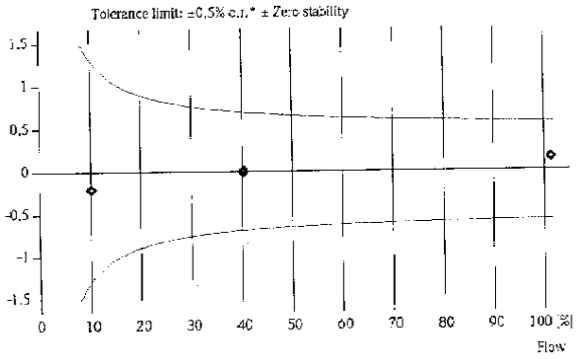
Flow [%]	Flow [us.gal/min]	Duration [s]	V target [us.gal]	V meas. [us.gal]	Δ o.r.* [%]	Outp.** [mA]
10.1	40.0	60.1	40.074	39.992	-0.20	5.60
40.2	160.2	60.1	160.332	160.322	-0.01	10.43
40.2	160.2	60.1	160.400	160.424	0.01	10.44
101.4	404.0	60.1	404.438	405.041	0.15	20.25
–	–	–	–	–	–	–
–	–	–	–	–	–	–
–	–	–	–	–	–	–
–	–	–	–	–	–	–
–	–	–	–	–	–	–
–	–	–	–	–	–	–

*o.r. of rate

**Calculated value (4 - 20 mA)

Measured error % o.r.

Tolerance limit: ±0.5% o.r.* ± Zero stability



For detailed data concerning output specifications of the unit under test, see technical informations (TI), chapter Performance characteristics.

The calibration is traceable to the N.I.S.T. through standards certified at preset intervals.

Endress+Hauser Flowtec operates ISO/IEC 17025 accredited calibration facilities in Reinach (CH), Cernay (FR), Greenwood (USA), Aurangabad (IN) and Suzhou (CN).

07-25-2011

Date of calibration

Endress+Hauser Flowtec, Division USA
2330 Endress Place
Greenwood, IN 46143

Taylor Shepard

Operator

Certified acc. to
ISO 9001, Reg.-N° 030502.2
ISO 14001, Reg.-N° EMS561046

Endress+Hauser

People for Process Automation

Flow Calibration without Adjustment

92002718-1275190

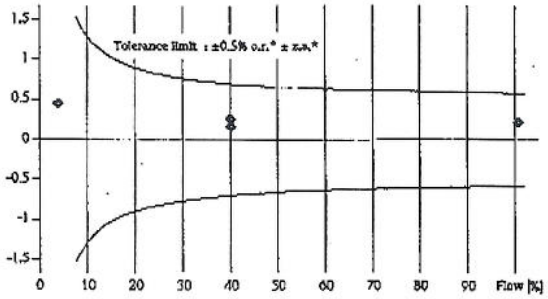
4600082515	FCP-8.2 US
Purchase order number	Calibration rig
US-3601521707-100 / Endress+Hauser Inc.	155 us.gal/min (≙ 100%)
Order N°/Manufacturer	Calibrated full scale
23P50-AL1A1RA022AW	Current 4 - 20 mA
Order code	Calibrated output
PROMAG 23 P 2"	0.9178
Transmitter/Sensor	Calibration factor
6A021F16000	0
Serial N°	Zero point
FIT-100	75.3 °F
Tag N°	Water temperature

Flow [%]	Flow [us.gal/min]	Duration [sec]	V target [us.gal]	V meas. [us.gal]	Δ o.r.* [%]	Outp.** [mA]
4.0	6.14	60.0	0.1423	0.1699	0.45	4.64
40.2	62.3	60.0	62.353	62.512	0.26	10.45
40.2	62.3	60.0	62.361	62.460	0.16	10.44
100.8	156.3	60.0	156.354	156.703	0.22	20.17
-	-	-	-	-	-	-
-	-	-	-	-	-	-
-	-	-	-	-	-	-
-	-	-	-	-	-	-
-	-	-	-	-	-	-
-	-	-	-	-	-	-

*o.r.: of rate

**Calculated value (4 - 20 mA)

Measured error % o.r.



*z.s.: Zero stability

For detailed data concerning output specifications of the unit under test, see Technical Information (TI), chapter Performance characteristics.
Traceability to the national standard for all test instruments used for the calibration is guaranteed.

Endress+Hauser Flowtec operates ISO/IEC 17025 accredited calibration facilities in Reinach (CH), Cernay (FR), Greenwood (USA), Aurangabad (IN) and Suzhou (CN).

Wesley Watkins

06-19-2012
Date of calibration

W. Watkins
Operator

Endress+Hauser Inc.
10057 Porter Road
La Porte, Texas 77571

Appendix D
Second Quarter 2015
Laboratory Analytical Reports

April 22, 2015

Shawn P. Duffy
CH2M HILL
155 Grand Avenue, Suite 1000
Oakland, CA 94612

TEL: (530) 229-3303
FAX: (530) 339-3303

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

Workorder No.: N015241

RE: PG&E Topock, 658274.01.IM.OP.00

Attention: Shawn P. Duffy

Enclosed are the results for sample(s) received on April 07, 2015 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,

Glen Gesmundo
QA Manager

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.

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.

Subcontracted Analyses:

Ammonia was subcontracted to Truesdail-Tustin,CA.

Analytical Comments for EPA 218.6:

Dilution was necessary for sample N015241-003 (SC-701-WDR-515) due to matrix interference. Sample was analyzed at lower dilution however retention time criteria was not met indicating possible matrix interference. Sample was reported at dilution that meet matrix spike recovery limit and the detected peak within retention time window.

Analytical Comments for EPA 200.8:

Dilution was necessary on some analytes for samples N015241-001, N015241-002 and N015241-003 due to associated internal standard not meeting method criteria possibly due to matrix interference. Samples were analyzed with dilution and internal standard met method criteria. Affected analytes for this failed internal standard were reported at dilution that meet internal standard recovery limit.

Matrix Spike (MS) and Matrix Spike Duplicate (MSD) on QC samples N015230-001E-MS, N015230-001E-MSD and N015233-001A-MS are outside recovery criteria for some analytes possibly due to matrix interference. The associated Laboratory Control Sample (LCS) recovery was acceptable.

ASSET Laboratories

Date: *22-Apr-15*

CLIENT: CH2M HILL
Project: PG&E Topock, 658274.01.IM.OP.00
Lab Order: N015241
Contract No: IM3PLANT-AR

Work Order Sample Summary

Lab Sample ID	Client Sample ID	Matrix	Collection Date	Date Received	Date Reported
N015241-001A	SC-100B-WDR-515	Water	4/7/2015 11:10:00 AM	4/7/2015	4/22/2015
N015241-001B	SC-100B-WDR-515	Water	4/7/2015 11:10:00 AM	4/7/2015	4/22/2015
N015241-001C	SC-100B-WDR-515	Water	4/7/2015 11:10:00 AM	4/7/2015	4/22/2015
N015241-001D	SC-100B-WDR-515	Water	4/7/2015 11:10:00 AM	4/7/2015	4/22/2015
N015241-001E	SC-100B-WDR-515	Water	4/7/2015 11:10:00 AM	4/7/2015	4/22/2015
N015241-002A	SC-700B-WDR-515	Water	4/7/2015 11:15:00 AM	4/7/2015	4/22/2015
N015241-002B	SC-700B-WDR-515	Water	4/7/2015 11:15:00 AM	4/7/2015	4/22/2015
N015241-002C	SC-700B-WDR-515	Water	4/7/2015 11:15:00 AM	4/7/2015	4/22/2015
N015241-002D	SC-700B-WDR-515	Water	4/7/2015 11:15:00 AM	4/7/2015	4/22/2015
N015241-002E	SC-700B-WDR-515	Water	4/7/2015 11:15:00 AM	4/7/2015	4/22/2015
N015241-003A	SC-701-WDR-515	Water	4/7/2015 11:05:00 AM	4/7/2015	4/22/2015
N015241-003B	SC-701-WDR-515	Water	4/7/2015 11:05:00 AM	4/7/2015	4/22/2015
N015241-003C	SC-701-WDR-515	Water	4/7/2015 11:05:00 AM	4/7/2015	4/22/2015

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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: *22-Apr-15*

CLIENT:	CH2M HILL	**Client Sample ID:**	SC-100B-WDR-515
Lab Order:	N015241	**Collection Date:**	4/7/2015 11:10:00 AM
Project:	PG&E Topock, 658274.01.IM.OP.00	**Matrix:**	WATER
Lab ID:	N015241-001		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
SPECIFIC CONDUCTANCE							
EPA 120.1							
RunID: **WETCHEM_150408C**	QC Batch: **R99818**			PrepDate			Analyst: **LR**
Specific Conductance	7600	0.10	0.10		umhos/cm	1	4/8/2015 02:15 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		

ASSET Laboratories

ANALYTICAL RESULTS

Print Date: *22-Apr-15*

CLIENT:	CH2M HILL	**Client Sample ID:**	SC-700B-WDR-515
Lab Order:	N015241	**Collection Date:**	4/7/2015 11:15:00 AM
Project:	PG&E Topock, 658274.01.IM.OP.00	**Matrix:**	WATER
Lab ID:	N015241-002		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
SPECIFIC CONDUCTANCE							
EPA 120.1							
RunID: **WETCHEM_150408C**	QC Batch: **R99818**			PrepDate			Analyst: **LR**
Specific Conductance	7700	0.10	0.10		umhos/cm	1	4/8/2015 02:15 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		

ASSET Laboratories

ANALYTICAL RESULTS

Print Date: *22-Apr-15*

CLIENT:	CH2M HILL	**Client Sample ID:**	SC-701-WDR-515
Lab Order:	N015241	**Collection Date:**	4/7/2015 11:05:00 AM
Project:	PG&E Topock, 658274.01.IM.OP.00	**Matrix:**	WATER
Lab ID:	N015241-003		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
SPECIFIC CONDUCTANCE							
EPA 120.1							
RunID: **WETCHEM_150408C**	QC Batch: **R99818**			PrepDate			Analyst: **LR**
Specific Conductance	33000	0.10	0.10		umhos/cm	1	4/8/2015 02:15 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		

ASSET Laboratories

Date: *22-Apr-15*

CLIENT: CH2M HILL
Work Order: N015241
Project: PG&E Topock, 658274.01.IM.OP.00

ANALYTICAL QC SUMMARY REPORT

TestCode: 120.1_WPGE

Sample ID **N015240-001A DUP** SampType: **DUP** TestCode: **120.1_WPGE** Units: **umhos/cm** Prep Date: RunNo: **99818**
Client ID: **ZZZZZZ** Batch ID: **R99818** TestNo: **EPA 120.1** Analysis Date: **4/8/2015** SeqNo: **1973697**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Specific Conductance	4280.000	0.10						4250	0.703	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		

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: *22-Apr-15*

CLIENT:	CH2M HILL	**Client Sample ID:**	SC-100B-WDR-515
Lab Order:	N015241	**Collection Date:**	4/7/2015 11:10:00 AM
Project:	PG&E Topock, 658274.01.IM.OP.00	**Matrix:**	WATER
Lab ID:	N015241-001		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
TOTAL FILTERABLE RESIDUE							
			SM2540C				
RunID: **WETCHEM_150408E**	QC Batch: **50156**				PrepDate	**4/8/2015**	Analyst: **LR**
Total Dissolved Solids (Residue, Filterable)	4400	50	50		mg/L	1	4/8/2015 11:00 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		

ASSET Laboratories

ANALYTICAL RESULTS

Print Date: *22-Apr-15*

CLIENT:	CH2M HILL	**Client Sample ID:**	SC-700B-WDR-515
Lab Order:	N015241	**Collection Date:**	4/7/2015 11:15:00 AM
Project:	PG&E Topock, 658274.01.IM.OP.00	**Matrix:**	WATER
Lab ID:	N015241-002		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
TOTAL FILTERABLE RESIDUE							
			SM2540C				
RunID: **WETCHEM_150408E**	QC Batch: **50156**				PrepDate	**4/8/2015**	Analyst: **LR**
Total Dissolved Solids (Residue, Filterable)	4400	50	50		mg/L	1	4/8/2015 11:00 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		

ASSET Laboratories

ANALYTICAL RESULTS

Print Date: *22-Apr-15*

CLIENT:	CH2M HILL	**Client Sample ID:**	SC-701-WDR-515
Lab Order:	N015241	**Collection Date:**	4/7/2015 11:05:00 AM
Project:	PG&E Topock, 658274.01.IM.OP.00	**Matrix:**	WATER
Lab ID:	N015241-003		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
TOTAL FILTERABLE RESIDUE							
			SM2540C				
RunID: **WETCHEM_150408E**	QC Batch: **50156**				PrepDate	**4/8/2015**	Analyst: **LR**
Total Dissolved Solids (Residue, Filterable)	19000	500	500		mg/L	1	4/8/2015 11:00 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		

ASSET Laboratories

Date: *22-Apr-15*

CLIENT: CH2M HILL
Work Order: N015241
Project: PG&E Topock, 658274.01.IM.OP.00

ANALYTICAL QC SUMMARY REPORT

TestCode: 160.1_2540C_W

Sample ID **MB-50156** SampType: **MBLK** TestCode: **160.1_2540C** Units: **mg/L** Prep Date: **4/8/2015** RunNo: **99836**
Client ID: **PBW** Batch ID: **50156** TestNo: **SM2540C** Analysis Date: **4/8/2015** SeqNo: **1974795**

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 **LCS-50156** SampType: **LCS** TestCode: **160.1_2540C** Units: **mg/L** Prep Date: **4/8/2015** RunNo: **99836**
Client ID: **LCSW** Batch ID: **50156** TestNo: **SM2540C** Analysis Date: **4/8/2015** SeqNo: **1974796**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	1001.000	10	1000	0	100	80	120				

Sample ID **N015240-001A DUP** SampType: **DUP** TestCode: **160.1_2540C** Units: **mg/L** Prep Date: **4/8/2015** RunNo: **99836**
Client ID: **ZZZZZZ** Batch ID: **50156** TestNo: **SM2540C** Analysis Date: **4/8/2015** SeqNo: **1974803**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	2543.333	33						2513	1.19	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		

ASSET LABORATORIES
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P: 702.307.2659 F: 702.307.2691
"Serving Clients with Passion and Professionalism"

ASSET Laboratories

ANALYTICAL RESULTS

Print Date: *22-Apr-15*

CLIENT:	CH2M HILL	**Client Sample ID:**	SC-100B-WDR-515
Lab Order:	N015241	**Collection Date:**	4/7/2015 11:10:00 AM
Project:	PG&E Topock, 658274.01.IM.OP.00	**Matrix:**	WATER
Lab ID:	N015241-001		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
TOTAL METALS BY ICP							
EPA 200.7							
RunID: **ICP2_150408B**	QC Batch: **50155**				PrepDate	**4/8/2015**	Analyst: **JAA**
Aluminum	ND	6.2	50		µg/L	1	4/8/2015 08:35 PM
Boron	1000	19	100		µg/L	1	4/8/2015 08:35 PM
Iron	ND	1.3	20		µg/L	1	4/8/2015 08:35 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: *22-Apr-15*

CLIENT:	CH2M HILL	**Client Sample ID:**	SC-700B-WDR-515
Lab Order:	N015241	**Collection Date:**	4/7/2015 11:15:00 AM
Project:	PG&E Topock, 658274.01.IM.OP.00	**Matrix:**	WATER
Lab ID:	N015241-002		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
TOTAL METALS BY ICP							
EPA 200.7							
RunID: **ICP2_150408B**	QC Batch: **50155**				PrepDate	**4/8/2015**	Analyst: **JAA**
Aluminum	ND	6.2	50		µg/L	1	4/8/2015 09:26 PM
Boron	870	19	100		µg/L	1	4/8/2015 09:26 PM
Iron	ND	1.3	20		µg/L	1	4/8/2015 09:26 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		

ASSET Laboratories

Date: *22-Apr-15*

CLIENT: CH2M HILL
Work Order: N015241
Project: PG&E Topock, 658274.01.IM.OP.00

ANALYTICAL QC SUMMARY REPORT

TestCode: 200.7_WPGEPPB

Sample ID **MB-50155** SampType: **MBLK** TestCode: **200.7_WPGE** Units: **µg/L** Prep Date: **4/8/2015** RunNo: **99826**
Client ID: **PBW** Batch ID: **50155** TestNo: **EPA 200.7** Analysis Date: **4/8/2015** SeqNo: **1974327**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aluminum	6.754	50									
Boron	ND	100									
Iron	6.997	20									

Sample ID **LCS-50155** SampType: **LCS** TestCode: **200.7_WPGE** Units: **µg/L** Prep Date: **4/8/2015** RunNo: **99826**
Client ID: **LCSW** Batch ID: **50155** TestNo: **EPA 200.7** Analysis Date: **4/8/2015** SeqNo: **1974328**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aluminum	9586.833	50	10000	0	95.9	85	115				
Boron	4560.401	100	5000	0	91.2	85	115				
Iron	109.693	20	100.0	0	110	85	115				

Sample ID **N015239-001B-MS** SampType: **MS** TestCode: **200.7_WPGE** Units: **µg/L** Prep Date: **4/8/2015** RunNo: **99826**
Client ID: **ZZZZZZ** Batch ID: **50155** TestNo: **EPA 200.7** Analysis Date: **4/8/2015** SeqNo: **1974332**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aluminum	9679.333	50	10000	0	96.8	75	125				
Boron	5172.673	100	5000	349.9	96.5	75	125				
Iron	113.225	20	100.0	12.85	100	75	125				

Sample ID **N015239-001B-MSD** SampType: **MSD** TestCode: **200.7_WPGE** Units: **µg/L** Prep Date: **4/8/2015** RunNo: **99826**
Client ID: **ZZZZZZ** Batch ID: **50155** TestNo: **EPA 200.7** Analysis Date: **4/8/2015** SeqNo: **1974333**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aluminum	9759.156	50	10000	0	97.6	75	125	9679	0.821	20	
Boron	5224.968	100	5000	349.9	97.5	75	125	5173	1.01	20	
Iron	107.563	20	100.0	12.85	94.7	75	125	113.2	5.13	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		

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ANALYTICAL RESULTS

Print Date: *22-Apr-15*

CLIENT: CH2M HILL
Lab Order: N015241
Project: PG&E Topock, 658274.01.IM.OP.00
Lab ID: N015241-001

Client Sample ID: SC-100B-WDR-515
Collection Date: 4/7/2015 11:10:00 AM
Matrix: WATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
TOTAL METALS BY ICPMS							
			EPA 200.8				
RunID: **ICP7_150408A**	QC Batch: **50147**				PrepDate	**4/8/2015**	Analyst: **CEI**
Antimony	ND	0.92	2.5		µg/L	5	4/8/2015 03:30 PM
Arsenic	2.9	0.027	0.10		µg/L	1	4/8/2015 03:35 PM
Barium	27	0.030	1.0		µg/L	1	4/10/2015 12:19 PM
Copper	ND	0.040	1.0		µg/L	1	4/10/2015 12:19 PM
Lead	ND	0.053	5.0		µg/L	5	4/8/2015 03:30 PM
Manganese	ND	0.026	0.50		µg/L	1	4/8/2015 03:35 PM
Molybdenum	22	0.76	2.5		µg/L	5	4/8/2015 03:30 PM
Nickel	ND	0.032	1.0		µg/L	1	4/8/2015 03:35 PM
Zinc	ND	0.23	10		µg/L	1	4/8/2015 03:35 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: *22-Apr-15*

CLIENT:	CH2M HILL	**Client Sample ID:**	SC-700B-WDR-515
Lab Order:	N015241	**Collection Date:**	4/7/2015 11:15:00 AM
Project:	PG&E Topock, 658274.01.IM.OP.00	**Matrix:**	WATER
Lab ID:	N015241-002		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
TOTAL METALS BY ICPMS							
EPA 200.8							
RunID: **ICP7_150408A**	QC Batch: **50147**				PrepDate	**4/8/2015**	Analyst: **CEI**
Antimony	ND	0.92	2.5		µg/L	5	4/8/2015 03:41 PM
Arsenic	ND	0.027	0.10		µg/L	1	4/8/2015 03:46 PM
Barium	11	0.030	1.0		µg/L	1	4/10/2015 12:30 PM
Copper	ND	0.040	1.0		µg/L	1	4/10/2015 12:30 PM
Lead	ND	0.053	5.0		µg/L	5	4/8/2015 03:41 PM
Manganese	13	0.026	0.50		µg/L	1	4/8/2015 03:46 PM
Molybdenum	16	0.76	2.5		µg/L	5	4/8/2015 03:41 PM
Nickel	3.0	0.032	1.0		µg/L	1	4/8/2015 03:46 PM
Zinc	ND	0.23	10		µg/L	1	4/8/2015 03:46 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: *22-Apr-15*

CLIENT: CH2M HILL
Lab Order: N015241
Project: PG&E Topock, 658274.01.IM.OP.00
Lab ID: N015241-003

Client Sample ID: SC-701-WDR-515
Collection Date: 4/7/2015 11:05:00 AM
Matrix: WATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
TOTAL METALS BY ICPMS							
			EPA 200.8				
RunID: **ICP7_150408A**	QC Batch: **50147**				PrepDate	**4/8/2015**	Analyst: **CEI**
Antimony	ND	4.6	12		µg/L	25	4/8/2015 04:10 PM
Arsenic	ND	0.13	0.50		µg/L	5	4/8/2015 03:52 PM
Barium	56	0.75	25		µg/L	25	4/10/2015 12:36 PM
Beryllium	ND	0.25	12		µg/L	25	4/10/2015 12:36 PM
Cadmium	ND	0.33	12		µg/L	25	4/8/2015 04:10 PM
Cobalt	ND	0.084	2.5		µg/L	5	4/8/2015 03:52 PM
Copper	ND	0.99	25		µg/L	25	4/10/2015 12:36 PM
Lead	ND	0.26	25		µg/L	25	4/8/2015 04:10 PM
Manganese	ND	0.13	2.5		µg/L	5	4/8/2015 03:52 PM
Molybdenum	110	3.8	12		µg/L	25	4/8/2015 04:10 PM
Nickel	13	0.16	5.0		µg/L	5	4/8/2015 03:52 PM
Selenium	18	1.7	12		µg/L	25	4/10/2015 12:36 PM
Silver	ND	2.4	12		µg/L	25	4/8/2015 04:10 PM
Thallium	ND	0.20	12		µg/L	25	4/8/2015 04:10 PM
Vanadium	ND	0.79	5.0		µg/L	5	4/8/2015 03:52 PM
Zinc	ND	1.2	50		µg/L	5	4/8/2015 03:52 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

Date: *22-Apr-15*

CLIENT: CH2M HILL
Work Order: N015241
Project: PG&E Topock, 658274.01.IM.OP.00

ANALYTICAL QC SUMMARY REPORT

TestCode: 200.8_W

Sample ID **MB-50147** SampType: **MBLK** TestCode: **200.8_W** Units: **µg/L** Prep Date: **4/8/2015** RunNo: **99822**
Client ID: **PBW** Batch ID: **50147** TestNo: **EPA 200.8** Analysis Date: **4/8/2015** SeqNo: **1974092**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Antimony	ND	0.50									
Arsenic	ND	0.10									
Beryllium	ND	0.50									
Cadmium	ND	0.50									
Cobalt	ND	0.50									
Lead	ND	1.0									
Manganese	ND	0.50									
Molybdenum	ND	0.50									
Nickel	ND	1.0									
Selenium	ND	0.50									
Silver	ND	0.50									
Thallium	ND	0.50									
Vanadium	ND	1.0									
Zinc	ND	10									

Sample ID **LCS-50147** SampType: **LCS** TestCode: **200.8_W** Units: **µg/L** Prep Date: **4/8/2015** RunNo: **99822**
Client ID: **LCSW** Batch ID: **50147** TestNo: **EPA 200.8** Analysis Date: **4/8/2015** SeqNo: **1974093**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Antimony	10.620	0.50	10.00	0	106	85	115				
Arsenic	9.876	0.10	10.00	0	98.8	85	115				
Beryllium	9.508	0.50	10.00	0	95.1	85	115				
Cadmium	10.603	0.50	10.00	0	106	85	115				
Cobalt	10.425	0.50	10.00	0	104	85	115				
Lead	10.346	1.0	10.00	0	103	85	115				
Manganese	101.857	0.50	100.0	0	102	85	115				
Molybdenum	9.562	0.50	10.00	0	95.6	85	115				
Nickel	10.277	1.0	10.00	0	103	85	115				

Qualifiers:

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

CLIENT: CH2M HILL
Work Order: N015241
Project: PG&E Topock, 658274.01.IM.OP.00

ANALYTICAL QC SUMMARY REPORT

TestCode: 200.8_W

Sample ID **LCS-50147** SampType: **LCS** TestCode: **200.8_W** Units: **µg/L** Prep Date: **4/8/2015** RunNo: **99822**
Client ID: **LCSW** Batch ID: **50147** TestNo: **EPA 200.8** Analysis Date: **4/8/2015** SeqNo: **1974093**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Selenium	10.576	0.50	10.00	0	106	85	115				
Silver	9.783	0.50	10.00	0	97.8	85	115				
Thallium	10.411	0.50	10.00	0	104	85	115				
Vanadium	9.375	1.0	10.00	0	93.8	85	115				
Zinc	105.547	10	100.0	0	106	85	115				

Sample ID **N015230-001E-MS** SampType: **MS** TestCode: **200.8_W** Units: **µg/L** Prep Date: **4/8/2015** RunNo: **99822**
Client ID: **ZZZZZZ** Batch ID: **50147** TestNo: **EPA 200.8** Analysis Date: **4/8/2015** SeqNo: **1974097**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Antimony	10.824	0.50	10.00	0	108	75	125				
Arsenic	33.600	0.10	10.00	23.60	100	75	125				
Beryllium	9.669	0.50	10.00	0	96.7	75	125				
Cadmium	8.076	0.50	10.00	0	80.8	75	125				
Cobalt	9.160	0.50	10.00	0	91.6	75	125				
Lead	10.165	1.0	10.00	0	102	75	125				
Manganese	97.820	0.50	100.0	4.677	93.1	75	125				
Molybdenum	12.388	0.50	10.00	1.265	111	75	125				
Nickel	9.305	1.0	10.00	0	93.1	75	125				
Selenium	9.344	0.50	10.00	0	93.4	75	125				
Silver	9.766	0.50	10.00	0	97.7	75	125				
Thallium	10.004	0.50	10.00	0.01840	99.9	75	125				
Vanadium	11.007	1.0	10.00	0.9028	101	75	125				
Zinc	90.101	10	100.0	2.069	88.0	75	125				

Sample ID **N015230-001E-MSD** SampType: **MSD** TestCode: **200.8_W** Units: **µg/L** Prep Date: **4/8/2015** RunNo: **99822**
Client ID: **ZZZZZZ** Batch ID: **50147** TestNo: **EPA 200.8** Analysis Date: **4/8/2015** SeqNo: **1974100**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Antimony	10.738	0.50	10.00	0	107	75	125	10.82	0.799	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		

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CLIENT: CH2M HILL
Work Order: N015241
Project: PG&E Topock, 658274.01.IM.OP.00

ANALYTICAL QC SUMMARY REPORT

TestCode: 200.8_W

Sample ID **N015230-001E-MSD** SampType: **MSD** TestCode: **200.8_W** Units: **µg/L** Prep Date: **4/8/2015** RunNo: **99822**
Client ID: **ZZZZZZ** Batch ID: **50147** TestNo: **EPA 200.8** Analysis Date: **4/8/2015** SeqNo: **1974100**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	33.322	0.10	10.00	23.60	97.3	75	125	33.60	0.834	20	
Beryllium	9.550	0.50	10.00	0	95.5	75	125	9.669	1.24	20	
Cadmium	8.024	0.50	10.00	0	80.2	75	125	8.076	0.647	20	
Cobalt	9.189	0.50	10.00	0	91.9	75	125	9.160	0.309	20	
Lead	10.257	1.0	10.00	0	103	75	125	10.17	0.897	20	
Manganese	98.049	0.50	100.0	4.677	93.4	75	125	97.82	0.234	20	
Molybdenum	12.350	0.50	10.00	1.265	111	75	125	12.39	0.305	20	
Nickel	9.125	1.0	10.00	0	91.3	75	125	9.305	1.95	20	
Selenium	9.478	0.50	10.00	0	94.8	75	125	9.344	1.43	20	
Silver	9.748	0.50	10.00	0	97.5	75	125	9.766	0.179	20	
Thallium	9.879	0.50	10.00	0.01840	98.6	75	125	10.00	1.26	20	
Vanadium	10.947	1.0	10.00	0.9028	100	75	125	11.01	0.546	20	
Zinc	88.387	10	100.0	2.069	86.3	75	125	90.10	1.92	20	

Sample ID **N015233-001A-MS** SampType: **MS** TestCode: **200.8_W** Units: **µg/L** Prep Date: **4/8/2015** RunNo: **99822**
Client ID: **ZZZZZZ** Batch ID: **50147** TestNo: **EPA 200.8** Analysis Date: **4/8/2015** SeqNo: **1974102**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Antimony	10.425	0.50	10.00	0	104	75	125				
Arsenic	10.173	0.10	10.00	0.3404	98.3	75	125				
Beryllium	9.534	0.50	10.00	0	95.3	75	125				
Cadmium	6.380	0.50	10.00	0	63.8	75	125				S
Cobalt	8.963	0.50	10.00	0	89.6	75	125				
Lead	10.129	1.0	10.00	0	101	75	125				
Manganese	126.582	0.50	100.0	32.96	93.6	75	125				
Molybdenum	10.808	0.50	10.00	0.8102	100	75	125				
Nickel	8.456	1.0	10.00	0	84.6	75	125				
Selenium	11.140	0.50	10.00	0.8308	103	75	125				
Silver	9.557	0.50	10.00	0	95.6	75	125				
Thallium	10.038	0.50	10.00	0.1529	98.9	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		

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CLIENT: CH2M HILL
Work Order: N015241
Project: PG&E Topock, 658274.01.IM.OP.00

ANALYTICAL QC SUMMARY REPORT

TestCode: 200.8_W

Sample ID	N015233-001A-MS	SampType:	MS	TestCode:	200.8_W	Units:	µg/L	Prep Date:	4/8/2015	RunNo:	99822
Client ID:	ZZZZZZ	Batch ID:	50147	TestNo:	EPA 200.8			Analysis Date:	4/8/2015	SeqNo:	1974102

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Vanadium	12.532	1.0	10.00	2.323	102	75	125				

Sample ID	MB-50147	SampType:	MBLK	TestCode:	200.8_W	Units:	µg/L	Prep Date:	4/8/2015	RunNo:	99857
Client ID:	PBW	Batch ID:	50147	TestNo:	EPA 200.8			Analysis Date:	4/10/2015	SeqNo:	1976261

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

Sample ID	LCS-50147	SampType:	LCS	TestCode:	200.8_W	Units:	µg/L	Prep Date:	4/8/2015	RunNo:	99857
Client ID:	LCSW	Batch ID:	50147	TestNo:	EPA 200.8			Analysis Date:	4/10/2015	SeqNo:	1976262

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Barium	107.455	1.0	100.0	0	107	85	115				
Copper	9.988	1.0	10.00	0	99.9	85	115				

Sample ID	N015230-001E-MS	SampType:	MS	TestCode:	200.8_W	Units:	µg/L	Prep Date:	4/8/2015	RunNo:	99857
Client ID:	ZZZZZZ	Batch ID:	50147	TestNo:	EPA 200.8			Analysis Date:	4/10/2015	SeqNo:	1976266

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Copper	7.317	1.0	10.00	0	73.2	75	125				S

Sample ID	N015230-001E-MSD	SampType:	MSD	TestCode:	200.8_W	Units:	µg/L	Prep Date:	4/8/2015	RunNo:	99857
Client ID:	ZZZZZZ	Batch ID:	50147	TestNo:	EPA 200.8			Analysis Date:	4/10/2015	SeqNo:	1976267

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Copper	7.412	1.0	10.00	0	74.1	75	125	7.317	1.30	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		

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CLIENT: CH2M HILL
Work Order: N015241
Project: PG&E Topock, 658274.01.IM.OP.00

ANALYTICAL QC SUMMARY REPORT

TestCode: 200.8_W

Sample ID **N015230-001E-MS** SampType: **MS** TestCode: **200.8_W** Units: **µg/L** Prep Date: **4/8/2015** RunNo: **99857**
Client ID: **ZZZZZZ** Batch ID: **50147** TestNo: **EPA 200.8** Analysis Date: **4/10/2015** SeqNo: **1976270**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Barium	266.243	5.0	100.0	146.7	120	75	125				

Sample ID **N015230-001E-MSD** SampType: **MSD** TestCode: **200.8_W** Units: **µg/L** Prep Date: **4/8/2015** RunNo: **99857**
Client ID: **ZZZZZZ** Batch ID: **50147** TestNo: **EPA 200.8** Analysis Date: **4/10/2015** SeqNo: **1976273**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Barium	266.994	5.0	100.0	146.7	120	75	125	266.2	0.281	20	

Sample ID **N015233-001A-MS** SampType: **MS** TestCode: **200.8_W** Units: **µg/L** Prep Date: **4/8/2015** RunNo: **99857**
Client ID: **ZZZZZZ** Batch ID: **50147** TestNo: **EPA 200.8** Analysis Date: **4/10/2015** SeqNo: **1976275**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Barium	138.151	1.0	100.0	43.08	95.1	75	125				
Copper	9.196	1.0	10.00	1.206	79.9	75	125				

Sample ID **N015233-001A-MS** SampType: **MS** TestCode: **200.8_W** Units: **µg/L** Prep Date: **4/8/2015** RunNo: **99857**
Client ID: **ZZZZZZ** Batch ID: **50147** TestNo: **EPA 200.8** Analysis Date: **4/10/2015** SeqNo: **1976277**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Zinc	306.762	50	100.0	196.3	110	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 RESULTS

Print Date: *22-Apr-15*

CLIENT:	CH2M HILL	**Client Sample ID:**	SC-100B-WDR-515
Lab Order:	N015241	**Collection Date:**	4/7/2015 11:10:00 AM
Project:	PG&E Topock, 658274.01.IM.OP.00	**Matrix:**	WATER
Lab ID:	N015241-001		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
HEXAVALENT CHROMIUM BY IC							
EPA 218.6							
RunID: **IC6_150409A** QC Batch: **R99859**				PrepDate			Analyst: **RB**
Hexavalent Chromium	570	1.5	20		µg/L	100	4/9/2015 02:08 PM
TOTAL METALS BY ICPMS							
EPA 200.8							
RunID: **ICP7_150408A** QC Batch: **50147**				PrepDate		**4/8/2015**	Analyst: **CEI**
Chromium	580	0.15	5.0		µg/L	5	4/8/2015 03:30 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: *22-Apr-15*

CLIENT:	CH2M HILL	**Client Sample ID:**	SC-700B-WDR-515
Lab Order:	N015241	**Collection Date:**	4/7/2015 11:15:00 AM
Project:	PG&E Topock, 658274.01.IM.OP.00	**Matrix:**	WATER
Lab ID:	N015241-002		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
HEXAVALENT CHROMIUM BY IC							
EPA 218.6							
RunID: **IC6_150409A** QC Batch: **R99859** PrepDate							Analyst: **RB**
Hexavalent Chromium	ND	0.015	0.20		µg/L	1	4/9/2015 01:28 PM
TOTAL METALS BY ICPMS							
EPA 200.8							
RunID: **ICP7_150408A** QC Batch: **50147** PrepDate **4/8/2015**							Analyst: **CEI**
Chromium	ND	0.030	1.0		µg/L	1	4/8/2015 03:46 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: *22-Apr-15*

CLIENT:	CH2M HILL	**Client Sample ID:**	SC-701-WDR-515
Lab Order:	N015241	**Collection Date:**	4/7/2015 11:05:00 AM
Project:	PG&E Topock, 658274.01.IM.OP.00	**Matrix:**	WATER
Lab ID:	N015241-003		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
HEXAVALENT CHROMIUM BY IC							
EPA 218.6							
RunID: **IC6_150409A** QC Batch: **R99859**				PrepDate			Analyst: **RB**
Hexavalent Chromium	ND	0.075	1.0		µg/L	5	4/9/2015 05:38 PM
TOTAL METALS BY ICPMS							
EPA 200.8							
RunID: **ICP7_150408A** QC Batch: **50147**				PrepDate	**4/8/2015**		Analyst: **CEI**
Chromium	ND	0.15	5.0		µg/L	5	4/8/2015 03:52 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

Date: *22-Apr-15*

CLIENT: CH2M HILL
Work Order: N015241
Project: PG&E Topock, 658274.01.IM.OP.00

ANALYTICAL QC SUMMARY REPORT

TestCode: 200.8_W_CRPGE

Sample ID **MB-50147** SampType: **MBLK** TestCode: **200.8_W_CR** Units: **µg/L** Prep Date: **4/8/2015** RunNo: **99822**
Client ID: **PBW** Batch ID: **50147** TestNo: **EPA 200.8** Analysis Date: **4/8/2015** SeqNo: **1974035**

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

Sample ID **LCS-50147** SampType: **LCS** TestCode: **200.8_W_CR** Units: **µg/L** Prep Date: **4/8/2015** RunNo: **99822**
Client ID: **LCSW** Batch ID: **50147** TestNo: **EPA 200.8** Analysis Date: **4/8/2015** SeqNo: **1974036**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium	10.565	1.0	10.00	0	106	85	115				

Sample ID **N015230-001E-MS** SampType: **MS** TestCode: **200.8_W_CR** Units: **µg/L** Prep Date: **4/8/2015** RunNo: **99822**
Client ID: **ZZZZZZ** Batch ID: **50147** TestNo: **EPA 200.8** Analysis Date: **4/8/2015** SeqNo: **1974040**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium	9.934	1.0	10.00	0	99.3	75	125				

Sample ID **N015230-001E-MSD** SampType: **MSD** TestCode: **200.8_W_CR** Units: **µg/L** Prep Date: **4/8/2015** RunNo: **99822**
Client ID: **ZZZZZZ** Batch ID: **50147** TestNo: **EPA 200.8** Analysis Date: **4/8/2015** SeqNo: **1974043**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium	9.896	1.0	10.00	0	99.0	75	125	9.934	0.380	20	

Sample ID **N015233-001A-MS** SampType: **MS** TestCode: **200.8_W_CR** Units: **µg/L** Prep Date: **4/8/2015** RunNo: **99822**
Client ID: **ZZZZZZ** Batch ID: **50147** TestNo: **EPA 200.8** Analysis Date: **4/8/2015** SeqNo: **1974045**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium	10.048	1.0	10.00	0.4991	95.5	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		

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CLIENT: CH2M HILL
Work Order: N015241
Project: PG&E Topock, 658274.01.IM.OP.00

ANALYTICAL QC SUMMARY REPORT

TestCode: 218.6_WU_PGE

Sample ID **MB-R99859** SampType: **MBLK** TestCode: **218.6_WU_P** Units: **µg/L** Prep Date: RunNo: **99859**
Client ID: **PBW** Batch ID: **R99859** TestNo: **EPA 218.6** Analysis Date: **4/9/2015** SeqNo: **1975889**

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-R99859** SampType: **LCS** TestCode: **218.6_WU_P** Units: **µg/L** Prep Date: RunNo: **99859**
Client ID: **LCSW** Batch ID: **R99859** TestNo: **EPA 218.6** Analysis Date: **4/9/2015** SeqNo: **1975890**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	5.051	0.20	5.000	0	101	90	110				

Sample ID **N015256-001A-DUP** SampType: **DUP** TestCode: **218.6_WU_P** Units: **µg/L** Prep Date: RunNo: **99859**
Client ID: **ZZZZZZ** Batch ID: **R99859** TestNo: **EPA 218.6** Analysis Date: **4/9/2015** SeqNo: **1975892**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	1.707	0.20						1.663	2.64	20	

Sample ID **N015256-001A-MS** SampType: **MS** TestCode: **218.6_WU_P** Units: **µg/L** Prep Date: RunNo: **99859**
Client ID: **ZZZZZZ** Batch ID: **R99859** TestNo: **EPA 218.6** Analysis Date: **4/9/2015** SeqNo: **1975893**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	6.632	0.20	5.000	1.663	99.4	90	110				

Sample ID **N015256-001A-MSD** SampType: **MSD** TestCode: **218.6_WU_P** Units: **µg/L** Prep Date: RunNo: **99859**
Client ID: **ZZZZZZ** Batch ID: **R99859** TestNo: **EPA 218.6** Analysis Date: **4/9/2015** SeqNo: **1975894**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	6.716	0.20	5.000	1.663	101	90	110	6.632	1.27	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		

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CLIENT: CH2M HILL
Work Order: N015241
Project: PG&E Topock, 658274.01.IM.OP.00

ANALYTICAL QC SUMMARY REPORT

TestCode: 218.6_WU_PGE

Sample ID **N015241-002C-MS** SampType: **MS** TestCode: **218.6_WU_P** Units: **µg/L** Prep Date: RunNo: **99859**
Client ID: **ZZZZZZ** Batch ID: **R99859** TestNo: **EPA 218.6** Analysis Date: **4/9/2015** SeqNo: **1975900**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	1.153	0.20	1.000	0.1761	97.7	90	110				

Sample ID **N015240-001B-MS** SampType: **MS** TestCode: **218.6_WU_P** Units: **µg/L** Prep Date: RunNo: **99859**
Client ID: **ZZZZZZ** Batch ID: **R99859** TestNo: **EPA 218.6** Analysis Date: **4/9/2015** SeqNo: **1975902**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	8.376	0.20	5.000	3.570	96.1	90	110				

Sample ID **N015241-001C-MS** SampType: **MS** TestCode: **218.6_WU_P** Units: **µg/L** Prep Date: RunNo: **99859**
Client ID: **ZZZZZZ** Batch ID: **R99859** TestNo: **EPA 218.6** Analysis Date: **4/9/2015** SeqNo: **1975904**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	1047.290	20	500.0	566.5	96.2	90	110				

Sample ID **N015241-003B-MS** SampType: **MS** TestCode: **218.6_WU_P** Units: **µg/L** Prep Date: RunNo: **99859**
Client ID: **ZZZZZZ** Batch ID: **R99859** TestNo: **EPA 218.6** Analysis Date: **4/9/2015** SeqNo: **1975922**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	5.720	1.0	5.000	0.5315	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		

ASSET Laboratories

ANALYTICAL RESULTS

Print Date: *22-Apr-15*

CLIENT:	CH2M HILL	**Client Sample ID:**	SC-100B-WDR-515
Lab Order:	N015241	**Collection Date:**	4/7/2015 11:10:00 AM
Project:	PG&E Topock, 658274.01.IM.OP.00	**Matrix:**	WATER
Lab ID:	N015241-001		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
TURBIDITY							
			SM 2130B				
RunID: **WETCHEM_150408A**	QC Batch: **R99816**			PrepDate			Analyst: **LR**
Turbidity	0.16	0.10	0.10		NTU	1	4/8/2015 05:00 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: *22-Apr-15*

CLIENT:	CH2M HILL	**Client Sample ID:**	SC-700B-WDR-515
Lab Order:	N015241	**Collection Date:**	4/7/2015 11:15:00 AM
Project:	PG&E Topock, 658274.01.IM.OP.00	**Matrix:**	WATER
Lab ID:	N015241-002		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
TURBIDITY							
			SM 2130B				
RunID: **WETCHEM_150408A**	QC Batch: **R99816**			PrepDate			Analyst: **LR**
Turbidity	0.17	0.10	0.10		NTU	1	4/8/2015 05:00 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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Date: *22-Apr-15*

CLIENT: CH2M HILL
Work Order: N015241
Project: PG&E Topock, 658274.01.IM.OP.00

ANALYTICAL QC SUMMARY REPORT

TestCode: 2130_W

Sample ID	MB-R99816	SampType:	MBLK	TestCode:	2130_W	Units:	NTU	Prep Date:		RunNo:	99816
Client ID:	PBW	Batch ID:	R99816	TestNo:	SM 2130B			Analysis Date:	4/8/2015	SeqNo:	1973686

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Turbidity	ND	0.10									

Sample ID	N015230-001D DUP	SampType:	DUP	TestCode:	2130_W	Units:	NTU	Prep Date:		RunNo:	99816
Client ID:	ZZZZZZ	Batch ID:	R99816	TestNo:	SM 2130B			Analysis Date:	4/8/2015	SeqNo:	1973688

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Turbidity	0.260	0.10						0.2700	3.77	30	

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis 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		

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ANALYTICAL RESULTS

Print Date: *22-Apr-15*

CLIENT:	CH2M HILL	**Client Sample ID:**	SC-701-WDR-515
Lab Order:	N015241	**Collection Date:**	4/7/2015 11:05:00 AM
Project:	PG&E Topock, 658274.01.IM.OP.00	**Matrix:**	WATER
Lab ID:	N015241-003		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
TOTAL MERCURY BY COLD VAPOR TECHNIQUE							
EPA 245.1							
RunID: **AA1_150410A**	QC Batch: **50154**				PrepDate	**4/8/2015**	Analyst: **CEI**
Mercury	ND	0.015	0.20		µg/L	1	4/10/2015 01:14 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: CH2M HILL
Work Order: N015241
Project: PG&E Topock, 658274.01.IM.OP.00

ANALYTICAL QC SUMMARY REPORT

TestCode: 245.1_W

Sample ID **MB-50154** SampType: **MBLK** TestCode: **245.1_W** Units: **µg/L** Prep Date: **4/8/2015** RunNo: **99858**
Client ID: **PBW** Batch ID: **50154** TestNo: **EPA 245.1** Analysis Date: **4/10/2015** SeqNo: **1975823**

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

Sample ID **LCS-50154** SampType: **LCS** TestCode: **245.1_W** Units: **µg/L** Prep Date: **4/8/2015** RunNo: **99858**
Client ID: **LCSW** Batch ID: **50154** TestNo: **EPA 245.1** Analysis Date: **4/10/2015** SeqNo: **1975824**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	2.611	0.20	2.500	0	104	85	115				

Sample ID **N015230-001E-MS** SampType: **MS** TestCode: **245.1_W** Units: **µg/L** Prep Date: **4/8/2015** RunNo: **99858**
Client ID: **ZZZZZZ** Batch ID: **50154** TestNo: **EPA 245.1** Analysis Date: **4/10/2015** SeqNo: **1975826**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	2.463	0.20	2.500	0	98.5	75	125				

Sample ID **N015230-001E-MSD** SampType: **MSD** TestCode: **245.1_W** Units: **µg/L** Prep Date: **4/8/2015** RunNo: **99858**
Client ID: **ZZZZZZ** Batch ID: **50154** TestNo: **EPA 245.1** Analysis Date: **4/10/2015** SeqNo: **1975827**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	2.453	0.20	2.500	0	98.1	75	125	2.463	0.420	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		

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ANALYTICAL RESULTS

Print Date: *22-Apr-15*

CLIENT:	CH2M HILL	**Client Sample ID:**	SC-100B-WDR-515
Lab Order:	N015241	**Collection Date:**	4/7/2015 11:10:00 AM
Project:	PG&E Topock, 658274.01.IM.OP.00	**Matrix:**	WATER
Lab ID:	N015241-001		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
ANIONS BY ION CHROMATOGRAPHY							
EPA 300.0							
RunID: **IC2_150409A** QC Batch: **R99851** PrepDate Analyst: **QBM**							
Fluoride	2.6	0.12	1.0		mg/L	10	4/9/2015 02:28 PM
ANIONS BY ION CHROMATOGRAPHY							
EPA 300.0							
RunID: **IC2_150409A** QC Batch: **R99851** PrepDate Analyst: **QBM**							
Sulfate	480	1.6	25		mg/L	50	4/9/2015 02:57 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		

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ANALYTICAL RESULTS

Print Date: *22-Apr-15*

CLIENT:	CH2M HILL	**Client Sample ID:**	SC-700B-WDR-515
Lab Order:	N015241	**Collection Date:**	4/7/2015 11:15:00 AM
Project:	PG&E Topock, 658274.01.IM.OP.00	**Matrix:**	WATER
Lab ID:	N015241-002		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
ANIONS BY ION CHROMATOGRAPHY							
EPA 300.0							
RunID: **IC2_150409A** QC Batch: **R99851** PrepDate Analyst: **QBM**							
Fluoride	2.5	0.12	1.0		mg/L	10	4/9/2015 03:27 PM
ANIONS BY ION CHROMATOGRAPHY							
EPA 300.0							
RunID: **IC2_150409A** QC Batch: **R99851** PrepDate Analyst: **QBM**							
Sulfate	470	1.6	25		mg/L	50	4/9/2015 04:10 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		

ASSET Laboratories

ANALYTICAL RESULTS

Print Date: *22-Apr-15*

CLIENT:	CH2M HILL	**Client Sample ID:**	SC-701-WDR-515
Lab Order:	N015241	**Collection Date:**	4/7/2015 11:05:00 AM
Project:	PG&E Topock, 658274.01.IM.OP.00	**Matrix:**	WATER
Lab ID:	N015241-003		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
ANIONS BY ION CHROMATOGRAPHY							
EPA 300.0							
RunID: **IC2_150409A** QC Batch: **R99851** PrepDate Analyst: **QBM**							
Fluoride	12	0.62	5.0		mg/L	50	4/9/2015 05:24 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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Date: *22-Apr-15*

CLIENT: CH2M HILL
Work Order: N015241
Project: PG&E Topock, 658274.01.IM.OP.00

ANALYTICAL QC SUMMARY REPORT

TestCode: 300_W_FPGE

Sample ID **MB-R99851_F** SampType: **MBLK** TestCode: **300_W_FPG** Units: **mg/L** Prep Date: RunNo: **99851**
Client ID: **PBW** Batch ID: **R99851** TestNo: **EPA 300.0** Analysis Date: **4/9/2015** SeqNo: **1975345**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Fluoride	ND	0.10									

Sample ID **LCS-R99851_F** SampType: **LCS** TestCode: **300_W_FPG** Units: **mg/L** Prep Date: RunNo: **99851**
Client ID: **LCSW** Batch ID: **R99851** TestNo: **EPA 300.0** Analysis Date: **4/9/2015** SeqNo: **1975346**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Fluoride	2.430	0.10	2.500	0	97.2	90	110				

Sample ID **N015241-001BDUP** SampType: **DUP** TestCode: **300_W_FPG** Units: **mg/L** Prep Date: RunNo: **99851**
Client ID: **ZZZZZZ** Batch ID: **R99851** TestNo: **EPA 300.0** Analysis Date: **4/9/2015** SeqNo: **1975350**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Fluoride	2.790	1.0						2.630	5.90	20	

Sample ID **N015241-002BMS** SampType: **MS** TestCode: **300_W_FPG** Units: **mg/L** Prep Date: RunNo: **99851**
Client ID: **ZZZZZZ** Batch ID: **R99851** TestNo: **EPA 300.0** Analysis Date: **4/9/2015** SeqNo: **1975354**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Fluoride	26.220	1.0	25.00	2.490	94.9	80	120				

Sample ID **N015241-002BMSD** SampType: **MSD** TestCode: **300_W_FPG** Units: **mg/L** Prep Date: RunNo: **99851**
Client ID: **ZZZZZZ** Batch ID: **R99851** TestNo: **EPA 300.0** Analysis Date: **4/9/2015** SeqNo: **1975355**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Fluoride	26.950	1.0	25.00	2.490	97.8	80	120	26.22	2.75	20	

Qualifiers:

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

ASSET LABORATORIES
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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"

CLIENT: CH2M HILL
Work Order: N015241
Project: PG&E Topock, 658274.01.IM.OP.00

ANALYTICAL QC SUMMARY REPORT

TestCode: 300_W_SO4PGE

Sample ID **MB-R99851_SO4** SampType: **MBLK** TestCode: **300_W_SO4P** Units: **mg/L** Prep Date: RunNo: **99851**
Client ID: **PBW** Batch ID: **R99851** TestNo: **EPA 300.0** Analysis Date: **4/9/2015** SeqNo: **1975368**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Sulfate	ND	0.50									

Sample ID **LCS-R99851_SO4** SampType: **LCS** TestCode: **300_W_SO4P** Units: **mg/L** Prep Date: RunNo: **99851**
Client ID: **LCSW** Batch ID: **R99851** TestNo: **EPA 300.0** Analysis Date: **4/9/2015** SeqNo: **1975369**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Sulfate	4.877	0.50	5.000	0	97.5	90	110				

Sample ID **N015241-001BDUP** SampType: **DUP** TestCode: **300_W_SO4P** Units: **mg/L** Prep Date: RunNo: **99851**
Client ID: **ZZZZZZ** Batch ID: **R99851** TestNo: **EPA 300.0** Analysis Date: **4/9/2015** SeqNo: **1975385**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Sulfate	497.200	25						478.9	3.75	20	

Sample ID **N015241-002BMS** SampType: **MS** TestCode: **300_W_SO4P** Units: **mg/L** Prep Date: RunNo: **99851**
Client ID: **ZZZZZZ** Batch ID: **R99851** TestNo: **EPA 300.0** Analysis Date: **4/9/2015** SeqNo: **1975392**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Sulfate	723.400	25	250.0	468.0	102	80	120				

Sample ID **N015241-002BMSD** SampType: **MSD** TestCode: **300_W_SO4P** Units: **mg/L** Prep Date: RunNo: **99851**
Client ID: **ZZZZZZ** Batch ID: **R99851** TestNo: **EPA 300.0** Analysis Date: **4/9/2015** SeqNo: **1975393**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Sulfate	725.650	25	250.0	468.0	103	80	120	723.4	0.311	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: *22-Apr-15*

CLIENT:	CH2M HILL	**Client Sample ID:**	SC-100B-WDR-515
Lab Order:	N015241	**Collection Date:**	4/7/2015 11:10:00 AM
Project:	PG&E Topock, 658274.01.IM.OP.00	**Matrix:**	WATER
Lab ID:	N015241-001		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
NITRATE/NITRITE-N BY CADMIUM REDUCTION							
SM4500-NO3F							
RunID: **WETCHEM_150421B** QC Batch: **R100030** PrepDate Analyst: **RB**							
Nitrate/Nitrite as N	2.4	0.11	0.25		mg/L	5	4/21/2015

Qualifiers:

B	Analyte detected in 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: *22-Apr-15*

CLIENT:	CH2M HILL	**Client Sample ID:**	SC-700B-WDR-515
Lab Order:	N015241	**Collection Date:**	4/7/2015 11:15:00 AM
Project:	PG&E Topock, 658274.01.IM.OP.00	**Matrix:**	WATER
Lab ID:	N015241-002		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
NITRATE/NITRITE-N BY CADMIUM REDUCTION							
SM4500-NO3F							
RunID: **WETCHEM_150421B** QC Batch: **R100030** PrepDate							Analyst: **RB**
Nitrate/Nitrite as N	2.3	0.11	0.25		mg/L	5	4/21/2015

Qualifiers:

B	Analyte detected in 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

Date: *22-Apr-15*

CLIENT: CH2M HILL
Work Order: N015241
Project: PG&E Topock, 658274.01.IM.OP.00

ANALYTICAL QC SUMMARY REPORT

TestCode: 4500N03F_W

Sample ID **MB-R100030** SampType: **MBLK** TestCode: **4500N03F_W** Units: **mg/L** Prep Date: RunNo: **100030**
Client ID: **PBW** Batch ID: **R100030** TestNo: **SM4500-NO3** Analysis Date: **4/21/2015** SeqNo: **1984349**

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-R100030** SampType: **LCS** TestCode: **4500N03F_W** Units: **mg/L** Prep Date: RunNo: **100030**
Client ID: **LCSW** Batch ID: **R100030** TestNo: **SM4500-NO3** Analysis Date: **4/21/2015** SeqNo: **1984350**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrate/Nitrite as N	0.928	0.050	1.000	0	92.8	85	115				

Sample ID **N015240-001DDUP** SampType: **DUP** TestCode: **4500N03F_W** Units: **mg/L** Prep Date: RunNo: **100030**
Client ID: **ZZZZZZ** Batch ID: **R100030** TestNo: **SM4500-NO3** Analysis Date: **4/21/2015** SeqNo: **1984352**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrate/Nitrite as N	ND	0.050						0.02230	0	20	

Sample ID **N015240-001DMS** SampType: **MS** TestCode: **4500N03F_W** Units: **mg/L** Prep Date: RunNo: **100030**
Client ID: **ZZZZZZ** Batch ID: **R100030** TestNo: **SM4500-NO3** Analysis Date: **4/21/2015** SeqNo: **1984353**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrate/Nitrite as N	0.960	0.050	1.000	0.02230	93.8	75	125				

Sample ID **N015240-001DMSD** SampType: **MSD** TestCode: **4500N03F_W** Units: **mg/L** Prep Date: RunNo: **100030**
Client ID: **ZZZZZZ** Batch ID: **R100030** TestNo: **SM4500-NO3** Analysis Date: **4/21/2015** SeqNo: **1984354**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrate/Nitrite as N	1.030	0.050	1.000	0.02230	101	75	125	0.9603	6.98	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		

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List of Analyst/s

WORK ORDER: N015241

ANALYST LIST

NAME	TEST METHOD
Quennie Manimtim	EPA 300.0
Claire Ignacio	EPA 200.8, EPA 245.1
Jasper Aquino	EPA 200.7
Lilia Ramit	EPA 120.1, SM 2540C, SM 2130B
Ryan Balilu	EPA 218.6, SM 4500-NO3F

CH2MHILL

CHAIN OF CUSTODY RECORD

3/16/2015 7:11:17 PM

Project Name PG&E Topock
Location PG&E Topock
Project Number 658274.01.IM.OP.00
Project Manager Scott O'Donnell
Sample Manager Shawn Duffy

Task Order
Project IM3PLANT-ARAR-WDR-515
Turnaround Time 10 Days
Shipping Date: 4/7/2015
COC Number: 515

			Container:	1 Liter Poly	1 Liter Poly	1 Liter Poly	1 Liter Poly	250 ml Poly	1 Liter Poly	1 Liter Poly	500 ml Poly	500 ml Poly	500 ml Poly	1 Liter Poly			
			Preservatives:	4°C Lab H2SO4	4°C	4°C	4°C	4°C	4°C Lab H2SO4	4°C	4°C	4°C	4°C	4°C			
			Filtered:	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA			
			Holding Time:	28	7	7	7	1	28	7	180	180	180	7			
	DATE	TIME	Matrix	AMMONIA (SM4500NH3D)	Anions (E300.0) Flouride	Anions (E300.0) Sulfate/Flouride	CONDUCTIVITY (E120.1)	E218.6 Lab Filtered	Nitrate/Nitrite (SM4500NO3-E)	TDS (SM2540C)	Total Metals (E200.8 Mn)	Total Metals(200.7 and 200.8) See List	Total Title22Metals	Turbidity (SM2130)		Number of Containers	COMMENTS
SC-100B-WDR-515	4/7/2015	11:10	Water	X		X	X	X	X	X		X		X	N015241-1	4	✓
SC-700B-WDR-515	4/7/2015	11:15	Water	X		X	X	X	X	X		X		X	1 -2	4	✓
SC-701-WDR-515	4/7/2015	11:05	Water		X		X	X		X	X		X		1 -3	3	✓
															TOTAL NUMBER OF CONTAINERS	11	

	Signatures	Date/Time
Approved by		
Sampled by		4-7-15 - 11:00
Relinquished by		4-7-15
Received by		4/7/15 1315
Relinquished by		4/7/15 1945
Received by		

Shipping Details

Method of Shipment: FedEx
On Ice: yes / no 1.6°C
Airbill No:
Lab Name: ASSET Laboratories
Lab Phone: (702) 307-2659

ATTN:

Sample Custody

and

Glen Gesmundo

Special Instructions:

Metal List - Cr, Al, Sb, As, Ba, B, Cu, Pb, Mn, Mo, Ni, Fe, Zn

Report Copy to

Shawn Duffy
530-229-3303

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:	4/7/2015	Workorder:	N015241
Rep sample Temp (Deg C):	1.6	IR Gun ID:	2
Temp Blank:	☑ Yes ☐ No		
Carrier name:	ATL		
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 Ammonia, Nitrate/Nitrite and Total Metals was lab preserved.

Checklist Completed By: HG 4/15/2015

Reviewed By: 4/22/2015

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:

Truesdail
14201 Franklin Ave.
Tustin, CA 92680

TEL: (714) 730-6239
FAX: (714) 730-6462
Acct #:

Field Sampler:

08-Apr-15

				Requested Tests		
Sample ID	**Matrix**	**Date Collected**	**Bottle Type**	**SM4500-NH3C**		
N015241-001A / SC-100B-WDR-515	Water	4/7/2015 11:10:00 AM	32OZP	1		
N015241-002A / SC-700B-WDR-515	Water	4/7/2015 11:15:00 AM	32OZP	1		

General Comments: Please email sample receipt acknowledgement to the PM.

Please use PO#:N15241A For questions, call Marlon at (702)-307-2659. Please e-mail results to reports.lv@assetlaboratories.com by:Normal TAT

Please analyze for Ammonia. CH2MHILL Sample.

		Date/Time			Date/Time
Relinquished by:		4/8/2015 17:00	**Received by:**	GSO #: 527510209	
Relinquished by:			**Received by:**		

SAMPLE CALCULATION

METHOD: SM 2540C
TEST NAME: Total Filterable Residue
MATRIX: Water

FORMULA:

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

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

Where:

A = weight in g of dish + residue after drying
B = weight of dish in g
C = volume of sample used in mL

For **N015241-001B,** TDS concentration in mg/L is calculated as follows:

$$\text{TDS, mg/L} = \frac{(61.3270-61.2399)*1000000}{20}$$

$$= 4355 \text{ mg/L}$$

Reporting result in two significant figures,

TDS = 4400 mg/L

Julia Ramit 4/10/2015

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

	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
Date Finished:4/9/15								
MB-50156	100	54.6172	54.6175	3	1	3		
LCS-50156	100	75.7421	75.8422	1001	1	1001		
N015234-002D	75	61.3424	61.4158	734	1.33333333	978.666667	1609	0.608
N015234-003D	30	53.9169	54.0292	1123	3.33333333	3743.33333	4650	0.805
N015234-004D	10	55.1278	55.2171	893	10	8930	10760	0.830
N015234-005D	10	57.0813	57.1701	888	10	8880	10870	0.817
N015239-001C	100	53.7167	53.7856	689	1	689	1088	0.633
N015240-001A	30	62.9713	63.0467	754	3.33333333	2513.33333	4250	0.591
N015240-001A DUP	30	55.5402	55.6165	763	3.33333333	2543.33333	4250	0.598
N015240-002A	20	53.9476	54.0423	947	5	4735	8360	0.566
N015241-001B	20	61.2399	61.327	871	5	4355	7560	0.576
N015241-002B	20	55.7206	55.8079	873	5	4365	7710	0.566
N015241-003A	2	64.0889	64.1273	384	50	19200	32800	0.585

Silia Ramit 4/10/2015

Sample Calculation

METHOD: EPA 200.7
TEST NAME: Heavy Metals by ICP
MATRIX: Water

FORMULA:

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

Boron, ug/L = A * DF * PF * 1000

where:

A = mg/L, calculated concentration
DF = dilution factor
PF = Final Vol. of Digestate in mL / Amt. of Sample mL

For Sample **N015241-002E**, the concentration in ug/L is calculated as follows:

Boron, ug/L = 0.8657022006 * 1 * (25/25) * 1000

= 865.7022006

Reporting results in two significant figures,

Boron, ug/L = 870

4/22/2015

ASSET Laboratories

ICP-Metals in Water

Dilution Test Summary

Work Order No.: N015241
Test Method: EPA 200.7
Analysis Date: 04/08/15

Matrix: Water
Batch No.: 50155

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

Comments:

Analyzed By: Jasper A Aquino

Dilution test is not applicable to B, Al & Fe. The calculated values are <25XRL.

Sample ID	Analyte	Units	Calc Val	OQual	SAMPrefval	%DIFF	%DIFFlimit
N015239-001B-DT 5X	Aluminum	µg/L	0	NA	0		10
N015239-001B-DT 5X	Boron	µg/L	392.19776	NA	349.8748749	12.10%	10
N015239-001B-DT 5X	Iron	µg/L	47.30960788	NA	12.84858491	268.21%	10

ASSET Laboratories

Date: *08-Apr-15*

CLIENT: CH2M HILL
Work Order: N015241
Project: PG&E Topock, 658274.01.IM.OP.00

ANALYTICAL QC SUMMARY REPORT

TestCode: 200.7_WPGEPPB

Sample ID **N015239-001B-PS** SampType: **PS** TestCode: **200.7_WPGE** Units: **µg/L** Prep Date: RunNo: **99826**
Client ID: **ZZZZZZ** Batch ID: **50155** TestNo: **EPA 200.7** Analysis Date: **4/8/2015** SeqNo: **1974331**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aluminum	9601.529	50	10000	0	96.0	80	120				
Boron	5100.102	100	5000	349.9	95.0	80	120				
Iron	106.749	20	100.0	12.85	93.9	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		

Sample Calculation

METHOD: EPA 200.8
TEST NAME: Heavy Metals by ICP-MS
MATRIX: Water

FORMULA:

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

Manganese, ug/L = A * DF * PF

where:

A = ug/L, calculated concentration
DF = dilution factor
PF = Final Vol. of Digestate in mL / Vol. of Sample used in mL

For Sample **N015241-002E,** the concentration in ug/L is calculated as follows:

Manganese, ug/L = 12.884931775633 * 1 * (25/25)

= 12.884931775633

Reporting results in two significant figures,

Manganese, ug/L = 13

4/21/2015

ASSET Laboratories

ICP-Metals in Water

Dilution Test Summary

Work Order No.: N015241
Test Method: EPA 200.8
Analysis Date: 4/8/2015

Matrix: Water
Batch No.: 50147

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

Comments:

Analyzed By: Mary Claire Ignacio

Dilution test is not applicable to Sb, Be, Cd, Cr, Co, Pb, Mn, Mo, Ni, Se, Ag, Tl, V, and Zn. The calculated concentrations are < 25X RL's.

Sample ID	Analyte	Units	Calc Val	OQual	SAMPRefVal	%DIFF	%DIFFlimit
N015230-001E-DT 5X	Antimony	µg/L	0	NA	0		10
N015230-001E-DT 5X	Arsenic	µg/L	24.91243691	PASS	23.59637528	5.58%	10
N015230-001E-DT 5X	Beryllium	µg/L	0	NA	0		10
N015230-001E-DT 5X	Cadmium	µg/L	0	NA	0		10
N015230-001E-DT 5X	Chromium	µg/L	0	NA	0		10
N015230-001E-DT 5X	Cobalt	µg/L	0	NA	0		10
N015230-001E-DT 5X	Lead	µg/L	0	NA	0		10
N015230-001E-DT 5X	Manganese	µg/L	4.90600462	NA	4.677045051	4.90%	10
N015230-001E-DT 5X	Molybdenum	µg/L	1.349139496	NA	1.265226307	6.63%	10
N015230-001E-DT 5X	Nickel	µg/L	0	NA	0		10
N015230-001E-DT 5X	Selenium	µg/L	0	NA	0		10
N015230-001E-DT 5X	Silver	µg/L	0	NA	0		10
N015230-001E-DT 5X	Thallium	µg/L	0	NA	0.018398335	100.00%	10
N015230-001E-DT 5X	Vanadium	µg/L	1.016005961	NA	0.902827696	12.54%	10
N015230-001E-DT 5X	Zinc	µg/L	2.877266487	NA	2.06854635	39.10%	10

Note: NA - Not applicable

ASSET Laboratories

ICP-Metals in Water

Dilution Test Summary

Work Order No.: N015241
Test Method: EPA 200.8
Analysis Date: 4/10/2015

Matrix: Water
Batch No.: 50147

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

Comments:

Analyzed By: Mary Claire Ignacio

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

Sample ID	Analyte	Units	Calc Val	OQual	SAMPRefVal	%DIFF	%DIFFlimit
N015230-001E-DT 5X	Copper	µg/L	0	NA	0		10
N015230-001E-DT 25X	Barium	µg/L	152.4980052	PASS	146.6518625	3.99%	10

Note: NA - Not applicable

ASSET Laboratories

Date: *12-Apr-15*

CLIENT: CH2M HILL
Work Order: N015241
Project: PG&E Topock, 658274.01.IM.OP.00

ANALYTICAL QC SUMMARY REPORT

TestCode: 200.8_W

Sample ID **N015230-001E-PS** SampType: **PS** TestCode: **200.8_W** Units: **µg/L** Prep Date: RunNo: **99822**
Client ID: **ZZZZZZ** Batch ID: **50147** TestNo: **EPA 200.8** Analysis Date: **4/8/2015** SeqNo: **1974096**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Antimony	10.853	0.50	10.00	0	109	80	120				
Arsenic	33.648	0.10	10.00	23.60	101	80	120				
Beryllium	9.600	0.50	10.00	0	96.0	80	120				
Cadmium	7.982	0.50	10.00	0	79.8	80	120				S
Cobalt	9.207	0.50	10.00	0	92.1	80	120				
Lead	10.394	1.0	10.00	0	104	80	120				
Manganese	97.757	0.50	100.0	4.677	93.1	80	120				
Molybdenum	12.290	0.50	10.00	1.265	110	80	120				
Nickel	9.118	1.0	10.00	0	91.2	80	120				
Selenium	9.527	0.50	10.00	0	95.3	80	120				
Silver	9.769	0.50	10.00	0	97.7	80	120				
Thallium	10.161	0.50	10.00	0.01840	101	80	120				
Vanadium	11.079	1.0	10.00	0.9028	102	80	120				
Zinc	86.587	10	100.0	2.069	84.5	80	120				

Sample ID **N015230-001E-PS** SampType: **PS** TestCode: **200.8_W** Units: **µg/L** Prep Date: RunNo: **99857**
Client ID: **ZZZZZZ** Batch ID: **50147** TestNo: **EPA 200.8** Analysis Date: **4/10/2015** SeqNo: **1976265**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Copper	7.501	1.0	10.00	0	75.0	80	120				S

Sample ID **N015230-001E-PS** SampType: **PS** TestCode: **200.8_W** Units: **µg/L** Prep Date: RunNo: **99857**
Client ID: **ZZZZZZ** Batch ID: **50147** TestNo: **EPA 200.8** Analysis Date: **4/10/2015** SeqNo: **1976269**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Barium	274.253	5.0	500.0	146.7	25.5	80	120				S

DT of Ba@25x is within criteria.

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis 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		

DT of Ba

Nancy 4/21/2015

CLIENT: CH2M HILL
Work Order: N015241
Project: PG&E Topock, 658274.01.IM.OP.00

ANALYTICAL QC SUMMARY REPORT

TestCode: 200.8_W_CRPGE

Sample ID	**N015230-001E-PS**	SampType:	**PS**	TestCode:	**200.8_W_CR**	Units:	**µg/L**	Prep Date:				RunNo:	**99822**
Client ID:	**ZZZZZZ**	Batch ID:	**50147**	TestNo:	**EPA 200.8**			Analysis Date:	**4/8/2015**			SeqNo:	**1974039**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium	9.884	1.0	10.00	0	98.8	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		

Sample Calculation

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

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 **N015241-001C,** concentration in µg/L is calculated as follows:

Cr^{+6}, µg/L = 5.665 * 100

= 566.5

Reporting result in two significant figures,

Cr^{+6}, µg/L = 570

ASSET Laboratories

Sample Calculation

Work Order No.:	**N015241**
Test Method:	**EPA 245.1**
Matrix:	**Water**

FORMULA:

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

Hg = [A] [DF] [0.001]

where:

A = ppt, instrument calculated concentration
DF = dilution factor

For: **N015241-003C**

The concentration in ug/L is calculated as follows:

Hg = [A] [DF] [0.001]

Hg = [10.78734] [1] [0.001]

Hg = 0.01079 ug/L

Since result is less than 0.2 ug/L reporting limit.

Hg = ND

Sample Calculation

METHOD: EPA 300.0
TEST NAME: INORGANIC ANIONS BY IC
MATRIX: WATER

FORMULA:

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

Fluoride, mg/L = A * DF

where:

A = mg/L, IC calculated concentration
DF = dilution factor

For **N015241-001B** concentration in mg/L is calculated as follows:

Fluoride, mg/L = 0.263 * 10

= 2.63

Reporting results in two significant figures,

Fluoride, mg/L = 2.6

4/20/2015

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 **N015241-001D**, concentration in mg/L is calculated as follows:

Nitrate/Nitrite-N, mg/L = 0.4882* 5

= 2.441 mg/L

Reporting results in two significant figures:

Nitrate/Nitrite-N, mg/L = 2.4 mg/L

April 28, 2015

Shawn P. Duffy
CH2M HILL
155 Grand Avenue, Suite 1000
Oakland, CA 94612

TEL: (530) 229-3303
FAX: (530) 339-3303

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

Workorder No.: N015337

RE: PG&E Topock, 658274.01.IM.OP.00

Attention: Shawn P. Duffy

Enclosed are the results for sample(s) received on April 14, 2015 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,

Glen Gesmundo
QA Manager

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CLIENT: CH2M HILL
Project: PG&E Topock, 658274.01.IM.OP.00
Lab Order: N015337

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.

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Date: *28-Apr-15*

CLIENT: CH2M HILL
Project: PG&E Topock, 658274.01.IM.OP.00
Lab Order: N015337
Contract No: IM3PLANT-AR

Work Order Sample Summary

Lab Sample ID	Client Sample ID	Matrix	Collection Date	Date Received	Date Reported
N015337-001A	SC-700B-WDR-516	Water	4/14/2015 11:30:00 AM	4/14/2015	4/28/2015
N015337-001B	SC-700B-WDR-516	Water	4/14/2015 11:30:00 AM	4/14/2015	4/28/2015
N015337-001C	SC-700B-WDR-516	Water	4/14/2015 11:30:00 AM	4/14/2015	4/28/2015

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ANALYTICAL RESULTS

Print Date: *28-Apr-15*

CLIENT:	CH2M HILL	**Client Sample ID:**	SC-700B-WDR-516
Lab Order:	N015337	**Collection Date:**	4/14/2015 11:30:00 AM
Project:	PG&E Topock, 658274.01.IM.OP.00	**Matrix:**	WATER
Lab ID:	N015337-001		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
SPECIFIC CONDUCTANCE							
			EPA 120.1				
RunID: **WETCHEM_150415C**	QC Batch: **R99936**			PrepDate			Analyst: **LR**
Specific Conductance	7400	0.10	0.10		umhos/cm	1	4/15/2015 02:50 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		

ASSET Laboratories

Date: *28-Apr-15*

CLIENT: CH2M HILL
Work Order: N015337
Project: PG&E Topock, 658274.01.IM.OP.00

ANALYTICAL QC SUMMARY REPORT

TestCode: 120.1_WPGE

Sample ID **N015337-001A DUP** SampType: **DUP** TestCode: **120.1_WPGE** Units: **umhos/cm** Prep Date: RunNo: **99936**
Client ID: **ZZZZZZ** Batch ID: **R99936** TestNo: **EPA 120.1** Analysis Date: **4/15/2015** SeqNo: **1979759**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Specific Conductance	7410.000	0.10						7440	0.404	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		

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ANALYTICAL RESULTS

Print Date: *28-Apr-15*

CLIENT:	CH2M HILL	**Client Sample ID:**	SC-700B-WDR-516
Lab Order:	N015337	**Collection Date:**	4/14/2015 11:30:00 AM
Project:	PG&E Topock, 658274.01.IM.OP.00	**Matrix:**	WATER
Lab ID:	N015337-001		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
TOTAL FILTERABLE RESIDUE							
			SM2540C				
RunID: **WETCHEM_150415F**	QC Batch: **50221**				PrepDate	**4/15/2015**	Analyst: **LR**
Total Dissolved Solids (Residue, Filterable)	4100	50	50		mg/L	1	4/15/2015 01:32 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

Date: *28-Apr-15*

CLIENT: CH2M HILL
Work Order: N015337
Project: PG&E Topock, 658274.01.IM.OP.00

ANALYTICAL QC SUMMARY REPORT

TestCode: 160.1_2540C_W

Sample ID **MB-50221** SampType: **MBLK** TestCode: **160.1_2540C** Units: **mg/L** Prep Date: **4/15/2015** RunNo: **99952**
Client ID: **PBW** Batch ID: **50221** TestNo: **SM2540C** Analysis Date: **4/15/2015** SeqNo: **1980417**

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 **LCS-50221** SampType: **LCS** TestCode: **160.1_2540C** Units: **mg/L** Prep Date: **4/15/2015** RunNo: **99952**
Client ID: **LCSW** Batch ID: **50221** TestNo: **SM2540C** Analysis Date: **4/15/2015** SeqNo: **1980418**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	970.000	10	1000	0	97.0	80	120				

Sample ID **N015337-001A-DUP** SampType: **DUP** TestCode: **160.1_2540C** Units: **mg/L** Prep Date: **4/15/2015** RunNo: **99952**
Client ID: **ZZZZZZ** Batch ID: **50221** TestNo: **SM2540C** Analysis Date: **4/15/2015** SeqNo: **1980426**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	4015.000	50						4090	1.85	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		

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ANALYTICAL RESULTS

Print Date: *28-Apr-15*

CLIENT:	CH2M HILL	**Client Sample ID:**	SC-700B-WDR-516
Lab Order:	N015337	**Collection Date:**	4/14/2015 11:30:00 AM
Project:	PG&E Topock, 658274.01.IM.OP.00	**Matrix:**	WATER
Lab ID:	N015337-001		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
TOTAL METALS BY ICPMS							
EPA 200.8							
RunID: **ICP7_150417A**	QC Batch: **50217**				PrepDate	**4/15/2015**	Analyst: **CEI**
Manganese	ND	0.026	0.50		µg/L	1	4/17/2015 11:33 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

Date: *28-Apr-15*

CLIENT: CH2M HILL
Work Order: N015337
Project: PG&E Topock, 658274.01.IM.OP.00

ANALYTICAL QC SUMMARY REPORT

TestCode: 200.8_W

Sample ID **MB-50217** SampType: **MBLK** TestCode: **200.8_W** Units: **µg/L** Prep Date: **4/15/2015** RunNo: **99973**
Client ID: **PBW** Batch ID: **50217** TestNo: **EPA 200.8** Analysis Date: **4/17/2015** SeqNo: **1983478**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Manganese	ND	0.50									

Sample ID **LCS-50217** SampType: **LCS** TestCode: **200.8_W** Units: **µg/L** Prep Date: **4/15/2015** RunNo: **99973**
Client ID: **LCSW** Batch ID: **50217** TestNo: **EPA 200.8** Analysis Date: **4/17/2015** SeqNo: **1983479**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Manganese	95.110	0.50	100.0	0	95.1	85	115				

Sample ID **N015337-001C-MS** SampType: **MS** TestCode: **200.8_W** Units: **µg/L** Prep Date: **4/15/2015** RunNo: **99973**
Client ID: **ZZZZZZ** Batch ID: **50217** TestNo: **EPA 200.8** Analysis Date: **4/17/2015** SeqNo: **1983483**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Manganese	83.593	0.50	100.0	0	83.6	75	125				

Sample ID **N015337-001C-MSD** SampType: **MSD** TestCode: **200.8_W** Units: **µg/L** Prep Date: **4/15/2015** RunNo: **99973**
Client ID: **ZZZZZZ** Batch ID: **50217** TestNo: **EPA 200.8** Analysis Date: **4/17/2015** SeqNo: **1983484**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Manganese	82.543	0.50	100.0	0	82.5	75	125	83.59	1.26	20	

Qualifiers:

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

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ANALYTICAL RESULTS

Print Date: *28-Apr-15*

CLIENT:	CH2M HILL	**Client Sample ID:**	SC-700B-WDR-516
Lab Order:	N015337	**Collection Date:**	4/14/2015 11:30:00 AM
Project:	PG&E Topock, 658274.01.IM.OP.00	**Matrix:**	WATER
Lab ID:	N015337-001		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
HEXAVALENT CHROMIUM BY IC							
EPA 218.6							
RunID: **IC7_150415A** QC Batch: **R99985** PrepDate							Analyst: **RB**
Hexavalent Chromium	ND	0.015	0.20		µg/L	1	4/15/2015 02:36 PM
TOTAL METALS BY ICPMS							
EPA 200.8							
RunID: **ICP7_150417A** QC Batch: **50217** PrepDate **4/15/2015**							Analyst: **CEI**
Chromium	ND	0.030	1.0		µg/L	1	4/17/2015 11:33 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

Date: *28-Apr-15*

CLIENT: CH2M HILL
Work Order: N015337
Project: PG&E Topock, 658274.01.IM.OP.00

ANALYTICAL QC SUMMARY REPORT

TestCode: 200.8_W_CRPGE

Sample ID **MB-50217** SampType: **MBLK** TestCode: **200.8_W_CR** Units: **µg/L** Prep Date: **4/15/2015** RunNo: **99973**
Client ID: **PBW** Batch ID: **50217** TestNo: **EPA 200.8** Analysis Date: **4/17/2015** SeqNo: **1983341**

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

Sample ID **LCS-50217** SampType: **LCS** TestCode: **200.8_W_CR** Units: **µg/L** Prep Date: **4/15/2015** RunNo: **99973**
Client ID: **LCSW** Batch ID: **50217** TestNo: **EPA 200.8** Analysis Date: **4/17/2015** SeqNo: **1983342**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium	9.636	1.0	10.00	0	96.4	85	115				

Sample ID **N015337-001C-MS** SampType: **MS** TestCode: **200.8_W_CR** Units: **µg/L** Prep Date: **4/15/2015** RunNo: **99973**
Client ID: **ZZZZZZ** Batch ID: **50217** TestNo: **EPA 200.8** Analysis Date: **4/17/2015** SeqNo: **1983346**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium	10.974	1.0	10.00	0	110	75	125				

Sample ID **N015337-001C-MSD** SampType: **MSD** TestCode: **200.8_W_CR** Units: **µg/L** Prep Date: **4/15/2015** RunNo: **99973**
Client ID: **ZZZZZZ** Batch ID: **50217** TestNo: **EPA 200.8** Analysis Date: **4/17/2015** SeqNo: **1983347**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium	10.822	1.0	10.00	0	108	75	125	10.97	1.39	20	

Qualifiers:

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

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CLIENT: CH2M HILL
Work Order: N015337
Project: PG&E Topock, 658274.01.IM.OP.00

ANALYTICAL QC SUMMARY REPORT

TestCode: 218.6_WU_PGE

Sample ID	MB-R99985	SampType:	MBLK	TestCode:	218.6_WU_P	Units:	µg/L	Prep Date:		RunNo:	99985
Client ID:	PBW	Batch ID:	R99985	TestNo:	EPA 218.6			Analysis Date:	4/15/2015	SeqNo:	1982081

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-R99985	SampType:	LCS	TestCode:	218.6_WU_P	Units:	µg/L	Prep Date:		RunNo:	99985
Client ID:	LCSW	Batch ID:	R99985	TestNo:	EPA 218.6			Analysis Date:	4/15/2015	SeqNo:	1982082

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	4.949	0.20	5.000	0	99.0	90	110				

Sample ID	N015324-007A-DUP	SampType:	DUP	TestCode:	218.6_WU_P	Units:	µg/L	Prep Date:		RunNo:	99985
Client ID:	ZZZZZZ	Batch ID:	R99985	TestNo:	EPA 218.6			Analysis Date:	4/15/2015	SeqNo:	1982084

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	1.233	0.20						1.208	2.03	20	

Sample ID	N015324-007A-MS	SampType:	MS	TestCode:	218.6_WU_P	Units:	µg/L	Prep Date:		RunNo:	99985
Client ID:	ZZZZZZ	Batch ID:	R99985	TestNo:	EPA 218.6			Analysis Date:	4/15/2015	SeqNo:	1982085

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	6.232	0.20	5.000	1.208	100	90	110				

Sample ID	N015324-007A-MSD	SampType:	MSD	TestCode:	218.6_WU_P	Units:	µg/L	Prep Date:		RunNo:	99985
Client ID:	ZZZZZZ	Batch ID:	R99985	TestNo:	EPA 218.6			Analysis Date:	4/15/2015	SeqNo:	1982086

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	6.286	0.20	5.000	1.208	102	90	110	6.232	0.866	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		

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"Serving Clients with Passion and Professionalism"

CLIENT: CH2M HILL
Work Order: N015337
Project: PG&E Topock, 658274.01.IM.OP.00

ANALYTICAL QC SUMMARY REPORT

TestCode: 218.6_WU_PGE

Sample ID	**N015337-001B-MS**	SampType:	**MS**	TestCode:	**218.6_WU_P**	Units:	**µg/L**	Prep Date:		RunNo:	**99985**	
Client ID:	**ZZZZZZ**	Batch ID:	**R99985**	TestNo:	**EPA 218.6**			Analysis Date:	**4/15/2015**	SeqNo:	**1982102**	

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	1.043	0.20	1.000	0.09760	94.5	90	110				

Qualifiers:

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

ASSET Laboratories

ANALYTICAL RESULTS

Print Date: *28-Apr-15*

CLIENT:	CH2M HILL	**Client Sample ID:**	SC-700B-WDR-516
Lab Order:	N015337	**Collection Date:**	4/14/2015 11:30:00 AM
Project:	PG&E Topock, 658274.01.IM.OP.00	**Matrix:**	WATER
Lab ID:	N015337-001		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
TURBIDITY							
			SM 2130B				
RunID: **WETCHEM_150415D**	QC Batch: **R99938**			PrepDate			Analyst: **LR**
Turbidity	0.13	0.10	0.10		NTU	1	4/15/2015 05:30 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

Date: *28-Apr-15*

CLIENT: CH2M HILL
Work Order: N015337
Project: PG&E Topock, 658274.01.IM.OP.00

ANALYTICAL QC SUMMARY REPORT

TestCode: 2130_W

Sample ID	**MB-R99938**	SampType:	**MBLK**	TestCode:	**2130_W**	Units:	**NTU**	Prep Date:		RunNo:	**99938**
Client ID:	**PBW**	Batch ID:	**R99938**	TestNo:	**SM 2130B**			Analysis Date:	**4/15/2015**	SeqNo:	**1979787**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Turbidity	ND	0.10									

Sample ID	**N015337-001A DUP**	SampType:	**DUP**	TestCode:	**2130_W**	Units:	**NTU**	Prep Date:		RunNo:	**99938**
Client ID:	**ZZZZZZ**	Batch ID:	**R99938**	TestNo:	**SM 2130B**			Analysis Date:	**4/15/2015**	SeqNo:	**1979789**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Turbidity	0.120	0.10						0.1300	8.00	30	

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis 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		

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WORK ORDER: N015337

ANALYST LIST

NAME	TEST METHOD
Ryan Balilu	EPA 218.6
Claire Ignacio	EPA 200.8
Lilia Ramit	EPA 120.1, SM 2540C, SM 2130B

CH2MHILL

CHAIN OF CUSTODY RECORD

4/13/2015 1:33:56 PM

Project Name PG&E Topock
Location PG&E Topock
Project Number 658274.01.IM.OP.00
Project Manager Scott O'Donnell
Sample Manager Shawn Duffy

Task Order
Project IM3PLANT-ARAR-WDR-516
Turnaround Time 10 Days
Shipping Date: 4/14/2015
COC Number: 516

			Container:	1 Liter Poly	250 ml Poly	1 Liter Poly	500 ml Poly	1 Liter Poly			
			Preservatives:	4°C	4°C	4°C	4°C	4°C			
			Filtered:	NA	NA	NA	NA	NA			
			Holding Time:	7	1	7	180	7			
	DATE	TIME	Matrix	CONDUCTIVITY (E120.1)	E218.6 Lab Filtered	TDS (SM2540C)	Total Metals(E200.8) Cr & Mn	Turbidity (SM2130)		Number of Containers	COMMENTS
SC-700B-WDR-516	4/14/2015		Water	X	X	X	X	X	N015337-1	3	
									TOTAL NUMBER OF CONTAINERS	3	

	Signatures	Date/Time
Approved by		
Sampled by		4/14/15 13:46
Relinquished by		
Received by		4/14/15 B44
Relinquished by		4/14/15 1553
Received by		

Shipping Details

Method of Shipment: FedEx
On Ice: (yes) / no 2-1°C
Airbill No: 1R H2
Lab Name: ASSET Laboratories
Lab Phone: (702) 307-2659

ATTN:

Sample Custody
and
Glen Gesmundo

Special Instructions:

Report Copy to
Shawn Duffy
530-229-3303

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:	4/14/2015	Workorder:	N015337
Rep sample Temp (Deg C):	2.1	IR Gun ID:	2
Temp Blank:	☑ Yes ☐ No		
Carrier name:	ATL		
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 total metals are lab preserved.

Checklist Completed By: HG 4/15/2015

Reviewed By: 04/17/15

SAMPLE CALCULATION

METHOD: SM 2540C
TEST NAME: Total Filterable Residue
MATRIX: Water

FORMULA:

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

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

Where:

A = weight in g of dish + residue after drying
B = weight of dish in g
C = volume of sample used in mL

For N015337-001A, TDS concentration in mg/L is calculated as follows:

$$\text{TDS, mg/L} = \frac{(64.0538-63.9720)*1000000}{20}$$

$$= 4{,}090 \text{ mg/L}$$

Reporting result in two significant figures,

TDS = 4100 mg/L

Julia Ramit 4/17/2015

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

	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
Date Finished:4/16/15								
MB-50221	100	61.3465	61.347	5	1	5		
LCS-50221	100	97.2615	97.3585	970	1	970		
N015325-001D	100	64.2528	64.3369	841	1	841	1260	0.667
N015325-002D	60	55.728	55.8288	1008	1.66666667	1680	2410	0.697
N015325-003D	50	63.7818	63.8819	1001	2	2002	2780	0.720
N015325-004D	60	61.2506	61.3473	967	1.66666667	1611.66667	2300	0.701
N015327-001C	100	54.9516	55.0187	671	1	671	1101	0.609
N015327-002C	100	63.5182	63.5712	530	1	530	839	0.632
N015337-001A	20	63.972	64.0538	818	5	4090	7440	0.550
N015337-001A DUP	20	53.8221	53.9024	803	5	4015	7440	0.540

Silia Ramit 4/17/2015

Sample Calculation

METHOD: EPA 200.8
TEST NAME: Heavy Metals by ICP-MS
MATRIX: Water

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 Vol. of Digestate in mL / Vol. of Sample used in mL

For Sample **N015337-001C,** the concentration in ug/L is calculated as follows:

Chromium, ug/L = 0.0000 * 1 * (25/25)

= 0.0000

Since the reporting limit is 1 ug/L therefore,

Chromium, ug/L = ND

ASSET Laboratories

ICP-Metals in Water

Dilution Test Summary

Work Order No.: N015337
Test Method: EPA 200.8
Analysis Date: 4/17/2015

Matrix: Water
Batch No.: 50217

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

Comments:

Analyzed By: Mary Claire Ignacio

Dilution test is not applicable to Cr and Mn. The calculated concentrations are < 25X RL's.

Sample ID	Analyte	Units	Calc Val	OQual	SAMPRefVal	%DIFF	%DIFFlimit
N015337-001C-DT 5X	Chromium	µg/L	0	NA	0		10
N015337-001C-DT 5X	Manganese	µg/L	0	NA	0		10

Note: NA - Not applicable

ASSET Laboratories

Date: *20-Apr-15*

CLIENT: CH2M HILL
Work Order: N015337
Project: PG&E Topock, 658274.01.IM.OP.00

ANALYTICAL QC SUMMARY REPORT

TestCode: 200.8_W

Sample ID **N015337-001C-PS** SampType: **PS** TestCode: **200.8_W** Units: **µg/L** Prep Date: RunNo: **99973**
Client ID: **ZZZZZZ** Batch ID: **50217** TestNo: **EPA 200.8** Analysis Date: **4/17/2015** SeqNo: **1983482**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Manganese	84.340	0.50	100.0	0	84.3	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		

CLIENT: CH2M HILL
Work Order: N015337
Project: PG&E Topock, 658274.01.IM.OP.00

ANALYTICAL QC SUMMARY REPORT

TestCode: 200.8_W_CRPGE

Sample ID	**N015337-001C-PS**	SampType:	**PS**	TestCode:	**200.8_W_CR**	Units:	**µg/L**	Prep Date:				RunNo:	**99973**
Client ID:	**ZZZZZZ**	Batch ID:	**50217**	TestNo:	**EPA 200.8**			Analysis Date:	**4/17/2015**			SeqNo:	**1983345**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium	10.908	1.0	10.00	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		

Sample Calculation

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

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 **N015337-001B** concentration in µg/L is calculated as follows:

Cr^{+6}, µg/L = 0.0976 * 1

= 0.0976

Since PQL is 0.20 µg/L,

Cr^{+6}, µg/L = ND

May 05, 2015

Shawn P. Duffy
CH2M HILL
155 Grand Avenue, Suite 1000
Oakland, CA 94612

TEL: (530) 229-3303
FAX: (530) 339-3303

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

Workorder No.: N015413

RE: PG&E Topock, 658274.01.IM.OP.00

Attention: Shawn P. Duffy

Enclosed are the results for sample(s) received on April 21, 2015 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,

Glen Gesmundo
QA Manager

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: CH2M HILL
Project: PG&E Topock, 658274.01.IM.OP.00
Lab Order: N015413

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.

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ASSET Laboratories

Date: *05-May-15*

CLIENT: CH2M HILL
Project: PG&E Topock, 658274.01.IM.OP.00
Lab Order: N015413
Contract No: IM3PLANT-AR

Work Order Sample Summary

Lab Sample ID	Client Sample ID	Matrix	Collection Date	Date Received	Date Reported
N015413-001A	SC-700B-WDR-517	Water	4/21/2015 1:08:00 PM	4/21/2015	5/5/2015
N015413-001B	SC-700B-WDR-517	Water	4/21/2015 1:08:00 PM	4/21/2015	5/5/2015
N015413-001C	SC-700B-WDR-517	Water	4/21/2015 1:08:00 PM	4/21/2015	5/5/2015

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ANALYTICAL RESULTS

Print Date: *05-May-15*

CLIENT:	CH2M HILL	**Client Sample ID:**	SC-700B-WDR-517
Lab Order:	N015413	**Collection Date:**	4/21/2015 1:08:00 PM
Project:	PG&E Topock, 658274.01.IM.OP.00	**Matrix:**	WATER
Lab ID:	N015413-001		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
SPECIFIC CONDUCTANCE							
			EPA 120.1				
RunID: **WETCHEM_150422B**	QC Batch: **R100045**			PrepDate			Analyst: **LR**
Specific Conductance	6800	0.10	0.10		umhos/cm	1	4/22/2015 10:25 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		

ASSET Laboratories

Date: *05-May-15*

CLIENT: CH2M HILL
Work Order: N015413
Project: PG&E Topock, 658274.01.IM.OP.00

ANALYTICAL QC SUMMARY REPORT

TestCode: 120.1_WPGE

Sample ID **N015413-001A DUP** SampType: **DUP** TestCode: **120.1_WPGE** Units: **umhos/cm** Prep Date: RunNo: **100045**
Client ID: **ZZZZZZ** Batch ID: **R100045** TestNo: **EPA 120.1** Analysis Date: **4/22/2015** SeqNo: **1985189**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Specific Conductance	6780.000	0.10						6770	0.148	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		

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ANALYTICAL RESULTS

Print Date: *05-May-15*

CLIENT:	CH2M HILL	**Client Sample ID:**	SC-700B-WDR-517
Lab Order:	N015413	**Collection Date:**	4/21/2015 1:08:00 PM
Project:	PG&E Topock, 658274.01.IM.OP.00	**Matrix:**	WATER
Lab ID:	N015413-001		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
TOTAL FILTERABLE RESIDUE							
			SM2540C				
RunID: **WETCHEM_150422D**	QC Batch: **50275**				PrepDate	**4/22/2015**	Analyst: **LR**
Total Dissolved Solids (Residue, Filterable)	4100	50	50		mg/L	1	4/22/2015 08:30 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

Date: *05-May-15*

CLIENT: CH2M HILL
Work Order: N015413
Project: PG&E Topock, 658274.01.IM.OP.00

ANALYTICAL QC SUMMARY REPORT

TestCode: 160.1_2540C_W

Sample ID **MB-50275** SampType: **MBLK** TestCode: **160.1_2540C** Units: **mg/L** Prep Date: **4/22/2015** RunNo: **100047**
Client ID: **PBW** Batch ID: **50275** TestNo: **SM2540C** Analysis Date: **4/22/2015** SeqNo: **1985193**

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 **LCS-50275** SampType: **LCS** TestCode: **160.1_2540C** Units: **mg/L** Prep Date: **4/22/2015** RunNo: **100047**
Client ID: **LCSW** Batch ID: **50275** TestNo: **SM2540C** Analysis Date: **4/22/2015** SeqNo: **1985194**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	994.000	10	1000	0	99.4	80	120				

Sample ID **N015413-001A-DUP** SampType: **DUP** TestCode: **160.1_2540C** Units: **mg/L** Prep Date: **4/22/2015** RunNo: **100047**
Client ID: **ZZZZZZ** Batch ID: **50275** TestNo: **SM2540C** Analysis Date: **4/22/2015** SeqNo: **1985196**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	4185.000	50						4070	2.79	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		

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ANALYTICAL RESULTS

Print Date: *05-May-15*

CLIENT:	CH2M HILL	**Client Sample ID:**	SC-700B-WDR-517
Lab Order:	N015413	**Collection Date:**	4/21/2015 1:08:00 PM
Project:	PG&E Topock, 658274.01.IM.OP.00	**Matrix:**	WATER
Lab ID:	N015413-001		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
TOTAL METALS BY ICPMS							
EPA 200.8							
RunID: **ICP7_150422A**	QC Batch: **50273**				PrepDate	**4/22/2015**	Analyst: **CEI**
Manganese	ND	0.026	0.50		µg/L	1	4/22/2015 03:11 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

Date: *05-May-15*

CLIENT: CH2M HILL
Work Order: N015413
Project: PG&E Topock, 658274.01.IM.OP.00

ANALYTICAL QC SUMMARY REPORT

TestCode: 200.8_W

Sample ID **MB-50273** SampType: **MBLK** TestCode: **200.8_W** Units: **µg/L** Prep Date: **4/22/2015** RunNo: **100058**
Client ID: **PBW** Batch ID: **50273** TestNo: **EPA 200.8** Analysis Date: **4/22/2015** SeqNo: **1986150**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Manganese	ND	0.50									

Sample ID **LCS-50273** SampType: **LCS** TestCode: **200.8_W** Units: **µg/L** Prep Date: **4/22/2015** RunNo: **100058**
Client ID: **LCSW** Batch ID: **50273** TestNo: **EPA 200.8** Analysis Date: **4/22/2015** SeqNo: **1986151**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Manganese	99.288	0.50	100.0	0	99.3	85	115				

Sample ID **N015414-001B-MS** SampType: **MS** TestCode: **200.8_W** Units: **µg/L** Prep Date: **4/22/2015** RunNo: **100058**
Client ID: **ZZZZZZ** Batch ID: **50273** TestNo: **EPA 200.8** Analysis Date: **4/22/2015** SeqNo: **1986166**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Manganese	509.371	2.5	100.0	428.6	80.8	75	125				

Sample ID **N015414-001B-MSD** SampType: **MSD** TestCode: **200.8_W** Units: **µg/L** Prep Date: **4/22/2015** RunNo: **100058**
Client ID: **ZZZZZZ** Batch ID: **50273** TestNo: **EPA 200.8** Analysis Date: **4/22/2015** SeqNo: **1986167**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Manganese	513.736	2.5	100.0	428.6	85.2	75	125	509.4	0.853	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		

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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: *05-May-15*

CLIENT:	CH2M HILL	**Client Sample ID:**	SC-700B-WDR-517
Lab Order:	N015413	**Collection Date:**	4/21/2015 1:08:00 PM
Project:	PG&E Topock, 658274.01.IM.OP.00	**Matrix:**	WATER
Lab ID:	N015413-001		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
HEXAVALENT CHROMIUM BY IC							
EPA 218.6							
RunID: **IC6_150422A** QC Batch: **R100056**				PrepDate			Analyst: **RB**
Hexavalent Chromium	ND	0.015	0.20		µg/L	1	4/22/2015 01:34 PM
TOTAL METALS BY ICPMS							
EPA 200.8							
RunID: **ICP7_150422A** QC Batch: **50273**				PrepDate	**4/22/2015**		Analyst: **CEI**
Chromium	ND	0.030	1.0		µg/L	1	4/22/2015 03:11 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

Date: *05-May-15*

CLIENT: CH2M HILL
Work Order: N015413
Project: PG&E Topock, 658274.01.IM.OP.00

ANALYTICAL QC SUMMARY REPORT

TestCode: 200.8_W_CRPGE

Sample ID **MB-50273** SampType: **MBLK** TestCode: **200.8_W_CR** Units: **µg/L** Prep Date: **4/22/2015** RunNo: **100058**
Client ID: **PBW** Batch ID: **50273** TestNo: **EPA 200.8** Analysis Date: **4/22/2015** SeqNo: **1986094**

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

Sample ID **LCS-50273** SampType: **LCS** TestCode: **200.8_W_CR** Units: **µg/L** Prep Date: **4/22/2015** RunNo: **100058**
Client ID: **LCSW** Batch ID: **50273** TestNo: **EPA 200.8** Analysis Date: **4/22/2015** SeqNo: **1986095**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium	10.032	1.0	10.00	0	100	85	115				

Sample ID **N015414-001B-MS** SampType: **MS** TestCode: **200.8_W_CR** Units: **µg/L** Prep Date: **4/22/2015** RunNo: **100058**
Client ID: **ZZZZZZ** Batch ID: **50273** TestNo: **EPA 200.8** Analysis Date: **4/22/2015** SeqNo: **1986102**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium	21.885	1.0	10.00	12.47	94.2	75	125				

Sample ID **N015414-001B-MSD** SampType: **MSD** TestCode: **200.8_W_CR** Units: **µg/L** Prep Date: **4/22/2015** RunNo: **100058**
Client ID: **ZZZZZZ** Batch ID: **50273** TestNo: **EPA 200.8** Analysis Date: **4/22/2015** SeqNo: **1986103**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium	21.888	1.0	10.00	12.47	94.2	75	125	21.88	0.0153	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		

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CLIENT: CH2M HILL
Work Order: N015413
Project: PG&E Topock, 658274.01.IM.OP.00

ANALYTICAL QC SUMMARY REPORT

TestCode: 218.6_WU_PGE

Sample ID **MB-R100056** SampType: **MBLK** TestCode: **218.6_WU_P** Units: **µg/L** Prep Date: RunNo: **100056**
Client ID: **PBW** Batch ID: **R100056** TestNo: **EPA 218.6** Analysis Date: **4/22/2015** SeqNo: **1985905**

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-R100056** SampType: **LCS** TestCode: **218.6_WU_P** Units: **µg/L** Prep Date: RunNo: **100056**
Client ID: **LCSW** Batch ID: **R100056** TestNo: **EPA 218.6** Analysis Date: **4/22/2015** SeqNo: **1985907**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	4.896	0.20	5.000	0	97.9	90	110				

Sample ID **N015414-002A-DUP** SampType: **DUP** TestCode: **218.6_WU_P** Units: **µg/L** Prep Date: RunNo: **100056**
Client ID: **ZZZZZZ** Batch ID: **R100056** TestNo: **EPA 218.6** Analysis Date: **4/22/2015** SeqNo: **1985909**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	2.268	0.20						2.258	0.477	20	

Sample ID **N015414-002A-MS** SampType: **MS** TestCode: **218.6_WU_P** Units: **µg/L** Prep Date: RunNo: **100056**
Client ID: **ZZZZZZ** Batch ID: **R100056** TestNo: **EPA 218.6** Analysis Date: **4/22/2015** SeqNo: **1985910**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	7.226	0.20	5.000	2.258	99.4	90	110				

Sample ID **N015414-002A-MSD** SampType: **MSD** TestCode: **218.6_WU_P** Units: **µg/L** Prep Date: RunNo: **100056**
Client ID: **ZZZZZZ** Batch ID: **R100056** TestNo: **EPA 218.6** Analysis Date: **4/22/2015** SeqNo: **1985911**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	7.517	0.20	5.000	2.258	105	90	110	7.226	3.95	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: CH2M HILL
Work Order: N015413
Project: PG&E Topock, 658274.01.IM.OP.00

ANALYTICAL QC SUMMARY REPORT

TestCode: 218.6_WU_PGE

Sample ID	N015413-001B-MS	SampType:	MS	TestCode:	218.6_WU_P	Units:	µg/L	Prep Date:		RunNo:	100056
Client ID:	ZZZZZZ	Batch ID:	R100056	TestNo:	EPA 218.6			Analysis Date:	4/22/2015	SeqNo:	1985916

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	1.185	0.20	1.000	0.1201	107	90	110				

Sample ID	N015423-001A-MS	SampType:	MS	TestCode:	218.6_WU_P	Units:	µg/L	Prep Date:		RunNo:	100056
Client ID:	ZZZZZZ	Batch ID:	R100056	TestNo:	EPA 218.6			Analysis Date:	4/22/2015	SeqNo:	1985920

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	5.179	0.20	5.000	0.05250	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		

ASSET Laboratories

ANALYTICAL RESULTS

Print Date: *05-May-15*

CLIENT:	CH2M HILL	**Client Sample ID:**	SC-700B-WDR-517
Lab Order:	N015413	**Collection Date:**	4/21/2015 1:08:00 PM
Project:	PG&E Topock, 658274.01.IM.OP.00	**Matrix:**	WATER
Lab ID:	N015413-001		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
TURBIDITY							
			SM 2130B				
RunID: **WETCHEM_150422C**	QC Batch: **R100046**			PrepDate			Analyst: **LR**
Turbidity	0.18	0.10	0.10		NTU	1	4/22/2015 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		

ASSET Laboratories

Date: *05-May-15*

CLIENT: CH2M HILL
Work Order: N015413
Project: PG&E Topock, 658274.01.IM.OP.00

ANALYTICAL QC SUMMARY REPORT

TestCode: 2130_W

Sample ID	**MB-R100046**	SampType:	**MBLK**	TestCode:	**2130_W**	Units:	**NTU**	Prep Date:		RunNo:	**100046**
Client ID:	**PBW**	Batch ID:	**R100046**	TestNo:	**SM 2130B**			Analysis Date:	**4/22/2015**	SeqNo:	**1985190**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Turbidity	ND	0.10									

Sample ID	**N015413-001A DUP**	SampType:	**DUP**	TestCode:	**2130_W**	Units:	**NTU**	Prep Date:		RunNo:	**100046**
Client ID:	**ZZZZZZ**	Batch ID:	**R100046**	TestNo:	**SM 2130B**			Analysis Date:	**4/22/2015**	SeqNo:	**1985192**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Turbidity	0.170	0.10						0.1800	5.71	30	

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis 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		

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WORK ORDER: N015413

ANALYST LIST

NAME	TEST METHOD
Claire Ignacio	EPA 200.8
Ryan Balilu	EPA 218.6
Lilia Ramit	EPA 120.1, SM 2540C, SM 2130B

CH2MHILL

CHAIN OF CUSTODY RECORD

4/20/2015 6:31:02 PM

Project Name PG&E Topock
Location PG&E Topock
Project Number 658274.01.IM.OP.00
Project Manager Scott O'Donnell
Sample Manager Shawn Duffy

Task Order
Project IM3PLANT-ARAR-WDR-517
Turnaround Time 10 Days
Shipping Date: 4/21/2015
COC Number: 517

			Container:	1 Liter Poly	250 ml Poly	1 Liter Poly	500 ml Poly	1 Liter Poly		Number of Containers	COMMENTS
			Preservatives:	4°C	4°C	4°C	4°C	4°C			
			Filtered:	NA	NA	NA	NA	NA			
			Holding Time:	7	1	7	180	7			
	DATE	**TIME**	**Matrix**	CONDUCTIVITY (E120.1)	E218.6 Lab Filtered	TDS (SM2540C)	Total Metals(E200.8) Cr & Mn	Turbidity (SM2130)			
SC-700B-WDR-517	4/21/2015	1308	Water	X	X	X	X	X	N015413-1	3	
									TOTAL NUMBER OF CONTAINERS	3	

	Signatures	Date/Time
Approved by		
Sampled by		4-21-15 1308
Relinquished by		4-21-15 1405
Received by		4/21/15 1405
Relinquished by		4/21/15 1648
Received by		4/21/15 1648

Shipping Details

Method of Shipment: FedEx
On Ice: yes / no 1.1°C
Airbill No: 1842
Lab Name: ASSET Laboratories
Lab Phone: (702) 307-2659

ATTN:

Sample Custody
and
Glen Gesmundo

Special Instructions:

Report Copy to
Shawn Duffy
530-229-3303

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:	4/21/2015	Workorder:	N015413
Rep sample Temp (Deg C):	1.1	IR Gun ID:	2
Temp Blank:	☑ Yes ☐ No		
Carrier name:	ATL		
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 Cr6 was lab filtered.
Sample for total metals was lab preserved.

Checklist Completed By: HG 4/24/2015

Reviewed By: 04/27/15

SAMPLE CALCULATION

METHOD: SM 2540C
TEST NAME: Total Filterable Residue
MATRIX: Water

FORMULA:

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

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

Where:

A = weight in g of dish + residue after drying
B = weight of dish in g
C = volume of sample used in mL

For **N015413-001A,** TDS concentration in mg/L is calculated as follows:

$$\text{TDS, mg/L} = \frac{(54.0073-53.9259)*1000000}{20}$$
$$= 4070 \text{ mg/L}$$

Reporting result in two significant figures,

TDS = 4100 mg/L

Julia Ramit 4/23/2015

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

	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
Date Finished:4/22/15								
MB-50275	100	76.8445	76.8448	3	1	3		
LCS-50275	100	77.1003	77.1997	994	1	994		
N015413-001A	20	53.9259	54.0073	814	5	4070	6770	0.601
N015413-001A DUP	20	53.8153	53.899	837	5	4185	6770	0.618
N015414-001C	100	55.5414	55.6312	898	1	898	1095	0.820
N015414-002C	100	54.9555	55.0138	583	1	583	924	0.631

Julia Ramit 4/23/2015

Sample Calculation

METHOD: EPA 200.8
TEST NAME: Heavy Metals by ICP-MS
MATRIX: Water

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 Vol. of Digestate in mL / Vol. of Sample used in mL

For Sample **N015413-001C,** the concentration in ug/L is calculated as follows:

Chromium, ug/L = 0.0000 * 1 * (25/25)

= 0.0000

Since the reporting limit is 1 ug/L therefore,

Chromium, ug/L = ND

ASSET Laboratories

ICP-Metals in Water

Dilution Test Summary

Work Order No.: N015413
Test Method: EPA 200.8
Analysis Date: 4/22/2015

Matrix: Water
Batch No.: 50273

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

Comments:

Analyzed By: Mary Claire Ignacio

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

Sample ID	Analyte	Units	Calc Val	OQual	SAMPRefVal	%DIFF	%DIFFlimit
N015414-001B-DT 5X	Chromium	µg/L	13.98306761	NA	12.46652722	12.16%	10
N015414-001B-DT 25X	Manganese	µg/L	459.2708402	PASS	428.5772518	7.16%	10

Note: NA - Not applicable

ASSET Laboratories

Date: *23-Apr-15*

CLIENT: CH2M HILL
Work Order: N015413
Project: PG&E Topock, 658274.01.IM.OP.00

ANALYTICAL QC SUMMARY REPORT

TestCode: 200.8_W

Sample ID **N015414-001B-PS** SampType: **PS** TestCode: **200.8_W** Units: **µg/L** Prep Date: RunNo: **100058**
Client ID: **ZZZZZZ** Batch ID: **50273** TestNo: **EPA 200.8** Analysis Date: **4/22/2015** SeqNo: **1986163**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Manganese	504.181	2.5	100.0	428.6	75.6	80	120				S

DT of Mn @25x is within criteria.

Nancy 5/5/2015

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis 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: CH2M HILL
Work Order: N015413
Project: PG&E Topock, 658274.01.IM.OP.00

ANALYTICAL QC SUMMARY REPORT

TestCode: 200.8_W_CRPGE

Sample ID	**N015414-001B-PS**	SampType:	**PS**	TestCode:	**200.8_W_CR**	Units:	**µg/L**	Prep Date:				RunNo:	**100058**
Client ID:	**ZZZZZZ**	Batch ID:	**50273**	TestNo:	**EPA 200.8**			Analysis Date:	**4/22/2015**			SeqNo:	**1986101**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium	21.425	1.0	10.00	12.47	89.6	80	120				

Qualifiers:

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

Sample Calculation

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

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 **N015413-001B,**concentration in µg/L is calculated as follows:

Cr^{+6}, µg/L = 0.1201 * 1

= 0.1201

Since PQL is 0.20 µg/L,

Cr^{+6}, µg/L = ND

May 12, 2015

Shawn P. Duffy
CH2M HILL
155 Grand Avenue, Suite 1000
Oakland, CA 94612

TEL: (530) 229-3303
FAX: (530) 339-3303

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

Workorder No.: N015472

RE: PG&E Topock, 658274.01.IM.OP.00

Attention: Shawn P. Duffy

Enclosed are the results for sample(s) received on April 28, 2015 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,

Glen Gesmundo
QA Manager

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CLIENT: CH2M HILL
Project: PG&E Topock, 658274.01.IM.OP.00
Lab Order: N015472

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 200.8:

Matrix Spike (MS) and Matrix Spike Duplicate (MSD) on QC samples N015472-001C-MS and N015472-001C-MSD is outside recovery criteria for Manganese possibly due to matrix interference. The associated Laboratory Control Sample (LCS) recovery was acceptable.

ASSET Laboratories

Date: *12-May-15*

CLIENT: CH2M HILL
Project: PG&E Topock, 658274.01.IM.OP.00
Lab Order: N015472
Contract No: IM3PLANT-AR

Work Order Sample Summary

Lab Sample ID	Client Sample ID	Matrix	Collection Date	Date Received	Date Reported
N015472-001A	SC-700B-WDR-518	Water	4/28/2015 9:55:00 AM	4/28/2015	5/12/2015
N015472-001B	SC-700B-WDR-518	Water	4/28/2015 9:55:00 AM	4/28/2015	5/12/2015
N015472-001C	SC-700B-WDR-518	Water	4/28/2015 9:55:00 AM	4/28/2015	5/12/2015

ASSET Laboratories

ANALYTICAL RESULTS

Print Date: *12-May-15*

CLIENT:	CH2M HILL	**Client Sample ID:**	SC-700B-WDR-518
Lab Order:	N015472	**Collection Date:**	4/28/2015 9:55:00 AM
Project:	PG&E Topock, 658274.01.IM.OP.00	**Matrix:**	WATER
Lab ID:	N015472-001		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
SPECIFIC CONDUCTANCE							
			EPA 120.1				
RunID: **WETCHEM_150429C**	QC Batch: **R100122**			PrepDate			Analyst: **LR**
Specific Conductance	7200	0.10	0.10		umhos/cm	1	4/29/2015 04:00 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

Date: *12-May-15*

CLIENT: CH2M HILL
Work Order: N015472
Project: PG&E Topock, 658274.01.IM.OP.00

ANALYTICAL QC SUMMARY REPORT

TestCode: 120.1_WPGE

Sample ID	N015472-001A DUP	SampType:	DUP	TestCode:	120.1_WPGE	Units:	umhos/cm	Prep Date:		RunNo:	100122
Client ID:	ZZZZZZ	Batch ID:	R100122	TestNo:	EPA 120.1			Analysis Date:	4/29/2015	SeqNo:	1988841

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Specific Conductance	7140.000	0.10						7150	0.140	10	

Qualifiers:

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- ND Not Detected at the Reporting Limit
- DO Surrogate Diluted Out
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- Calculations are based on raw values
- H Holding times for preparation or analysis exceeded
- S Spike/Surrogate outside of limits due to matrix interference

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ANALYTICAL RESULTS

Print Date: *12-May-15*

CLIENT:	CH2M HILL	**Client Sample ID:**	SC-700B-WDR-518
Lab Order:	N015472	**Collection Date:**	4/28/2015 9:55:00 AM
Project:	PG&E Topock, 658274.01.IM.OP.00	**Matrix:**	WATER
Lab ID:	N015472-001		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
TOTAL FILTERABLE RESIDUE							
			SM2540C				
RunID: **WETCHEM_150429E**	QC Batch: **50305**			PrepDate		**4/29/2015**	Analyst: **LR**
Total Dissolved Solids (Residue, Filterable)	4100	50	50		mg/L	1	4/29/2015 01:20 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		

ASSET Laboratories

Date: *12-May-15*

CLIENT: CH2M HILL
Work Order: N015472
Project: PG&E Topock, 658274.01.IM.OP.00

ANALYTICAL QC SUMMARY REPORT

TestCode: 160.1_2540C_W

Sample ID	MB-50305	SampType:	MBLK	TestCode:	160.1_2540C	Units:	mg/L	Prep Date:	4/29/2015	RunNo:	100136
Client ID:	PBW	Batch ID:	50305	TestNo:	SM2540C			Analysis Date:	4/29/2015	SeqNo:	1989332

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	LCS-50305	SampType:	LCS	TestCode:	160.1_2540C	Units:	mg/L	Prep Date:	4/29/2015	RunNo:	100136
Client ID:	LCSW	Batch ID:	50305	TestNo:	SM2540C			Analysis Date:	4/29/2015	SeqNo:	1989333

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	950.000	10	1000	0	95.0	80	120				

Sample ID	N015472-001ADUP	SampType:	DUP	TestCode:	160.1_2540C	Units:	mg/L	Prep Date:	4/29/2015	RunNo:	100136
Client ID:	ZZZZZZ	Batch ID:	50305	TestNo:	SM2540C			Analysis Date:	4/29/2015	SeqNo:	1989335

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	4060.000	50						4145	2.07	5	

Qualifiers:

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- 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: *12-May-15*

CLIENT:	CH2M HILL	**Client Sample ID:**	SC-700B-WDR-518
Lab Order:	N015472	**Collection Date:**	4/28/2015 9:55:00 AM
Project:	PG&E Topock, 658274.01.IM.OP.00	**Matrix:**	WATER
Lab ID:	N015472-001		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
TOTAL METALS BY ICPMS							
			EPA 200.8				
RunID: ICP7_150430A	QC Batch: 50307			PrepDate	4/30/2015		Analyst: CEI
Manganese	ND	0.023	0.50		µg/L	1	4/30/2015 12:17 PM

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range
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S	Spike/Surrogate outside of limits due to matrix interference		Results are wet unless otherwise specified
DO	Surrogate Diluted Out		

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Date: *12-May-15*

CLIENT: CH2M HILL
Work Order: N015472
Project: PG&E Topock, 658274.01 IM.OP.00

ANALYTICAL QC SUMMARY REPORT

TestCode: 200.8_W

Sample ID	SampType	TestCode	Units	Prep Date	RunNo
MB-50307	MBLK	200.8_W	µg/L	4/30/2015	100142
Client ID: PBW	Batch ID: 50307	TestNo: EPA 200.8		Analysis Date: 4/30/2015	SeqNo: 1989487

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Manganese	ND	0.50									

Sample ID	SampType	TestCode	Units	Prep Date	RunNo
LCS-50307	LCS	200.8_W	µg/L	4/30/2015	100142
Client ID: LCSW	Batch ID: 50307	TestNo: EPA 200.8		Analysis Date: 4/30/2015	SeqNo: 1989488

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Manganese	92.328	0.50	100.0	0	92.3	85	115				

Sample ID	SampType	TestCode	Units	Prep Date	RunNo
N015472-001C-MS	MS	200.8_W	µg/L	4/30/2015	100142
Client ID: ZZZZZZ	Batch ID: 50307	TestNo: EPA 200.8		Analysis Date: 4/30/2015	SeqNo: 1989492

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Manganese	64.466	0.50	100.0	0	64.5	75	125				S

Sample ID	SampType	TestCode	Units	Prep Date	RunNo
N015472-001C-MSD	MSD	200.8_W	µg/L	4/30/2015	100142
Client ID: ZZZZZZ	Batch ID: 50307	TestNo: EPA 200.8		Analysis Date: 4/30/2015	SeqNo: 1989495

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Manganese	64.020	0.50	100.0	0	64.0	75	125	64.47	0.695	20	S

Qualifiers:

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- 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: *12-May-15*

CLIENT:	CH2M HILL	**Client Sample ID:**	SC-700B-WDR-518
Lab Order:	N015472	**Collection Date:**	4/28/2015 9:55:00 AM
Project:	PG&E Topock, 658274.01.1M.OP.00	**Matrix:**	WATER
Lab ID:	N015472-001		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
HEXAVALENT CHROMIUM BY IC							
			EPA 218.6				
RunID: IC7_150429A	QC Batch: R100125			PrepDate			Analyst: RB
Hexavalent Chromium	ND	0.015	0.20		µg/L	1	4/29/2015 12:13 PM
TOTAL METALS BY ICPMS							
			EPA 200.8				
RunID: ICP7_150430A	QC Batch: 50307			PrepDate		4/30/2015	Analyst: CEI
Chromium	ND	0.086	1.0		µg/L	1	4/30/2015 12:17 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

Date: *12-May-15*

CLIENT: CH2M HILL
Work Order: N015472
Project: PG&E Topock, 658274.01.IM.OP.00

ANALYTICAL QC SUMMARY REPORT

TestCode: 200.8_W_CRPGE

Sample ID MB-50307 | SampType: MBLK | TestCode: 200.8_W_CR | Units: µg/L | Prep Date: 4/30/2015 | RunNo: 100142
Client ID: PBW | Batch ID: 50307 | TestNo: EPA 200.8 | Analysis Date: 4/30/2015 | SeqNo: 1989531

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

Sample ID LCS-50307 | SampType: LCS | TestCode: 200.8_W_CR | Units: µg/L | Prep Date: 4/30/2015 | RunNo: 100142
Client ID: LCSW | Batch ID: 50307 | TestNo: EPA 200.8 | Analysis Date: 4/30/2015 | SeqNo: 1989532

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium	9.304	1.0	10.00	0	93.0	85	115				

Sample ID N015472-001C-MS | SampType: MS | TestCode: 200.8_W_CR | Units: µg/L | Prep Date: 4/30/2015 | RunNo: 100142
Client ID: ZZZZZZ | Batch ID: 50307 | TestNo: EPA 200.8 | Analysis Date: 4/30/2015 | SeqNo: 1989536

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium	8.725	1.0	10.00	0.09667	86.3	75	125				

Sample ID N015472-001C-MSD | SampType: MSD | TestCode: 200.8_W_CR | Units: µg/L | Prep Date: 4/30/2015 | RunNo: 100142
Client ID: ZZZZZZ | Batch ID: 50307 | TestNo: EPA 200.8 | Analysis Date: 4/30/2015 | SeqNo: 1989539

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium	8.546	1.0	10.00	0.09667	84.5	75	125	8.725	2.08	20	

Qualifiers:

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- 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: CH2M HILL
Work Order: N015472
Project: PG&E Topock, 658274.01.IM.OP.00

ANALYTICAL QC SUMMARY REPORT

TestCode: 218.6_WU_PGE

Sample ID	SampType	TestCode	Units	Prep Date	RunNo	Client ID	Batch ID	TestNo	Analysis Date	SeqNo
MB-R100125	MBLK	218.6_WU_P	µg/L		100125	PBW	R100125	EPA 218.6	4/29/2015	1988934

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

Sample ID	SampType	TestCode	Units	Prep Date	RunNo	Client ID	Batch ID	TestNo	Analysis Date	SeqNo
LCS-R100125	LCS	218.6_WU_P	µg/L		100125	LCSW	R100125	EPA 218.6	4/29/2015	1988935

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	4.970	0.20	5.000	0	99.4	90	110				

Sample ID	SampType	TestCode	Units	Prep Date	RunNo	Client ID	Batch ID	TestNo	Analysis Date	SeqNo
N015472-001B-DUP	DUP	218.6_WU_P	µg/L		100125	ZZZZZZ	R100125	EPA 218.6	4/29/2015	1988937

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	0.165	0.20						0.1632	0	20	

Sample ID	SampType	TestCode	Units	Prep Date	RunNo	Client ID	Batch ID	TestNo	Analysis Date	SeqNo
N015472-001B-MS	MS	218.6_WU_P	µg/L		100125	ZZZZZZ	R100125	EPA 218.6	4/29/2015	1988938

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	1.185	0.20	1.000	0.1632	102	90	110				

Sample ID	SampType	TestCode	Units	Prep Date	RunNo	Client ID	Batch ID	TestNo	Analysis Date	SeqNo
N015472-001B-MSD	MSD	218.6_WU_P	µg/L		100125	ZZZZZZ	R100125	EPA 218.6	4/29/2015	1988939

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	1.221	0.20	1.000	0.1632	106	90	110	1.185	2.99	20	

Qualifiers:

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

ASSET Laboratories

ANALYTICAL RESULTS

Print Date: *12-May-15*

CLIENT:	CH2M HILL	**Client Sample ID:**	SC-700B-WDR-518
Lab Order:	N015472	**Collection Date:**	4/28/2015 9:55:00 AM
Project:	PG&E Topock, 658274.01.IM.OP.00	**Matrix:**	WATER
Lab ID:	N015472-001		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
TURBIDITY							
			SM 2130B				
RunID: **WETCHEM_150429B**	QC Batch: **R100121**			PrepDate			Analyst: **LR**
Turbidity	0.21	0.10	0.10		NTU	1	4/29/2015 04:35 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

Date: *12-May-15*

CLIENT: CH2M HILL
Work Order: N015472
Project: PG&E Topock, 658274.01.IM.OP.00

ANALYTICAL QC SUMMARY REPORT

TestCode: 2130_W

Sample ID	MB-R100121	SampType:	MBLK	TestCode:	2130_W	Units:	NTU	Prep Date:		RunNo:	100121
Client ID:	PBW	Batch ID:	R100121	TestNo:	SM 2130B			Analysis Date:	4/29/2015	SeqNo:	1988833

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Turbidity	ND	0.10									

Sample ID	N015472-001A DUP	SampType:	DUP	TestCode:	2130_W	Units:	NTU	Prep Date:		RunNo:	100121
Client ID:	ZZZZZZ	Batch ID:	R100121	TestNo:	SM 2130B			Analysis Date:	4/29/2015	SeqNo:	1988835

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Turbidity	0.200	0.10						0.2100	4.88	30	

Qualifiers:

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

WORK ORDER: N015472

ANALYST LIST

NAME	TEST METHOD
Claire Ignacio	EPA 200.8
Ryan Balilu	EPA 218.6
Lilia Ramit	EPA 120.1, SM 2540C, SM 2130B

CH2MHILL

CHAIN OF CUSTODY RECORD

4/27/2015 4:38:24 PM

Project Name PG&E Topock
Location PG&E Topock
Project Number 658274.01.IM.OP.00
Project Manager Scott O'Donnell
Sample Manager Shawn Duffy

Task Order
Project IM3PLANT-ARAR-WDR-518
Turnaround Time 10 Days
Shipping Date: 4/28/2015
COC Number: 518

			Container:	1 Liter Poly	250 ml Poly	1 Liter Poly	500 ml Poly	1 Liter Poly			
			Preservatives:	4°C	4°C	4°C	4°C	4°C			
			Filtered:	NA	NA	NA	NA	NA			
			Holding Time:	7	1	7	180	7			
	DATE	TIME	Matrix	CONDUCTIVITY (E120.1)	E218.6 Lab Filtered	TDS (SM2540C)	Total Metals(E200.8) Cr & Mn	Turbidity (SM2130)		Number of Containers	COMMENTS
SC-700B-WDR-518	4/28/2015	0955	Water	X	X	X	X	X	N015472-1	3	
									TOTAL NUMBER OF CONTAINERS	3	

	Signatures	Date/Time
Approved by		
Sampled by	Ryan Phelps	4-28-15 0955
Relinquished by		4-28-15 1500
Received by		4/28/15 1700
Relinquished by		4/28/15
Received by		4/28/15 1730

Shipping Details

Method of Shipment: FedEx
On Ice: yes / no 1.9°C
Airbill No: 1K#7
Lab Name: ASSET Laboratories
Lab Phone: (702) 307-2659

ATTN:

Sample Custody
and
Glen Gesmundo

Special Instructions:

Report Copy to
Shawn Duffy
530-229-3303

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:	4/28/2015	Workorder:	N015472
Rep sample Temp (Deg C):	1.9	IR Gun ID:	2
Temp Blank:	☑ Yes ☐ No		
Carrier name:	ASSET		
Last 4 digits of Tracking No.:	NA	Packing Material Used:	None
Cooling process:	☑ Ice ☐ Ice Pack ☐ Dry Ice ☐ Other ☐ None		

Sample Receipt Checklist

1. Shipping container/cooler in good condition?	Yes ☑	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 4/29/2015

Reviewed By: 05/01/15

SAMPLE CALCULATION

METHOD: SM 2540C
TEST NAME: Total Filterable Residue
MATRIX: Water

FORMULA:

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

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

Where:

A = weight in g of dish + residue after drying
B = weight of dish in g
C = volume of sample used in mL

For **N015472-001A,** TDS concentration in mg/L is calculated as follows:

$$\text{TDS, mg/L} = \frac{(55.6239-55.5410)*1000000}{20}$$
$$= 4145 \text{ mg/L}$$

Reporting result in two significant figures,

TDS = 4100 mg/L

Sulla Ramit 5/1/2015

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

	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
Date Finished:4/30/15								
MB-50305	100	76.8448	76.8452	4	1	4		
LCS-50305	100	77.0975	77.1925	950	1	950		
N015472-001A	20	55.541	55.6239	829	5	4145	7150	0.580
N015472-001A DUP	20	53.8218	53.903	812	5	4060	7150	0.568

Julia Ramit 5/1/2015

Sample Calculation

METHOD: EPA 200.8
TEST NAME: Heavy Metals by ICP-MS
MATRIX: Water

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 Vol. of Digestate in mL / Vol. of Sample used in mL

For Sample **N015472-001C,** the concentration in ug/L is calculated as follows:

Chromium, ug/L = 0.096671843143 * 1 * (25/25)

= 0.096671843143

Reporting results in two significant figures,

Chromium, ug/L = 0.097

Since the reporting limit is 1 ug/L therefore,

Chromium, ug/L = ND

5/12/2015

ASSET Laboratories

ICP-Metals in Water

Dilution Test Summary

Work Order No.: N015472
Test Method: EPA 200.8
Analysis Date: 4/30/2015

Matrix: Water
Batch No.: 50307

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

Comments:

Analyzed By: Mary Claire Ignacio

Dilution test is not applicable to Cr and Mn. The calculated concentrations are < 25X RL's.

Sample ID	Analyte	Units	Calc Val	OQual	SAMPRefVal	%DIFF	%DIFFlimit
N015472-001C-DT 5X	Chromium	µg/L	0	NA	0.096671843	100.00%	10
N015472-001C-DT 5X	Manganese	µg/L	0	NA	0		10

Note: NA - Not applicable

ASSET Laboratories

Date: *30-Apr-15*

CLIENT: CH2M HILL
Work Order: N015472
Project: PG&E Topock, 658274.01.IM.OP.00

ANALYTICAL QC SUMMARY REPORT

TestCode: 200.8_W

Sample ID	N015472-001C-PS	SampType:	PS	TestCode:	200.8_W	Units:	µg/L	Prep Date:		RunNo:	100142
Client ID:	ZZZZZZ	Batch ID:	50307	TestNo:	EPA 200.8			Analysis Date:	4/30/2015	SeqNo:	1989491

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Manganese	62.644	0.50	100.0	0	62.6	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		

CLIENT: CH2M HILL
Work Order: N015472
Project: PG&E Topock, 658274.01.IM.OP.00

ANALYTICAL QC SUMMARY REPORT

TestCode: 200.8_W_CRPGE

Sample ID	N015472-001C-PS	SampType:	PS	TestCode:	200.8_W_CR	Units:	µg/L	Prep Date:			RunNo:	100142
Client ID:	ZZZZZZ	Batch ID:	50307	TestNo:	EPA 200.8			Analysis Date:	4/30/2015		SeqNo:	1989535

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium	8.593	1.0	10.00	0.09667	85.0	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

Sample Calculation

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

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 **N015472-001B** concentration in µg/L is calculated as follows:

$$Cr^{+6}, \mu g/L = 0.1632 * 1$$

$$= 0.1632$$

Since PQL is 0.20 µg/L,

$$\mathbf{Cr^{+6}, \mu g/L = ND}$$

TRUESDAIL LABORATORIES, INC.
EXCELLENCE IN INDEPENDENT TESTING
Established 1931
14201 FRANKLIN AVENUE
TUSTIN, CALIFORNIA 92780-7008
(714) 730-6239 · FAX (714) 730-6462
www.truesdail.com

April 17, 2015

ASSET Laboratories

Mr. Marlon Cartin
3151 W Post Road
Las Vegas, NV 89118

Dear Mr. Cartin:

SUBJECT: CASE NARRATIVE; PG&E TOPOCK PROJECT;

TLI NO.: 815136

Truesdail Laboratories, Inc. is pleased to submit this report summarizing the Ammonia results. A summary table for this sample delivery group is included in Section 2. Complete laboratory reports, wet chemistry raw data, quality control data and chain of custody forms are included in Sections 3 and 4.

The samples were received and delivered with the chain of custody on April 9, 2015, intact and in chilled condition. The samples will be kept in a locked refrigerator for 30 days; thereafter they will either be disposed or kept in warm storage for an additional 2 months.

The samples were analyzed and recorded in the raw data as SDG 15D0183 but are reported as SDG 815136 in all final report pages.

An LCS and LCSD were analyzed in lieu of the sample duplicate and matrix spike for ammonia due to insufficient sample volume.

No other violations or nonconformance actions occurred for this data package. If you have any questions or require additional information, please contact me at (714) 730-6239 ext. 206.

Respectfully Submitted,
TRUESDAIL LABORATORIES, INC.

Laureen Tan,
Project Manager

TRUESDAIL LABORATORIES, INC.
EXCELLENCE IN INDEPENDENT TESTING

Established 1931

14201 FRANKLIN AVENUE
TUSTIN, CALIFORNIA 92780-7008
(714) 730-6239 · FAX (714) 730-6462
www.truesdail.com

Client: ASSET Laboratories
3151 W Post Road
Las Vegas, NV 89118
Attention: Marlon Cartin
Sample: Two (2) Water Samples
Project Name: PG&E Topock Project
Project No.: N/A

Laboratory No.: **815136**
Date: April 17, 2015
Collected: April 7, 2015
Received: April 9, 2015

ANALYST LIST

METHOD	PARAMETER	ANALYST
SM 4500-NH3 D	Ammonia	Naheed Eidinejad

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14201 FRANKLIN AVENUE · TUSTIN, CALIFORNIA 92780-7008
(714) 730-6239 · FAX (714) 730-6462 · www.truesdail.com

Client: ASSET Laboratories
3151 W Post Road
Las Vegas, NV 89118
Attention: Marlon Cartin

Laboratory No.: 815136
Date Received: April 9, 2015

Project No.: N/A
P.O. No.: N15241A

Analytical Results Summary

Lab Sample ID	Field ID	Analysis Method	Extraction Method	Sample Date	Sample Time	Parameter	Result	Units	RL
815136-001	SC-100B-WDR-515	SM4500NH3D	NONE	4/7/2015	11:10	Ammonia-N	ND	mg/L	0.500
815136-002	SC-700B-WDR-515	SM4500NH3D	NONE	4/7/2015	11:15	Ammonia-N	ND	mg/L	0.500

ND: Non Detected (below reporting limit)
mg/L: Milligrams per liter.
Note: The following "Significant Figures" rule has been applied to all results:
Results below 0.01ppm will have two (2) significant figures.
Result above or equal to 0.01ppm will have three (3) significant figures.
Quality Control data will always have three (3) significant figures.

This report applies only to the sample, or samples, investigated and is not necessarily indicative of the quality or condition of apparently identical or similar products. As a mutual protection to clients, the public, and these laboratories, this report is submitted and accepted for the exclusive use of the client to whom it is addressed and upon the condition that it is not to be used, in whole or in part, in any advertising or publicity matter without prior written authorization from Truesdail Laboratories.

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www.truesdail.com

REPORT

Client: **ASSET Laboratories**
3151 W Post Road
Las Vegas, NV 89118
Attention: Marlon Cartin
Project Name: PG&E Topock Project
Project Number: N/A
P.O. Number: N15241A

Laboratory No. 815136

Printed 4/17/2015

Samples Received on 4/9/2015 10:00:00 AM

Field ID	Lab ID	Collected	Matrix
SC-100B-WDR-515	815136-001	04/07/2015 11:10	Water
SC-700B-WDR-515	815136-002	04/07/2015 11:15	Water

Ammonia Nitrogen by SM4500-NH3D Batch 040915A

Parameter	Unit	Analyzed	DF	MDL	RL	Result
815136-001 Ammonia as N	mg/L	04/13/2015	1.00	0.0318	0.500	ND
815136-002 Ammonia as N	mg/L	04/13/2015	1.00	0.0318	0.500	ND

Method Blank

Parameter	Unit	DF	Result
Ammonia as N	mg/L	1.00	ND

Lab Control Sample

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Ammonia as N	mg/L	1.00	7.59	8.00	94.8	90 - 110

Lab Control Sample Duplicate

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Ammonia as N	mg/L	1.00	7.72	8.00	96.6	90 - 110

Matrix Spike — Lab ID = 815136-002

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Ammonia as N	mg/L	1.00	9.63	10.0(10.0)	96.3	75 - 125

MRCCS - Secondary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Ammonia as N	mg/L	1.00	5.48	6.00	91.3	90 - 110

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Ammonia as N	mg/L	1.00	5.76	6.00	96.1	90 - 110

This report applies only to the sample, or samples, investigated and is not necessarily indicative of the quality or condition of apparently identical or similar products. As a mutual protection to clients, the public, and these laboratories, this report is submitted and accepted for the exclusive use of the client to whom it is addressed and upon the condition that it is not to be used, in whole or in part, in any advertising or publicity matter without prior written authorization from Truesdail Laboratories.

Client: Asset Laboratories

Project Name: PG&E Topock Project
Project Number: N/A

Printed 4/17/2015

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Ammonia as N	mg/L	1.00	5.70	6.00	95.0	90 - 110

Respectfully submitted,
TRUESDAIL LABORATORIES, INC.

Laureen Tan
Project Manager

This report applies only to the sample, or samples, investigated and is not necessarily indicative of the quality or condition of apparently identical or similar products. As a mutual protection to clients, the public, and these laboratories, this report is submitted and accepted for the exclusive use of the client to whom it is addressed and upon the condition that it is not to be used, in whole or in part, in any advertising or publicity matter without prior written authorization from Truesdail Laboratories.

815136 / 15D 0183

CHAIN-OF-CUSTODY RECORD

ASSET Laboratories
3151-3153 W Post Rd., Las Vegas, NV 89118
www.atl-labs.com
TEL: 7023072659 *FAX: 7023072691*

QC Level: Level IV

Subcontractor:

Truesdail
14201 Franklin Ave.
Tustin, CA 92680

TEL: (714) 730-6239
FAX: (714) 730-6462
Acct #:

Field Sampler:

08-Apr-15

Sample ID	Matrix	Date Collected	Bottle Type	Requested Tests		
				SM4500-NH3C		
N015241-001A / SC-100B-WDR-515	Water	4/7/2015 11:10:00 AM	32OZP	1		
N015241-002A / SC-700B-WDR-515	Water	4/7/2015 11:15:00 AM	32OZP	1		

ALERT !!
Level IV QC

General Comments: Please email sample receipt acknowledgement to the PM.
Please use PO#:N15241A For questions, call Marlon at (702)-307-2659. Please e-mail results to reports.lv@assetlaboratories.com by:Normal TAT
Please analyze for Ammonia. CH2MHILL Sample.

		Date/Time			Date/Time
Relinquished by:	[illegible]	4/8/2015 17:00	**Received by:**	GSO #: 527510209	
Relinquished by:			**Received by:**	Leila, TCI 4-9-15	10:00

014

WORK ORDER

Printed: 4/13/2015 4:43:30PM

15D0183

Truesdail Laboratories, Inc

Client: Advanced Technology Laboratories-NV
Project: ATL-NV

Project Manager: Laureen Tan
Project Number: [none]

Report To:
Advanced Technology Laboratories-NV
Marlon Cartin
3151 W Post Rd
Las Vegas, NV 89118
Phone: 702-307-2659
Fax: 702-307-2691

Invoice To:
Advanced Technology Laboratories-NV
Marlon Cartin
3151 W Post Rd
Las Vegas, NV 89118
Phone :702-307-2659
Fax: 702-307-2691

Date Due: 04/20/2015 16:30 (7 day TAT)

Received By: Luda Shabunina
Date Received: 04/09/2015 10:00

Logged In By: Luda Shabunina
Date Logged In: 04/09/2015 10:16

Samples Received at: **4.4°C**

Chain of Custody re	Yes	Samples intact?	Yes
Letter (if sent) matc	No	Custody seals (if an	No
Requested analyses	Yes	Analyses within hol	Yes
Samples received in	Yes		

Analysis	Due	TAT	Expires	Comments
15D0183-01 SC-100B-WDR-515 [Water] Sampled 04/07/2015 11:10 (GMT-08:00) Pacific Time (US &				
Ammonia-N	04/20/2015 12:00	7	05/05/2015 11:10	
15D0183-02 SC-700B-WDR-515 [Water] Sampled 04/07/2015 11:15 (GMT-08:00) Pacific Time (US &				
Ammonia-N	04/20/2015 12:00	7	05/05/2015 11:15	

Reviewed By

4/17/15
Date

May 20, 2015

Shawn P. Duffy
CH2M HILL
155 Grand Avenue, Suite 1000
Oakland, CA 94612

TEL: (530) 229-3303
FAX: (530) 339-3303

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

Workorder No.: N015567

RE: PG&E Topock, 658274.01.IM.OP.00

Attention: Shawn P. Duffy

Enclosed are the results for sample(s) received on May 05, 2015 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,

Glen Gesmundo
QA Manager

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.

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.

Subcontracted Analyses:

Ammonia and Reactive Silica were subcontracted to Truesdail-Tustin,CA.

Analytical Comments for EPA 200.7_Dissolved:

Matrix Spike (MS) and Matrix Spike Duplicate (MSD) on QC samples N015567-001C-MS1 and N015567-001C-MSD1 are outside recovery criteria for Calcium and Magnesium since the analyte concentration in the sample is disproportionate to the spike level. The associated Laboratory Control Sample (LCS) recovery was acceptable.

Matrix Spike (MS) and Matrix Spike Duplicate (MSD) on QC samples N015569-001B-MS2 and N015569-001B-MSD2 are outside recovery criteria for Sodium since the analyte concentration in the sample is disproportionate to the spike level. The associated Laboratory Control Sample (LCS) recovery was acceptable.

Analytical Comments for EPA 200.8:

Dilution was necessary on Lead for samples N015567-001 and N015567-002 due to associated internal standard not meeting method criteria possibly due to matrix interference. Samples were analyzed with dilution and internal standard met method criteria. Affected analyte for this failed internal standard was reported at dilution that meet internal standard recovery limit.

Matrix Spike (MS) and Matrix Spike Duplicate (MSD) on QC samples N015565-001H-MS and N015565-001H-MSD are outside recovery criteria for some analytes possibly due to matrix

interference. The associated Laboratory Control Sample (LCS) recovery was acceptable.

ASSET Laboratories

Date: *20-May-15*

CLIENT: CH2M HILL
Project: PG&E Topock, 658274.01.IM.OP.00
Lab Order: N015567
Contract No: IM3PLANT-AR

Work Order Sample Summary

Lab Sample ID	Client Sample ID	Matrix	Collection Date	Date Received	Date Reported
N015567-001A	SC-100B-WDR-520	Water	5/5/2015 7:10:00 AM	5/5/2015	5/20/2015
N015567-001B	SC-100B-WDR-520	Water	5/5/2015 7:10:00 AM	5/5/2015	5/20/2015
N015567-001C	SC-100B-WDR-520	Water	5/5/2015 7:10:00 AM	5/5/2015	5/20/2015
N015567-001D	SC-100B-WDR-520	Water	5/5/2015 7:10:00 AM	5/5/2015	5/20/2015
N015567-001E	SC-100B-WDR-520	Water	5/5/2015 7:10:00 AM	5/5/2015	5/20/2015
N015567-001F	SC-100B-WDR-520	Water	5/5/2015 7:10:00 AM	5/5/2015	5/20/2015
N015567-001G	SC-100B-WDR-520	Water	5/5/2015 7:10:00 AM	5/5/2015	5/20/2015
N015567-001H	SC-100B-WDR-520	Water	5/5/2015 7:10:00 AM	5/5/2015	5/20/2015
N015567-002A	SC-700B-WDR-520	Water	5/5/2015 7:12:00 AM	5/5/2015	5/20/2015
N015567-002B	SC-700B-WDR-520	Water	5/5/2015 7:12:00 AM	5/5/2015	5/20/2015
N015567-002C	SC-700B-WDR-520	Water	5/5/2015 7:12:00 AM	5/5/2015	5/20/2015
N015567-002D	SC-700B-WDR-520	Water	5/5/2015 7:12:00 AM	5/5/2015	5/20/2015
N015567-002E	SC-700B-WDR-520	Water	5/5/2015 7:12:00 AM	5/5/2015	5/20/2015

ASSET Laboratories

ANALYTICAL RESULTS

Print Date: *20-May-15*

CLIENT:	CH2M HILL	**Client Sample ID:**	SC-100B-WDR-520
Lab Order:	N015567	**Collection Date:**	5/5/2015 7:10:00 AM
Project:	PG&E Topock, 658274.01.IM.OP.00	**Matrix:**	WATER
Lab ID:	N015567-001		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
SPECIFIC CONDUCTANCE							
			EPA 120.1				
RunID: **WETCHEM_150506C**	QC Batch: **R100215**			PrepDate			Analyst: **LR**
Specific Conductance	6800	0.10	0.10		umhos/cm	1	5/6/2015 02:00 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: *20-May-15*

CLIENT:	CH2M HILL	**Client Sample ID:**	SC-700B-WDR-520
Lab Order:	N015567	**Collection Date:**	5/5/2015 7:12:00 AM
Project:	PG&E Topock, 658274.01.IM.OP.00	**Matrix:**	WATER
Lab ID:	N015567-002		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
SPECIFIC CONDUCTANCE							
			EPA 120.1				
RunID: **WETCHEM_150506C**	QC Batch: **R100215**			PrepDate			Analyst: **LR**
Specific Conductance	6800	0.10	0.10		umhos/cm	1	5/6/2015 02:00 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

Date: *20-May-15*

CLIENT: CH2M HILL
Work Order: N015567
Project: PG&E Topock, 658274.01.IM.OP.00

ANALYTICAL QC SUMMARY REPORT

TestCode: 120.1_WPGE

Sample ID	N015567-001A DUP	SampType: DUP	TestCode: 120.1_WPGE	Units: umhos/cm	Prep Date:					RunNo: 100215		
Client ID:	ZZZZZZ	Batch ID: R100215	TestNo: EPA 120.1		Analysis Date: 5/6/2015					SeqNo: 1992879		
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Specific Conductance		6800.000	0.10						6780	0.295	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

ASSET Laboratories

ANALYTICAL RESULTS

Print Date: *20-May-15*

CLIENT:	CH2M HILL	**Client Sample ID:**	SC-100B-WDR-520
Lab Order:	N015567	**Collection Date:**	5/5/2015 7:10:00 AM
Project:	PG&E Topock, 658274.01.IM.OP.00	**Matrix:**	WATER
Lab ID:	N015567-001		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
TOTAL FILTERABLE RESIDUE							
			SM2540C				
RunID: **WETCHEM_150506G**	QC Batch: **50361**				PrepDate	**5/6/2015**	Analyst: **LR**
Total Dissolved Solids (Residue, Filterable)	4000	50	50		mg/L	1	5/6/2015 11:47 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: *20-May-15*

CLIENT:	CH2M HILL	**Client Sample ID:**	SC-700B-WDR-520
Lab Order:	N015567	**Collection Date:**	5/5/2015 7:12:00 AM
Project:	PG&E Topock, 658274.01.IM.OP.00	**Matrix:**	WATER
Lab ID:	N015567-002		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
TOTAL FILTERABLE RESIDUE							
			SM2540C				
RunID: **WETCHEM_150506G**	QC Batch: **50361**			PrepDate		**5/6/2015**	Analyst: **LR**
Total Dissolved Solids (Residue, Filterable)	4100	50	50		mg/L	1	5/6/2015 11:47 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
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: *20-May-15*

CLIENT: CH2M HILL
Work Order: N015567
Project: PG&E Topock, 658274.01.IM.OP.00

ANALYTICAL QC SUMMARY REPORT

TestCode: 160.1_2540C_W

Sample ID	MB-50361	SampType:	MBLK	TestCode:	160.1_2540C	Units:	mg/L	Prep Date:	5/6/2015	RunNo:	100235
Client ID:	PBW	Batch ID:	50361	TestNo:	SM2540C			Analysis Date:	5/6/2015	SeqNo:	1993517

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	LCS-50361	SampType:	LCS	TestCode:	160.1_2540C	Units:	mg/L	Prep Date:	5/6/2015	RunNo:	100235
Client ID:	LCSW	Batch ID:	50361	TestNo:	SM2540C			Analysis Date:	5/6/2015	SeqNo:	1993518

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	970.000	10	1000	0	97.0	80	120				

Sample ID	N015563-006D DUP	SampType:	DUP	TestCode:	160.1_2540C	Units:	mg/L	Prep Date:	5/6/2015	RunNo:	100235
Client ID:	ZZZZZZ	Batch ID:	50361	TestNo:	SM2540C			Analysis Date:	5/6/2015	SeqNo:	1993520

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	298.000	10						296.0	0.673	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

ASSET Laboratories

ANALYTICAL RESULTS

Print Date: *20-May-15*

CLIENT:	CH2M HILL	**Client Sample ID:**	SC-100B-WDR-520
Lab Order:	N015567	**Collection Date:**	5/5/2015 7:10:00 AM
Project:	PG&E Topock, 658274.01.IM.OP.00	**Matrix:**	WATER
Lab ID:	N015567-001		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
DISSOLVED METALS BY ICP							
			EPA 200.7				
RunID: ICP2_150507B	QC Batch: 50380			PrepDate		5/7/2015	Analyst: JAA
Calcium	150000	31	500		µg/L	1	5/7/2015 08:08 PM
Iron	ND	17	20		µg/L	1	5/7/2015 08:08 PM
Magnesium	21000	86	100		µg/L	1	5/7/2015 08:08 PM
Sodium	1100000	1200	50000		µg/L	100	5/8/2015 07:59 AM
TOTAL METALS BY ICP							
			EPA 200.7				
RunID: ICP2_150507B	QC Batch: 50382			PrepDate		5/7/2015	Analyst: JAA
Aluminum	ND	12	50		µg/L	1	5/7/2015 07:19 PM
Boron	900	11	100		µg/L	1	5/7/2015 07:19 PM
Iron	ND	17	20		µg/L	1	5/7/2015 07:19 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: *20-May-15*

CLIENT:	CH2M HILL	**Client Sample ID:**	SC-700B-WDR-520
Lab Order:	N015567	**Collection Date:**	5/5/2015 7:12:00 AM
Project:	PG&E Topock, 658274.01.IM.OP.00	**Matrix:**	WATER
Lab ID:	N015567-002		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
TOTAL METALS BY ICP							
			EPA 200.7				
RunID: ICP2_150507B	QC Batch: 50382				PrepDate	5/7/2015	Analyst: JAA
Aluminum	ND	12	50		µg/L	1	5/7/2015 07:45 PM
Boron	920	11	100		µg/L	1	5/7/2015 07:45 PM
Iron	ND	17	20		µg/L	1	5/7/2015 07:45 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

Date: *20-May-15*

CLIENT: CH2M HILL
Work Order: N015567
Project: PG&E Topock, 658274.01.IM.OP.00

ANALYTICAL QC SUMMARY REPORT

TestCode: 200.7_WDPGEPPB

Sample ID LCS1-50380 SampType: LCS TestCode: 200.7_WDPG Units: µg/L Prep Date: 5/7/2015 RunNo: 100254
Client ID: LCSW Batch ID: 50380 TestNo: EPA 200.7 Analysis Date: 5/7/2015 SeqNo: 1994139

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Calcium	9691.734	500	10000	0	96.9	85	115				
Iron	103.497	20	100.0	0	103	85	115				
Magnesium	10084.166	100	10000	0	101	85	115				

Sample ID N015567-001C-MS1 SampType: MS TestCode: 200.7_WDPG Units: µg/L Prep Date: 5/7/2015 RunNo: 100254
Client ID: ZZZZZZ Batch ID: 50380 TestNo: EPA 200.7 Analysis Date: 5/7/2015 SeqNo: 1994143

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Calcium	240496.932	500	10000	151200	893	75	125				S
Iron	97.851	20	100.0	0	97.9	75	125				
Magnesium	39059.999	100	10000	20540	185	75	125				S

Sample ID N015567-001C-MSD SampType: MSD TestCode: 200.7_WDPG Units: µg/L Prep Date: 5/7/2015 RunNo: 100254
Client ID: ZZZZZZ Batch ID: 50380 TestNo: EPA 200.7 Analysis Date: 5/7/2015 SeqNo: 1994144

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Calcium	228207.363	500	10000	151200	770	75	125	240500	5.24	20	S
Iron	105.128	20	100.0	0	105	75	125	97.85	7.17	20	
Magnesium	37709.094	100	10000	20540	172	75	125	39060	3.52	20	S

Sample ID MB-50380 SampType: MBLK TestCode: 200.7_WDPG Units: µg/L Prep Date: 5/7/2015 RunNo: 100254
Client ID: PBW Batch ID: 50380 TestNo: EPA 200.7 Analysis Date: 5/7/2015 SeqNo: 1994159

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Calcium	ND	500									
Iron	ND	20									
Magnesium	ND	100									

Qualifiers:

- B Analyte detected in the associated Method Blank
- 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: CH2M HILL
Work Order: N015567
Project: PG&E Topock, 658274.01.IM.OP.00

ANALYTICAL QC SUMMARY REPORT

TestCode: 200.7_WDPGEPPB

Sample ID	MB-50380	SampType:	MBLK	TestCode:	200.7_WDPG	Units:	µg/L	Prep Date:	5/7/2015	RunNo:	100279
Client ID:	PBW	Batch ID:	50380	TestNo:	EPA 200.7			Analysis Date:	5/8/2015	SeqNo:	1996184

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Sodium	28.880	500									

Sample ID	LCS2-50380	SampType:	LCS	TestCode:	200.7_WDPG	Units:	µg/L	Prep Date:	5/7/2015	RunNo:	100279
Client ID:	LCSW	Batch ID:	50380	TestNo:	EPA 200.7			Analysis Date:	5/8/2015	SeqNo:	1996185

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Sodium	19281.827	500	20000	0	96.4	85	115				

Sample ID	N015569-001B-MS2	SampType:	MS	TestCode:	200.7_WDPG	Units:	µg/L	Prep Date:	5/7/2015	RunNo:	100279
Client ID:	ZZZZZZ	Batch ID:	50380	TestNo:	EPA 200.7			Analysis Date:	5/8/2015	SeqNo:	1996190

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Sodium	815709.408	50000	20000	848500	-164	75	125				S

Sample ID	N015569-001B-MSD	SampType:	MSD	TestCode:	200.7_WDPG	Units:	µg/L	Prep Date:	5/7/2015	RunNo:	100279
Client ID:	ZZZZZZ	Batch ID:	50380	TestNo:	EPA 200.7			Analysis Date:	5/8/2015	SeqNo:	1996191

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Sodium	799776.436	50000	20000	848500	-243	75	125	815700	1.97	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: CH2M HILL
Work Order: N015567
Project: PG&E Topock, 658274 01.IM.OP.00

ANALYTICAL QC SUMMARY REPORT

TestCode: 200.7_WPGEPPB

Sample ID MB-50382 | SampType: MBLK | TestCode: 200.7_WPGE | Units: µg/L | Prep Date: 5/7/2015 | RunNo: 100254
Client ID: PBW | Batch ID: 50382 | TestNo: EPA 200.7 | Analysis Date: 5/7/2015 | SeqNo: 1994079

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aluminum	ND	50									
Boron	ND	100									
Iron	ND	20									

Sample ID LCS-50382 | SampType: LCS | TestCode: 200.7_WPGE | Units: µg/L | Prep Date: 5/7/2015 | RunNo: 100254
Client ID: LCSW | Batch ID: 50382 | TestNo: EPA 200.7 | Analysis Date: 5/7/2015 | SeqNo: 1994080

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aluminum	9994.329	50	10000	0	99.9	85	115				
Boron	4906.711	100	5000	0	98.1	85	115				
Iron	103.499	20	100.0	0	103	85	115				

Sample ID N015567-001E-MS | SampType: MS | TestCode: 200.7_WPGE | Units: µg/L | Prep Date: 5/7/2015 | RunNo: 100254
Client ID: ZZZZZZ | Batch ID: 50382 | TestNo: EPA 200.7 | Analysis Date: 5/7/2015 | SeqNo: 1994084

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aluminum	10880.930	50	10000	0	109	75	125				
Boron	6130.290	100	5000	897.9	105	75	125				
Iron	101.279	20	100.0	0	101	75	125				

Sample ID N015567-001E-MSD | SampType: MSD | TestCode: 200.7_WPGE | Units: µg/L | Prep Date: 5/7/2015 | RunNo: 100254
Client ID: ZZZZZZ | Batch ID: 50382 | TestNo: EPA 200.7 | Analysis Date: 5/7/2015 | SeqNo: 1994085

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aluminum	10898.236	50	10000	0	109	75	125	10880	0.159	20	
Boron	6152.333	100	5000	897.9	105	75	125	6130	0.359	20	
Iron	121.023	20	100.0	0	121	75	125	101.3	17.8	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: *20-May-15*

CLIENT:	CH2M HILL	**Client Sample ID:**	SC-100B-WDR-520
Lab Order:	N015567	**Collection Date:**	5/5/2015 7:10:00 AM
Project:	PG&E Topock, 658274.01.IM.OP.00	**Matrix:**	WATER
Lab ID:	N015567-001		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
TOTAL METALS BY ICPMS							
			EPA 200.8				
RunID: ICP7_150507A	QC Batch: 50357				PrepDate	5/6/2015	Analyst: CEI
Antimony	ND	0.026	0.50		µg/L	1	5/7/2015 06:02 PM
Arsenic	3.7	0.016	0.10		µg/L	1	5/6/2015 04:00 PM
Barium	29	0.072	1.0		µg/L	1	5/7/2015 06:02 PM
Copper	ND	0.26	1.0		µg/L	1	5/6/2015 04:00 PM
Lead	ND	0.27	5.0		µg/L	5	5/7/2015 06:13 PM
Manganese	ND	0.023	0.50		µg/L	1	5/6/2015 04:00 PM
Molybdenum	20	0.029	0.50		µg/L	1	5/7/2015 06:02 PM
Nickel	ND	0.038	1.0		µg/L	1	5/6/2015 04:00 PM
Zinc	ND	0.039	10		µg/L	1	5/6/2015 04:00 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: *20-May-15*

CLIENT:	CH2M HILL	**Client Sample ID:**	SC-700B-WDR-520
Lab Order:	N015567	**Collection Date:**	5/5/2015 7:12:00 AM
Project:	PG&E Topock, 658274.01.IM.OP.00	**Matrix:**	WATER
Lab ID:	N015567-002		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
TOTAL METALS BY ICPMS							
			EPA 200.8				
RunID: ICP7_150507A	QC Batch: 50357				PrepDate	5/6/2015	Analyst: CEI
Antimony	ND	0.026	0.50		µg/L	1	5/7/2015 06:08 PM
Arsenic	ND	0.016	0.10		µg/L	1	5/6/2015 04:05 PM
Barium	8.4	0.072	1.0		µg/L	1	5/7/2015 06:08 PM
Copper	ND	0.26	1.0		µg/L	1	5/6/2015 04:05 PM
Lead	ND	0.27	5.0		µg/L	5	5/7/2015 06:31 PM
Manganese	ND	0.023	0.50		µg/L	1	5/6/2015 04:05 PM
Molybdenum	21	0.029	0.50		µg/L	1	5/7/2015 06:08 PM
Nickel	1.5	0.038	1.0		µg/L	1	5/6/2015 04:05 PM
Zinc	ND	0.039	10		µg/L	1	5/6/2015 04:05 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		

ASSET Laboratories

Date: *20-May-15*

CLIENT: CH2M HILL
Work Order: N015567
Project: PG&E Topock, 658274.01.IM.OP.00

ANALYTICAL QC SUMMARY REPORT

TestCode: 200.8_W

Sample ID MB-50357 | SampType: MBLK | TestCode: 200.8_W | Units: µg/L | Prep Date: 5/6/2015 | RunNo: 100255
Client ID: PBW | Batch ID: 50357 | TestNo: EPA 200.8 | Analysis Date: 5/6/2015 | SeqNo: 1994693

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	ND	0.10									
Copper	ND	1.0									
Manganese	ND	0.50									
Nickel	ND	1.0									
Zinc	0.051	10									

Sample ID LCS-50357 | SampType: LCS | TestCode: 200.8_W | Units: µg/L | Prep Date: 5/6/2015 | RunNo: 100255
Client ID: LCSW | Batch ID: 50357 | TestNo: EPA 200.8 | Analysis Date: 5/6/2015 | SeqNo: 1994694

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	10.195	0.10	10.00	0	102	85	115				
Copper	9.345	1.0	10.00	0	93.4	85	115				
Manganese	97.072	0.50	100.0	0	97.1	85	115				
Nickel	9.797	1.0	10.00	0	98.0	85	115				
Zinc	100.363	10	100.0	0	100	85	115				

Sample ID N015565-001H-MS | SampType: MS | TestCode: 200.8_W | Units: µg/L | Prep Date: 5/6/2015 | RunNo: 100255
Client ID: ZZZZZZ | Batch ID: 50357 | TestNo: EPA 200.8 | Analysis Date: 5/6/2015 | SeqNo: 1994700

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	38.243	0.10	10.00	29.03	92.1	75	125				
Copper	6.896	1.0	10.00	0	69.0	75	125				S
Manganese	86.631	0.50	100.0	0	86.6	75	125				
Nickel	8.870	1.0	10.00	0	88.7	75	125				
Zinc	81.767	10	100.0	2.783	79.0	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

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"Serving Clients with Passion and Professionalism"

CLIENT: CH2M HILL
Work Order: N015567
Project: PG&E Topock, 658274.01.IM.OP.00

ANALYTICAL QC SUMMARY REPORT

TestCode: 200.8_W

Sample ID	N015565-001H-MSD	SampType:	MSD	TestCode:	200.8_W	Units:	µg/L	Prep Date:	5/6/2015	RunNo:	100255
Client ID:	ZZZZZZ	Batch ID:	50357	TestNo:	EPA 200.8			Analysis Date:	5/6/2015	SeqNo:	1994701

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	38.021	0.10	10.00	29.03	89.9	75	125	38.24	0.583	20	
Copper	6.937	1.0	10.00	0	69.4	75	125	6.896	0.594	20	S
Manganese	86.512	0.50	100.0	0	86.5	75	125	86.63	0.138	20	
Nickel	8.778	1.0	10.00	0	87.8	75	125	8.870	1.05	20	
Zinc	81.737	10	100.0	2.783	79.0	75	125	81.77	0.0374	20	

Sample ID	MB-50357	SampType:	MBLK	TestCode:	200.8_W	Units:	µg/L	Prep Date:	5/6/2015	RunNo:	100260
Client ID:	PBW	Batch ID:	50357	TestNo:	EPA 200.8			Analysis Date:	5/7/2015	SeqNo:	1995370

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Antimony	ND	0.50									
Barium	ND	1.0									
Lead	ND	1.0									
Molybdenum	0.043	0.50									

Sample ID	LCS-50357	SampType:	LCS	TestCode:	200.8_W	Units:	µg/L	Prep Date:	5/6/2015	RunNo:	100260
Client ID:	LCSW	Batch ID:	50357	TestNo:	EPA 200.8			Analysis Date:	5/7/2015	SeqNo:	1995371

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Antimony	10.190	0.50	10.00	0	102	85	115				
Barium	106.761	1.0	100.0	0	107	85	115				
Lead	10.322	1.0	10.00	0	103	85	115				
Molybdenum	9.675	0.50	10.00	0	96.8	85	115				

Sample ID	N015565-001H-MS	SampType:	MS	TestCode:	200.8_W	Units:	µg/L	Prep Date:	5/6/2015	RunNo:	100260
Client ID:	ZZZZZZ	Batch ID:	50357	TestNo:	EPA 200.8			Analysis Date:	5/7/2015	SeqNo:	1995375

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Antimony	10.206	0.50	10.00	0.06900	101	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

ASSET LABORATORIES
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"Serving Clients with Passion and Professionalism"

CLIENT: CH2M HILL
Work Order: N015567
Project: PG&E Topock, 658274.01.IM.OP.00

ANALYTICAL QC SUMMARY REPORT

TestCode: 200.8_W

Sample ID N015565-001H-MS SampType: MS TestCode: 200.8_W Units: µg/L Prep Date: 5/6/2015 RunNo: 100260
Client ID: ZZZZZZ Batch ID: 50357 TestNo: EPA 200.8 Analysis Date: 5/7/2015 SeqNo: 1995375

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	10.246	1.0	10.00	0	102	75	125				
Molybdenum	12.178	0.50	10.00	1.221	110	75	125				

Sample ID N015565-001H-MSD SampType: MSD TestCode: 200.8_W Units: µg/L Prep Date: 5/6/2015 RunNo: 100260
Client ID: ZZZZZZ Batch ID: 50357 TestNo: EPA 200.8 Analysis Date: 5/7/2015 SeqNo: 1995378

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Antimony	10.299	0.50	10.00	0.06900	102	75	125	10.21	0.907	20	
Lead	10.286	1.0	10.00	0	103	75	125	10.25	0.386	20	
Molybdenum	12.256	0.50	10.00	1.221	110	75	125	12.18	0.639	20	

Sample ID N015565-001H-MS SampType: MS TestCode: 200.8_W Units: µg/L Prep Date: 5/6/2015 RunNo: 100260
Client ID: ZZZZZZ Batch ID: 50357 TestNo: EPA 200.8 Analysis Date: 5/7/2015 SeqNo: 1995381

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Barium	314.787	5.0	100.0	185.4	129	75	125				S

Sample ID N015565-001H-MSD SampType: MSD TestCode: 200.8_W Units: µg/L Prep Date: 5/6/2015 RunNo: 100260
Client ID: ZZZZZZ Batch ID: 50357 TestNo: EPA 200.8 Analysis Date: 5/7/2015 SeqNo: 1995382

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Barium	313.461	5.0	100.0	185.4	128	75	125	314.8	0.422	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

ASSET Laboratories

ANALYTICAL RESULTS

Print Date: *20-May-15*

CLIENT:	CH2M HILL	**Client Sample ID:**	SC-100B-WDR-520
Lab Order:	N015567	**Collection Date:**	5/5/2015 7:10:00 AM
Project:	PG&E Topock, 658274.01.IM.OP.00	**Matrix:**	WATER
Lab ID:	N015567-001		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
HEXAVALENT CHROMIUM BY IC							
			EPA 218.6				
RunID: IC7_150506A	QC Batch: R100271			PrepDate			Analyst: RB
Hexavalent Chromium	530	1.5	20		µg/L	100	5/6/2015 05:15 PM
TOTAL METALS BY ICPMS							
			EPA 200.8				
RunID: ICP7_150507A	QC Batch: 50357			PrepDate		5/6/2015	Analyst: CEI
Chromium	500	0.43	5.0		µg/L	5	5/7/2015 06:13 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

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NEVADA
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ANALYTICAL RESULTS

Print Date: *20-May-15*

CLIENT:	CH2M HILL	**Client Sample ID:**	SC-700B-WDR-520
Lab Order:	N015567	**Collection Date:**	5/5/2015 7:12:00 AM
Project:	PG&E Topock, 658274.01.IM.OP.00	**Matrix:**	WATER
Lab ID:	N015567-002		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
HEXAVALENT CHROMIUM BY IC							
			EPA 218.6				
RunID: IC7_150506A	QC Batch: R100271			PrepDate			Analyst: RB
Hexavalent Chromium	ND	0.015	0.20		µg/L	1	5/6/2015 04:27 PM
TOTAL METALS BY ICPMS							
			EPA 200.8				
RunID: ICP7_150506A	QC Batch: 50357			PrepDate		5/6/2015	Analyst: CEI
Chromium	ND	0.086	1.0		µg/L	1	5/6/2015 04:05 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		

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Date: *20-May-15*

CLIENT: CH2M HILL
Work Order: N015567
Project: PG&E Topock, 658274.01.IM.OP.00

ANALYTICAL QC SUMMARY REPORT

TestCode: 200.8_W_CRPGE

Sample ID	MB-50357	SampType:	MBLK	TestCode:	200.8_W_CR	Units:	µg/L	Prep Date:	5/6/2015	RunNo:	100255
Client ID:	PBW	Batch ID:	50357	TestNo:	EPA 200.8			Analysis Date:	5/6/2015	SeqNo:	1994497

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

Sample ID	LCS-50357	SampType:	LCS	TestCode:	200.8_W_CR	Units:	µg/L	Prep Date:	5/6/2015	RunNo:	100255
Client ID:	LCSW	Batch ID:	50357	TestNo:	EPA 200.8			Analysis Date:	5/6/2015	SeqNo:	1994498

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium	9.824	1.0	10.00	0	98.2	85	115				

Sample ID	N015565-001H-MS	SampType:	MS	TestCode:	200.8_W_CR	Units:	µg/L	Prep Date:	5/6/2015	RunNo:	100255
Client ID:	ZZZZZZ	Batch ID:	50357	TestNo:	EPA 200.8			Analysis Date:	5/6/2015	SeqNo:	1994504

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium	9.034	1.0	10.00	0	90.3	75	125				

Sample ID	N015565-001H-MSD	SampType:	MSD	TestCode:	200.8_W_CR	Units:	µg/L	Prep Date:	5/6/2015	RunNo:	100255
Client ID:	ZZZZZZ	Batch ID:	50357	TestNo:	EPA 200.8			Analysis Date:	5/6/2015	SeqNo:	1994505

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium	9.130	1.0	10.00	0	91.3	75	125	9.034	1.05	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: CH2M HILL
Work Order: N015567
Project: PG&E Topock, 658274.01.IM.OP.00

ANALYTICAL QC SUMMARY REPORT

TestCode: 218.6_WU_PGE

Sample ID	SampType	TestCode	Units	Prep Date	RunNo	Client ID	Batch ID	TestNo	Analysis Date	SeqNo
LCS-R100271	LCS	218.6_WU_P	µg/L		100271	LCSW	R100271	EPA 218.6	5/6/2015	1995910

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	4.959	0.20	5.000	0	99.2	90	110				

Sample ID	SampType	TestCode	Units	Prep Date	RunNo	Client ID	Batch ID	TestNo	Analysis Date	SeqNo
MB-R100271	MBLK	218.6_WU_P	µg/L		100271	PBW	R100271	EPA 218.6	5/6/2015	1995911

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

Sample ID	SampType	TestCode	Units	Prep Date	RunNo	Client ID	Batch ID	TestNo	Analysis Date	SeqNo
N015565-001E-DUP	DUP	218.6_WU_P	µg/L		100271	ZZZZZZ	R100271	EPA 218.6	5/6/2015	1995920

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	0.137	0.20						0.1309	0	20	

Sample ID	SampType	TestCode	Units	Prep Date	RunNo	Client ID	Batch ID	TestNo	Analysis Date	SeqNo
N015474-002A-MS	MS	218.6_WU_P	µg/L		100271	ZZZZZZ	R100271	EPA 218.6	5/6/2015	1995921

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	32.160	1.0	25.00	7.747	97.7	90	110				

Sample ID	SampType	TestCode	Units	Prep Date	RunNo	Client ID	Batch ID	TestNo	Analysis Date	SeqNo
N015474-002A-MSD	MSD	218.6_WU_P	µg/L		100271	ZZZZZZ	R100271	EPA 218.6	5/6/2015	1995922

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	32.815	1.0	25.00	7.747	100	90	110	32.16	2.01	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: CH2M HILL
Work Order: N015567
Project: PG&E Topock, 658274.01.IM.OP.00

ANALYTICAL QC SUMMARY REPORT

TestCode: 218.6_WU_PGE

Sample ID	N015567-002C-MS	SampType: MS	TestCode: 218.6_WU_P	Units: µg/L	Prep Date:	RunNo: 100271
Client ID:	ZZZZZZ	Batch ID: R100271	TestNo: EPA 218.6		Analysis Date: 5/6/2015	SeqNo: 1995938

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	1.171	0.20	1.000	0.1918	97.9	90	110				

Sample ID	N015568-001B-MS	SampType: MS	TestCode: 218.6_WU_P	Units: µg/L	Prep Date:	RunNo: 100271
Client ID:	ZZZZZZ	Batch ID: R100271	TestNo: EPA 218.6		Analysis Date: 5/6/2015	SeqNo: 1995940

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	1.556	0.20	1.000	0.5735	98.3	90	110				

Sample ID	N015567-001D-MS	SampType: MS	TestCode: 218.6_WU_P	Units: µg/L	Prep Date:	RunNo: 100271
Client ID:	ZZZZZZ	Batch ID: R100271	TestNo: EPA 218.6		Analysis Date: 5/6/2015	SeqNo: 1995943

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	1008.760	20	500.0	526.3	96.5	90	110				

Sample ID	N015569-001C-MS	SampType: MS	TestCode: 218.6_WU_P	Units: µg/L	Prep Date:	RunNo: 100271
Client ID:	ZZZZZZ	Batch ID: R100271	TestNo: EPA 218.6		Analysis Date: 5/6/2015	SeqNo: 1995947

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	7.870	0.20	5.000	2.866	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

ASSET Laboratories

ANALYTICAL RESULTS

Print Date: *20-May-15*

CLIENT:	CH2M HILL	**Client Sample ID:**	SC-100B-WDR-520
Lab Order:	N015567	**Collection Date:**	5/5/2015 7:10:00 AM
Project:	PG&E Topock, 658274.01.IM.OP.00	**Matrix:**	WATER
Lab ID:	N015567-001		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
TURBIDITY							
			SM 2130B				
RunID: **WETCHEM_150506D**	QC Batch: **R100217**			PrepDate			Analyst: **LR**
Turbidity	0.23	0.10	0.10		NTU	1	5/6/2015 03:40 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: *20-May-15*

CLIENT:	CH2M HILL	**Client Sample ID:**	SC-700B-WDR-520
Lab Order:	N015567	**Collection Date:**	5/5/2015 7:12:00 AM
Project:	PG&E Topock, 658274.01.IM.OP.00	**Matrix:**	WATER
Lab ID:	N015567-002		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
TURBIDITY							
			SM 2130B				
RunID: **WETCHEM_150506D**	QC Batch: **R100217**			PrepDate			Analyst: **LR**
Turbidity	0.18	0.10	0.10		NTU	1	5/6/2015 03:40 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

Date: *20-May-15*

CLIENT: CH2M HILL
Work Order: N015567
Project: PG&E Topock, 658274.01.IM.OP.00

ANALYTICAL QC SUMMARY REPORT

TestCode: 2130_W

Sample ID	MB-R100217	SampType:	MBLK	TestCode:	2130_W	Units:	NTU	Prep Date:		RunNo:	100217
Client ID:	PBW	Batch ID:	R100217	TestNo:	SM 2130B			Analysis Date:	5/6/2015	SeqNo:	1992888

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Turbidity	ND	0.10									

Sample ID	N015567-001A DUP	SampType:	DUP	TestCode:	2130_W	Units:	NTU	Prep Date:		RunNo:	100217
Client ID:	ZZZZZZ	Batch ID:	R100217	TestNo:	SM 2130B			Analysis Date:	5/6/2015	SeqNo:	1992890

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Turbidity	0.240	0.10						0.2300	4.26	30	

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis 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: *20-May-15*

CLIENT:	CH2M HILL	**Client Sample ID:**	SC-100B-WDR-520
Lab Order:	N015567	**Collection Date:**	5/5/2015 7:10:00 AM
Project:	PG&E Topock, 658274.01.IM.OP.00	**Matrix:**	WATER
Lab ID:	N015567-001		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
ALKALINITY, SPECIATED							
			SM 2320 B				
RunID: **WETCHEM_150506I**	QC Batch: **R100237**			PrepDate			Analyst: **LR**
Alkalinity, Bicarbonate (As CaCO3)	180	1.2	5.0		mg/L	1	5/6/2015 10:20 AM
Alkalinity, Carbonate (As CaCO3)	ND	1.2	5.0		mg/L	1	5/6/2015 10:20 AM
Alkalinity, Hydroxide (As CaCO3)	ND	1.2	5.0		mg/L	1	5/6/2015 10:20 AM
Alkalinity, Total (As CaCO3)	180	1.2	5.0		mg/L	1	5/6/2015 10:20 AM

Qualifiers:

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

ASSET Laboratories

Date: *20-May-15*

CLIENT: CH2M HILL
Work Order: N015567
Project: PG&E Topock, 658274.01.IM.OP.00

ANALYTICAL QC SUMMARY REPORT

TestCode: 2320_W_SP

Sample ID LCS-R100237 SampType: LCS TestCode: 2320_W_SP Units: mg/L Prep Date: RunNo: 100237
Client ID: LCSW Batch ID: R100237 TestNo: SM 2320 B Analysis Date: 5/6/2015 SeqNo: 1993574

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Alkalinity, Bicarbonate (As CaCO3)	97.917	5.0	100.0	0	97.9	85	115				
Alkalinity, Total (As CaCO3)	100.000	5.0	100.0	0	100	85	115				

Sample ID N015567-001A DUP SampType: DUP TestCode: 2320_W_SP Units: mg/L Prep Date: RunNo: 100237
Client ID: ZZZZZZ Batch ID: R100237 TestNo: SM 2320 B Analysis Date: 5/6/2015 SeqNo: 1993576

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Alkalinity, Bicarbonate (As CaCO3)	179.167	5.0						179.2	0	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)	179.167	5.0						179.2	0	30	

Sample ID N015569-002A MS SampType: MS TestCode: 2320_W_SP Units: mg/L Prep Date: RunNo: 100237
Client ID: ZZZZZZ Batch ID: R100237 TestNo: SM 2320 B Analysis Date: 5/6/2015 SeqNo: 1993579

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Alkalinity, Bicarbonate (As CaCO3)	264.583	5.0	100.0	172.9	91.7	75	125				
Alkalinity, Total (As CaCO3)	264.583	5.0	100.0	172.9	91.7	75	125				

Sample ID N015569-002A MSD SampType: MSD TestCode: 2320_W_SP Units: mg/L Prep Date: RunNo: 100237
Client ID: ZZZZZZ Batch ID: R100237 TestNo: SM 2320 B Analysis Date: 5/6/2015 SeqNo: 1993580

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Alkalinity, Bicarbonate (As CaCO3)	264.583	5.0	100.0	172.9	91.7	75	125	264.6	0	20	
Alkalinity, Total (As CaCO3)	264.583	5.0	100.0	172.9	91.7	75	125	264.6	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

CLIENT: CH2M HILL
Work Order: N015567
Project: PG&E Topock, 658274.01.IM.OP.00

ANALYTICAL QC SUMMARY REPORT

TestCode: 2320_W_SP

Sample ID	MB-R100237	SampType:	MBLK	TestCode:	2320_W_SP	Units:	mg/L	Prep Date:			RunNo:	100237
Client ID:	PBW	Batch ID:	R100237	TestNo:	SM 2320 B			Analysis Date:	5/6/2015		SeqNo:	1993595

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									

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: *20-May-15*

CLIENT:	CH2M HILL	**Client Sample ID:**	SC-100B-WDR-520
Lab Order:	N015567	**Collection Date:**	5/5/2015 7:10:00 AM
Project:	PG&E Topock, 658274.01.IM.OP.00	**Matrix:**	WATER
Lab ID:	N015567-001		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
ANIONS BY ION CHROMATOGRAPHY							
			EPA 300.0				
RunID: IC2_150513A	QC Batch: R100345			PrepDate			Analyst: QBM
Fluoride	2.6	0.12	1.0		mg/L	10	5/13/2015 10:40 AM
ANIONS BY ION CHROMATOGRAPHY							
			EPA 300.0				
RunID: IC2_150513A	QC Batch: R100345			PrepDate			Analyst: QBM
Sulfate	460	1.6	25		mg/L	50	5/13/2015 10:54 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		

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ANALYTICAL RESULTS

Print Date: *20-May-15*

CLIENT:	CH2M HILL	**Client Sample ID:**	SC-700B-WDR-520
Lab Order:	N015567	**Collection Date:**	5/5/2015 7:12:00 AM
Project:	PG&E Topock, 658274.01.IM.OP.00	**Matrix:**	WATER
Lab ID:	N015567-002		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
ANIONS BY ION CHROMATOGRAPHY							
			EPA 300.0				
RunID: IC2_150513A	QC Batch: R100345			PrepDate			Analyst: QBM
Fluoride	2.3	0.12	1.0		mg/L	10	5/13/2015 11:09 AM
ANIONS BY ION CHROMATOGRAPHY							
			EPA 300.0				
RunID: IC2_150513A	QC Batch: R100345			PrepDate			Analyst: QBM
Sulfate	450	1.6	25		mg/L	50	5/13/2015 11:24 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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Date: *20-May-15*

CLIENT: CH2M HILL
Work Order: N015567
Project: PG&E Topock, 658274.01.IM.OP.00

ANALYTICAL QC SUMMARY REPORT

TestCode: 300_W_FPGE

Sample ID	MB-R100345_F	SampType:	MBLK	TestCode:	300_W_FPG	Units:	mg/L	Prep Date:		RunNo:	100345
Client ID:	PBW	Batch ID:	R100345	TestNo:	EPA 300.0			Analysis Date:	5/13/2015	SeqNo:	2000170

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Fluoride	ND	0.10									

Sample ID	LCS-R100345_F	SampType:	LCS	TestCode:	300_W_FPG	Units:	mg/L	Prep Date:		RunNo:	100345
Client ID:	LCSW	Batch ID:	R100345	TestNo:	EPA 300.0			Analysis Date:	5/13/2015	SeqNo:	2000171

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Fluoride	2.412	0.10	2.500	0	96.5	90	110				

Sample ID	N015567-001ADUP	SampType:	DUP	TestCode:	300_W_FPG	Units:	mg/L	Prep Date:		RunNo:	100345
Client ID:	ZZZZZZ	Batch ID:	R100345	TestNo:	EPA 300.0			Analysis Date:	5/13/2015	SeqNo:	2000176

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Fluoride	2.280	1.0						2.580	12.3	20	

Sample ID	N015567-002BMS	SampType:	MS	TestCode:	300_W_FPG	Units:	mg/L	Prep Date:		RunNo:	100345
Client ID:	ZZZZZZ	Batch ID:	R100345	TestNo:	EPA 300.0			Analysis Date:	5/13/2015	SeqNo:	2000177

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Fluoride	26.210	1.0	25.00	2.310	95.6	80	120				

Sample ID	N015567-002BMSD	SampType:	MSD	TestCode:	300_W_FPG	Units:	mg/L	Prep Date:		RunNo:	100345
Client ID:	ZZZZZZ	Batch ID:	R100345	TestNo:	EPA 300.0			Analysis Date:	5/13/2015	SeqNo:	2000178

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Fluoride	25.930	1.0	25.00	2.310	94.5	80	120	26.21	1.07	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: CH2M HILL
Work Order: N015567
Project: PG&E Topock, 658274.01.IM.OP.00

ANALYTICAL QC SUMMARY REPORT

TestCode: 300_W_SO4PGE

Sample ID	MB-R100345_SO4	SampType: MBLK	TestCode: 300_W_SO4P	Units: mg/L	Prep Date:	RunNo: 100345
Client ID:	PBW	Batch ID: R100345	TestNo: EPA 300.0		Analysis Date: 5/13/2015	SeqNo: 2000228

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Sulfate	ND	0.50									

Sample ID	LCS-R100345_SO4	SampType: LCS	TestCode: 300_W_SO4P	Units: mg/L	Prep Date:	RunNo: 100345
Client ID:	LCSW	Batch ID: R100345	TestNo: EPA 300.0		Analysis Date: 5/13/2015	SeqNo: 2000229

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Sulfate	5.128	0.50	5.000	0	103	90	110				

Sample ID	N015567-001ADUP	SampType: DUP	TestCode: 300_W_SO4P	Units: mg/L	Prep Date:	RunNo: 100345
Client ID:	ZZZZZZ	Batch ID: R100345	TestNo: EPA 300.0		Analysis Date: 5/13/2015	SeqNo: 2000236

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Sulfate	460.750	25						460.6	0.0217	20	

Sample ID	N015567-002BMS	SampType: MS	TestCode: 300_W_SO4P	Units: mg/L	Prep Date:	RunNo: 100345
Client ID:	ZZZZZZ	Batch ID: R100345	TestNo: EPA 300.0		Analysis Date: 5/13/2015	SeqNo: 2000237

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Sulfate	704.250	25	250.0	447.5	103	80	120				

Sample ID	N015567-002BMSD	SampType: MSD	TestCode: 300_W_SO4P	Units: mg/L	Prep Date:	RunNo: 100345
Client ID:	ZZZZZZ	Batch ID: R100345	TestNo: EPA 300.0		Analysis Date: 5/13/2015	SeqNo: 2000238

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Sulfate	710.400	25	250.0	447.5	105	80	120	704.2	0.869	20	

Qualifiers:

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- 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: *20-May-15*

CLIENT:	CH2M HILL	**Client Sample ID:**	SC-100B-WDR-520
Lab Order:	N015567	**Collection Date:**	5/5/2015 7:10:00 AM
Project:	PG&E Topock, 658274.01.IM.OP.00	**Matrix:**	WATER
Lab ID:	N015567-001		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
TOTAL PHOSPHORUS							
			EPA 365.3				
RunID: **WETCHEM_150519C**	QC Batch: **50466**			PrepDate	**5/18/2015**		Analyst: **QBM**
Phosphorus, Total (As P)	0.035	0.0056	0.020		mg/L	1	5/19/2015

Qualifiers:

B	Analyte detected in 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
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: *20-May-15*

CLIENT: CH2M HILL
Work Order: N015567
Project: PG&E Topock, 658274.01.IM.OP.00

ANALYTICAL QC SUMMARY REPORT

TestCode: 365.3_W_T

Sample ID	LCS-50466	SampType:	LCS	TestCode:	365.3_W_T	Units:	mg/L	Prep Date:	5/18/2015	RunNo:	100435
Client ID:	LCSW	Batch ID:	50466	TestNo:	EPA 365.3			Analysis Date:	5/19/2015	SeqNo:	2003891

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Phosphorus, Total (As P)	0.373	0.020	0.4000	0	93.2	80	120				

Sample ID	MB-50466	SampType:	MBLK	TestCode:	365.3_W_T	Units:	mg/L	Prep Date:	5/18/2015	RunNo:	100435
Client ID:	PBW	Batch ID:	50466	TestNo:	EPA 365.3			Analysis Date:	5/19/2015	SeqNo:	2003892

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Phosphorus, Total (As P)	ND	0.020									

Sample ID	N015669-005A-MS	SampType:	MS	TestCode:	365.3_W_T	Units:	mg/L	Prep Date:	5/18/2015	RunNo:	100435
Client ID:	ZZZZZZ	Batch ID:	50466	TestNo:	EPA 365.3			Analysis Date:	5/19/2015	SeqNo:	2003896

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Phosphorus, Total (As P)	0.469	0.020	0.4000	0.09100	94.5	80	120				

Sample ID	N015669-005A-MSD	SampType:	MSD	TestCode:	365.3_W_T	Units:	mg/L	Prep Date:	5/18/2015	RunNo:	100435
Client ID:	ZZZZZZ	Batch ID:	50466	TestNo:	EPA 365.3			Analysis Date:	5/19/2015	SeqNo:	2003897

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Phosphorus, Total (As P)	0.479	0.020	0.4000	0.09100	97.0	80	120	0.4690	2.11	20	

Qualifiers:

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- 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: *20-May-15*

CLIENT:	CH2M HILL	**Client Sample ID:**	SC-100B-WDR-520
Lab Order:	N015567	**Collection Date:**	5/5/2015 7:10:00 AM
Project:	PG&E Topock, 658274.01.IM.OP.00	**Matrix:**	WATER
Lab ID:	N015567-001		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
NITRATE/NITRITE-N BY CADMIUM REDUCTION							
			SM4500-NO3F				
RunID: **WETCHEM_150515D**	QC Batch: **R100396**			PrepDate			Analyst: **RB**
Nitrate/Nitrite as N	2.5	0.11	0.25		mg/L	5	5/15/2015

Qualifiers:

B	Analyte detected in 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

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P: 702.307.2659 F: 702.307.2691

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ANALYTICAL RESULTS

Print Date: *20-May-15*

CLIENT:	CH2M HILL	**Client Sample ID:**	SC-700B-WDR-520
Lab Order:	N015567	**Collection Date:**	5/5/2015 7:12:00 AM
Project:	PG&E Topock. 658274.01.IM.OP.00	**Matrix:**	WATER
Lab ID:	N015567-002		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
NITRATE/NITRITE-N BY CADMIUM REDUCTION							
			SM4500-NO3F				
RunID: WETCHEM_150515D	QC Batch: R100396			PrepDate			Analyst: RB
Nitrate/Nitrite as N	2.6	0.11	0.25		mg/L	5	5/15/2015

Qualifiers:

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

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ASSET Laboratories

Date: *20-May-15*

CLIENT: CH2M HILL
Work Order: N015567
Project: PG&E Topock, 658274.01.IM.OP.00

ANALYTICAL QC SUMMARY REPORT

TestCode: 4500N03F_W

Sample ID	SampType	TestCode	Units	Prep Date	RunNo
MB-R100396	MBLK	4500N03F_W	mg/L		100396
Client ID	**Batch ID**	**TestNo**		**Analysis Date**	**SeqNo**
PBW	R100396	SM4500-NO3		5/15/2015	2002355

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-R100396	LCS	4500N03F_W	mg/L		100396
Client ID	**Batch ID**	**TestNo**		**Analysis Date**	**SeqNo**
LCSW	R100396	SM4500-NO3		5/15/2015	2002356

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrate/Nitrite as N	0.966	0.050	1.000	0	96.6	85	115				

Sample ID	SampType	TestCode	Units	Prep Date	RunNo
N015566-002CMS	MS	4500N03F_W	mg/L		100396
Client ID	**Batch ID**	**TestNo**		**Analysis Date**	**SeqNo**
ZZZZZZ	R100396	SM4500-NO3		5/15/2015	2002360

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrate/Nitrite as N	1.022	0.050	1.000	0.05810	96.4	75	125				

Sample ID	SampType	TestCode	Units	Prep Date	RunNo
N015566-002CMSD	MSD	4500N03F_W	mg/L		100396
Client ID	**Batch ID**	**TestNo**		**Analysis Date**	**SeqNo**
ZZZZZZ	R100396	SM4500-NO3		5/15/2015	2002361

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrate/Nitrite as N	1.053	0.050	1.000	0.05810	99.5	75	125	1.053	0	20	

Sample ID	SampType	TestCode	Units	Prep Date	RunNo
N015566-001CDUP	DUP	4500N03F_W	mg/L		100396
Client ID	**Batch ID**	**TestNo**		**Analysis Date**	**SeqNo**
ZZZZZZ	R100396	SM4500-NO3		5/15/2015	2002381

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	

Qualifiers:

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- DO Surrogate Diluted Out
- E Value above quantitation range
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- 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: *20-May-15*

CLIENT:	CH2M HILL	**Client Sample ID:**	SC-100B-WDR-520
Lab Order:	N015567	**Collection Date:**	5/5/2015 7:10:00 AM
Project:	PG&E Topock, 658274.01.IM.OP.00	**Matrix:**	WATER
Lab ID:	N015567-001		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
TOTAL ORGANIC CARBON							
			SM 5310C				
RunID: TOC2_150515A	QC Batch: R100390			PrepDate			Analyst: RB
Organic Carbon, Total	ND	0.041	1.0		mg/L	1	5/15/2015 02:01 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		

ASSET Laboratories

Date: *20-May-15*

CLIENT: CH2M HILL
Work Order: N015567
Project: PG&E Topock, 658274.01.IM.OP.00

ANALYTICAL QC SUMMARY REPORT

TestCode: 5310C_W_T

Sample ID MB-R100390 SampType: MBLK TestCode: 5310C_W_T Units: mg/L Prep Date: RunNo: 100390
Client ID: PBW Batch ID: R100390 TestNo: SM 5310C Analysis Date: 5/15/2015 SeqNo: 2001758

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Organic Carbon, Total	ND	1.0									

Sample ID LCS-R100390 SampType: LCS TestCode: 5310C_W_T Units: mg/L Prep Date: RunNo: 100390
Client ID: LCSW Batch ID: R100390 TestNo: SM 5310C Analysis Date: 5/15/2015 SeqNo: 2001759

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Organic Carbon, Total	4.986	1.0	5.000	0	99.7	85	115				

Sample ID N015615-006DMS SampType: MS TestCode: 5310C_W_T Units: mg/L Prep Date: RunNo: 100390
Client ID: ZZZZZZ Batch ID: R100390 TestNo: SM 5310C Analysis Date: 5/15/2015 SeqNo: 2001772

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Organic Carbon, Total	5.289	1.0	5.000	0.6397	93.0	75	125				

Sample ID N015615-006DMSD SampType: MSD TestCode: 5310C_W_T Units: mg/L Prep Date: RunNo: 100390
Client ID: ZZZZZZ Batch ID: R100390 TestNo: SM 5310C Analysis Date: 5/15/2015 SeqNo: 2001773

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Organic Carbon, Total	5.303	1.0	5.000	0.6397	93.3	75	125	5.288	0.270	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

WORK ORDER: N015567

ANALYST LIST

NAME	TEST METHOD
Quennie Manimtim	EPA 300.0, EPA 365.3
Claire Ignacio	EPA 200.8
Jasper Aquino	EPA 200.7
Lilia Ramit	EPA 120.1, SM 2540C, SM 2130B, SM 2320B
Ryan Balilu	EPA 218.6, SM 4500-NO3F, SM 5310C

CH2MHILL

CHAIN OF CUSTODY RECORD

5/4/2015 2:52:53 PM

Project Name PG&E Topock
Location PG&E Topock
Project Number 658274.01.IM.OP.00
Project Manager Scott O'Donnell
Sample Manager Shawn Duffy

Task Order
Project IM3PLANT-ARAR-WDR-520
Turnaround Time 10 Days
Shipping Date: 5/5/2015
COC Number: 520

			Container:	1 Liter Poly	1 Liter Poly	1 Liter Poly	1 Liter Poly	500 ml Poly	250 ml Poly	1 Liter Poly	1 Liter Poly	1 Liter Poly	3 x 40 ml VOA	500 ml Poly	1 Liter Poly	1 Liter Poly			
			Preservatives:	4°C	4°C Lab H2SO4	4°C	4°C	4°C	4°C	4°C Lab H2SO4	4°C Lab H2SO4	4°C	H3PO4, 4°C	4°C	4°C	4°C			
			Filtered:	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA			
			Holding Time:	7	28	7	7	180	1	28	28	7	7	180	7	7			
	DATE	TIME	Matrix	ALKALINITY (SM2320B)	AMMONIA (SM4500NH3D)	Anions (E300.0) Sulfate/Flouride	CONDUCTIVITY (E120.1)	Diss Metals(E200.7) Ca,Mg,Na,Fe LabFilt	E218.6 Lab Filtered	Nitrate/Nitrite (SM4500NO3-E)	Reactivesilica (4500Si-D)	TDS (SM2540C)	TOC (SM5310C)	Total Metals(200.7 and 200.8) See List	Total P (SM4500-P)	Turbidity (SM2130)		Number of Containers	COMMENTS
SC-100B-WDR-520	5/5/2015	0710	Water	X	X	X	X	X	X	X	X	X	X	X	X	X		8	7. NO15567-1
SC-700B-WDR-520	5/5/2015	0712	Water		X	X	X		X	X		X		X		X		4	1 -2
																	TOTAL NUMBER OF CONTAINERS	11	

0713- pH 7.23 T100
7.05
0715 pH ~~7.25~~ 7.16 T 700

	Signatures	Date/Time
Approved by		
Sampled by		5-5-15 0713
Relinquished by		5-5-15 11:20
Received by		5/5/15 1320
Relinquished by		5-5-15 1925
Received by		5/5/15 1925

Shipping Details

Method of Shipment: FedEx
Chain on Ice: (yes) / no 2-4°C
Airbill No: 1242
Lab Name: ASSET Laboratories
Lab Phone: (702) 307-2659

ATTN:

Sample Custody

and

Glen Gesmundo

Special Instructions:

Metal List - Cr, Al, Sb, As, Ba, B, Cu, Pb, Mn, Mo, Ni, Fe, Zn

Report Copy to
Shawn Duffy
(530) 229-3303

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:	5/5/2015	Workorder:	N015567
Rep sample Temp (Deg C):	2.9	IR Gun ID:	2
Temp Blank:	☑ Yes ☐ No		
Carrier name:	ASSET		
Last 4 digits of Tracking No.:	NA	Packing Material Used:	None
Cooling process:	☑ Ice ☐ Ice Pack ☐ Dry Ice ☐ Other ☐ None		

Sample Receipt Checklist

1. Shipping container/cooler in good condition?	Yes ☑	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 5/11/2015

Reviewed By: 05/12/15

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:
Truesdail
14201 Franklin Ave.
Tustin, CA 92680

TEL: (714) 730-6239
FAX: (714) 730-6462
Acct #:

Field Sampler: SIGNED

06-May-15

Sample ID	Matrix	Date Collected	Bottle Type	Requested Tests: SM 4500-SiO2 C	Requested Tests: SM4500-NH3C	
N015567-001B / SC-100B-WDR-520	Water	5/5/2015 7:10:00 AM	32OZP		1	
N015567-001H / SC-100B-WDR-520	Water	5/5/2015 7:10:00 AM	8OZP	1		
N015567-002A / SC-700B-WDR-520	Water	5/5/2015 7:12:00 AM	32OZP		1	

General Comments: Please email sample receipt acknowledgement to the PM.
Please use PO#:N15567A For questions, call Marlon at (702)-307-2659. Please e-mail results to reports.lv@assetlaboratories.com by:Normal TAT
Please analyze for Ammonia by SM4500NH3D and Reactive Silica by 4500Si-D. CH2M HILL Sample.

		Date/Time			Date/Time
Relinquished by:		5/6/2015 17:00	**Received by:**	GSO #: 527834362	
Relinquished by:			**Received by:**		

SAMPLE CALCULATION

METHOD: SM 2540C
TEST NAME: Total Filterable Residue
MATRIX: Water

FORMULA:

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

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

Where:

A = weight in g of dish + residue after drying
B = weight of dish in g
C = volume of sample used in mL

For **N015567-001A,** TDS concentration in mg/L is calculated as follows:

$$\text{TDS, mg/L} = \frac{(64.1653-64.0853)*1000000}{20}$$

$$= 4000 \text{ mg/L}$$

Reporting result in two significant figures,

TDS = 4000 mg/L

Julia Ramit 5/8/2015

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

	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
Date Finished:5/7/15								
MB-50361	100	63.9837	63.9844	7	1	7		
LCS-50361	100	75.7415	75.8385	970	1	970		
N015563-006D	100	55.5377	55.5673	296	1	296	415	0.713
N015563-006D DUP	100	61.2254	61.2552	298	1	298	415	0.718
N015563-007D	100	63.8117	63.8365	248	1	248	347	0.715
N015563-008D	100	63.525	63.5519	269	1	269	399	0.674
N015567-001A	20	64.0853	64.1653	800	5	4000	6780	0.590
N015567-002B	20	64.2444	64.3255	811	5	4055	6790	0.597
N015568-001A	20	61.3451	61.4322	871	5	4355	7340	0.593
N015569-001A	30	63.9484	64.023	746	3.33333333	2486.66667	4160	0.598
N015569-002A	20	57.065	57.1536	886	5	4430	7530	0.588

Julia Ramit 5/8/2015

Sample Calculation

METHOD: EPA 200.7
TEST NAME: Heavy Metals by ICP
MATRIX: Water

FORMULA:

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

Calcium, ug/L = A * DF * PF * 1000

where:

A = mg/L, calculated concentration
DF = dilution factor
PF = Final Vol. of Digestate in mL / Amt. of Sample mL

For Sample **N015567-001C**, the concentration in ug/L is calculated as follows:

Calcium, ug/L = 151.1977054 * 1 * (25/25) * 1000

= 151197.7054

Reporting results in two significant figures,

Calcium, ug/L = 150000

ASSET Laboratories

ICP-Metals In Water

Dilution Test Summary

Work Order No.: N015567
Test Method: EPA 200.7
Analysis Date: 05/07/15

Matrix: Water
Batch No.: 50380

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

Comments:

Analyzed By: Jasper A. Aquino

Dilution test is not applicable to Fe. The calculated value is < 25X RL.
Dilution test failed for Ca and Mg.

Sample ID	Analyte	Units	Calc Val	QQual	SAMPrefval	%DIFF	%DIFFlimit
N015567-001C-DT 5X	Calcium	µg/L	215012.4078	FAIL	151197.7054	42.21%	10
N015567-001C-DT 5X	Iron	µg/L	0	NA	0		10
N015567-001C-DT 5X	Magnesium	µg/L	30572.59718	FAIL	20542.23369	48.83%	10

Note: NA - Not Applicable

ASSET Laboratories

ICP-Metals In Water

Dilution Test Summary

Work Order No.: N015567
Test Method: EPA 200.7
Analysis Date: 05/08/15

Matrix: Water
Batch No.: 50380

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

Comments:

Analyzed By: Jasper A. Aquino

Sample ID	Analyte	Units	Calc Val	OQual	SAMPrefval	%DIFF	%DIFFlimit
N015569-001B-DT 500X	Sodium	µg/L	907128.5345	PASS	848467.8309	6.91%	10

Note: NA - Not Applicable

ASSET Laboratories

Date: *10-May-15*

CLIENT: CH2M HILL
Work Order: N015567
Project: PG&E Topock, 658274.01.IM.OP.00

ANALYTICAL QC SUMMARY REPORT

TestCode: 200.7_WDPGEPPB

Sample ID: **N015567-001C-PS** SampType: **PS** TestCode: **200.7_WDPG** Units: **µg/L** Prep Date: RunNo: **100254**
Client ID: **ZZZZZZ** Batch ID: **50380** TestNo: **EPA 200.7** Analysis Date: **5/7/2015** SeqNo: **1994142**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Calcium	239273.268	500	10000	151200	881	80	120				S
Iron	97.602	20	100.0	0	97.6	80	120				
Magnesium	38960.510	100	10000	20540	184	80	120				S

Sample ID: **N015569-001B-PS** SampType: **PS** TestCode: **200.7_WDPG** Units: **µg/L** Prep Date: RunNo: **100279**
Client ID: **ZZZZZZ** Batch ID: **50380** TestNo: **EPA 200.7** Analysis Date: **5/8/2015** SeqNo: **1996189**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Sodium	812224.556	50000	20000	848500	-181	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		

Sample Calculation

METHOD: EPA 200.7
TEST NAME: Heavy Metals by ICP
MATRIX: Water

FORMULA:

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

Boron, ug/L = A * DF * PF * 1000

where:

A = mg/L, calculated concentration
DF = dilution factor
PF = Final Vol. of Digestate in mL / Amt. of Sample mL

For Sample **N015567-001E**, the concentration in ug/L is calculated as follows:

Boron, ug/L = 0.8978952033 * 1 * (25/25) * 1000

= 897.8952033

Reporting results in two significant figures,

Boron, ug/L = 900

ASSET Laboratories

ICP-Metals in Water

Dilution Test Summary

Work Order No.: N015567
Test Method: EPA 200.7
Analysis Date: 05/07/15

Matrix: Water
Batch No.: 50382

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

Comments:

Analyzed By: Jasper A. Aquino

Dilution test is not applicable to Al, B & Fe. The calculated values are < 25X RL.

Sample ID	Analyte	Units	Calc Val	OQual	SAMPrefval	%DIFF	%DIFFlimit
N015567-001E-DT 5X	Aluminum	µg/L	0	NA	0		10
N015567-001E-DT 5X	Boron	µg/L	966.0005665	NA	897.8952033	7.59%	10
N015567-001E-DT 5X	Iron	µg/L	0	NA	0		10

Note: NA - Not Applicable

ASSET Laboratories

Date: *07-May-15*

CLIENT: CH2M HILL
Work Order: N015567
Project: PG&E Topock, 658274.01.IM.OP.00

ANALYTICAL QC SUMMARY REPORT

TestCode: 200.7_WPGEPPB

Sample ID:	N015567-001E-PS	SampType:	PS	TestCode:	200.7_WPGE	Units:	µg/L	Prep Date:			RunNo:	100254
Client ID:	ZZZZZZ	Batch ID:	50382	TestNo:	EPA 200.7			Analysis Date:	5/7/2015		SeqNo:	1994083

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aluminum	10899.079	50	10000	0	109	80	120				
Boron	6117.279	100	5000	897.9	104	80	120				
Iron	100.781	20	100.0	0	101	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		

Sample Calculation

METHOD: EPA 200.8
TEST NAME: Heavy Metals by ICP-MS
MATRIX: Water

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 Vol. of Digestate in mL / Vol. of Sample used in mL

For Sample **N015567-001E,** the concentration in ug/L is calculated as follows:

Arsenic, ug/L = 3.68443809774564 * 1 * (25/25)

= 3.68443809774564

Reporting results in two significant figures,

Arsenic, ug/L = 3.7

ASSET Laboratories

ICP-Metals In Water

Dilution Test Summary

Work Order No.: N015567
Test Method: EPA 200.8
Analysis Date: 5/6/2015

Matrix: Water
Batch No.: 50357

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

Comments:

Analyzed By: Mary Claire Ignacio

Dilution test is not applicable to Sb, Cr, Cu, Mn, Mo, Ni and Zn. The calculated concentrations are < 25X RL's.

Sample ID	Analyte	Units	Calc Val	OQual	SAMPRefVal	%DIFF	%DIFFlimit
N015565-001H-DT 5X	Antimony	µg/L	0	NA	0.055997304	0 100.00%	10
N015565-001H-DT 5X	Arsenic	µg/L	31.39603524	PASS	29.03485417	8.13%	10
N015565-001H-DT 5X	Chromium	µg/L	0	NA	0		10
N015565-001H-DT 5X	Copper	µg/L	0	NA	0		10
N015565-001H-DT 5X	Manganese	µg/L	0	NA	0		10
N015565-001H-DT 5X	Molybdenum	µg/L	1.275824895	NA	1.222002774	4.40%	10
N015565-001H-DT 5X	Nickel	µg/L	0	NA	0		10
N015565-001H-DT 5X	Zinc	µg/L	3.125978428	NA	2.782728329	12.34%	10

5/20/2015

Note: NA - Not applicable

Sb and Mo are not reported on this run.

5/20/2015

ASSET Laboratories

ICP-Metals in Water

Dilution Test Summary

Work Order No.: N015567
Test Method: EPA 200.8
Analysis Date: 5/7/2015

Matrix: Water
Batch No.: 50357

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

Comments:

Analyzed By: Mary Claire Ignacio

Dilution test is not applicable to Sb, Mo and Pb. The calculated concentrations are < 25X RL's.

Sample ID	Analyte	Units	Calc Val	OQual	SAMPRefVal	%DIFF	%DIFFlimit
N015565-001H-DT 5X	Antimony	µg/L	0	NA	0.062	100.00%	10
N015565-001H-DT 25X	Barium	µg/L	197.683275	PASS	185.4144511	6.62%	10
N015565-001H-DT 5X	Molybdenum	µg/L	1.341855642	NA	1.220918443	9.91%	10
N015565-001H-DT 5X	Lead	µg/L	0	NA	0		10

Note: NA - Not applicable

ASSET Laboratories

Date: *20-May-15*

CLIENT: CH2M HILL
Work Order: N015567
Project: PG&E Topock, 658274.01.IM.OP.00

ANALYTICAL QC SUMMARY REPORT

TestCode: 200.8_W

Sample ID: **N015565-001H-PS** SampType: **PS** TestCode: **200.8_W** Units: **µg/L** Prep Date: RunNo: **100255**
Client ID: **ZZZZZZ** Batch ID: **50357** TestNo: **EPA 200.8** Analysis Date: **5/6/2015** SeqNo: **1994699**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	38.993	0.10	10.00	29.03	99.6	80	120				
Copper	6.916	1.0	10.00	0	69.2	80	120				S
Manganese	88.045	0.50	100.0	0	88.0	80	120				
Nickel	8.976	1.0	10.00	0	89.8	80	120				
Zinc	81.369	10	100.0	2.783	78.6	80	120				S

Sample ID: **N015565-001H-PS** SampType: **PS** TestCode: **200.8_W** Units: **µg/L** Prep Date: RunNo: **100260**
Client ID: **ZZZZZZ** Batch ID: **50357** TestNo: **EPA 200.8** Analysis Date: **5/7/2015** SeqNo: **1995374**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Antimony	10.264	0.50	10.00	0.06900	102	80	120				
Lead	10.236	1.0	10.00	0	102	80	120				
Molybdenum	12.289	0.50	10.00	1.221	111	80	120				

Sample ID: **N015565-001H-PS** SampType: **PS** TestCode: **200.8_W** Units: **µg/L** Prep Date: RunNo: **100260**
Client ID: **ZZZZZZ** Batch ID: **50357** TestNo: **EPA 200.8** Analysis Date: **5/7/2015** SeqNo: **1995380**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Barium	313.490	5.0	100.0	185.4	128	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		

CLIENT: CH2M HILL
Work Order: N015567
Project: PG&E Topock, 658274.01.IM.OP.00

ANALYTICAL QC SUMMARY REPORT

TestCode: 200.8_W_CRPGE

Sample ID:	N015565-001H-PS	SampType:	PS	TestCode:	200.8_W_CR	Units:	µg/L	Prep Date:			RunNo:	100255
Client ID:	ZZZZZZ	Batch ID:	50357	TestNo:	EPA 200.8			Analysis Date:	5/6/2015		SeqNo:	1994503

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium	9.289	1.0	10.00	0	92.9	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		

Sample Calculation

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

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 **N015567-001D** concentration in µg/L is calculated as follows:

$$Cr^{+6}, \mu g/L = 5.2629 * 100$$

$$= 526.29$$

Reporting result in two significant figures,

$$\mathbf{Cr^{+6}, \mu g/L = 530}$$

Sample ID: **N015567-001A @ pH 7.41**

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) (12.00mL)

= **0.020833 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 = (8.60) (0.020833 N) (1) * 1000

= 179.1638 **mg/L**

Reporting results in two significant figures,

= 180 **mg/L** as CaCO3

Julia Ramit 5/8/2015

C. SPECIATED ALKALINITY:

Phenolphthalein Alkalinity

P alkalinity, mg/L as $CaCO_3$ = $P_{vol.}$ * N H_2SO_4 * DF * 1000

= (0) (0.020833 N) (1) * 1000

= **0**

Total Alkalinity

T alkalinity, mg/L as $CaCO_3$ = $M_{vol.}$ * N H_2SO_4 * DF * 1000

= (8.60 mL) (0.020833) (1) * 1000

= 179.1638 **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 $CaCO_3$ = 179.1638 **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 $CaCO_3$ = 180 **mg/L**

Julia Ramit 5/8/2015

Sample Calculation

METHOD: EPA 300.0
TEST NAME: INORGANIC ANIONS BY IC
MATRIX: WATER

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 **N015567-001A** concentration in mg/L is calculated as follows:

Sulfate, mg/L = 9.213 * 50

= 460.65

Reporting results in two significant figures,

Sulfate, mg/L = 460

5/15/2015

SAMPLE CALCULATION

METHOD: EPA 365.3
TEST NAME: Total Phosphorus
MATRIX: WATER

FORMULA:

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

Total Phosphorus, mg/L = A * DF

Where:

A= mg/L, UV-VIS Total Phosphorus calculated concentration

DF= dilution factor

For **N015567-001G,** concentration in mg/L is calculated as follows:

Total Phosphorus, mg/L = 0.035 *1

= 0.035 mg/L

Reporting result in 2 significant figures,

Total Phosphorus = 0.035 mg/L

5/20/2015

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 **N015567-001G**, concentration in mg/L is calculated as follows:

Nitrate/Nitrite-N, mg/L = 0.4995 * 5

= 2.4975mg/L

Reporting results in two significant figures:

Nitrate/Nitrite-N, mg/L = 2.5 mg/L

REB 5/18/2015

Sample Calculation

METHOD: SM5310C
TEST NAME: TOTAL ORGANIC CARBON
MATRIX: WATER

FORMULA:

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

TOC = [A] [DF] - B

where:

A = mg/L, instrument calculated concentration
DF = dilution factor
B = mg/L, TOC concentration in the calibration blank

For: **N015567-001F**

The concentration in mg/L is calculated as follows:

TOC = [0.12320] [1] - 0.00000

TOC = 0.12320

Since PQL is 1mg/L,

TOC = ND

May 20, 2015

Shawn P. Duffy
CH2M HILL
155 Grand Avenue, Suite 1000
Oakland, CA 94612

TEL: (530) 229-3303
FAX: (530) 339-3303

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

Workorder No.: N015568

RE: PG&E Topock, 658274.01.IM.OP.00

Attention: Shawn P. Duffy

Enclosed are the results for sample(s) received on May 05, 2015 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,

Glen Gesmundo
QA Manager

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: CH2M HILL
Project: PG&E Topock, 658274.01.IM.OP.00
Lab Order: N015568

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.

ASSET Laboratories

Date: *20-May-15*

CLIENT: CH2M HILL
Project: PG&E Topock, 658274.01.IM.OP.00
Lab Order: N015568
Contract No: IM3PLANT-AR

Work Order Sample Summary

Lab Sample ID	Client Sample ID	Matrix	Collection Date	Date Received	Date Reported
N015568-001A	SC-700B-WDR-519	Water	5/4/2015 9:30:00 AM	5/5/2015	5/20/2015
N015568-001B	SC-700B-WDR-519	Water	5/4/2015 9:30:00 AM	5/5/2015	5/20/2015
N015568-001C	SC-700B-WDR-519	Water	5/4/2015 9:30:00 AM	5/5/2015	5/20/2015

ASSET Laboratories

ANALYTICAL RESULTS

Print Date: *20-May-15*

CLIENT:	CH2M HILL	**Client Sample ID:**	SC-700B-WDR-519
Lab Order:	N015568	**Collection Date:**	5/4/2015 9:30:00 AM
Project:	PG&E Topock, 658274.01.IM.OP.00	**Matrix:**	WATER
Lab ID:	N015568-001		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
SPECIFIC CONDUCTANCE							
			EPA 120.1				
RunID: **WETCHEM_150506C**	QC Batch: **R100215**			PrepDate			Analyst: **LR**
Specific Conductance	7300	0.10	0.10		umhos/cm	1	5/6/2015 02:00 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

Date: *20-May-15*

CLIENT: CH2M HILL
Work Order: N015568
Project: PG&E Topock, 658274.01.IM.OP.00

ANALYTICAL QC SUMMARY REPORT

TestCode: 120.1_WPGE

Sample ID	N015567-001A DUP	SampType:	DUP	TestCode:	120.1_WPGE	Units:	umhos/cm	Prep Date:			RunNo:	100215
Client ID:	ZZZZZZ	Batch ID:	R100215	TestNo:	EPA 120.1			Analysis Date:	5/6/2015		SeqNo:	1992879

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Specific Conductance	6800.000	0.10						6780	0.295	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

ASSET Laboratories

ANALYTICAL RESULTS

Print Date: *20-May-15*

CLIENT:	CH2M HILL	**Client Sample ID:**	SC-700B-WDR-519
Lab Order:	N015568	**Collection Date:**	5/4/2015 9:30:00 AM
Project:	PG&E Topock, 658274.01.IM.OP.00	**Matrix:**	WATER
Lab ID:	N015568-001		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
TOTAL FILTERABLE RESIDUE							
			SM2540C				
RunID: **WETCHEM_150506G**	QC Batch: **50361**			PrepDate	**5/6/2015**		Analyst: **LR**
Total Dissolved Solids (Residue, Filterable)	4400	50	50		mg/L	1	5/6/2015 11:47 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

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P: 702.307.2659 F: 702.307.2691

"Serving Clients with Passion and Professionalism"

ASSET Laboratories

Date: *20-May-15*

CLIENT: CH2M HILL
Work Order: N015568
Project: PG&E Topock, 658274.01.IM.OP.00

ANALYTICAL QC SUMMARY REPORT

TestCode: 160.1_2540C_W

Sample ID	MB-50361	SampType:	MBLK	TestCode:	160.1_2540C	Units:	mg/L	Prep Date:	5/6/2015	RunNo:	100235
Client ID:	PBW	Batch ID:	50361	TestNo:	SM2540C			Analysis Date:	5/6/2015	SeqNo:	1993517

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	LCS-50361	SampType:	LCS	TestCode:	160.1_2540C	Units:	mg/L	Prep Date:	5/6/2015	RunNo:	100235
Client ID:	LCSW	Batch ID:	50361	TestNo:	SM2540C			Analysis Date:	5/6/2015	SeqNo:	1993518

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	970.000	10	1000	0	97.0	80	120				

Sample ID	N015563-006D DUP	SampType:	DUP	TestCode:	160.1_2540C	Units:	mg/L	Prep Date:	5/6/2015	RunNo:	100235
Client ID:	ZZZZZZ	Batch ID:	50361	TestNo:	SM2540C			Analysis Date:	5/6/2015	SeqNo:	1993520

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	298.000	10						296.0	0.673	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

ASSET Laboratories

ANALYTICAL RESULTS

Print Date: *20-May-15*

CLIENT:	CH2M HILL	**Client Sample ID:**	SC-700B-WDR-519
Lab Order:	N015568	**Collection Date:**	5/4/2015 9:30:00 AM
Project:	PG&E Topock, 658274.01.IM.OP.00	**Matrix:**	WATER
Lab ID:	N015568-001		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
TOTAL METALS BY ICPMS							
			EPA 200.8				
RunID: ICP7_150506A	QC Batch: 50357			PrepDate		5/6/2015	Analyst: CEI
Manganese	ND	0.023	0.50		µg/L	1	5/6/2015 04:11 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

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: *20-May-15*

CLIENT: CH2M HILL
Work Order: N015568
Project: PG&E Topock, 658274.01.IM.OP.00

ANALYTICAL QC SUMMARY REPORT

TestCode: 200.8_W

Sample ID	MB-50357	SampType:	MBLK	TestCode:	200.8_W	Units:	µg/L	Prep Date:	5/6/2015	RunNo:	100255
Client ID:	PBW	Batch ID:	50357	TestNo:	EPA 200.8			Analysis Date:	5/6/2015	SeqNo:	1994693

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Manganese	ND	0.50									

Sample ID	LCS-50357	SampType:	LCS	TestCode:	200.8_W	Units:	µg/L	Prep Date:	5/6/2015	RunNo:	100255
Client ID:	LCSW	Batch ID:	50357	TestNo:	EPA 200.8			Analysis Date:	5/6/2015	SeqNo:	1994694

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Manganese	97.072	0.50	100.0	0	97.1	85	115				

Sample ID	N015565-001H-MS	SampType:	MS	TestCode:	200.8_W	Units:	µg/L	Prep Date:	5/6/2015	RunNo:	100255
Client ID:	ZZZZZZ	Batch ID:	50357	TestNo:	EPA 200.8			Analysis Date:	5/6/2015	SeqNo:	1994700

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Manganese	86.631	0.50	100.0	0	86.6	75	125				

Sample ID	N015565-001H-MSD	SampType:	MSD	TestCode:	200.8_W	Units:	µg/L	Prep Date:	5/6/2015	RunNo:	100255
Client ID:	ZZZZZZ	Batch ID:	50357	TestNo:	EPA 200.8			Analysis Date:	5/6/2015	SeqNo:	1994701

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Manganese	86.512	0.50	100.0	0	86.5	75	125	86.63	0.138	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: *20-May-15*

CLIENT:	CH2M HILL	**Client Sample ID:**	SC-700B-WDR-519
Lab Order:	N015568	**Collection Date:**	5/4/2015 9:30:00 AM
Project:	PG&E Topock, 658274.01.IM.OP.00	**Matrix:**	WATER
Lab ID:	N015568-001		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
HEXAVALENT CHROMIUM BY IC							
			EPA 218.6				
RunID: IC7_150506A	QC Batch: R100271			PrepDate			Analyst: RB
Hexavalent Chromium	0.57	0.015	0.20		µg/L	1	5/6/2015 04:46 PM
TOTAL METALS BY ICPMS							
			EPA 200.8				
RunID: ICP7_150506A	QC Batch: 50357			PrepDate		5/6/2015	Analyst: CEI
Chromium	ND	0.086	1.0		µg/L	1	5/6/2015 04:11 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

Date: *20-May-15*

CLIENT: CH2M HILL
Work Order: N015568
Project: PG&E Topock, 658274.01.IM.OP.00

ANALYTICAL QC SUMMARY REPORT

TestCode: 200.8_W_CRPGE

Sample ID	MB-50357	SampType:	MBLK	TestCode:	200.8_W_CR	Units:	µg/L	Prep Date:	5/6/2015	RunNo:	100255
Client ID:	PBW	Batch ID:	50357	TestNo:	EPA 200.8			Analysis Date:	5/6/2015	SeqNo:	1994497

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

Sample ID	LCS-50357	SampType:	LCS	TestCode:	200.8_W_CR	Units:	µg/L	Prep Date:	5/6/2015	RunNo:	100255
Client ID:	LCSW	Batch ID:	50357	TestNo:	EPA 200.8			Analysis Date:	5/6/2015	SeqNo:	1994498

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium	9.824	1.0	10.00	0	98.2	85	115				

Sample ID	N015565-001H-MS	SampType:	MS	TestCode:	200.8_W_CR	Units:	µg/L	Prep Date:	5/6/2015	RunNo:	100255
Client ID:	ZZZZZZ	Batch ID:	50357	TestNo:	EPA 200.8			Analysis Date:	5/6/2015	SeqNo:	1994504

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium	9.034	1.0	10.00	0	90.3	75	125				

Sample ID	N015565-001H-MSD	SampType:	MSD	TestCode:	200.8_W_CR	Units:	µg/L	Prep Date:	5/6/2015	RunNo:	100255
Client ID:	ZZZZZZ	Batch ID:	50357	TestNo:	EPA 200.8			Analysis Date:	5/6/2015	SeqNo:	1994505

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium	9.130	1.0	10.00	0	91.3	75	125	9.034	1.05	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: CH2M HILL
Work Order: N015568
Project: PG&E Topock, 658274.01.IM.OP.00

ANALYTICAL QC SUMMARY REPORT

TestCode: 218.6_WU_PGE

Sample ID	SampType	TestCode	Units	Prep Date	RunNo
LCS-R100271	LCS	218.6_WU_P	µg/L		100271
Client ID: LCSW	Batch ID: R100271	TestNo: EPA 218.6		Analysis Date: 5/6/2015	SeqNo: 1995910

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	4.959	0.20	5.000	0	99.2	90	110				

Sample ID	SampType	TestCode	Units	Prep Date	RunNo
MB-R100271	MBLK	218.6_WU_P	µg/L		100271
Client ID: PBW	Batch ID: R100271	TestNo: EPA 218.6		Analysis Date: 5/6/2015	SeqNo: 1995911

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

Sample ID	SampType	TestCode	Units	Prep Date	RunNo
N015565-001E-DUP	DUP	218.6_WU_P	µg/L		100271
Client ID: ZZZZZZ	Batch ID: R100271	TestNo: EPA 218.6		Analysis Date: 5/6/2015	SeqNo: 1995920

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	0.137	0.20						0.1309	0	20	

Sample ID	SampType	TestCode	Units	Prep Date	RunNo
N015474-002A-MS	MS	218.6_WU_P	µg/L		100271
Client ID: ZZZZZZ	Batch ID: R100271	TestNo: EPA 218.6		Analysis Date: 5/6/2015	SeqNo: 1995921

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	32.160	1.0	25.00	7.747	97.7	90	110				

Sample ID	SampType	TestCode	Units	Prep Date	RunNo
N015474-002A-MSD	MSD	218.6_WU_P	µg/L		100271
Client ID: ZZZZZZ	Batch ID: R100271	TestNo: EPA 218.6		Analysis Date: 5/6/2015	SeqNo: 1995922

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	32.815	1.0	25.00	7.747	100	90	110	32.16	2.01	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: CH2M HILL
Work Order: N015568
Project: PG&E Topock, 658274 01.IM.OP.00

ANALYTICAL QC SUMMARY REPORT

TestCode: 218.6_WU_PGE

Sample ID	N015567-002C-MS	SampType: MS	TestCode: 218.6_WU_P	Units: µg/L	Prep Date:	RunNo: 100271
Client ID:	ZZZZZZ	Batch ID: R100271	TestNo: EPA 218.6		Analysis Date: 5/6/2015	SeqNo: 1995938

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	1.171	0.20	1.000	0.1918	97.9	90	110				

Sample ID	N015568-001B-MS	SampType: MS	TestCode: 218.6_WU_P	Units: µg/L	Prep Date:	RunNo: 100271
Client ID:	ZZZZZZ	Batch ID: R100271	TestNo: EPA 218.6		Analysis Date: 5/6/2015	SeqNo: 1995940

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	1.556	0.20	1.000	0.5735	98.3	90	110				

Sample ID	N015567-001D-MS	SampType: MS	TestCode: 218.6_WU_P	Units: µg/L	Prep Date:	RunNo: 100271
Client ID:	ZZZZZZ	Batch ID: R100271	TestNo: EPA 218.6		Analysis Date: 5/6/2015	SeqNo: 1995943

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	1008.760	20	500.0	526.3	96.5	90	110				

Sample ID	N015569-001C-MS	SampType: MS	TestCode: 218.6_WU_P	Units: µg/L	Prep Date:	RunNo: 100271
Client ID:	ZZZZZZ	Batch ID: R100271	TestNo: EPA 218.6		Analysis Date: 5/6/2015	SeqNo: 1995947

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	7.870	0.20	5.000	2.866	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

ASSET Laboratories

ANALYTICAL RESULTS

Print Date: *20-May-15*

CLIENT:	CH2M HILL	**Client Sample ID:**	SC-700B-WDR-519
Lab Order:	N015568	**Collection Date:**	5/4/2015 9:30:00 AM
Project:	PG&E Topock, 658274.01.IM.OP.00	**Matrix:**	WATER
Lab ID:	N015568-001		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
TURBIDITY							
			SM 2130B				
RunID: **WETCHEM_150506D**	QC Batch: **R100217**			PrepDate			Analyst: **LR**
Turbidity	0.17	0.10	0.10		NTU	1	5/6/2015 03:40 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

Date: *20-May-15*

CLIENT: CH2M HILL
Work Order: N015568
Project: PG&E Topock, 658274.01.IM.OP.00

ANALYTICAL QC SUMMARY REPORT

TestCode: 2130_W

Sample ID	MB-R100217	SampType:	MBLK	TestCode:	2130_W	Units:	NTU	Prep Date:		RunNo:	100217
Client ID:	PBW	Batch ID:	R100217	TestNo:	SM 2130B			Analysis Date:	5/6/2015	SeqNo:	1992888

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Turbidity	ND	0.10									

Sample ID	N015567-001A DUP	SampType:	DUP	TestCode:	2130_W	Units:	NTU	Prep Date:		RunNo:	100217
Client ID:	ZZZZZZ	Batch ID:	R100217	TestNo:	SM 2130B			Analysis Date:	5/6/2015	SeqNo:	1992890

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Turbidity	0.240	0.10						0.2300	4.26	30	

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis 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		

WORK ORDER: N015568

ANALYST LIST

NAME	TEST METHOD
Claire Ignacio	EPA 200.8
Ryan Balilu	EPA 218.6
Lilia Ramit	EPA 120.1, SM 2540C, SM 2130B

CH2MHILL

CHAIN OF CUSTODY RECORD

5/4/2015 12:26:37 PM

Project Name PG&E Topock
Location PG&E Topock
Project Number 658274.01.IM.OP.00
Project Manager Scott O'Donnell
Sample Manager Shawn Duffy

Task Order
Project IM3PLANT-ARAR-WDR-519
Turnaround Time 10 Days
Shipping Date: 5/5/2015
COC Number: 519

			Container:	1 Liter Poly	250 ml Poly	1 Liter Poly	500 ml Poly	1 Liter Poly				
			Preservatives:	4°C	4°C	4°C	4°C	4°C				
			Filtered:	NA	NA	NA	NA	NA				
			Holding Time:	7	1	7	180	7				
	DATE	TIME	Matrix	CONDUCTIVITY (E120.1)	E218.6 Lab Filtered	TDS (SM2540C)	Total Metals(E200.8) Cr & Mn	Turbidity (SM2130)		Number of Containers	COMMENTS
SC-700B-DWR-519	5/4/2015	0930	Water	X	X	X	X	X	N015568-1	3	
									TOTAL NUMBER OF CONTAINERS	3	

	Signatures	Date/Time
Approved by		
Sampled by	Roy Phelps	5-4-15 0930
Relinquished by	[illegible]	5-5-15 0730
Received by	[illegible]	5/5/15 1820
Relinquished by	[illegible]	5/5/15 1820
Received by	[illegible]	5/5/15 1820

Shipping Details

Method of Shipment: FedEx
On Ice: yes / no 2-9°C
Airbill No: [illegible]
Lab Name: ASSET Laboratories
Lab Phone: (702) 307-2659

ATTN:
Sample Custody
and
Glen Gesmundo

Special Instructions:

Report Copy to
Shawn Duffy
530-229-3303

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:	5/5/2015	Workorder:	N015568
Rep sample Temp (Deg C):	2.9	IR Gun ID:	2
Temp Blank:	☑ Yes ☐ No		
Carrier name:	ASSET		
Last 4 digits of Tracking No.:	NA	Packing Material Used:	None
Cooling process:	☑ Ice ☐ Ice Pack ☐ Dry Ice ☐ Other ☐ None		

Sample Receipt Checklist

1. Shipping container/cooler in good condition?	Yes ☑	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 5/11/2015

Reviewed By: 05/12/15

SAMPLE CALCULATION

METHOD: SM 2540C
TEST NAME: Total Filterable Residue
MATRIX: Water

FORMULA:

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

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

Where:

A = weight in g of dish + residue after drying
B = weight of dish in g
C = volume of sample used in mL

For **N015568-001A,** TDS concentration in mg/L is calculated as follows:

$$\text{TDS, mg/L} = \frac{(61.4322-61.3451)*1000000}{20}$$

$$= 4355 \text{ mg/L}$$

Reporting result in two significant figures,

TDS = 4400 mg/L

Julia Ramit 5/8/2015

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

	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
Date Finished:5/7/15								
MB-50361	100	63.9837	63.9844	7	1	7		
LCS-50361	100	75.7415	75.8385	970	1	970		
N015563-006D	100	55.5377	55.5673	296	1	296	415	0.713
N015563-006D DUP	100	61.2254	61.2552	298	1	298	415	0.718
N015563-007D	100	63.8117	63.8365	248	1	248	347	0.715
N015563-008D	100	63.525	63.5519	269	1	269	399	0.674
N015567-001A	20	64.0853	64.1653	800	5	4000	6780	0.590
N015567-002B	20	64.2444	64.3255	811	5	4055	6790	0.597
N015568-001A	20	61.3451	61.4322	871	5	4355	7340	0.593
N015569-001A	30	63.9484	64.023	746	3.33333333	2486.66667	4160	0.598
N015569-002A	20	57.065	57.1536	886	5	4430	7530	0.588

Julia Ramit 5/8/2015

Sample Calculation

METHOD: EPA 200.8
TEST NAME: Heavy Metals by ICP-MS
MATRIX: Water

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 Vol. of Digestate in mL / Vol. of Sample used in mL

For Sample **N015568-001C,** the concentration in ug/L is calculated as follows:

Chromium, ug/L = 0.532556349539607 * 1 * (25/25)

= 0.532556349539607

Reporting results in two significant figures,

Chromium, ug/L = 0.53

Since the reporting limit is 1 ug/L therefore,

Chromium, ug/L = ND

ASSET Laboratories

ICP-Metals in Water

Dilution Test Summary

Work Order No.: N015568
Test Method: EPA 200.8
Analysis Date: 5/6/2015

Matrix: Water
Batch No.: 50357

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

Comments:

Analyzed By: Mary Claire Ignacio

Dilution test is not applicable to Cr and Mn. The calculated concentrations are < 25X RL's.

Sample ID	Analyte	Units	Calc Val	QQual	SAMPRefVal	%DIFF	%DIFFlimit
N015565-001H-DT 5X	Chromium	µg/L	0	NA	0		10
N015565-001H-DT 5X	Manganese	µg/L	0	NA	0		10

Note: NA - Not applicable

ASSET Laboratories

Date: *08-May-15*

CLIENT: CH2M HILL
Work Order: N015568
Project: PG&E Topock, 658274.01.IM.OP.00

ANALYTICAL QC SUMMARY REPORT

TestCode: 200.8_W

Sample ID	N015565-001H-PS	SampType:	PS	TestCode:	200.8_W	Units:	µg/L	Prep Date:			RunNo:	100255	
Client ID:	ZZZZZZ	Batch ID:	50357	TestNo:	EPA 200.8			Analysis Date:	5/6/2015		SeqNo:	1994699	

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Manganese	88.045	0.50	100.0	0	88.0	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		

CLIENT: CH2M HILL
Work Order: N015568
Project: PG&E Topock, 658274.01.IM.OP.00

ANALYTICAL QC SUMMARY REPORT

TestCode: 200.8_W_CRPGE

Sample ID	N015565-001H-PS	SampType:	PS	TestCode:	200.8_W_CR	Units:	µg/L	Prep Date:			RunNo:	100255	
Client ID:	ZZZZZZ	Batch ID:	50357	TestNo:	EPA 200.8			Analysis Date:	5/6/2015		SeqNo:	1994503	

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium	9.289	1.0	10.00	0	92.9	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		

Sample Calculation

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

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 **N015568-001B** concentration in µg/L is calculated as follows:

$$Cr^{+6}, \mu g/L = 0.5735 * 1$$

$$= 0.5735$$

Reporting result in two significant figures,

$$\mathbf{Cr^{+6}, \mu g/L = 0.57}$$

May 27, 2015

Shawn P. Duffy
CH2M HILL
155 Grand Avenue, Suite 1000
Oakland, CA 94612

TEL: (530) 229-3303
FAX: (530) 339-3303

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

Workorder No.: N015638

RE: PG&E Topock, 658274.01.IM.OP.00

Attention: Shawn P. Duffy

Enclosed are the results for sample(s) received on May 12, 2015 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,

Glen Gesmundo
QA Manager

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: CH2M HILL
Project: PG&E Topock, 658274.01.IM.OP.00
Lab Order: N015638

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 200.8:

Matrix Spike (MS) and Matrix Spike Duplicate (MSD) on QC samples N015638-001C-MS and N015638-001C-MSD are outside recovery criteria for Manganese possibly due to matrix interference. The associated Laboratory Control Sample (LCS) recovery was acceptable.

ASSET Laboratories

Date: *27-May-15*

CLIENT: CH2M HILL
Project: PG&E Topock, 658274.01.IM.OP.00
Lab Order: N015638
Contract No: IM3PLANT-AR

Work Order Sample Summary

Lab Sample ID	Client Sample ID	Matrix	Collection Date	Date Received	Date Reported
N015638-001A	SC-700B-WDR-521	Water	5/12/2015 2:15:00 PM	5/12/2015	5/27/2015
N015638-001B	SC-700B-WDR-521	Water	5/12/2015 2:15:00 PM	5/12/2015	5/27/2015
N015638-001C	SC-700B-WDR-521	Water	5/12/2015 2:15:00 PM	5/12/2015	5/27/2015

ASSET Laboratories

ANALYTICAL RESULTS

Print Date: *27-May-15*

CLIENT:	CH2M HILL	**Client Sample ID:**	SC-700B-WDR-521
Lab Order:	N015638	**Collection Date:**	5/12/2015 2:15:00 PM
Project:	PG&E Topock, 658274.01.IM.OP.00	**Matrix:**	WATER
Lab ID:	N015638-001		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
SPECIFIC CONDUCTANCE							
			EPA 120.1				
RunID: **WETCHEM_150513C**	QC Batch: **R100327**			PrepDate			Analyst: **LR**
Specific Conductance	6100	0.10	0.10		umhos/cm	1	5/13/2015 02:00 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

Date: *27-May-15*

CLIENT: CH2M HILL
Work Order: N015638
Project: PG&E Topock, 658274.01.IM.OP.00

ANALYTICAL QC SUMMARY REPORT

TestCode: 120.1_WPGE

Sample ID	N015638-001A DUP	SampType:	DUP	TestCode:	120.1_WPGE	Units:	umhos/cm	Prep Date:			RunNo:	100327	
Client ID:	ZZZZZZ	Batch ID:	R100327	TestNo:	EPA 120.1			Analysis Date:	5/13/2015		SeqNo:	1999407	

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Specific Conductance	6120.000	0.10						6130	0.163	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		

ASSET Laboratories

ANALYTICAL RESULTS

Print Date: *27-May-15*

CLIENT:	CH2M HILL	**Client Sample ID:**	SC-700B-WDR-521
Lab Order:	N015638	**Collection Date:**	5/12/2015 2:15:00 PM
Project:	PG&E Topock, 658274.01.IM.OP.00	**Matrix:**	WATER
Lab ID:	N015638-001		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
TOTAL FILTERABLE RESIDUE							
			SM2540C				
RunID: **WETCHEM_150513F**	QC Batch: **50426**			PrepDate	**5/13/2015**		Analyst: **LR**
Total Dissolved Solids (Residue, Filterable)	4100	50	50		mg/L	1	5/13/2015 01:41 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		

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ASSET Laboratories

Date: *27-May-15*

CLIENT: CH2M HILL
Work Order: N015638
Project: PG&E Topock, 658274 01 IM.OP.00

ANALYTICAL QC SUMMARY REPORT

TestCode: 160.1_2540C_W

Sample ID	MB-R100347	SampType:	MBLK	TestCode:	160.1_2540C	Units:	mg/L	Prep Date:	5/13/2015	RunNo:	100347
Client ID:	PBW	Batch ID:	50426	TestNo:	SM2540C			Analysis Date:	5/13/2015	SeqNo:	2000345

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	LCS-R100347	SampType:	LCS	TestCode:	160.1_2540C	Units:	mg/L	Prep Date:	5/13/2015	RunNo:	100347
Client ID:	LCSW	Batch ID:	50426	TestNo:	SM2540C			Analysis Date:	5/13/2015	SeqNo:	2000346

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	989.000	10	1000	0	98.9	80	120				

Sample ID	N015638-001A-DUP	SampType:	DUP	TestCode:	160.1_2540C	Units:	mg/L	Prep Date:	5/13/2015	RunNo:	100347
Client ID:	ZZZZZZ	Batch ID:	50426	TestNo:	SM2540C			Analysis Date:	5/13/2015	SeqNo:	2000348

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	3965.000	50						4060	2.37	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

ASSET Laboratories

ANALYTICAL RESULTS

Print Date: *27-May-15*

CLIENT:	CH2M HILL	**Client Sample ID:**	SC-700B-WDR-521
Lab Order:	N015638	**Collection Date:**	5/12/2015 2:15:00 PM
Project:	PG&E Topock, 658274.01.IM.OP.00	**Matrix:**	WATER
Lab ID:	N015638-001		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
TOTAL METALS BY ICPMS							
			EPA 200.8				
RunID: **ICP7_150514A**	QC Batch: **50436**			PrepDate		**5/14/2015**	Analyst: **CEI**
Manganese	ND	0.023	0.50		µg/L	1	5/14/2015 01:23 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

Date: *27-May-15*

CLIENT: CH2M HILL
Work Order: N015638
Project: PG&E Topock, 658274.01.IM.OP.00

ANALYTICAL QC SUMMARY REPORT

TestCode: 200.8_W

Sample ID MB-50436 | SampType: MBLK | TestCode: 200.8_W | Units: µg/L | Prep Date: 5/14/2015 | RunNo: 100356
Client ID: PBW | Batch ID: 50436 | TestNo: EPA 200.8 | Analysis Date: 5/14/2015 | SeqNo: 2000526

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Manganese	ND	0.50									

Sample ID LCS-50436 | SampType: LCS | TestCode: 200.8_W | Units: µg/L | Prep Date: 5/14/2015 | RunNo: 100356
Client ID: LCSW | Batch ID: 50436 | TestNo: EPA 200.8 | Analysis Date: 5/14/2015 | SeqNo: 2000527

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Manganese	102.826	0.50	100.0	0	103	85	115				

Sample ID N015638-001C-MS | SampType: MS | TestCode: 200.8_W | Units: µg/L | Prep Date: 5/14/2015 | RunNo: 100356
Client ID: ZZZZZZ | Batch ID: 50436 | TestNo: EPA 200.8 | Analysis Date: 5/14/2015 | SeqNo: 2000533

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Manganese	64.804	0.50	100.0	0	64.8	75	125				S

Sample ID N015638-001C-MSD | SampType: MSD | TestCode: 200.8_W | Units: µg/L | Prep Date: 5/14/2015 | RunNo: 100356
Client ID: ZZZZZZ | Batch ID: 50436 | TestNo: EPA 200.8 | Analysis Date: 5/14/2015 | SeqNo: 2000534

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Manganese	65.521	0.50	100.0	0	65.5	75	125	64.80	1.10	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

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ANALYTICAL RESULTS

Print Date: *27-May-15*

CLIENT:	CH2M HILL	**Client Sample ID:**	SC-700B-WDR-521
Lab Order:	N015638	**Collection Date:**	5/12/2015 2:15:00 PM
Project:	PG&E Topock, 658274.01.IM.OP.00	**Matrix:**	WATER
Lab ID:	N015638-001		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
HEXAVALENT CHROMIUM BY IC							
			EPA 218.6				
RunID: IC7_150513A	QC Batch: R100385			PrepDate			Analyst: RB
Hexavalent Chromium	ND	0.015	0.20		µg/L	1	5/13/2015 04:44 PM
TOTAL METALS BY ICPMS							
			EPA 200.8				
RunID: ICP7_150514A	QC Batch: 50436			PrepDate		5/14/2015	Analyst: CEI
Chromium	ND	0.086	1.0		µg/L	1	5/14/2015 01:23 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

Date: *27-May-15*

CLIENT: CH2M HILL
Work Order: N015638
Project: PG&E Topock, 658274.01.IM.OP.00

ANALYTICAL QC SUMMARY REPORT

TestCode: 200.8_W_CRPGE

Sample ID	MB-50436	SampType:	MBLK	TestCode:	200.8_W_CR	Units:	µg/L	Prep Date:	5/14/2015	RunNo:	100356
Client ID:	PBW	Batch ID:	50436	TestNo:	EPA 200.8			Analysis Date:	5/14/2015	SeqNo:	2000559

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

Sample ID	LCS-50436	SampType:	LCS	TestCode:	200.8_W_CR	Units:	µg/L	Prep Date:	5/14/2015	RunNo:	100356
Client ID:	LCSW	Batch ID:	50436	TestNo:	EPA 200.8			Analysis Date:	5/14/2015	SeqNo:	2000560

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium	10.342	1.0	10.00	0	103	85	115				

Sample ID	N015638-001C-MS	SampType:	MS	TestCode:	200.8_W_CR	Units:	µg/L	Prep Date:	5/14/2015	RunNo:	100356
Client ID:	ZZZZZZ	Batch ID:	50436	TestNo:	EPA 200.8			Analysis Date:	5/14/2015	SeqNo:	2000566

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium	9.990	1.0	10.00	0	99.9	75	125				

Sample ID	N015638-001C-MSD	SampType:	MSD	TestCode:	200.8_W_CR	Units:	µg/L	Prep Date:	5/14/2015	RunNo:	100356
Client ID:	ZZZZZZ	Batch ID:	50436	TestNo:	EPA 200.8			Analysis Date:	5/14/2015	SeqNo:	2000567

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium	9.996	1.0	10.00	0	100	75	125	9.990	0.0633	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: CH2M HILL
Work Order: N015638
Project: PG&E Topock, 658274 01.IM.OP.00

ANALYTICAL QC SUMMARY REPORT

TestCode: 218.6_WU_PGE

Sample ID	MB-R100385	SampType:	MBLK	TestCode:	218.6_WU_P	Units:	µg/L	Prep Date:		RunNo:	100385
Client ID:	PBW	Batch ID:	R100385	TestNo:	EPA 218.6			Analysis Date:	5/13/2015	SeqNo:	2001490

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-R100385	SampType:	LCS	TestCode:	218.6_WU_P	Units:	µg/L	Prep Date:		RunNo:	100385
Client ID:	LCSW	Batch ID:	R100385	TestNo:	EPA 218.6			Analysis Date:	5/13/2015	SeqNo:	2001491

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	4.926	0.20	5.000	0	98.5	90	110				

Sample ID	N015564-001A-DUP	SampType:	DUP	TestCode:	218.6_WU_P	Units:	µg/L	Prep Date:		RunNo:	100385
Client ID:	ZZZZZZ	Batch ID:	R100385	TestNo:	EPA 218.6			Analysis Date:	5/13/2015	SeqNo:	2001494

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	2.547	0.20						2.531	0.634	20	

Sample ID	N015564-001A-MS	SampType:	MS	TestCode:	218.6_WU_P	Units:	µg/L	Prep Date:		RunNo:	100385
Client ID:	ZZZZZZ	Batch ID:	R100385	TestNo:	EPA 218.6			Analysis Date:	5/13/2015	SeqNo:	2001495

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	3.615	0.20	1.000	2.531	108	90	110				

Sample ID	N015564-001A-MSD	SampType:	MSD	TestCode:	218.6_WU_P	Units:	µg/L	Prep Date:		RunNo:	100385
Client ID:	ZZZZZZ	Batch ID:	R100385	TestNo:	EPA 218.6			Analysis Date:	5/13/2015	SeqNo:	2001496

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	3.569	0.20	1.000	2.531	104	90	110	3.615	1.28	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: CH2M HILL
Work Order: N015638
Project: PG&E Topock, 658274.01.IM.OP.00

ANALYTICAL QC SUMMARY REPORT

TestCode: 218.6_WU_PGE

Sample ID	N015638-001B-MS	SampType:	MS	TestCode:	218.6_WU_P	Units:	µg/L	Prep Date:		RunNo:	100385
Client ID:	ZZZZZZ	Batch ID:	R100385	TestNo:	EPA 218.6			Analysis Date:	5/13/2015	SeqNo:	2001518

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	1.128	0.20	1.000	0.09420	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		

ASSET Laboratories

ANALYTICAL RESULTS

Print Date: *27-May-15*

CLIENT:	CH2M HILL	**Client Sample ID:**	SC-700B-WDR-521
Lab Order:	N015638	**Collection Date:**	5/12/2015 2:15:00 PM
Project:	PG&E Topock, 658274.01.IM.OP.00	**Matrix:**	WATER
Lab ID:	N015638-001		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
TURBIDITY							
			SM 2130B				
RunID: **WETCHEM_150513D**	QC Batch: **R100328**			PrepDate			Analyst: **LR**
Turbidity	0.11	0.10	0.10		NTU	1	5/13/2015 02:15 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		

ASSET Laboratories

Date: *27-May-15*

CLIENT: CH2M HILL
Work Order: N015638
Project: PG&E Topock, 658274.01.IM.OP.00

ANALYTICAL QC SUMMARY REPORT

TestCode: 2130_W

Sample ID	MB-R100328	SampType:	MBLK	TestCode:	2130_W	Units:	NTU	Prep Date:		RunNo:	100328
Client ID:	PBW	Batch ID:	R100328	TestNo:	SM 2130B			Analysis Date:	5/13/2015	SeqNo:	1999408

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Turbidity	ND	0.10									

Sample ID	N015638-001A DUP	SampType:	DUP	TestCode:	2130_W	Units:	NTU	Prep Date:		RunNo:	100328
Client ID:	ZZZZZZ	Batch ID:	R100328	TestNo:	SM 2130B			Analysis Date:	5/13/2015	SeqNo:	1999410

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Turbidity	0.100	0.10						0.1100	9.52	30	

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis 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		

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WORK ORDER: N015638

ANALYST LIST

NAME	TEST METHOD
Claire Ignacio	EPA 200.8
Ryan Balilu	EPA 218.6
Lilia Ramit	EPA 120.1, SM 2540C, SM 2130B

CH2MHILL

CHAIN OF CUSTODY RECORD

5/12/2015 11:55:53 AM

Project Name PG&E Topock
Location PG&E Topock
Project Number 658274.01.IM.OP.00
Project Manager Scott O'Donnell
Sample Manager Shawn Duffy

Task Order
Project IM3PLANT-ARAR-WDR-521
Turnaround Time 10 Days
Shipping Date: 5/12/2015
COC Number: WDR-521

			Container:	1 Liter Poly	250 ml Poly	1 Liter Poly	500 ml Poly	1 Liter Poly			
			Preservatives:	4°C	4°C	4°C	4°C	4°C			
			Filtered:	NA	NA	NA	NA	NA			
			Holding Time:	7	1	7	180	7			
	DATE	TIME	Matrix	CONDUCTIVITY (E120.1)	E218.6 Lab Filtered	TDS (SM2540C)	Total Metals(E200.8) Cr & Mn Cr,Mn	Turbidity (SM2130)		Number of Containers	COMMENTS
SC-700B-WDR-521	5/12/2015	14:15	Water	X	X	X	X	X	N0156388-1	3	
									TOTAL NUMBER OF CONTAINERS	3	

	Signatures	Date/Time
Approved by		
Sampled by		5-12-15 14:15
Relinquished by		5-12-15 15:10
Received by		5/12/15 1510
Relinquished by		5/12/15 1645
Received by		5/12/15 1645

Shipping Details

Method of Shipment: FedEx
On Ice: yes / no 3.1 °C
Airbill No: 1447
Lab Name: ASSET Laboratories
Lab Phone: (702) 307-2659

ATTN:

Sample Custody
and
Glen Gesmundo

Special Instructions:

Report Copy to
Shawn Duffy
530-229-3303

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:	5/12/2015	Workorder:	N015638
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: HG 5/19/2015

Reviewed By: 05/19/15

SAMPLE CALCULATION

METHOD: SM 2540C
TEST NAME: Total Filterable Residue
MATRIX: Water

FORMULA:

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

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

Where:

A = weight in g of dish + residue after drying
B = weight of dish in g
C = volume of sample used in mL

For **N015638-001A,** TDS concentration in mg/L is calculated as follows:

$$\text{TDS, mg/L} = \frac{(54.4322-54.3510)*1000000}{20}$$
$$= 4060 \text{ mg/L}$$

Reporting result in two significant figures,

TDS = 4100 mg/L

Julia Ramit 5/14/2015

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

	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
Date Finished: 5/14/15								
MB-50426	100	76.8427	76.843	3	1	3		
LCS-50426	100	75.7401	75.839	989	1	989		
N015638-001A	20	54.351	54.4322	812	5	4060	6130	0.662
N015638-001A DUP	20	54.8752	54.9545	793	5	3965	6130	0.647

Julia Ramit 5/14/2015

Sample Calculation

METHOD: EPA 200.8
TEST NAME: Heavy Metals by ICP-MS
MATRIX: Water

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 Vol. of Digestate in mL / Vol. of Sample used in mL

For Sample **N015638-001C**, the concentration in ug/L is calculated as follows:

Chromium, ug/L = 0.000 * 1 * (25/25)

= 0.000

Since the reporting limit is 1 ug/L therefore,

Chromium, ug/L = ND

5/27/2015

ASSET Laboratories

ICP-Metals in Water

Dilution Test Summary

Work Order No.: N015638
Test Method: EPA 200.8
Analysis Date: 5/14/2015

Matrix: Water
Batch No.: 50436

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

Comments:

Analyzed By: Mary Claire Ignacio

Dilution test is not applicable to Cr and Mn. The calculated concentrations are < 25X RL's.

Sample ID	Analyte	Units	Calc Val	OQual	SAMPRefVal	%DIFF	%DIFFlimit
N015638-001C-DT 5X	Chromium	µg/L	0	NA	0		10
N015638-001C-DT 5X	Manganese	µg/L	0	NA	0		10

Note: NA - Not applicable

ASSET Laboratories

Date: *18-May-15*

CLIENT: CH2M HILL
Work Order: N015638
Project: PG&E Topock, 658274.01.IM.OP.00

ANALYTICAL QC SUMMARY REPORT

TestCode: 200.8_W

Sample ID	N015638-001C-PS	SampType:	PS	TestCode:	200.8_W	Units:	µg/L	Prep Date:				RunNo:	100356
Client ID:	ZZZZZZ	Batch ID:	50436	TestNo:	EPA 200.8			Analysis Date:	5/14/2015			SeqNo:	2000532

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Manganese	64.448	0.50	100.0	0	64.4	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		

CLIENT: CH2M HILL
Work Order: N015638
Project: PG&E Topock, 658274.01.IM.OP.00

ANALYTICAL QC SUMMARY REPORT

TestCode: 200.8_W_CRPGE

Sample ID	N015638-001C-PS	SampType:	PS	TestCode:	200.8_W_CR	Units:	µg/L	Prep Date:				RunNo:	100356
Client ID:	ZZZZZZ	Batch ID:	50436	TestNo:	EPA 200.8			Analysis Date:	5/14/2015			SeqNo:	2000565

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium	9.876	1.0	10.00	0	98.8	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		

Sample Calculation

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

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 **N015638-001B** concentration in µg/L is calculated as follows:

$$Cr^{+6}, \mu g/L = 0.0942 * 1$$

$$= 0.0942$$

Since PQL is 0.20 µg/L,

$$\mathbf{Cr^{+6}, \mu g/L = ND}$$

June 03, 2015

Shawn P. Duffy
CH2M HILL
155 Grand Avenue, Suite 1000
Oakland, CA 94612

TEL: (530) 229-3303
FAX: (530) 339-3303

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

Workorder No.: N015740

RE: PG&E Topock, 658274.01.IM.OP.00

Attention: Shawn P. Duffy

Enclosed are the results for sample(s) received on May 19, 2015 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,

Glen Gesmundo
QA Manager

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: CH2M HILL
Project: PG&E Topock, 658274.01.IM.OP.00
Lab Order: N015740

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.

ASSET LABORATORIES
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ASSET Laboratories

Date: *03-Jun-15*

CLIENT: CH2M HILL
Project: PG&E Topock, 658274.01.IM.OP.00
Lab Order: N015740
Contract No: IM3PLANT-AR

Work Order Sample Summary

Lab Sample ID	Client Sample ID	Matrix	Collection Date	Date Received	Date Reported
N015740-001A	SC-700B-WDR-522	Water	5/19/2015 1:00:00 PM	5/19/2015	6/3/2015
N015740-001B	SC-700B-WDR-522	Water	5/19/2015 1:00:00 PM	5/19/2015	6/3/2015
N015740-001C	SC-700B-WDR-522	Water	5/19/2015 1:00:00 PM	5/19/2015	6/3/2015

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ANALYTICAL RESULTS

Print Date: *03-Jun-15*

CLIENT:	CH2M HILL	**Client Sample ID:**	SC-700B-WDR-522
Lab Order:	N015740	**Collection Date:**	5/19/2015 1:00:00 PM
Project:	PG&E Topock, 658274.01.IM.OP.00	**Matrix:**	WATER
Lab ID:	N015740-001		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
SPECIFIC CONDUCTANCE							
EPA 120.1							
RunID: **WETCHEM_150520A**	QC Batch: **R100458**			PrepDate			Analyst: **LR**
Specific Conductance	6600	0.10	0.10		umhos/cm	1	5/20/2015 10:30 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

Date: *03-Jun-15*

CLIENT: CH2M HILL
Work Order: N015740
Project: PG&E Topock, 658274.01.IM.OP.00

ANALYTICAL QC SUMMARY REPORT

TestCode: 120.1_WPGE

Sample ID **N015740-001A DUP** SampType: **DUP** TestCode: **120.1_WPGE** Units: **umhos/cm** Prep Date: RunNo: **100458**
Client ID: **ZZZZZZ** Batch ID: **R100458** TestNo: **EPA 120.1** Analysis Date: **5/20/2015** SeqNo: **2004523**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Specific Conductance	6590.000	0.10						6610	0.303	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		

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ANALYTICAL RESULTS

Print Date: *03-Jun-15*

CLIENT:	CH2M HILL	**Client Sample ID:**	SC-700B-WDR-522
Lab Order:	N015740	**Collection Date:**	5/19/2015 1:00:00 PM
Project:	PG&E Topock, 658274.01.IM.OP.00	**Matrix:**	WATER
Lab ID:	N015740-001		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
TOTAL FILTERABLE RESIDUE							
			SM2540C				
RunID: **WETCHEM_150520F**	QC Batch: **50481**				PrepDate	**5/20/2015**	Analyst: **LR**
Total Dissolved Solids (Residue, Filterable)	3900	50	50		mg/L	1	5/20/2015 02:15 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		

ASSET Laboratories

Date: *03-Jun-15*

CLIENT: CH2M HILL
Work Order: N015740
Project: PG&E Topock, 658274.01.IM.OP.00

ANALYTICAL QC SUMMARY REPORT

TestCode: 160.1_2540C_W

Sample ID **MB-50481** SampType: **MBLK** TestCode: **160.1_2540C** Units: **mg/L** Prep Date: **5/20/2015** RunNo: **100478**
Client ID: **PBW** Batch ID: **50481** TestNo: **SM2540C** Analysis Date: **5/20/2015** SeqNo: **2006022**

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 **LCS-50481** SampType: **LCS** TestCode: **160.1_2540C** Units: **mg/L** Prep Date: **5/20/2015** RunNo: **100478**
Client ID: **LCSW** Batch ID: **50481** TestNo: **SM2540C** Analysis Date: **5/20/2015** SeqNo: **2006023**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	979.000	10	1000	0	97.9	80	120				

Sample ID **N015740-001A-DUP** SampType: **DUP** TestCode: **160.1_2540C** Units: **mg/L** Prep Date: **5/20/2015** RunNo: **100478**
Client ID: **ZZZZZZ** Batch ID: **50481** TestNo: **SM2540C** Analysis Date: **5/20/2015** SeqNo: **2006027**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	4010.000	50						3865	3.68	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		

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ANALYTICAL RESULTS

Print Date: *03-Jun-15*

CLIENT:	CH2M HILL	**Client Sample ID:**	SC-700B-WDR-522
Lab Order:	N015740	**Collection Date:**	5/19/2015 1:00:00 PM
Project:	PG&E Topock, 658274.01.IM.OP.00	**Matrix:**	WATER
Lab ID:	N015740-001		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
TOTAL METALS BY ICPMS							
EPA 200.8							
RunID: **ICP7_150521B**	QC Batch: **50485**				PrepDate	**5/21/2015**	Analyst: **CEI**
Manganese	ND	0.023	0.50		µg/L	1	5/21/2015 06:09 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		

ASSET Laboratories

Date: *03-Jun-15*

CLIENT: CH2M HILL
Work Order: N015740
Project: PG&E Topock, 658274.01.IM.OP.00

ANALYTICAL QC SUMMARY REPORT

TestCode: 200.8_W

Sample ID **MB-50485** SampType: **MBLK** TestCode: **200.8_W** Units: **µg/L** Prep Date: **5/21/2015** RunNo: **100502**
Client ID: **PBW** Batch ID: **50485** TestNo: **EPA 200.8** Analysis Date: **5/21/2015** SeqNo: **2007036**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Manganese	ND	0.50									

Sample ID **LCS-50485** SampType: **LCS** TestCode: **200.8_W** Units: **µg/L** Prep Date: **5/21/2015** RunNo: **100502**
Client ID: **LCSW** Batch ID: **50485** TestNo: **EPA 200.8** Analysis Date: **5/21/2015** SeqNo: **2007037**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Manganese	101.381	0.50	100.0	0	101	85	115				

Sample ID **N015761-001B-MS** SampType: **MS** TestCode: **200.8_W** Units: **µg/L** Prep Date: **5/21/2015** RunNo: **100502**
Client ID: **ZZZZZZ** Batch ID: **50485** TestNo: **EPA 200.8** Analysis Date: **5/21/2015** SeqNo: **2007043**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Manganese	120.284	0.50	100.0	22.93	97.4	75	125				

Sample ID **N015761-001B-MSD** SampType: **MSD** TestCode: **200.8_W** Units: **µg/L** Prep Date: **5/21/2015** RunNo: **100502**
Client ID: **ZZZZZZ** Batch ID: **50485** TestNo: **EPA 200.8** Analysis Date: **5/21/2015** SeqNo: **2007044**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Manganese	121.114	0.50	100.0	22.93	98.2	75	125	120.3	0.687	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		

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ANALYTICAL RESULTS

Print Date: *03-Jun-15*

CLIENT:	CH2M HILL	**Client Sample ID:**	SC-700B-WDR-522
Lab Order:	N015740	**Collection Date:**	5/19/2015 1:00:00 PM
Project:	PG&E Topock, 658274.01.IM.OP.00	**Matrix:**	WATER
Lab ID:	N015740-001		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
HEXAVALENT CHROMIUM BY IC							
EPA 218.6							
RunID: **IC7_150520A** QC Batch: **R100480** PrepDate							Analyst: **RB**
Hexavalent Chromium	ND	0.015	0.20		µg/L	1	5/20/2015 12:37 PM
TOTAL METALS BY ICPMS							
EPA 200.8							
RunID: **ICP7_150521B** QC Batch: **50485** PrepDate **5/21/2015**							Analyst: **CEI**
Chromium	ND	0.086	1.0		µg/L	1	5/21/2015 06:09 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		

ASSET Laboratories

Date: *03-Jun-15*

CLIENT: CH2M HILL
Work Order: N015740
Project: PG&E Topock, 658274.01.IM.OP.00

ANALYTICAL QC SUMMARY REPORT

TestCode: 200.8_W_CRPGE

Sample ID **MB-50485** SampType: **MBLK** TestCode: **200.8_W_CR** Units: **µg/L** Prep Date: **5/21/2015** RunNo: **100502**
Client ID: **PBW** Batch ID: **50485** TestNo: **EPA 200.8** Analysis Date: **5/21/2015** SeqNo: **2007056**

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

Sample ID **LCS-50485** SampType: **LCS** TestCode: **200.8_W_CR** Units: **µg/L** Prep Date: **5/21/2015** RunNo: **100502**
Client ID: **LCSW** Batch ID: **50485** TestNo: **EPA 200.8** Analysis Date: **5/21/2015** SeqNo: **2007057**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium	9.969	1.0	10.00	0	99.7	85	115				

Sample ID **N015761-001B-MS** SampType: **MS** TestCode: **200.8_W_CR** Units: **µg/L** Prep Date: **5/21/2015** RunNo: **100502**
Client ID: **ZZZZZZ** Batch ID: **50485** TestNo: **EPA 200.8** Analysis Date: **5/21/2015** SeqNo: **2007063**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium	26.733	1.0	10.00	16.42	103	75	125				

Sample ID **N015761-001B-MSD** SampType: **MSD** TestCode: **200.8_W_CR** Units: **µg/L** Prep Date: **5/21/2015** RunNo: **100502**
Client ID: **ZZZZZZ** Batch ID: **50485** TestNo: **EPA 200.8** Analysis Date: **5/21/2015** SeqNo: **2007064**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium	26.942	1.0	10.00	16.42	105	75	125	26.73	0.779	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: CH2M HILL
Work Order: N015740
Project: PG&E Topock, 658274.01.IM.OP.00

ANALYTICAL QC SUMMARY REPORT

TestCode: 218.6_WU_PGE

Sample ID	MB-R100480	SampType:	MBLK	TestCode:	218.6_WU_P	Units:	µg/L	Prep Date:		RunNo:	100480
Client ID:	PBW	Batch ID:	R100480	TestNo:	EPA 218.6			Analysis Date:	5/20/2015	SeqNo:	2006084

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-R100480	SampType:	LCS	TestCode:	218.6_WU_P	Units:	µg/L	Prep Date:		RunNo:	100480
Client ID:	LCSW	Batch ID:	R100480	TestNo:	EPA 218.6			Analysis Date:	5/20/2015	SeqNo:	2006085

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	N015677-001ADUP	SampType:	DUP	TestCode:	218.6_WU_P	Units:	µg/L	Prep Date:		RunNo:	100480
Client ID:	ZZZZZZ	Batch ID:	R100480	TestNo:	EPA 218.6			Analysis Date:	5/20/2015	SeqNo:	2006089

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	0.019	0.20						0	0	20	

Sample ID	N015677-001A-MS	SampType:	MS	TestCode:	218.6_WU_P	Units:	µg/L	Prep Date:		RunNo:	100480
Client ID:	ZZZZZZ	Batch ID:	R100480	TestNo:	EPA 218.6			Analysis Date:	5/20/2015	SeqNo:	2006090

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	0.947	0.20	1.000	0	94.7	90	110				

Sample ID	N015677-001A-MSD	SampType:	MSD	TestCode:	218.6_WU_P	Units:	µg/L	Prep Date:		RunNo:	100480
Client ID:	ZZZZZZ	Batch ID:	R100480	TestNo:	EPA 218.6			Analysis Date:	5/20/2015	SeqNo:	2006091

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	0.949	0.20	1.000	0	94.9	90	110	0.9473	0.137	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: CH2M HILL
Work Order: N015740
Project: PG&E Topock, 658274.01.IM.OP.00

ANALYTICAL QC SUMMARY REPORT

TestCode: 218.6_WU_PGE

Sample ID	**N015740-001B-MS**	SampType:	**MS**	TestCode:	**218.6_WU_P**	Units:	**µg/L**	Prep Date:			RunNo:	**100480**	
Client ID:	**ZZZZZZ**	Batch ID:	**R100480**	TestNo:	**EPA 218.6**			Analysis Date:	**5/20/2015**		SeqNo:	**2006093**	

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	1.095	0.20	1.000	0.07990	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		

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ANALYTICAL RESULTS

Print Date: *03-Jun-15*

CLIENT:	CH2M HILL	**Client Sample ID:**	SC-700B-WDR-522
Lab Order:	N015740	**Collection Date:**	5/19/2015 1:00:00 PM
Project:	PG&E Topock, 658274.01.IM.OP.00	**Matrix:**	WATER
Lab ID:	N015740-001		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
TURBIDITY							
			SM 2130B				
RunID: **WETCHEM_150520B**	QC Batch: **R100459**			PrepDate			Analyst: **LR**
Turbidity	0.17	0.10	0.10		NTU	1	5/20/2015 10:45 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

Date: *03-Jun-15*

CLIENT: CH2M HILL
Work Order: N015740
Project: PG&E Topock, 658274.01.IM.OP.00

ANALYTICAL QC SUMMARY REPORT

TestCode: 2130_W

Sample ID	**MB-R100459**	SampType:	**MBLK**	TestCode:	**2130_W**	Units:	**NTU**	Prep Date:		RunNo:	**100459**
Client ID:	**PBW**	Batch ID:	**R100459**	TestNo:	**SM 2130B**			Analysis Date:	**5/20/2015**	SeqNo:	**2004524**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Turbidity	ND	0.10									

Sample ID	**N015740-001A DUP**	SampType:	**DUP**	TestCode:	**2130_W**	Units:	**NTU**	Prep Date:		RunNo:	**100459**
Client ID:	**ZZZZZZ**	Batch ID:	**R100459**	TestNo:	**SM 2130B**			Analysis Date:	**5/20/2015**	SeqNo:	**2004528**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Turbidity	0.160	0.10						0.1700	6.06	30	

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis 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		

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WORK ORDER: N015740

ANALYST LIST

NAME	TEST METHOD
Claire Ignacio	EPA 200.8
Ryan Balilu	EPA 218.6
Lilia Ramit	EPA 120.1, SM 2540C, SM 2130B

CH2MHILL

CHAIN OF CUSTODY RECORD

5/19/2015 12:04:15 PM

Project Name PG&E Topock
Location PG&E Topock
Project Number 658274.01.IM.OP.00
Project Manager Scott O'Donnell
Sample Manager Shawn Duffy

Task Order
Project IM3PLANT-ARAR-WDR-522
Turnaround Time 10 Days
Shipping Date: 5/19/2015
COC Number: 522

			Container:	1 Liter Poly	250 ml Poly	1 Liter Poly	500 ml Poly	1 Liter Poly				
			Preservatives:	4°C	4°C	4°C	4°C	4°C				
			Filtered:	NA	NA	NA	NA	NA				
			Holding Time:	7	1	7	180	7				
	DATE	**TIME**	**Matrix**	CONDUCTIVITY (E120.1)	E218.6 Lab Filtered	TDS (SM2540C)	Total Metals(E200.8) Cr & Mn	Turbidity (SM2130)		Number of Containers	**COMMENTS**
SC-700B-WDR-522	5/19/2015	1300	Water	X	X	X	X	X	N015740-1	3	
									TOTAL NUMBER OF CONTAINERS	3	

	Signatures	Date/Time
Approved by		
Sampled by	Ryan Phelps	5-19-15 1300
Relinquished by	[illegible]	5-19-15 15:38
Received by	[illegible]	5/19/15 1588
Relinquished by	[illegible]	5/19/15 1750
Received by		

Shipping Details

Method of Shipment: FedEx
On Ice: (yes) / no 1.9°C IR#2
Airbill No:
Lab Name: ASSET Laboratories
Lab Phone: (702) 307-2659

ATTN:
Sample Custody
and
Glen Gesmundo

Special Instructions:

Report Copy to
Shawn Duffy
530-229-3303

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:	5/19/2015	Workorder:	N015740
Rep sample Temp (Deg C):	1.9	IR Gun ID:	2
Temp Blank:	☑ Yes ☐ No		
Carrier name:	ASSET		
Last 4 digits of Tracking No.:	NA	Packing Material Used:	None
Cooling process:	☑ Ice ☐ Ice Pack ☐ Dry Ice ☐ Other ☐ None		

Sample Receipt Checklist

1. Shipping container/cooler in good condition?	Yes ☑	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 Total Metals was lab preserved.

Checklist Completed By: HG 5/21/2015

Reviewed By: gsg 05/26/15

SAMPLE CALCULATION

METHOD: SM 2540C
TEST NAME: Total Filterable Residue
MATRIX: Water

FORMULA:

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

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

Where:

A = weight in g of dish + residue after drying
B = weight of dish in g
C = volume of sample used in mL

For N015740-001A, TDS concentration in mg/L is calculated as follows:

$$\text{TDS, mg/L} = \frac{(57.1374-57.0601)*1000000}{20}$$

$$= 3865 \text{ mg/L}$$

Reporting result in two significant figures,

TDS = 3900 mg/L

Julia Ramit 5/22/2015

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

	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
Date Finished: 5/21/15								
MB-50481	100	76.8397	76.8404	7	1	7		
LCS-50481	100	77.093	77.1909	979	1	979		
N015698-001A	50	63.9482	64.0773	1291	2	2582	2870	0.900
N015699-001B	100	63.519	63.5791	601	1	601	973	0.618
N015740-001A	20	57.0601	57.1374	773	5	3865	6610	0.585
N015740-001A DUP	20	54.8331	54.9133	802	5	4010	6610	0.607
N015745-001B	40	54.3429	54.4143	714	2.5	1785	3040	0.587

Julia Ramit 5/22/2015

Sample Calculation

METHOD: EPA 200.8
TEST NAME: Heavy Metals by ICP-MS
MATRIX: Water

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 Vol. of Digestate in mL / Vol. of Sample used in mL

For Sample **N015740-001C,** the concentration in ug/L is calculated as follows:

Chromium, ug/L = 0.0000 * 1 * (25/25)

= 0.000

Since the reporting limit is 1 ug/L therefore,

Chromium, ug/L = ND

ASSET Laboratories

ICP-Metals in Water

Dilution Test Summary

Work Order No.: N015740
Test Method: EPA 200.8
Analysis Date: 5/21/2015

Matrix: Water
Batch No.: 50485

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

Comments:

Analyzed By: Mary Claire Ignacio

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

Sample ID	Analyte	Units	Calc Val	OQual	SAMPRefVal	%DIFF	%DIFFlimit
N015761-001B-DT 5X	Chromium	µg/L	17.41113415	NA	16.42002154	6.04%	10
N015761-001B-DT 5X	Manganese	µg/L	23.63654038	PASS	22.93174749	3.07%	10

Note: NA - Not applicable

ASSET Laboratories

Date: *22-May-15*

CLIENT: CH2M HILL
Work Order: N015740
Project: PG&E Topock, 658274.01.IM.OP.00

ANALYTICAL QC SUMMARY REPORT

TestCode: 200.8_W

Sample ID	**N015761-001B-PS**	SampType:	**PS**	TestCode:	**200.8_W**	Units:	**µg/L**	Prep Date:		RunNo:	**100502**
Client ID:	**ZZZZZZ**	Batch ID:	**50485**	TestNo:	**EPA 200.8**			Analysis Date:	**5/21/2015**	SeqNo:	**2007042**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Manganese	119.786	0.50	100.0	22.93	96.9	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: CH2M HILL
Work Order: N015740
Project: PG&E Topock, 658274.01.IM.OP.00

ANALYTICAL QC SUMMARY REPORT

TestCode: 200.8_W_CRPGE

Sample ID	**N015761-001B-PS**	SampType:	**PS**	TestCode:	**200.8_W_CR**	Units:	**µg/L**	Prep Date:				RunNo:	**100502**
Client ID:	**ZZZZZZ**	Batch ID:	**50485**	TestNo:	**EPA 200.8**			Analysis Date:	**5/21/2015**			SeqNo:	**2007062**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium	26.235	1.0	10.00	16.42	98.1	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		

Sample Calculation

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

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 **N015740-001B** concentration in µg/L is calculated as follows:

Cr^{+6}, µg/L = 0.0799 * 1

= 0.0799

Since PQL is 0.20 µg/L,

Cr^{+6}, µg/L = ND

June 09, 2015

Shawn P. Duffy
CH2M HILL
155 Grand Avenue, Suite 1000
Oakland, CA 94612

TEL: (530) 229-3303
FAX: (530) 339-3303

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

Workorder No.: N015804

RE: PG&E Topock, 658274.01.IM.OP.00

Attention: Shawn P. Duffy

Enclosed are the results for sample(s) received on May 26, 2015 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,

Glen Gesmundo
QA Manager

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: CH2M HILL
Project: PG&E Topock, 658274.01.IM.OP.00
Lab Order: N015804

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 200.8:

Matrix Spike (MS) and Matrix Spike Duplicate (MSD) are outside recovery criteria for Manganese on QC samples N015804-001C-MS and N015804-001C-MSD possibly due to matrix interference. The associated Laboratory Control Sample (LCS) recovery was acceptable.

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Date: *09-Jun-15*

CLIENT: CH2M HILL
Project: PG&E Topock, 658274.01.IM.OP.00
Lab Order: N015804
Contract No: IM3PLANT-AR

Work Order Sample Summary

Lab Sample ID	Client Sample ID	Matrix	Collection Date	Date Received	Date Reported
N015804-001A	SC-700B-WDR-523	Water	5/26/2015 8:40:00 AM	5/26/2015	6/9/2015
N015804-001B	SC-700B-WDR-523	Water	5/26/2015 8:40:00 AM	5/26/2015	6/9/2015
N015804-001C	SC-700B-WDR-523	Water	5/26/2015 8:40:00 AM	5/26/2015	6/9/2015

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ANALYTICAL RESULTS

Print Date: *09-Jun-15*

CLIENT:	CH2M HILL	**Client Sample ID:**	SC-700B-WDR-523
Lab Order:	N015804	**Collection Date:**	5/26/2015 8:40:00 AM
Project:	PG&E Topock, 658274.01.IM.OP.00	**Matrix:**	WATER
Lab ID:	N015804-001		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
SPECIFIC CONDUCTANCE							
			EPA 120.1				
RunID: **WETCHEM_150527A**	QC Batch: **R100541**			PrepDate			Analyst: **LR**
Specific Conductance	6500	0.10	0.10		umhos/cm	1	5/27/2015 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

Date: *09-Jun-15*

CLIENT: CH2M HILL
Work Order: N015804
Project: PG&E Topock, 658274.01.IM.OP.00

ANALYTICAL QC SUMMARY REPORT

TestCode: 120.1_WPGE

Sample ID **N015804-001A DUP** SampType: **DUP** TestCode: **120.1_WPGE** Units: **umhos/cm** Prep Date: RunNo: **100541**
Client ID: **ZZZZZZ** Batch ID: **R100541** TestNo: **EPA 120.1** Analysis Date: **5/27/2015** SeqNo: **2008745**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Specific Conductance	6530.000	0.10						6540	0.153	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		

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ANALYTICAL RESULTS

Print Date: *09-Jun-15*

CLIENT:	CH2M HILL	**Client Sample ID:**	SC-700B-WDR-523
Lab Order:	N015804	**Collection Date:**	5/26/2015 8:40:00 AM
Project:	PG&E Topock, 658274.01.IM.OP.00	**Matrix:**	WATER
Lab ID:	N015804-001		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
TOTAL FILTERABLE RESIDUE							
			SM2540C				
RunID: **WETCHEM_150527E**	QC Batch: **50536**				PrepDate	**5/27/2015**	Analyst: **LR**
Total Dissolved Solids (Residue, Filterable)	4000	50	50		mg/L	1	5/27/2015 01:54 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

Date: *09-Jun-15*

CLIENT: CH2M HILL
Work Order: N015804
Project: PG&E Topock, 658274.01.IM.OP.00

ANALYTICAL QC SUMMARY REPORT

TestCode: 160.1_2540C_W

Sample ID **MB-50536** SampType: **MBLK** TestCode: **160.1_2540C** Units: **mg/L** Prep Date: **5/27/2015** RunNo: **100558**
Client ID: **PBW** Batch ID: **50536** TestNo: **SM2540C** Analysis Date: **5/27/2015** SeqNo: **2009526**

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 **LCS-50536** SampType: **LCS** TestCode: **160.1_2540C** Units: **mg/L** Prep Date: **5/27/2015** RunNo: **100558**
Client ID: **LCSW** Batch ID: **50536** TestNo: **SM2540C** Analysis Date: **5/27/2015** SeqNo: **2009527**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	982.000	10	1000	0	98.2	80	120				

Sample ID **N015804-001A-DUP** SampType: **DUP** TestCode: **160.1_2540C** Units: **mg/L** Prep Date: **5/27/2015** RunNo: **100558**
Client ID: **ZZZZZZ** Batch ID: **50536** TestNo: **SM2540C** Analysis Date: **5/27/2015** SeqNo: **2009530**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	3940.000	50						3990	1.26	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		

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ANALYTICAL RESULTS

Print Date: *09-Jun-15*

CLIENT:	CH2M HILL	**Client Sample ID:**	SC-700B-WDR-523
Lab Order:	N015804	**Collection Date:**	5/26/2015 8:40:00 AM
Project:	PG&E Topock, 658274.01.IM.OP.00	**Matrix:**	WATER
Lab ID:	N015804-001		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
TOTAL METALS BY ICPMS							
EPA 200.8							
RunID: **ICP7_150528C**	QC Batch: **50531**				PrepDate	**5/27/2015**	Analyst: **CEI**
Manganese	ND	0.023	0.50		µg/L	1	5/28/2015 09:33 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

Date: *09-Jun-15*

CLIENT: CH2M HILL
Work Order: N015804
Project: PG&E Topock, 658274.01.IM.OP.00

ANALYTICAL QC SUMMARY REPORT

TestCode: 200.8_W

Sample ID **MB-50531** SampType: **MBLK** TestCode: **200.8_W** Units: **µg/L** Prep Date: **5/27/2015** RunNo: **100594**
Client ID: **PBW** Batch ID: **50531** TestNo: **EPA 200.8** Analysis Date: **5/28/2015** SeqNo: **2011327**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Manganese	0.024	0.50									

Sample ID **LCS-50531** SampType: **LCS** TestCode: **200.8_W** Units: **µg/L** Prep Date: **5/27/2015** RunNo: **100594**
Client ID: **LCSW** Batch ID: **50531** TestNo: **EPA 200.8** Analysis Date: **5/28/2015** SeqNo: **2011328**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Manganese	97.885	0.50	100.0	0	97.9	85	115				

Sample ID **N015804-001C-MS** SampType: **MS** TestCode: **200.8_W** Units: **µg/L** Prep Date: **5/27/2015** RunNo: **100594**
Client ID: **ZZZZZZ** Batch ID: **50531** TestNo: **EPA 200.8** Analysis Date: **5/28/2015** SeqNo: **2011340**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Manganese	55.036	0.50	100.0	0	55.0	75	125				S

Sample ID **N015804-001C-MSD** SampType: **MSD** TestCode: **200.8_W** Units: **µg/L** Prep Date: **5/27/2015** RunNo: **100594**
Client ID: **ZZZZZZ** Batch ID: **50531** TestNo: **EPA 200.8** Analysis Date: **5/28/2015** SeqNo: **2011344**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Manganese	57.081	0.50	100.0	0	57.1	75	125	55.04	3.65	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		

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ANALYTICAL RESULTS

Print Date: *09-Jun-15*

CLIENT:	CH2M HILL	**Client Sample ID:**	SC-700B-WDR-523
Lab Order:	N015804	**Collection Date:**	5/26/2015 8:40:00 AM
Project:	PG&E Topock, 658274.01.IM.OP.00	**Matrix:**	WATER
Lab ID:	N015804-001		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
HEXAVALENT CHROMIUM BY IC							
EPA 218.6							
RunID: **IC6_150527A** QC Batch: **R100565** PrepDate							Analyst: **RB**
Hexavalent Chromium	ND	0.015	0.20		µg/L	1	5/27/2015 02:00 PM
TOTAL METALS BY ICPMS							
EPA 200.8							
RunID: **ICP7_150528C** QC Batch: **50531** PrepDate **5/27/2015**							Analyst: **CEI**
Chromium	ND	0.086	1.0		µg/L	1	5/28/2015 09:33 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

Date: *09-Jun-15*

CLIENT: CH2M HILL
Work Order: N015804
Project: PG&E Topock, 658274.01.IM.OP.00

ANALYTICAL QC SUMMARY REPORT

TestCode: 200.8_W_CRPGE

Sample ID **MB-50531** SampType: **MBLK** TestCode: **200.8_W_CR** Units: **µg/L** Prep Date: **5/27/2015** RunNo: **100594**
Client ID: **PBW** Batch ID: **50531** TestNo: **EPA 200.8** Analysis Date: **5/28/2015** SeqNo: **2011271**

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

Sample ID **LCS-50531** SampType: **LCS** TestCode: **200.8_W_CR** Units: **µg/L** Prep Date: **5/27/2015** RunNo: **100594**
Client ID: **LCSW** Batch ID: **50531** TestNo: **EPA 200.8** Analysis Date: **5/28/2015** SeqNo: **2011272**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium	10.699	1.0	10.00	0	107	85	115				

Sample ID **N015804-001C-MS** SampType: **MS** TestCode: **200.8_W_CR** Units: **µg/L** Prep Date: **5/27/2015** RunNo: **100594**
Client ID: **ZZZZZZ** Batch ID: **50531** TestNo: **EPA 200.8** Analysis Date: **5/28/2015** SeqNo: **2011284**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium	9.552	1.0	10.00	0	95.5	75	125				

Sample ID **N015804-001C-MSD** SampType: **MSD** TestCode: **200.8_W_CR** Units: **µg/L** Prep Date: **5/27/2015** RunNo: **100594**
Client ID: **ZZZZZZ** Batch ID: **50531** TestNo: **EPA 200.8** Analysis Date: **5/28/2015** SeqNo: **2011288**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium	9.695	1.0	10.00	0	97.0	75	125	9.552	1.49	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		

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CLIENT: CH2M HILL
Work Order: N015804
Project: PG&E Topock, 658274.01.IM.OP.00

ANALYTICAL QC SUMMARY REPORT

TestCode: 218.6_WU_PGE

Sample ID **LCS-R100565** SampType: **LCS** TestCode: **218.6_WU_P** Units: **µg/L** Prep Date: RunNo: **100565**
Client ID: **LCSW** Batch ID: **R100565** TestNo: **EPA 218.6** Analysis Date: **5/27/2015** SeqNo: **2009720**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	4.925	0.20	5.000	0	98.5	90	110				

Sample ID **MB-R100565** SampType: **MBLK** TestCode: **218.6_WU_P** Units: **µg/L** Prep Date: RunNo: **100565**
Client ID: **PBW** Batch ID: **R100565** TestNo: **EPA 218.6** Analysis Date: **5/27/2015** SeqNo: **2009721**

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

Sample ID **N015804-001B-MS** SampType: **MS** TestCode: **218.6_WU_P** Units: **µg/L** Prep Date: RunNo: **100565**
Client ID: **ZZZZZZ** Batch ID: **R100565** TestNo: **EPA 218.6** Analysis Date: **5/27/2015** SeqNo: **2009723**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	1.230	0.20	1.000	0.1501	108	90	110				

Sample ID **N015804-001B-MSD** SampType: **MSD** TestCode: **218.6_WU_P** Units: **µg/L** Prep Date: RunNo: **100565**
Client ID: **ZZZZZZ** Batch ID: **R100565** TestNo: **EPA 218.6** Analysis Date: **5/27/2015** SeqNo: **2009724**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	1.183	0.20	1.000	0.1501	103	90	110	1.230	3.89	20	

Sample ID **N015792-001A-DUP** SampType: **DUP** TestCode: **218.6_WU_P** Units: **µg/L** Prep Date: RunNo: **100565**
Client ID: **ZZZZZZ** Batch ID: **R100565** TestNo: **EPA 218.6** Analysis Date: **5/27/2015** SeqNo: **2009728**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	18.037	0.40						18.06	0.150	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		

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ANALYTICAL RESULTS

Print Date: *09-Jun-15*

CLIENT:	CH2M HILL	**Client Sample ID:**	SC-700B-WDR-523
Lab Order:	N015804	**Collection Date:**	5/26/2015 8:40:00 AM
Project:	PG&E Topock, 658274.01.IM.OP.00	**Matrix:**	WATER
Lab ID:	N015804-001		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
TURBIDITY							
			SM 2130B				
RunID: **WETCHEM_150527B**	QC Batch: **R100542**			PrepDate			Analyst: **LR**
Turbidity	0.13	0.10	0.10		NTU	1	5/27/2015 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		

ASSET Laboratories

Date: *09-Jun-15*

CLIENT: CH2M HILL
Work Order: N015804
Project: PG&E Topock, 658274.01.IM.OP.00

ANALYTICAL QC SUMMARY REPORT

TestCode: 2130_W

Sample ID	**MB-R100542**	SampType:	**MBLK**	TestCode:	**2130_W**	Units:	**NTU**	Prep Date:		RunNo:	**100542**
Client ID:	**PBW**	Batch ID:	**R100542**	TestNo:	**SM 2130B**			Analysis Date:	**5/27/2015**	SeqNo:	**2008746**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Turbidity	ND	0.10									

Sample ID	**N015804-001A DUP**	SampType:	**DUP**	TestCode:	**2130_W**	Units:	**NTU**	Prep Date:		RunNo:	**100542**
Client ID:	**ZZZZZZ**	Batch ID:	**R100542**	TestNo:	**SM 2130B**			Analysis Date:	**5/27/2015**	SeqNo:	**2008748**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Turbidity	0.120	0.10						0.1300	8.00	30	

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis 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		

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WORK ORDER: N015804

ANALYST LIST

NAME	TEST METHOD
Claire Ignacio	EPA 200.8
Ryan Balilu	EPA 218.6
Lilia Ramit	EPA 120.1, SM 2540C, SM 2130B

CH2MHILL

CHAIN OF CUSTODY RECORD

5/26/2015 1:14:55 PM

Project Name PG&E Topock
Location PG&E Topock
Project Number 658274.01.IM.OP.00
Project Manager Scott O'Donnell
Sample Manager Shawn Duffy

Task Order
Project IM3PLANT-ARAR-WDR-523
Turnaround Time 10 Days
Shipping Date: 5/26/2015
COC Number: 523

			Container:	1 Liter Poly	250 ml Poly	1 Liter Poly	500 ml Poly	1 Liter Poly			
			Preservatives:	4°C	4°C	4°C	4°C	4°C			
			Filtered:	NA	NA	NA	NA	NA			
			Holding Time:	7	1	7	180	7			
	DATE	**TIME**	**Matrix**	CONDUCTIVITY (E120.1)	E218.6 Lab Filtered	TDS (SM2540C)	Total Metals(E200.8) Cr & Mn	Turbidity (SM2130)		Number of Containers	**COMMENTS**
SC-700B-WDR-523	5/26/2015	08:40	Water	X	X	X	X	X	N015804-1	3	
									TOTAL NUMBER OF CONTAINERS	3	

	Signatures	Date/Time
Approved by		
Sampled by		5/26/15
Relinquished by		08:40
Received by -		5/26/15 1400
Relinquished by		5/26/15 2000
Received by		

Shipping Details
Method of Shipment: FedEx
On Ice: yes / no 3.1°C
Airbill No: 1RAZ
Lab Name: ASSET Laboratories
Lab Phone: (702) 307-2659

ATTN:
Sample Custody
and
Glen Gesmundo

Special Instructions:

Report Copy to
Shawn Duffy
530-229-3303

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:	5/26/2015	Workorder:	N015804
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: Sample for metals are lab preserved.

Checklist Completed By: HG 5/27/2015

Reviewed By: 05/27/15

SAMPLE CALCULATION

METHOD: SM 2540C
TEST NAME: Total Filterable Residue
MATRIX: Water

FORMULA:

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

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

Where:

A = weight in g of dish + residue after drying
B = weight of dish in g
C = volume of sample used in mL

For **N015804-001A,** TDS concentration in mg/L is calculated as follows:

$$\text{TDS, mg/L} = \frac{(55.0059-54.9261)*1000000}{20}$$
$$= 3990 \text{ mg/L}$$

Reporting result in two significant figures,

TDS = 4000 mg/L

Julia Ramit 5/28/2015

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

	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
Date Finished:5/28/15								
MB-50536	100	63.9708	63.971	2	1	2		
LCS-50536	100	77.0933	77.1915	982	1	982		
N015803-001C	100	61.376	61.4894	1134	1	1134	1236	0.917
N015804-001A	20	54.9261	55.0059	798	5	3990	6540	0.610
N015804-001A DUP	20	55.7357	55.8145	788	5	3940	6540	0.602

Julia Ramit 5/28/2015

Sample Calculation

METHOD: EPA 200.8
TEST NAME: Heavy Metals by ICP-MS
MATRIX: Water

FORMULA:

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

Chromium ,µg/L = A * DF * PF

where:

A = µg/L, calculated concentration
DF = dilution factor
PF = Final Vol. of Digestate, mL / Vol. of Sample used in mL

For Sample **N015804-001C** , the concentration in µg/L is calculated as follows:

Chromium ,µg/L = 0 * 1 * (25 / 25)

Chromium ,µg/L = 0

Since PQL is 1 µg/L,

Chromium ,µg/L = ND

ASSET Laboratories

ICP-MS-Metals in Water

Dilution Test Summary

Work Order No.: N015804
Test Method: EPA 200.8
Analysis Date: 5/28/2015

Matrix: Water
Batch No.: 50531

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 concentrations are <25X RL.

Sample ID	Analyte	Units	Calc Val	OQual	SAMPRefVal	%DIFF	%DIFFlimit
N015804-001C DT 5X	Chromium	µg/L	0	NA	0		10
N015804-001C DT 5X	Manganese	µg/L	0	NA	0		10

Note: NA - Not applicable

ASSET Laboratories

Date: *01-Jun-15*

CLIENT: CH2M HILL
Work Order: N015804
Project: PG&E Topock, 658274.01.IM.OP.00

ANALYTICAL QC SUMMARY REPORT

TestCode: 200.8_W

Sample ID: **N015804-001C-PS** SampType: **PS** TestCode: **200.8_W** Units: **µg/L** Prep Date: RunNo: **100594**
Client ID: **ZZZZZZ** Batch ID: **50531** TestNo: **EPA 200.8** Analysis Date: **5/28/2015** SeqNo: **2011338**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Manganese	55.196	0.50	100.0	0	55.2	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		

CLIENT: CH2M HILL
Work Order: N015804
Project: PG&E Topock, 658274.01.IM.OP.00

ANALYTICAL QC SUMMARY REPORT

TestCode: 200.8_W_CRPGE

Sample ID: **N015804-001C-PS** SampType: **PS** TestCode: **200.8_W_CR** Units: **µg/L** Prep Date: RunNo: **100594**
Client ID: **ZZZZZZ** Batch ID: **50531** TestNo: **EPA 200.8** Analysis Date: **5/28/2015** SeqNo: **2011282**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium	9.540	1.0	10.00	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		

Sample Calculation

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

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 **N015804-001B** , the concentration in µg/L is calculated as follows:

$$Cr^{+6}, \mu g/L = 0.1501 * 1$$

$$Cr^{+6}, \mu g/L = 0.1501$$

Since PQL is 0.20 µg/L,

$$\mathbf{Cr^{+6}, \mu g/L = ND}$$

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Established 1931
3337 MICHELSON DRIVE, SUITE CN 750
IRVINE, CA 92612
(714) 730-6239 • FAX (714) 730-6462
www.truesdail.com

REPORT

Client: **Advanced Technology Laboratories-NV**
3151 W Post Rd
Las Vegas, NV 89118
Attention: Marlon Cartin
Project Name: ATL-NV

Work Order No.: 15E0128
Printed: 07/08/2015

CASE NARRATIVE

Truesdail Laboratories, Inc. is pleased to submit this report summarizing the Ammonia and Reactive Soluble Silica results. A summary table for this laboratory number is included in Section 2. Complete laboratory reports, wet chemistry raw data, quality control data and chain of custody forms for sampling period are included in Sections 3 and 4. Analytical raw data are under Section 5.

The samples were received and delivered with the chain of custody on May 7, 2015, intact and in chilled condition. The samples will be kept in a locked refrigerator for 30 days; thereafter will be kept in warm storage for additional 2 months before disposal.

If you have any questions or require additional information, please contact me at (714) 730-6239 ext. 201.

SAMPLE RECEIPT SUMMARY

Sample ID	Laboratory ID	Matrix	Type	Date Sampled	Date Received
SC-100B-WDR-520	15E0128-01	Water	Grab	05/05/2015 07:10	05/07/2015 15:00
SC-700B-WDR-520	15E0128-02	Water	Grab	05/05/2015 07:12	05/07/2015 15:00

DEFINITIONS

Symbol	Definition
DF	Dilution Factor
MDL	Method Detection Limit
ND	Not Detected
RL	Reporting Limit

Respectfully yours,

Lyn Phaerakkakit
Project Manager

This report applies only to the sample, or samples, investigated and is not necessarily indicative of the quality or condition of apparently identical or similar products. As a mutual protection to clients, the public and these laboratories, this report is submitted and accepted for the exclusive use of the client to whom it is addressed and upon the condition that it is not to be used, in whole or in part, in any advertising or publicity matter without prior written authorization from Truesdail Laboratories.

TRUESDAIL LABORATORIES, INC.

Client: Advanced Technology Laboratories-N Project Name: ATL-NV

Printed: 07/08/2015

SC-100B-WDR-520

15E0128-01 (Water)

Analyte	Result	RL	Units	DF	Batch	Analyzed	Analyst	Method	Notes
Truesdail Laboratories, Inc									
Wet Chemistry									
Ammonia	ND	0.0500	mg/L	1	1506040	06/02/2015 09:25	AL	SM 4500-NH3 D M	
Silica	**21.0**	1.00	mg/L	25	1505049	05/07/2015 16:04	JT	SM 4500-Si D	

SC-700B-WDR-520

15E0128-02 (Water)

Analyte	Result	RL	Units	DF	Batch	Analyzed	Analyst	Method	Notes
Truesdail Laboratories, Inc									
Wet Chemistry									
Ammonia	**0.0667**	0.0500	mg/L	1	1506040	06/02/2015 09:39	AL	SM 4500-NH3 D M	

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TRUESDAIL LABORATORIES, INC.

Client: Advanced Technology Laboratories-N Project Name: ATL-NV

Printed: 07/08/2015

QUALITY CONTROL

Wet Chemistry

Truesdail Laboratories, Inc

Analyte	Result	RL	Units	Spike Level	Source Result	%REC	% Rec Limits	RPD	RPD Limit	Note
Batch: 1505049 - SM 4500-Si D										
Blank (1505049-BLK1)				Prepared & Analyzed: 5/7/2015						
Silica	ND	0.0400	mg/L							
LCS (1505049-BS1)				Prepared & Analyzed: 5/7/2015						
Silica	0.366	0.0400	mg/L	0.376		97	90-110			
Duplicate (1505049-DUP1)		**Source: 15E0061-01**		Prepared & Analyzed: 5/7/2015						
Silica	ND	0.0400	mg/L		ND				20	
Batch: 1506040 - SM 4500-NH3 B										
Blank (1506040-BLK1)				Prepared & Analyzed: 6/2/2015						
Ammonia	ND	0.0500	mg/L							
LCS (1506040-BS1)				Prepared & Analyzed: 6/2/2015						
Ammonia	0.398	0.0500	mg/L	0.400		100	90-110			
Duplicate (1506040-DUP1)		**Source: 15E0128-02**		Prepared & Analyzed: 6/2/2015						
Ammonia	0.0699	0.0500	mg/L		0.0667			5	20	
Matrix Spike (1506040-MS1)		**Source: 15E0128-01**		Prepared & Analyzed: 6/2/2015						
Ammonia	0.430	0.0500	mg/L	0.400	0.0394	98	75-125			
Matrix Spike Dup (1506040-MSD1)		**Source: 15E0128-01**		Prepared & Analyzed: 6/2/2015						
Ammonia	0.433	0.0500	mg/L	0.400	0.0394	99	75-125	0.9	20	

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ANALYSIS DATA SHEET

Inorganics

Client: **Advanced Technology Laboratories-NV**
Client Sample ID: **SC-100B-WDR-520**
Lab Sample ID: **15E0128-01**
Project: **ATL-NV**

Date Sampled: 05/05/15 07:10 Matrix: Water

CAS NO.	Analyte	Concentration (mg/L)	MDL	RL	DF	Q	Analyst	Analyzed	Method
7664-41-7	Ammonia	ND	0.0318	0.0500	1		AL	06/02/15 09:25	SM 4500-NH3 D M

ANALYSIS DATA SHEET

Inorganics

Client: **Advanced Technology Laboratories-NV**
Client Sample ID: **SC-700B-WDR-520**
Lab Sample ID: **15E0128-02**
Project: **ATL-NV**

Date Sampled: 05/05/15 07:12 Matrix: Water

CAS NO.	Analyte	Concentration (mg/L)	MDL	RL	DF	Q	Analyst	Analyzed	Method
7664-41-7	Ammonia	0.0667	0.0318	0.0500	1		AL	06/02/15 09:39	SM 4500-NH3 D M

METHOD BLANK DATA SHEET

SM 4500-NH3 D M

Client: Advanced Technology Laboratories-NV

Project: ATL-NV
Laboratory ID: 1506040-BLK1

Prepared:	06/02/15 08:49	Preparation:	SM 4500-NH3 B	Matrix:	Water
Analyzed:	06/02/15 09:16	Instrument:	TL01	File ID:	1506040-012
Batch:	1506040	Sequence:	5F03002		

CAS NO.	COMPOUND	CONC. (mg/L)	MDL	RL	Q
7664-41-7	Ammonia	ND	0.0318	0.0500	

LCS / LCS DUPLICATE RECOVERY

SM 4500-NH3 D M

Client: **Advanced Technology Laboratories-NV**
Project: **ATL-NV**
Work Order: **15E0128**

Matrix: Water
Prep Method: SM 4500-NH3 B
Prep Batch: 1506040
Lab Sample ID: 1506040-BS1

ANALYTE	SPIKE ADDED (mg/L)	LCS CONCENTRATION (mg/L)	LCS % REC.	QC LIMITS REC.
Ammonia	0.400	0.398	100	90 - 110

* Values outside of QC limits

MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY

SC-100B-WDR-520

Client: **Advanced Technology Laboratories-NV**
Project: **ATL-NV**
Work Order: **15E0128**

Matrix: Water
Prep Batch: 1506040

Analysis Method: SM 4500-NH3 D M
Prep Method: SM 4500-NH3 B
Laboratory ID: 1506040-MS1
Source Sample ID: 15E0128-01

ANALYTE	SPIKE ADDED (mg/L)	SAMPLE CONCENTRATION (mg/L)	MS CONCENTRATION (mg/L)	MS % REC.	QC LIMITS REC.
Ammonia	0.400	0.0394	0.430	98	75 - 125

ANALYTE	SPIKE ADDED (mg/L)	MSD CONCENTRATION (mg/L)	MSD % REC. #	% RPD	QC LIMITS RPD	QC LIMITS REC.
Ammonia	0.400	0.433	99	0.9	20	75 - 125

* Values outside of QC limits

DUPLICATES

SC-700B-WDR-520

Client: **Advanced Technology Laboratories-NV**
Project: **ATL-NV**

Matrix:	Water	Laboratory ID:	1506040-DUP1
Prep Batch:	1506040	Initial/Final:	50 mL / 50 mL
Prep Method:	SM 4500-NH3 B	Analysis:	SM 4500-NH3 D M

ANALYTE	SAMPLE CONCENTRATION (mg/L)	DUPLICATE CONCENTRATION (mg/L)	RPD %	Q	CONTROL LIMIT
Ammonia	0.0667	0.0699	5		20

* Values outside of QC limits

ANALYSIS DATA SHEET

Inorganics

Client: **Advanced Technology Laboratories-NV**
Client Sample ID: **SC-100B-WDR-520**
Lab Sample ID: **15E0128-01**
Project: **ATL-NV**

Date Sampled: 05/05/15 07:10 Matrix: Water

CAS NO.	Analyte	Concentration (mg/L)	MDL	RL	DF	Q	Analyst	Analyzed	Method
7631-86-9	Silica	21.0	0.252	1.00	25		JT	05/07/15 16:04	SM 4500-Si D

METHOD BLANK DATA SHEET

SM 4500-Si D

Client: Advanced Technology Laboratories-NV

Project: ATL-NV
Laboratory ID: 1505049-BLK1

Prepared:	05/07/15 14:02	Preparation:	SM 4500-Si D	Matrix:	Water
Analyzed:	05/07/15 14:02	Instrument:	INST	File ID:	
Batch:	1505049	Sequence:			

CAS NO.	COMPOUND	CONC. (mg/L)	MDL	RL	Q
7631-86-9	Silica	ND	0.0101	0.0400	

LCS / LCS DUPLICATE RECOVERY

SM 4500-Si D

Client: **Advanced Technology Laboratories-NV**
Project: **ATL-NV**
Work Order: **15E0128**

Matrix: Water
Prep Method: SM 4500-Si D
Prep Batch: 1505049
Lab Sample ID: 1505049-BS1

ANALYTE	SPIKE ADDED (mg/L)	LCS CONCENTRATION (mg/L)	LCS % REC.	QC LIMITS REC.
Silica	0.376	0.366	97	90 - 110

* Values outside of QC limits

DUPLICATES

Duplicate

Client: **Advanced Technology Laboratories-NV**
Project: **ATL-NV**

Matrix:	Water	Laboratory ID:	1505049-DUP1
Prep Batch:	1505049	Initial/Final:	50 mL / 50 mL
Prep Method:	SM 4500-Si D	Analysis:	SM 4500-Si D

ANALYTE	SAMPLE CONCENTRATION (mg/L)	DUPLICATE CONCENTRATION (mg/L)	RPD %	Q	CONTROL LIMIT
Silica	ND	ND			20

* Values outside of QC limits

15E 0128

CHAIN-OF-CUSTODY RECORD

ASSET Laboratories
3151-3153 W Post Rd., Las Vegas, NV 89118
www.atl-labs.com
TEL: 7023072659 *FAX: 7023072691*

QC Level: Level IV

Subcontractor:

Truesdail
14201 Franklin Ave.
Tustin, CA 92680

TEL: (714) 730-6239
FAX: (714) 730-6462
Acct #:

Field Sampler: SIGNED

06-May-15

	Sample ID	Matrix	Date Collected	Bottle Type	Requested Tests: SM 4500-SiO2 C	SM4500-NH3C	
-1	N015567-001B / SC-100B-WDR-520	Water	5/5/2015 7:10:00 AM	32OZP		1	
	N015567-001H / SC-100B-WDR-520	Water	5/5/2015 7:10:00 AM	8OZP	1		
-2	N015567-002A / SC-700B-WDR-520	Water	5/5/2015 7:12:00 AM	32OZP		1	

ALERT !!
Level IV QC

General Comments: Please email sample receipt acknowledgement to the PM.
Please use PO#:N15567A For questions, call Marlon at (702)-307-2659. Please e-mail results to reports.lv@assetlaboratories.com by:Normal TAT
Please analyze for Ammonia by SM4500NH3D and Reactive Silica by 4500Si-D. CH2M HILL Sample.

		Date/Time			Date/Time
Relinquished by:	[illegible]	5/6/2015 17:00	**Received by:**	GSO #: 527834362	
Relinquished by:			**Received by:**	Lucile, TCI	5-7-15 15:00

Log-in check list
For level III data package

Client: ATL Lab Number: 15E0128

Received Date: 5-7-15

Sample receiving review	Yes	No	N/A	Comment
Was special login form received by login personnel?			✓	
Was COC received and signed by client and login personnel?	✓			
Were all sampls temperature measured and recorded on COC?	✓			
Did you measure and record the pH on all metals samples on COC?			✓	
Has sample integrity and analysis discrepancy form been filled out completely?	✓			
Were all interacompany yellow forms generated and stamped with **" alert level III QC"** note?			✓	
Have check -in and check out lists been filled out and attached to appropriate form?	✓			
Were sample containers labeled with TLI numbers, date, and time sampled?	✓			
Did you notify analyst or group leader about short holding time?	✓			
Was a copy of COC attached to all yellow intracompany form?			✓	
For special clients, have all their samples been logged into the internal COC book?	✓			
Were samples locked in fridge or special storage area?	✓			
Was temperature recorded in the log book?	✓			

Sample receiving Signature: Linda

ALERT !!
Level IV QC

June 17, 2015

Shawn P. Duffy
CH2M HILL
155 Grand Avenue, Suite 1000
Oakland, CA 94612

TEL: (530) 229-3303
FAX: (530) 339-3303

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

Workorder No.: N015875

RE: PG&E Topock, 658274.01.IM.OP.00

Attention: Shawn P. Duffy

Enclosed are the results for sample(s) received on June 02, 2015 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,

Glen Gesmundo
QA Manager

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.

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.

Subcontracted Analyses:

Ammonia and Soluble Reactive Silica were subcontracted to Truesdail-Tustin,CA.

Analytical Comments for EPA 200.7_Dissolved:

Matrix Spike (MS) and Matrix Spike Duplicate (MSD) are outside recovery criteria for Magnesium on QC samples N015875-001C-MS1 and N015875-001C-MSD1 possibly due to matrix interference. The associated Laboratory Control Sample (LCS) recovery was acceptable.

Matrix Spike (MS) and Matrix Spike Duplicate (MSD) are outside recovery criteria for Calcium on QC samples N015875-001C-MS1 and N015875-001C-MSD1 and for Sodium on QC samples N015876-001B-MS2 and N015876-001B-MSD2 since the analyte concentration in the sample is disproportionate to the spike level. The associated Laboratory Control Sample (LCS) recovery was acceptable.

Analytical Comments for EPA 200.8:

Matrix Spike (MS) and Matrix Spike Duplicate (MSD) are outside recovery criteria for Copper on QC samples N015882-001H-MS and N015882-001H-MSD possibly due to matrix interference. The associated Laboratory Control Sample (LCS) recovery was acceptable.

Dilution was necessary on Lead for samples N015875-001 and N015875-002 due to associated internal standard not meeting method criteria possibly due to matrix interference. Samples were analyzed with dilution and internal standard met method criteria. Affected analyte for this failed internal standard were reported at dilution that meet internal standard recovery limit.

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Date: *17-Jun-15*

CLIENT: CH2M HILL
Project: PG&E Topock, 658274.01.IM.OP.00
Lab Order: N015875
Contract No: IM3PLANT-AR

Work Order Sample Summary

Lab Sample ID	Client Sample ID	Matrix	Collection Date	Date Received	Date Reported
N015875-001A	SC-100B-524	Water	6/2/2015 10:30:00 AM	6/2/2015	6/17/2015
N015875-001B	SC-100B-524	Water	6/2/2015 10:30:00 AM	6/2/2015	6/17/2015
N015875-001C	SC-100B-524	Water	6/2/2015 10:30:00 AM	6/2/2015	6/17/2015
N015875-001D	SC-100B-524	Water	6/2/2015 10:30:00 AM	6/2/2015	6/17/2015
N015875-001E	SC-100B-524	Water	6/2/2015 10:30:00 AM	6/2/2015	6/17/2015
N015875-001F	SC-100B-524	Water	6/2/2015 10:30:00 AM	6/2/2015	6/17/2015
N015875-001G	SC-100B-524	Water	6/2/2015 10:30:00 AM	6/2/2015	6/17/2015
N015875-001H	SC-100B-524	Water	6/2/2015 10:30:00 AM	6/2/2015	6/17/2015
N015875-001I	SC-100B-524	Water	6/2/2015 10:30:00 AM	6/2/2015	6/17/2015
N015875-002A	SC-700B-524	Water	6/2/2015 10:45:00 AM	6/2/2015	6/17/2015
N015875-002B	SC-700B-524	Water	6/2/2015 10:45:00 AM	6/2/2015	6/17/2015
N015875-002C	SC-700B-524	Water	6/2/2015 10:45:00 AM	6/2/2015	6/17/2015
N015875-002D	SC-700B-524	Water	6/2/2015 10:45:00 AM	6/2/2015	6/17/2015
N015875-002E	SC-700B-524	Water	6/2/2015 10:45:00 AM	6/2/2015	6/17/2015
N015875-002F	SC-700B-524	Water	6/2/2015 10:45:00 AM	6/2/2015	6/17/2015

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ANALYTICAL RESULTS

Print Date: *17-Jun-15*

CLIENT:	CH2M HILL	**Client Sample ID:**	SC-100B-524
Lab Order:	N015875	**Collection Date:**	6/2/2015 10:30:00 AM
Project:	PG&E Topock, 658274.01.IM.OP.00	**Matrix:**	WATER
Lab ID:	N015875-001		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
SPECIFIC CONDUCTANCE							
			EPA 120.1				
RunID: **WETCHEM_150603B**	QC Batch: **R100642**			PrepDate			Analyst: **LR**
Specific Conductance	6900	0.10	0.10		umhos/cm	1	6/3/2015 11:30 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: *17-Jun-15*

CLIENT:	CH2M HILL	**Client Sample ID:**	SC-700B-524
Lab Order:	N015875	**Collection Date:**	6/2/2015 10:45:00 AM
Project:	PG&E Topock, 658274.01.IM.OP.00	**Matrix:**	WATER
Lab ID:	N015875-002		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
SPECIFIC CONDUCTANCE							
EPA 120.1							
RunID: **WETCHEM_150603B**	QC Batch: **R100642**			PrepDate			Analyst: **LR**
Specific Conductance	7000	0.10	0.10		umhos/cm	1	6/3/2015 11:30 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

Date: *17-Jun-15*

CLIENT: CH2M HILL
Work Order: N015875
Project: PG&E Topock, 658274.01.IM.OP.00

ANALYTICAL QC SUMMARY REPORT

TestCode: 120.1_WPGE

Sample ID **N015875-001ADUP** SampType: **DUP** TestCode: **120.1_WPGE** Units: **umhos/cm** Prep Date: RunNo: **100642**
Client ID: **ZZZZZZ** Batch ID: **R100642** TestNo: **EPA 120.1** Analysis Date: **6/3/2015** SeqNo: **2013365**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Specific Conductance	6930.000	0.10						6910	0.289	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		

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ANALYTICAL RESULTS

Print Date: *17-Jun-15*

CLIENT:	CH2M HILL	**Client Sample ID:**	SC-100B-524
Lab Order:	N015875	**Collection Date:**	6/2/2015 10:30:00 AM
Project:	PG&E Topock, 658274.01.IM.OP.00	**Matrix:**	WATER
Lab ID:	N015875-001		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
TOTAL FILTERABLE RESIDUE							
			SM2540C				
RunID: **WETCHEM_150603F**	QC Batch: **50589**				PrepDate	**6/3/2015**	Analyst: **LR**
Total Dissolved Solids (Residue, Filterable)	4100	50	50		mg/L	1	6/3/2015 02:15 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		

ASSET Laboratories

ANALYTICAL RESULTS

Print Date: *17-Jun-15*

CLIENT:	CH2M HILL	**Client Sample ID:**	SC-700B-524
Lab Order:	N015875	**Collection Date:**	6/2/2015 10:45:00 AM
Project:	PG&E Topock, 658274.01.IM.OP.00	**Matrix:**	WATER
Lab ID:	N015875-002		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
TOTAL FILTERABLE RESIDUE							
			SM2540C				
RunID: **WETCHEM_150603F**	QC Batch: **50589**				PrepDate	**6/3/2015**	Analyst: **LR**
Total Dissolved Solids (Residue, Filterable)	3900	50	50		mg/L	1	6/3/2015 02:15 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		

ASSET Laboratories

Date: *17-Jun-15*

CLIENT: CH2M HILL
Work Order: N015875
Project: PG&E Topock, 658274.01.IM.OP.00

ANALYTICAL QC SUMMARY REPORT

TestCode: 160.1_2540C_W

Sample ID **MB-50589** SampType: **MBLK** TestCode: **160.1_2540C** Units: **mg/L** Prep Date: **6/3/2015** RunNo: **100658**
Client ID: **PBW** Batch ID: **50589** TestNo: **SM2540C** Analysis Date: **6/3/2015** SeqNo: **2013727**

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 **LCS-50589** SampType: **LCS** TestCode: **160.1_2540C** Units: **mg/L** Prep Date: **6/3/2015** RunNo: **100658**
Client ID: **LCSW** Batch ID: **50589** TestNo: **SM2540C** Analysis Date: **6/3/2015** SeqNo: **2013728**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	989.000	10	1000	0	98.9	80	120				

Sample ID **N015875-001A-DUP** SampType: **DUP** TestCode: **160.1_2540C** Units: **mg/L** Prep Date: **6/3/2015** RunNo: **100658**
Client ID: **ZZZZZZ** Batch ID: **50589** TestNo: **SM2540C** Analysis Date: **6/3/2015** SeqNo: **2013730**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	4100.000	50						4065	0.857	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		

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ANALYTICAL RESULTS

Print Date: *17-Jun-15*

CLIENT:	CH2M HILL	**Client Sample ID:**	SC-100B-524
Lab Order:	N015875	**Collection Date:**	6/2/2015 10:30:00 AM
Project:	PG&E Topock, 658274.01.IM.OP.00	**Matrix:**	WATER
Lab ID:	N015875-001		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
DISSOLVED METALS BY ICP							
			EPA 200.7				
RunID: **ICP2_150604B**	QC Batch: **50600**			PrepDate	**6/4/2015**		Analyst: **CEI**
Calcium	210000	31	500		µg/L	1	6/4/2015 12:22 PM
Iron	ND	17	20		µg/L	1	6/4/2015 12:22 PM
Magnesium	31000	86	100		µg/L	1	6/4/2015 12:22 PM
Sodium	1300000	580	25000		µg/L	50	6/9/2015 10:16 AM
TOTAL METALS BY ICP							
			EPA 200.7				
RunID: **ICP2_150604B**	QC Batch: **50588**			PrepDate	**6/4/2015**		Analyst: **CEI**
Aluminum	ND	12	50		µg/L	1	6/4/2015 11:45 AM
Boron	1000	11	100		µg/L	1	6/4/2015 11:45 AM
Iron	ND	17	20		µg/L	1	6/4/2015 11:45 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: *17-Jun-15*

CLIENT:	CH2M HILL	**Client Sample ID:**	SC-700B-524
Lab Order:	N015875	**Collection Date:**	6/2/2015 10:45:00 AM
Project:	PG&E Topock, 658274.01.IM.OP.00	**Matrix:**	WATER
Lab ID:	N015875-002		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
TOTAL METALS BY ICP							
EPA 200.7							
RunID: **ICP2_150604B**	QC Batch: **50588**				PrepDate	**6/4/2015**	Analyst: **CEI**
Aluminum	ND	12	50		µg/L	1	6/4/2015 11:51 AM
Boron	1000	11	100		µg/L	1	6/4/2015 11:51 AM
Iron	ND	17	20		µg/L	1	6/4/2015 11:51 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

Date: *17-Jun-15*

CLIENT: CH2M HILL
Work Order: N015875
Project: PG&E Topock, 658274.01.IM.OP.00

ANALYTICAL QC SUMMARY REPORT

TestCode: 200.7_WDPGEPPB

Sample ID **MB-50600** SampType: **MBLK** TestCode: **200.7_WDPG** Units: **µg/L** Prep Date: **6/4/2015** RunNo: **100665**
Client ID: **PBW** Batch ID: **50600** TestNo: **EPA 200.7** Analysis Date: **6/4/2015** SeqNo: **2014439**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Calcium	62.474	500									
Iron	ND	20									
Magnesium	ND	100									

Sample ID **N015875-001C-MS1** SampType: **MS** TestCode: **200.7_WDPG** Units: **µg/L** Prep Date: **6/4/2015** RunNo: **100665**
Client ID: **ZZZZZZ** Batch ID: **50600** TestNo: **EPA 200.7** Analysis Date: **6/4/2015** SeqNo: **2014446**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Calcium	234239.041	500	10000	213000	212	75	125				S
Iron	124.603	20	100.0	0	125	75	125				
Magnesium	46639.591	100	10000	31150	155	75	125				S

Sample ID **N015875-001C-MSD** SampType: **MSD** TestCode: **200.7_WDPG** Units: **µg/L** Prep Date: **6/4/2015** RunNo: **100665**
Client ID: **ZZZZZZ** Batch ID: **50600** TestNo: **EPA 200.7** Analysis Date: **6/4/2015** SeqNo: **2014447**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Calcium	233478.375	500	10000	213000	205	75	125	234200	0.325	20	S
Iron	124.564	20	100.0	0	125	75	125	124.6	0.0311	20	
Magnesium	46769.950	100	10000	31150	156	75	125	46640	0.279	20	S

Sample ID **LCS1-50600** SampType: **LCS** TestCode: **200.7_WDPG** Units: **µg/L** Prep Date: **6/4/2015** RunNo: **100665**
Client ID: **LCSW** Batch ID: **50600** TestNo: **EPA 200.7** Analysis Date: **6/4/2015** SeqNo: **2014451**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Calcium	8570.719	500	10000	0	85.7	85	115				
Iron	107.433	20	100.0	0	107	85	115				
Magnesium	10112.256	100	10000	0	101	85	115				

Qualifiers:

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

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CLIENT: CH2M HILL
Work Order: N015875
Project: PG&E Topock, 658274.01.IM.OP.00

ANALYTICAL QC SUMMARY REPORT

TestCode: 200.7_WDPGEPPB

Sample ID	MB-50600	SampType:	MBLK	TestCode:	200.7_WDPG	Units:	µg/L	Prep Date:	6/4/2015	RunNo:	100709
Client ID:	PBW	Batch ID:	50600	TestNo:	EPA 200.7			Analysis Date:	6/9/2015	SeqNo:	2018526

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Sodium	ND	500									

Sample ID	LCS2-50600	SampType:	LCS	TestCode:	200.7_WDPG	Units:	µg/L	Prep Date:	6/4/2015	RunNo:	100709
Client ID:	LCSW	Batch ID:	50600	TestNo:	EPA 200.7			Analysis Date:	6/9/2015	SeqNo:	2018527

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Sodium	19877.292	500	20000	0	99.4	85	115				

Sample ID	N015876-001B-MS2	SampType:	MS	TestCode:	200.7_WDPG	Units:	µg/L	Prep Date:	6/4/2015	RunNo:	100709
Client ID:	ZZZZZZ	Batch ID:	50600	TestNo:	EPA 200.7			Analysis Date:	6/9/2015	SeqNo:	2018539

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Sodium	829837.559	12000	20000	780300	248	75	125				S

Sample ID	N015876-001B-MSD	SampType:	MSD	TestCode:	200.7_WDPG	Units:	µg/L	Prep Date:	6/4/2015	RunNo:	100709
Client ID:	ZZZZZZ	Batch ID:	50600	TestNo:	EPA 200.7			Analysis Date:	6/9/2015	SeqNo:	2018540

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Sodium	824911.240	12000	20000	780300	223	75	125	829800	0.595	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: CH2M HILL
Work Order: N015875
Project: PG&E Topock, 658274.01.IM.OP.00

ANALYTICAL QC SUMMARY REPORT

TestCode: 200.7_WPGEPPB

Sample ID **MB-50588** SampType: **MBLK** TestCode: **200.7_WPGE** Units: **µg/L** Prep Date: **6/4/2015** RunNo: **100665**
Client ID: **PBW** Batch ID: **50588** TestNo: **EPA 200.7** Analysis Date: **6/4/2015** SeqNo: **2014304**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aluminum	ND	50									
Boron	19.430	100									
Iron	ND	20									

Sample ID **LCS-50588** SampType: **LCS** TestCode: **200.7_WPGE** Units: **µg/L** Prep Date: **6/4/2015** RunNo: **100665**
Client ID: **LCSW** Batch ID: **50588** TestNo: **EPA 200.7** Analysis Date: **6/4/2015** SeqNo: **2014305**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aluminum	10195.815	50	10000	0	102	85	115				
Boron	4888.205	100	5000	0	97.8	85	115				
Iron	113.272	20	100.0	0	113	85	115				

Sample ID **N015836-001B-MS** SampType: **MS** TestCode: **200.7_WPGE** Units: **µg/L** Prep Date: **6/4/2015** RunNo: **100665**
Client ID: **ZZZZZZ** Batch ID: **50588** TestNo: **EPA 200.7** Analysis Date: **6/4/2015** SeqNo: **2014309**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aluminum	10814.441	50	10000	0	108	75	125				
Boron	5626.772	100	5000	398.4	105	75	125				
Iron	107.753	20	100.0	0	108	75	125				

Sample ID **N015836-001B-MSD** SampType: **MSD** TestCode: **200.7_WPGE** Units: **µg/L** Prep Date: **6/4/2015** RunNo: **100665**
Client ID: **ZZZZZZ** Batch ID: **50588** TestNo: **EPA 200.7** Analysis Date: **6/4/2015** SeqNo: **2014310**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aluminum	10808.481	50	10000	0	108	75	125	10810	0.0551	20	
Boron	5687.815	100	5000	398.4	106	75	125	5627	1.08	20	
Iron	107.962	20	100.0	0	108	75	125	107.8	0.194	20	

Qualifiers:

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

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ANALYTICAL RESULTS

Print Date: *17-Jun-15*

CLIENT:	CH2M HILL	**Client Sample ID:**	SC-100B-524
Lab Order:	N015875	**Collection Date:**	6/2/2015 10:30:00 AM
Project:	PG&E Topock, 658274.01.IM.OP.00	**Matrix:**	WATER
Lab ID:	N015875-001		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
TOTAL METALS BY ICPMS							
			EPA 200.8				
RunID: **ICP7_150604B**	QC Batch: **50587**			PrepDate	**6/4/2015**		Analyst: **CEI**
Antimony	ND	0.026	0.50		µg/L	1	6/4/2015 12:12 PM
Arsenic	3.1	0.016	0.10		µg/L	1	6/4/2015 12:12 PM
Barium	25	0.072	1.0		µg/L	1	6/5/2015 03:58 PM
Copper	ND	0.26	1.0		µg/L	1	6/5/2015 03:58 PM
Lead	ND	0.27	5.0		µg/L	5	6/5/2015 04:02 PM
Manganese	ND	0.023	0.50		µg/L	1	6/4/2015 12:12 PM
Molybdenum	21	0.029	0.50		µg/L	1	6/4/2015 12:12 PM
Nickel	ND	0.038	1.0		µg/L	1	6/4/2015 12:12 PM
Zinc	ND	0.039	10		µg/L	1	6/5/2015 03:58 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: *17-Jun-15*

CLIENT:	CH2M HILL	**Client Sample ID:**	SC-700B-524
Lab Order:	N015875	**Collection Date:**	6/2/2015 10:45:00 AM
Project:	PG&E Topock, 658274.01.IM.OP.00	**Matrix:**	WATER
Lab ID:	N015875-002		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
TOTAL METALS BY ICPMS							
			EPA 200.8				
RunID: **ICP7_150604B**	QC Batch: **50587**				PrepDate	**6/4/2015**	Analyst: **CEI**
Antimony	ND	0.026	0.50		µg/L	1	6/4/2015 12:17 PM
Arsenic	ND	0.016	0.10		µg/L	1	6/4/2015 12:17 PM
Barium	8.3	0.072	1.0		µg/L	1	6/5/2015 04:09 PM
Copper	ND	0.26	1.0		µg/L	1	6/5/2015 04:09 PM
Lead	ND	0.27	5.0		µg/L	5	6/5/2015 04:13 PM
Manganese	ND	0.023	0.50		µg/L	1	6/4/2015 12:17 PM
Molybdenum	19	0.029	0.50		µg/L	1	6/4/2015 12:17 PM
Nickel	ND	0.038	1.0		µg/L	1	6/4/2015 12:17 PM
Zinc	ND	0.039	10		µg/L	1	6/5/2015 04:09 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		

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Date: *17-Jun-15*

CLIENT: CH2M HILL
Work Order: N015875
Project: PG&E Topock, 658274.01.IM.OP.00

ANALYTICAL QC SUMMARY REPORT

TestCode: 200.8_W

Sample ID **MB-50587** SampType: **MBLK** TestCode: **200.8_W** Units: **µg/L** Prep Date: **6/4/2015** RunNo: **100673**
Client ID: **PBW** Batch ID: **50587** TestNo: **EPA 200.8** Analysis Date: **6/4/2015** SeqNo: **2015165**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Antimony	ND	0.50									
Arsenic	ND	0.10									
Manganese	ND	0.50									
Molybdenum	0.133	0.50									
Nickel	ND	1.0									

Sample ID **LCS-50587** SampType: **LCS** TestCode: **200.8_W** Units: **µg/L** Prep Date: **6/4/2015** RunNo: **100673**
Client ID: **LCSW** Batch ID: **50587** TestNo: **EPA 200.8** Analysis Date: **6/4/2015** SeqNo: **2015166**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Antimony	10.357	0.50	10.00	0	104	85	115				
Arsenic	9.756	0.10	10.00	0	97.6	85	115				
Manganese	97.103	0.50	100.0	0	97.1	85	115				
Molybdenum	9.833	0.50	10.00	0	98.3	85	115				
Nickel	9.764	1.0	10.00	0	97.6	85	115				

Sample ID **N015882-001H-MS** SampType: **MS** TestCode: **200.8_W** Units: **µg/L** Prep Date: **6/4/2015** RunNo: **100673**
Client ID: **ZZZZZZ** Batch ID: **50587** TestNo: **EPA 200.8** Analysis Date: **6/4/2015** SeqNo: **2015170**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Antimony	10.537	0.50	10.00	0.04646	105	75	125				
Arsenic	31.347	0.10	10.00	22.11	92.4	75	125				
Manganese	88.371	0.50	100.0	0	88.4	75	125				
Molybdenum	12.513	0.50	10.00	1.297	112	75	125				
Nickel	8.917	1.0	10.00	0	89.2	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		

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CLIENT: CH2M HILL
Work Order: N015875
Project: PG&E Topock, 658274.01.IM.OP.00

ANALYTICAL QC SUMMARY REPORT

TestCode: 200.8_W

Sample ID **N015882-001H-MSD** SampType: **MSD** TestCode: **200.8_W** Units: **µg/L** Prep Date: **6/4/2015** RunNo: **100673**
Client ID: **ZZZZZZ** Batch ID: **50587** TestNo: **EPA 200.8** Analysis Date: **6/4/2015** SeqNo: **2015171**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Antimony	10.575	0.50	10.00	0.04646	105	75	125	10.54	0.363	20	
Arsenic	32.250	0.10	10.00	22.11	101	75	125	31.35	2.84	20	
Manganese	88.816	0.50	100.0	0	88.8	75	125	88.37	0.502	20	
Molybdenum	12.657	0.50	10.00	1.297	114	75	125	12.51	1.14	20	
Nickel	8.798	1.0	10.00	0	88.0	75	125	8.917	1.35	20	

Sample ID **MB-50587** SampType: **MBLK** TestCode: **200.8_W** Units: **µg/L** Prep Date: **6/4/2015** RunNo: **100702**
Client ID: **PBW** Batch ID: **50587** TestNo: **EPA 200.8** Analysis Date: **6/5/2015** SeqNo: **2017838**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Barium	ND	1.0									
Copper	ND	1.0									
Lead	ND	1.0									
Zinc	ND	10									

Sample ID **LCS-50587** SampType: **LCS** TestCode: **200.8_W** Units: **µg/L** Prep Date: **6/4/2015** RunNo: **100702**
Client ID: **LCSW** Batch ID: **50587** TestNo: **EPA 200.8** Analysis Date: **6/5/2015** SeqNo: **2017839**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Barium	100.276	1.0	100.0	0	100	85	115				
Copper	9.995	1.0	10.00	0	100	85	115				
Lead	11.134	1.0	10.00	0	111	85	115				
Zinc	93.478	10	100.0	0	93.5	85	115				

Sample ID **N015882-001H-MS** SampType: **MS** TestCode: **200.8_W** Units: **µg/L** Prep Date: **6/4/2015** RunNo: **100702**
Client ID: **ZZZZZZ** Batch ID: **50587** TestNo: **EPA 200.8** Analysis Date: **6/5/2015** SeqNo: **2017847**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Barium	277.131	5.0	100.0	157.4	120	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: CH2M HILL
Work Order: N015875
Project: PG&E Topock, 658274.01.IM.OP.00

ANALYTICAL QC SUMMARY REPORT

TestCode: 200.8_W

Sample ID **N015882-001H-MSD** SampType: **MSD** TestCode: **200.8_W** Units: **µg/L** Prep Date: **6/4/2015** RunNo: **100702**
Client ID: **ZZZZZZ** Batch ID: **50587** TestNo: **EPA 200.8** Analysis Date: **6/5/2015** SeqNo: **2017850**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Barium	282.230	5.0	100.0	157.4	125	75	125	277.1	1.82	20	

Sample ID **N015882-001H-MS** SampType: **MS** TestCode: **200.8_W** Units: **µg/L** Prep Date: **6/4/2015** RunNo: **100702**
Client ID: **ZZZZZZ** Batch ID: **50587** TestNo: **EPA 200.8** Analysis Date: **6/5/2015** SeqNo: **2017866**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Copper	6.541	1.0	10.00	0	65.4	75	125				S
Lead	10.305	1.0	10.00	0	103	75	125				
Zinc	75.028	10	100.0	0	75.0	75	125				

Sample ID **N015882-001H-MSD** SampType: **MSD** TestCode: **200.8_W** Units: **µg/L** Prep Date: **6/4/2015** RunNo: **100702**
Client ID: **ZZZZZZ** Batch ID: **50587** TestNo: **EPA 200.8** Analysis Date: **6/5/2015** SeqNo: **2017867**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Copper	6.480	1.0	10.00	0	64.8	75	125	6.541	0.929	20	S
Lead	10.362	1.0	10.00	0	104	75	125	10.31	0.554	20	
Zinc	75.055	10	100.0	0	75.1	75	125	75.03	0.0366	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: *17-Jun-15*

CLIENT:	CH2M HILL	**Client Sample ID:**	SC-100B-524
Lab Order:	N015875	**Collection Date:**	6/2/2015 10:30:00 AM
Project:	PG&E Topock, 658274.01.IM.OP.00	**Matrix:**	WATER
Lab ID:	N015875-001		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
HEXAVALENT CHROMIUM BY IC							
			EPA 218.6				
RunID: **IC6_150603B**	QC Batch: **R100686**			PrepDate			Analyst: **RB**
Hexavalent Chromium	520	1.5	20		µg/L	100	6/3/2015 07:09 PM
TOTAL METALS BY ICPMS							
			EPA 200.8				
RunID: **ICP7_150604B**	QC Batch: **50587**			PrepDate	**6/4/2015**		Analyst: **CEI**
Chromium	540	0.43	5.0		µg/L	5	6/4/2015 01:07 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		

ASSET Laboratories

ANALYTICAL RESULTS

Print Date: *17-Jun-15*

CLIENT:	CH2M HILL	**Client Sample ID:**	SC-700B-524
Lab Order:	N015875	**Collection Date:**	6/2/2015 10:45:00 AM
Project:	PG&E Topock, 658274.01.IM.OP.00	**Matrix:**	WATER
Lab ID:	N015875-002		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
HEXAVALENT CHROMIUM BY IC							
			EPA 218.6				
RunID: **IC6_150603B**	QC Batch: **R100686**			PrepDate			Analyst: **RB**
Hexavalent Chromium	ND	0.015	0.20		µg/L	1	6/3/2015 07:29 PM
TOTAL METALS BY ICPMS							
			EPA 200.8				
RunID: **ICP7_150604B**	QC Batch: **50587**			PrepDate		**6/4/2015**	Analyst: **CEI**
Chromium	ND	0.086	1.0		µg/L	1	6/4/2015 12:17 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

Date: *17-Jun-15*

CLIENT: CH2M HILL
Work Order: N015875
Project: PG&E Topock, 658274.01.IM.OP.00

ANALYTICAL QC SUMMARY REPORT

TestCode: 200.8_W_CRPGE

Sample ID **MB-50587** SampType: **MBLK** TestCode: **200.8_W_CR** Units: **µg/L** Prep Date: **6/4/2015** RunNo: **100673**
Client ID: **PBW** Batch ID: **50587** TestNo: **EPA 200.8** Analysis Date: **6/4/2015** SeqNo: **2015078**

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

Sample ID **LCS-50587** SampType: **LCS** TestCode: **200.8_W_CR** Units: **µg/L** Prep Date: **6/4/2015** RunNo: **100673**
Client ID: **LCSW** Batch ID: **50587** TestNo: **EPA 200.8** Analysis Date: **6/4/2015** SeqNo: **2015079**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium	9.826	1.0	10.00	0	98.3	85	115				

Sample ID **N015882-001H-MS** SampType: **MS** TestCode: **200.8_W_CR** Units: **µg/L** Prep Date: **6/4/2015** RunNo: **100673**
Client ID: **ZZZZZZ** Batch ID: **50587** TestNo: **EPA 200.8** Analysis Date: **6/4/2015** SeqNo: **2015083**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium	9.368	1.0	10.00	0	93.7	75	125				

Sample ID **N015882-001H-MSD** SampType: **MSD** TestCode: **200.8_W_CR** Units: **µg/L** Prep Date: **6/4/2015** RunNo: **100673**
Client ID: **ZZZZZZ** Batch ID: **50587** TestNo: **EPA 200.8** Analysis Date: **6/4/2015** SeqNo: **2015084**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium	9.209	1.0	10.00	0	92.1	75	125	9.368	1.71	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		

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CLIENT: CH2M HILL
Work Order: N015875
Project: PG&E Topock, 658274.01.IM.OP.00

ANALYTICAL QC SUMMARY REPORT

TestCode: 218.6_WU_PGE

Sample ID	MB-R100686	SampType:	MBLK	TestCode:	218.6_WU_P	Units:	µg/L	Prep Date:		RunNo:	100686
Client ID:	PBW	Batch ID:	R100686	TestNo:	EPA 218.6			Analysis Date:	6/3/2015	SeqNo:	2016929

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-R100686	SampType:	LCS	TestCode:	218.6_WU_P	Units:	µg/L	Prep Date:		RunNo:	100686
Client ID:	LCSW	Batch ID:	R100686	TestNo:	EPA 218.6			Analysis Date:	6/3/2015	SeqNo:	2016930

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	5.010	0.20	5.000	0	100	90	110				

Sample ID	N015890-004A-DUP	SampType:	DUP	TestCode:	218.6_WU_P	Units:	µg/L	Prep Date:		RunNo:	100686
Client ID:	ZZZZZZ	Batch ID:	R100686	TestNo:	EPA 218.6			Analysis Date:	6/3/2015	SeqNo:	2016935

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	13.379	1.0						12.79	4.47	20	

Sample ID	N015890-001A-MS	SampType:	MS	TestCode:	218.6_WU_P	Units:	µg/L	Prep Date:		RunNo:	100686
Client ID:	ZZZZZZ	Batch ID:	R100686	TestNo:	EPA 218.6			Analysis Date:	6/3/2015	SeqNo:	2016939

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	48.571	1.0	25.00	23.79	99.1	90	110				

Sample ID	N015890-001A-MSD	SampType:	MSD	TestCode:	218.6_WU_P	Units:	µg/L	Prep Date:		RunNo:	100686
Client ID:	ZZZZZZ	Batch ID:	R100686	TestNo:	EPA 218.6			Analysis Date:	6/3/2015	SeqNo:	2016940

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	48.701	1.0	25.00	23.79	99.6	90	110	48.57	0.267	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: CH2M HILL
Work Order: N015875
Project: PG&E Topock, 658274.01.IM.OP.00

ANALYTICAL QC SUMMARY REPORT

TestCode: 218.6_WU_PGE

Sample ID **N015875-001D-MS** SampType: **MS** TestCode: **218.6_WU_P** Units: **µg/L** Prep Date: RunNo: **100686**
Client ID: **ZZZZZZ** Batch ID: **R100686** TestNo: **EPA 218.6** Analysis Date: **6/3/2015** SeqNo: **2016946**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	1013.850	20	500.0	521.0	98.6	90	110				

Sample ID **N015875-002C-MS** SampType: **MS** TestCode: **218.6_WU_P** Units: **µg/L** Prep Date: RunNo: **100686**
Client ID: **ZZZZZZ** Batch ID: **R100686** TestNo: **EPA 218.6** Analysis Date: **6/3/2015** SeqNo: **2016948**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	1.200	0.20	1.000	0.1451	105	90	110				

Sample ID **N015876-001C-MS** SampType: **MS** TestCode: **218.6_WU_P** Units: **µg/L** Prep Date: RunNo: **100686**
Client ID: **ZZZZZZ** Batch ID: **R100686** TestNo: **EPA 218.6** Analysis Date: **6/3/2015** SeqNo: **2016952**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	8.550	0.20	5.000	3.378	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		

ASSET Laboratories

ANALYTICAL RESULTS

Print Date: *17-Jun-15*

CLIENT:	CH2M HILL	**Client Sample ID:**	SC-100B-524
Lab Order:	N015875	**Collection Date:**	6/2/2015 10:30:00 AM
Project:	PG&E Topock, 658274.01.IM.OP.00	**Matrix:**	WATER
Lab ID:	N015875-001		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
TURBIDITY							
			SM 2130B				
RunID: **WETCHEM_150603D**	QC Batch: **R100644**			PrepDate			Analyst: **LR**
Turbidity	0.26	0.10	0.10		NTU	1	6/3/2015 12:05 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		

ASSET Laboratories

ANALYTICAL RESULTS

Print Date: *17-Jun-15*

CLIENT:	CH2M HILL	**Client Sample ID:**	SC-700B-524
Lab Order:	N015875	**Collection Date:**	6/2/2015 10:45:00 AM
Project:	PG&E Topock, 658274.01.IM.OP.00	**Matrix:**	WATER
Lab ID:	N015875-002		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
TURBIDITY							
			SM 2130B				
RunID: **WETCHEM_150603D**	QC Batch: **R100644**			PrepDate			Analyst: **LR**
Turbidity	0.29	0.10	0.10		NTU	1	6/3/2015 12:05 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		

ASSET Laboratories

Date: *17-Jun-15*

CLIENT: CH2M HILL
Work Order: N015875
Project: PG&E Topock, 658274.01.IM.OP.00

ANALYTICAL QC SUMMARY REPORT

TestCode: 2130_W

Sample ID	**MB-R100644**	SampType:	**MBLK**	TestCode:	**2130_W**	Units:	**NTU**	Prep Date:		RunNo:	**100644**
Client ID:	**PBW**	Batch ID:	**R100644**	TestNo:	**SM 2130B**			Analysis Date:	**6/3/2015**	SeqNo:	**2013376**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Turbidity	ND	0.10									

Sample ID	**N015875-001ADUP**	SampType:	**DUP**	TestCode:	**2130_W**	Units:	**NTU**	Prep Date:		RunNo:	**100644**
Client ID:	**ZZZZZZ**	Batch ID:	**R100644**	TestNo:	**SM 2130B**			Analysis Date:	**6/3/2015**	SeqNo:	**2013378**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Turbidity	0.260	0.10						0.2600	0	30	

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis 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		

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ANALYTICAL RESULTS

Print Date: *17-Jun-15*

CLIENT:	CH2M HILL	**Client Sample ID:**	SC-100B-524
Lab Order:	N015875	**Collection Date:**	6/2/2015 10:30:00 AM
Project:	PG&E Topock, 658274.01.IM.OP.00	**Matrix:**	WATER
Lab ID:	N015875-001		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
ALKALINITY, SPECIATED							
			SM 2320 B				
RunID: **WETCHEM_150603E**	QC Batch: **R100656**			PrepDate			Analyst: **LR**
Alkalinity, Bicarbonate (As CaCO3)	150	1.2	5.0		mg/L	1	6/3/2015 02:15 PM
Alkalinity, Carbonate (As CaCO3)	ND	1.2	5.0		mg/L	1	6/3/2015 02:15 PM
Alkalinity, Hydroxide (As CaCO3)	ND	1.2	5.0		mg/L	1	6/3/2015 02:15 PM
Alkalinity, Total (As CaCO3)	150	1.2	5.0		mg/L	1	6/3/2015 02:15 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		

ASSET Laboratories

Date: *17-Jun-15*

CLIENT: CH2M HILL
Work Order: N015875
Project: PG&E Topock, 658274.01.IM.OP.00

ANALYTICAL QC SUMMARY REPORT

TestCode: 2320_W_SP

Sample ID **LCS-R100656** SampType: **LCS** TestCode: **2320_W_SP** Units: **mg/L** Prep Date: RunNo: **100656**
Client ID: **LCSW** Batch ID: **R100656** TestNo: **SM 2320 B** Analysis Date: **6/3/2015** SeqNo: **2016031**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Alkalinity, Bicarbonate (As CaCO3)	95.041	5.0	100.0	0	95.0	85	115				
Alkalinity, Total (As CaCO3)	97.107	5.0	100.0	0	97.1	85	115				

Sample ID **MB-R100656** SampType: **MBLK** TestCode: **2320_W_SP** Units: **mg/L** Prep Date: RunNo: **100656**
Client ID: **PBW** Batch ID: **R100656** TestNo: **SM 2320 B** Analysis Date: **6/3/2015** SeqNo: **2016032**

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 **N015875-001ADUP** SampType: **DUP** TestCode: **2320_W_SP** Units: **mg/L** Prep Date: RunNo: **100656**
Client ID: **ZZZZZZ** Batch ID: **R100656** TestNo: **SM 2320 B** Analysis Date: **6/3/2015** SeqNo: **2016034**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Alkalinity, Bicarbonate (As CaCO3)	150.826	5.0						150.8	0	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)	150.826	5.0						150.8	0	30	

Sample ID **N015876-001AMS** SampType: **MS** TestCode: **2320_W_SP** Units: **mg/L** Prep Date: RunNo: **100656**
Client ID: **ZZZZZZ** Batch ID: **R100656** TestNo: **SM 2320 B** Analysis Date: **6/3/2015** SeqNo: **2016036**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Alkalinity, Bicarbonate (As CaCO3)	311.983	5.0	100.0	204.5	107	75	125				
Alkalinity, Total (As CaCO3)	311.983	5.0	100.0	204.5	107	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: CH2M HILL
Work Order: N015875
Project: PG&E Topock, 658274.01.IM.OP.00

ANALYTICAL QC SUMMARY REPORT

TestCode: 2320_W_SP

Sample ID **N015876-001AMSD** SampType: **MSD** TestCode: **2320_W_SP** Units: **mg/L** Prep Date: RunNo: **100656**
Client ID: **ZZZZZZ** Batch ID: **R100656** TestNo: **SM 2320 B** Analysis Date: **6/3/2015** SeqNo: **2016037**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Alkalinity, Bicarbonate (As CaCO3)	307.851	5.0	100.0	204.5	103	75	125	312.0	1.33	20	
Alkalinity, Total (As CaCO3)	307.851	5.0	100.0	204.5	103	75	125	312.0	1.33	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: *17-Jun-15*

CLIENT:	CH2M HILL	**Client Sample ID:**	SC-100B-524
Lab Order:	N015875	**Collection Date:**	6/2/2015 10:30:00 AM
Project:	PG&E Topock, 658274.01.IM.OP.00	**Matrix:**	WATER
Lab ID:	N015875-001		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
ANIONS BY ION CHROMATOGRAPHY							
			EPA 300.0				
RunID: **IC2_150605A** QC Batch: **R100689**				PrepDate			Analyst: **QBM**
Fluoride	2.5	0.12	1.0		mg/L	10	6/5/2015 03:15 PM
ANIONS BY ION CHROMATOGRAPHY							
			EPA 300.0				
RunID: **IC2_150605A** QC Batch: **R100689**				PrepDate			Analyst: **QBM**
Sulfate	440	1.6	25		mg/L	50	6/5/2015 03:00 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: *17-Jun-15*

CLIENT:	CH2M HILL	**Client Sample ID:**	SC-700B-524
Lab Order:	N015875	**Collection Date:**	6/2/2015 10:45:00 AM
Project:	PG&E Topock, 658274.01.IM.OP.00	**Matrix:**	WATER
Lab ID:	N015875-002		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
ANIONS BY ION CHROMATOGRAPHY							
			EPA 300.0				
RunID: **IC2_150605A** QC Batch: **R100689**				PrepDate			Analyst: **QBM**
Fluoride	2.0	0.12	1.0		mg/L	10	6/5/2015 03:44 PM
ANIONS BY ION CHROMATOGRAPHY							
			EPA 300.0				
RunID: **IC2_150605A** QC Batch: **R100689**				PrepDate			Analyst: **QBM**
Sulfate	430	1.6	25		mg/L	50	6/5/2015 03:29 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: CH2M HILL
Work Order: N015875
Project: PG&E Topock, 658274.01.IM.OP.00

ANALYTICAL QC SUMMARY REPORT

TestCode: 300_W_FPGE

Sample ID **MB-R100689_F** SampType: **MBLK** TestCode: **300_W_FPG** Units: **mg/L** Prep Date: RunNo: **100689**
Client ID: **PBW** Batch ID: **R100689** TestNo: **EPA 300.0** Analysis Date: **6/5/2015** SeqNo: **2017101**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Fluoride	ND	0.10									

Sample ID **LCS-R100689_F** SampType: **LCS** TestCode: **300_W_FPG** Units: **mg/L** Prep Date: RunNo: **100689**
Client ID: **LCSW** Batch ID: **R100689** TestNo: **EPA 300.0** Analysis Date: **6/5/2015** SeqNo: **2017102**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Fluoride	2.276	0.10	2.500	0	91.0	90	110				

Sample ID **N015875-001ADUP** SampType: **DUP** TestCode: **300_W_FPG** Units: **mg/L** Prep Date: RunNo: **100689**
Client ID: **ZZZZZZ** Batch ID: **R100689** TestNo: **EPA 300.0** Analysis Date: **6/5/2015** SeqNo: **2017109**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Fluoride	2.770	1.0						2.520	9.45	20	

Sample ID **N015875-002BMS** SampType: **MS** TestCode: **300_W_FPG** Units: **mg/L** Prep Date: RunNo: **100689**
Client ID: **ZZZZZZ** Batch ID: **R100689** TestNo: **EPA 300.0** Analysis Date: **6/5/2015** SeqNo: **2017110**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Fluoride	24.690	1.0	25.00	1.980	90.8	80	120				

Sample ID **N015875-002BMSD** SampType: **MSD** TestCode: **300_W_FPG** Units: **mg/L** Prep Date: RunNo: **100689**
Client ID: **ZZZZZZ** Batch ID: **R100689** TestNo: **EPA 300.0** Analysis Date: **6/5/2015** SeqNo: **2017111**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Fluoride	25.040	1.0	25.00	1.980	92.2	80	120	24.69	1.41	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: CH2M HILL
Work Order: N015875
Project: PG&E Topock, 658274.01.IM.OP.00

ANALYTICAL QC SUMMARY REPORT

TestCode: 300_W_SO4PGE

Sample ID **MB-R100689_SO4** SampType: **MBLK** TestCode: **300_W_SO4P** Units: **mg/L** Prep Date: RunNo: **100689**
Client ID: **PBW** Batch ID: **R100689** TestNo: **EPA 300.0** Analysis Date: **6/5/2015** SeqNo: **2017192**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Sulfate	ND	0.50									

Sample ID **LCS-R100689_SO4** SampType: **LCS** TestCode: **300_W_SO4P** Units: **mg/L** Prep Date: RunNo: **100689**
Client ID: **LCSW** Batch ID: **R100689** TestNo: **EPA 300.0** Analysis Date: **6/5/2015** SeqNo: **2017193**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Sulfate	4.659	0.50	5.000	0	93.2	90	110				

Sample ID **N015902-001CDUP** SampType: **DUP** TestCode: **300_W_SO4P** Units: **mg/L** Prep Date: RunNo: **100689**
Client ID: **ZZZZZZ** Batch ID: **R100689** TestNo: **EPA 300.0** Analysis Date: **6/5/2015** SeqNo: **2017197**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Sulfate	127.800	10						131.7	3.01	20	

Sample ID **N015902-002CMS** SampType: **MS** TestCode: **300_W_SO4P** Units: **mg/L** Prep Date: RunNo: **100689**
Client ID: **ZZZZZZ** Batch ID: **R100689** TestNo: **EPA 300.0** Analysis Date: **6/5/2015** SeqNo: **2017199**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Sulfate	239.920	10	100.0	141.7	98.2	80	120				

Sample ID **N015902-002CMSD** SampType: **MSD** TestCode: **300_W_SO4P** Units: **mg/L** Prep Date: RunNo: **100689**
Client ID: **ZZZZZZ** Batch ID: **R100689** TestNo: **EPA 300.0** Analysis Date: **6/5/2015** SeqNo: **2017200**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Sulfate	239.540	10	100.0	141.7	97.9	80	120	239.9	0.159	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: *17-Jun-15*

CLIENT:	CH2M HILL	**Client Sample ID:**	SC-100B-524
Lab Order:	N015875	**Collection Date:**	6/2/2015 10:30:00 AM
Project:	PG&E Topock, 658274.01.IM.OP.00	**Matrix:**	WATER
Lab ID:	N015875-001		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
TOTAL PHOSPHORUS							
EPA 365.3							
RunID: **WETCHEM_150605A**	QC Batch: **50602**				PrepDate	**6/4/2015**	Analyst: **QBM**
Phosphorus, Total (As P)	ND	0.0056	0.020		mg/L	1	6/5/2015

Qualifiers:				
	B	Analyte detected in 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

Date: *17-Jun-15*

CLIENT: CH2M HILL
Work Order: N015875
Project: PG&E Topock, 658274.01.IM.OP.00

ANALYTICAL QC SUMMARY REPORT

TestCode: 365.3_W_T

Sample ID **LCS-50602** SampType: **LCS** TestCode: **365.3_W_T** Units: **mg/L** Prep Date: **6/4/2015** RunNo: **100693**
Client ID: **LCSW** Batch ID: **50602** TestNo: **EPA 365.3** Analysis Date: **6/5/2015** SeqNo: **2017248**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Phosphorus, Total (As P)	0.379	0.020	0.4000	0	94.8	80	120				

Sample ID **MB-50602** SampType: **MBLK** TestCode: **365.3_W_T** Units: **mg/L** Prep Date: **6/4/2015** RunNo: **100693**
Client ID: **PBW** Batch ID: **50602** TestNo: **EPA 365.3** Analysis Date: **6/5/2015** SeqNo: **2017249**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Phosphorus, Total (As P)	ND	0.020									

Sample ID **N015877-001D-MS** SampType: **MS** TestCode: **365.3_W_T** Units: **mg/L** Prep Date: **6/4/2015** RunNo: **100693**
Client ID: **ZZZZZZ** Batch ID: **50602** TestNo: **EPA 365.3** Analysis Date: **6/5/2015** SeqNo: **2017253**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Phosphorus, Total (As P)	0.384	0.020	0.4000	0	96.0	80	120				

Sample ID **N015877-001D-MSD** SampType: **MSD** TestCode: **365.3_W_T** Units: **mg/L** Prep Date: **6/4/2015** RunNo: **100693**
Client ID: **ZZZZZZ** Batch ID: **50602** TestNo: **EPA 365.3** Analysis Date: **6/5/2015** SeqNo: **2017254**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Phosphorus, Total (As P)	0.403	0.020	0.4000	0	101	80	120	0.3840	4.83	20	

Qualifiers:

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

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

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ANALYTICAL RESULTS

Print Date: *17-Jun-15*

CLIENT:	CH2M HILL	**Client Sample ID:**	SC-100B-524
Lab Order:	N015875	**Collection Date:**	6/2/2015 10:30:00 AM
Project:	PG&E Topock, 658274.01.IM.OP.00	**Matrix:**	WATER
Lab ID:	N015875-001		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
NITRATE/NITRITE-N BY CADMIUM REDUCTION							
SM4500-NO3F							
RunID: **WETCHEM_150616D** QC Batch: **R100822** PrepDate Analyst: **RB**							
Nitrate/Nitrite as N	3.0	0.11	0.25		mg/L	5	6/16/2015

Qualifiers:

B	Analyte detected in 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: *17-Jun-15*

CLIENT:	CH2M HILL	**Client Sample ID:**	SC-700B-524
Lab Order:	N015875	**Collection Date:**	6/2/2015 10:45:00 AM
Project:	PG&E Topock, 658274.01.IM.OP.00	**Matrix:**	WATER
Lab ID:	N015875-002		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
NITRATE/NITRITE-N BY CADMIUM REDUCTION							
SM4500-NO3F							
RunID: **WETCHEM_150616D** QC Batch: **R100822** PrepDate Analyst: **RB**							
Nitrate/Nitrite as N	2.6	0.11	0.25		mg/L	5	6/16/2015

Qualifiers:

B	Analyte detected in 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

Date: *17-Jun-15*

CLIENT: CH2M HILL
Work Order: N015875
Project: PG&E Topock, 658274.01.IM.OP.00

ANALYTICAL QC SUMMARY REPORT

TestCode: 4500N03F_W

Sample ID **MB-R100822** SampType: **MBLK** TestCode: **4500N03F_W** Units: **mg/L** Prep Date: RunNo: **100822**
Client ID: **PBW** Batch ID: **R100822** TestNo: **SM4500-NO3** Analysis Date: **6/16/2015** SeqNo: **2023993**

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-R100822** SampType: **LCS** TestCode: **4500N03F_W** Units: **mg/L** Prep Date: RunNo: **100822**
Client ID: **LCSW** Batch ID: **R100822** TestNo: **SM4500-NO3** Analysis Date: **6/16/2015** SeqNo: **2023994**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrate/Nitrite as N	0.515	0.050	0.5000	0	103	85	115				

Sample ID **N015875-002EDUP** SampType: **DUP** TestCode: **4500N03F_W** Units: **mg/L** Prep Date: RunNo: **100822**
Client ID: **ZZZZZZ** Batch ID: **R100822** TestNo: **SM4500-NO3** Analysis Date: **6/16/2015** SeqNo: **2023996**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrate/Nitrite as N	2.617	0.25						2.624	0.267	20	

Sample ID **N015875-002EMS** SampType: **MS** TestCode: **4500N03F_W** Units: **mg/L** Prep Date: RunNo: **100822**
Client ID: **ZZZZZZ** Batch ID: **R100822** TestNo: **SM4500-NO3** Analysis Date: **6/16/2015** SeqNo: **2023997**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrate/Nitrite as N	5.044	0.25	2.500	2.624	96.8	75	125				

Sample ID **N015875-002EMSD** SampType: **MSD** TestCode: **4500N03F_W** Units: **mg/L** Prep Date: RunNo: **100822**
Client ID: **ZZZZZZ** Batch ID: **R100822** TestNo: **SM4500-NO3** Analysis Date: **6/16/2015** SeqNo: **2023998**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrate/Nitrite as N	5.422	0.25	2.500	2.624	112	75	125	5.044	7.22	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
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11060 Artesia Blvd., Ste C, Cerritos, CA 90703
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P: 702.307.2659 F: 702.307.2691

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ANALYTICAL RESULTS

Print Date: *17-Jun-15*

CLIENT:	CH2M HILL	**Client Sample ID:**	SC-100B-524
Lab Order:	N015875	**Collection Date:**	6/2/2015 10:30:00 AM
Project:	PG&E Topock, 658274.01.IM.OP.00	**Matrix:**	WATER
Lab ID:	N015875-001		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
TOTAL ORGANIC CARBON							
			SM 5310C				
RunID: **TOC2_150605A**	QC Batch: **R100683**			PrepDate			Analyst: **RB**
Organic Carbon, Total	ND	0.041	1.0		mg/L	1	6/5/2015 02:09 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: CH2M HILL
Work Order: N015875
Project: PG&E Topock, 658274.01.IM.OP.00

ANALYTICAL QC SUMMARY REPORT

TestCode: 5310C_W_T

Sample ID **MB-R100683** SampType: **MBLK** TestCode: **5310C_W_T** Units: **mg/L** Prep Date: RunNo: **100683**
Client ID: **PBW** Batch ID: **R100683** TestNo: **SM 5310C** Analysis Date: **6/5/2015** SeqNo: **2016309**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Organic Carbon, Total	ND	1.0									

Sample ID **LCS-R100683** SampType: **LCS** TestCode: **5310C_W_T** Units: **mg/L** Prep Date: RunNo: **100683**
Client ID: **LCSW** Batch ID: **R100683** TestNo: **SM 5310C** Analysis Date: **6/5/2015** SeqNo: **2016310**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Organic Carbon, Total	5.045	1.0	5.000	0	101	85	115				

Sample ID **N015902-001DMS** SampType: **MS** TestCode: **5310C_W_T** Units: **mg/L** Prep Date: RunNo: **100683**
Client ID: **ZZZZZZ** Batch ID: **R100683** TestNo: **SM 5310C** Analysis Date: **6/5/2015** SeqNo: **2016313**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Organic Carbon, Total	656.139	100	500.0	117.5	108	75	125				

Sample ID **N015902-001DMSD** SampType: **MSD** TestCode: **5310C_W_T** Units: **mg/L** Prep Date: RunNo: **100683**
Client ID: **ZZZZZZ** Batch ID: **R100683** TestNo: **SM 5310C** Analysis Date: **6/5/2015** SeqNo: **2016314**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Organic Carbon, Total	652.729	100	500.0	117.5	107	75	125	656.1	0.521	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		

WORK ORDER: N015875

ANALYST LIST

NAME	TEST METHOD
Quennie Manimtim	EPA 300.0, EPA 365.3
Claire Ignacio	EPA 200.7, EPA 200.8
Lilia Ramit	EPA 120.1, SM 2540C, SM 2130B, SM 2320B
Ryan Balilu	EPA 218.6, SM 4500-NO3F, SM 5310C

CH2MHILL

CHAIN OF CUSTODY RECORD

6/1/2015 2:48:13 PM

Project Name PG&E Topock
Location PG&E Topock
Project Number 658274.01.IM.OP.00
Project Manager Scott O'Donnell
Sample Manager Shawn Duffy

Task Order
Project IM3PLANT-ARAR-WDR-524
Turnaround Time 10 Days
Shipping Date: 6/2/2015
COC Number: 524

			Container:	1 Liter Poly	1 Liter Poly	1 Liter Poly	1 Liter Poly	500 ml Poly	250 ml Poly	1 Liter Poly	1 Liter Poly	1 Liter Poly	3 x 40 ml VOA	500 ml Poly	1 Liter Poly	1 Liter Poly			
			Preservatives:	4°C	4°C Lab H2SO4	4°C	4°C	4°C	4°C	4°C Lab H2SO4	4°C Lab H2SO4	4°C	H3PO4, 4°C	4°C	4°C	4°C			
			Filtered:	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA			
			Holding Time:	7	28	7	7	180	1	28	28	7	7	180	7	7			
	DATE	TIME	Matrix	ALKALINITY (SM2320B)	AMMONIA (SM4500NH3D)	Anions (E300.0) Sulfate/Flouride	CONDUCTIVITY (E120.1)	Diss Metals(E200.7) Ca,Mg,Na,Fe LabFilt	E218.6 Lab Filtered	Nitrate/Nitrite (SM4500NO3-E)	Reactivesillica (4500Si-D)	TDS (SM2540C)	TOC (SM5310C)	Total Metals(200.7 and 200.8) See List	Total P (SM4500-P)	Turbidity (SM2130)		Number of Containers	COMMENTS
SC-100B-524	6/2/2015	1030	Water	X	X	X	X	X	X	X	X	X	X	X	X	X		7	N015875-1
SC-700B-524	6/2/2015	1045	Water		X	X	X		X	X		X		X		X		4	1 -2
																	TOTAL NUMBER OF CONTAINERS	11	

	Signatures	Date/Time
Approved by		
Sampled by	Josh Rosenberg	6-02-15 1030
Relinquished by	Josh Rosenberg	6-02-15 1315
Received by	Gonzalez	6/2/15 1315
Relinquished by	[illegible]	6/2/15 1544
Received by	[illegible]	6/2/15 1544

Shipping Details

Method of Shipment: FedEx
On Ice: (yes) / no 2 ice packs
Airbill No:
Lab Name: ASSET Laboratories
Lab Phone: (702) 307-2659

ATTN:

Sample Custody
and
Glen Gesmundo

Special Instructions:

Metal List - Cr, Al, Sb, As, Ba, B, Cu, Pb, Mn, Mo, Ni, Fe, Zn

Report Copy to
Shawn Duffy
(530) 229-3303

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:	6/2/2015	Workorder:	N015875
Rep sample Temp (Deg C):	2.3	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 were lab preserved for Metals, Ammonia, NO2/NO3 and Total Phosphate.
Sample for Cr6 was lab filtered and preserved.

Checklist Completed By: JPG For: 6/3/2015

Reviewed By: 06/03/15

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:

Truesdail
14201 Franklin Ave.
Tustin, CA 92680

TEL: (714) 730-6239
FAX: (714) 730-6462
Acct #:

Field Sampler:

03-Jun-15

Sample ID	Matrix	Date Collected	Bottle Type	Requested Tests		
				SM 4500-SiO2 C	SM4500-NH3C	
N015875-001B / SC-100B-524	Water	6/2/2015 10:30:00 AM	8OZP		1	
N015875-001H / SC-100B-524	Water	6/2/2015 10:30:00 AM	8OZP	1		
N015875-002A / SC-700B-524	Water	6/2/2015 10:45:00 AM	8OZP		1	

General Comments: Please email sample receipt acknowledgement to the PM.

Please use PO#: N15875A For questions, call Marlon at (702)-307-2659. Please e-mail results to reports.lv@assetlaboratories.com by: Normal TAT

Please analyze for Ammonia and Soluble Reactive Silica. CH2MHill Samples.

		Date/Time			Date/Time
Relinquished by:	[illegible]	6/3/15 @ 17:00	**Received by:**	GSO# 528141057	
Relinquished by:			**Received by:**		

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

	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
Date Finished:6/4/15								
MB-50589	100	76.8401	76.8404	3	1	3		
LCS-50589	100	77.0926	77.1915	989	1	989		
N015875-001A	20	54.8263	54.9076	813	5	4065	6910	0.588
N015875-001A DUP	20	53.9702	54.0522	820	5	4100	6910	0.593
N015875-002B	20	57.0455	57.124	785	5	3925	6950	0.565
N015876-001A	30	53.835	53.9085	735	3.33333333	2450	4220	0.581
N015876-002A	20	55.73	55.8185	885	5	4425	7680	0.576
N015877-001A	100	61.2353	61.289	537	1	537	799	0.672
N015877-002A	40	64.2422	64.3417	995	2.5	2487.5	3530	0.705
N015877-003A	30	55.1264	55.2082	818	3.33333333	2726.66667	4040	0.675

Lilia Ramit 6/5/2015

ASSET Laboratories

ICP-Metals in Water

Dilution Test Summary

Work Order No.: N015875
Test Method: EPA 200.7
Analysis Date: 06/04/15

Matrix: Water
Batch No.: 50600

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

Comments:

Analyzed By: Mary Claire E. Ignacio

Dilution test is not applicable to Fe. The calculated value is < 25X RL.
Dilution test failed for Mg.

Sample ID	Analyte	Units	Calc Val	OQual	SAMPrefval	%DIFF	%DIFFlimit
N015875-001C-DT 5X	Calcium	µg/L	205183.6736	PASS	212992.1683	3.67%	10
N015875-001C-DT 5X	Iron	µg/L	0	NA	0		10
N015875-001C-DT 5X	Magnesium	µg/L	35851.39533	FAIL	31148.54434	15.10%	10

Note: NA - Not Applicable

ASSET Laboratories

ICP-Metals in Water

Dilution Test Summary

Work Order No.: N015875
Test Method: EPA 200.7
Analysis Date: 06/09/15

Matrix: Water
Batch No.: 50600

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

Comments:

Analyzed By: Mary Claire E. Ignacio

Sample ID	Analyte	Units	Calc Val	OQual	SAMPrefval	%DIFF	%DIFFlimit
N015876-001B-DT 125X	Sodium	µg/L	794520.8354	PASS	780318.9288	1.82%	10

Note: NA - Not Applicable

ASSET Laboratories

Date: *09-Jun-15*

CLIENT: CH2M HILL
Work Order: N015875
Project: PG&E Topock, 658274.01.IM.OP.00

ANALYTICAL QC SUMMARY REPORT

TestCode: 200.7_WDPGEPPB

Sample ID: **N015875-001C-PS** SampType: **PS** TestCode: **200.7_WDPG** Units: **µg/L** Prep Date: RunNo: **100665**
Client ID: **ZZZZZZ** Batch ID: **50600** TestNo: **EPA 200.7** Analysis Date: **6/4/2015** SeqNo: **2014445**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Calcium	237460.219	500	10000	213000	245	80	120				S
Iron	124.425	20	100.0	0	124	80	120				S
Magnesium	46333.345	100	10000	31150	152	80	120				S

Sample ID: **N015876-001B-PS** SampType: **PS** TestCode: **200.7_WDPG** Units: **µg/L** Prep Date: RunNo: **100709**
Client ID: **ZZZZZZ** Batch ID: **50600** TestNo: **EPA 200.7** Analysis Date: **6/9/2015** SeqNo: **2018538**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Sodium	776894.029	12000	20000	780300	-17.1	80	120				S

DT of Ca @5x and Na @125x are within criteria.

Nancy 6/17/2015

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis 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

ICP-Metals in Water

Dilution Test Summary

Work Order No.: N015875
Test Method: EPA 200.7
Analysis Date: 06/04/15

Matrix: Water
Batch No.: 50588

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

Comments:

Analyzed By: Claire E. Ignacio

Dilution test is not applicable to Al, B and Fe. The calculated values are < 25X RLs.

Sample ID	Analyte	Units	Calc Val	OQual	SAMPrefval	%DIFF	%DIFFlimit
N015836-001B-DT 5X	Aluminum	µg/L	0	NA	0		10
N015836-001B-DT 5X	Boron	µg/L	488.2796481	NA	398.3782341	22.57%	10
N015836-001B-DT 5X	Iron	µg/L	0	NA	0		10

Note: NA - Not Applicable

ASSET Laboratories

Date: *04-Jun-15*

CLIENT: CH2M HILL
Work Order: N015875
Project: PG&E Topock, 658274.01.IM.OP.00

ANALYTICAL QC SUMMARY REPORT

TestCode: 200.7_WPGEPPB

Sample ID **N015836-001B-PS** SampType: **PS** TestCode: **200.7_WPGE** Units: **µg/L** Prep Date: RunNo: **100665**
Client ID: **ZZZZZZ** Batch ID: **50588** TestNo: **EPA 200.7** Analysis Date: **6/4/2015** SeqNo: **2014308**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aluminum	10779.866	50	10000	0	108	80	120				
Boron	5570.193	100	5000	398.4	103	80	120				
Iron	107.544	20	100.0	0	108	80	120				

Qualifiers:

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

ASSET Laboratories

ICP-Metals in Water

Dilution Test Summary

Work Order No.: N015875
Test Method: EPA 200.8
Analysis Date: 6/4/2015

Matrix: Water
Batch No.: 50587

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

Comments:

Analyzed By: Mary Claire Ignacio

Dilution test is not applicable to Sb, Cr, Mn, Mo and Ni. The calculated concentrations are < 25X RL's.
Dilution test failed for As. PS passed criteria.

Sample ID	Analyte	Units	Calc Val	OQual	SAMPRefVal	%DIFF	%DIFFlimit
N015882-001H-DT 5X	Arsenic	µg/L	24.79256358	FAIL	22.11008291	12.13%	10
N015882-001H-DT 5X	Antimony	µg/L	0	NA	0.046464938	100.00%	10
N015882-001H-DT 5X	Chromium	µg/L	0	NA	0		10
N015882-001H-DT 5X	Manganese	µg/L	0	NA	0		10
N015882-001H-DT 5X	Molybdenum	µg/L	1.239501126	NA	1.297187122	4.45%	10
N015882-001H-DT 5X	Nickel	µg/L	0	NA	0		10

Note: NA - Not applicable

ASSET Laboratories

ICP-Metals in Water

Dilution Test Summary

Work Order No.: N015875
Test Method: EPA 200.8
Analysis Date: 6/5/2015

Matrix: Water
Batch No.: 50587

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

Comments:

Analyzed By: Mary Claire Ignacio

Dilution test is not applicable to Cu, Pb and Zn. The calculated concentrations are < 25X RL's.

Sample ID	Analyte	Units	Calc Val	OQual	SAMPRefVal	%DIFF	%DIFFlimit
N015882-001H-DT 25X	Barium	µg/L	165.8611609	PASS	157.3858715	5.39%	10
N015882-001H-DT 5X	Copper	µg/L	0	NA	0		10
N015882-001H-DT 5X	Lead	µg/L	0	NA	0		10
N015882-001H-DT 5X	Zinc	µg/L	0	NA	0		10

Note: NA - Not applicable

CLIENT: CH2M HILL
Work Order: N015875
Project: PG&E Topock, 658274.01.IM.OP.00

ANALYTICAL QC SUMMARY REPORT

TestCode: 200.8_W

Sample ID **N015882-001H-PS** SampType: **PS** TestCode: **200.8_W** Units: **µg/L** Prep Date: RunNo: **100673**
Client ID: **ZZZZZZ** Batch ID: **50587** TestNo: **EPA 200.8** Analysis Date: **6/4/2015** SeqNo: **2015169**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Antimony	10.429	0.50	10.00	0.04646	104	80	120				
Arsenic	31.482	0.10	10.00	22.11	93.7	80	120				
Manganese	86.944	0.50	100.0	0	86.9	80	120				
Molybdenum	12.296	0.50	10.00	1.297	110	80	120				
Nickel	8.621	1.0	10.00	0	86.2	80	120				

Sample ID **N015882-001H-PS** SampType: **PS** TestCode: **200.8_W** Units: **µg/L** Prep Date: RunNo: **100702**
Client ID: **ZZZZZZ** Batch ID: **50587** TestNo: **EPA 200.8** Analysis Date: **6/5/2015** SeqNo: **2017846**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Barium	275.321	5.0	100.0	157.4	118	80	120				

Sample ID **N015882-001H-PS** SampType: **PS** TestCode: **200.8_W** Units: **µg/L** Prep Date: RunNo: **100702**
Client ID: **ZZZZZZ** Batch ID: **50587** TestNo: **EPA 200.8** Analysis Date: **6/5/2015** SeqNo: **2017865**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Copper	6.343	1.0	10.00	0	63.4	80	120				S
Lead	10.154	1.0	10.00	0	102	80	120				
Zinc	74.966	10	100.0	0	75.0	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		

CLIENT: CH2M HILL
Work Order: N015875
Project: PG&E Topock, 658274.01.IM.OP.00

ANALYTICAL QC SUMMARY REPORT

TestCode: 200.8_W_CRPGE

Sample ID	**N015882-001H-PS**	SampType:	**PS**	TestCode:	**200.8_W_CR**	Units:	**µg/L**	Prep Date:				RunNo:	**100673**
Client ID:	**ZZZZZZ**	Batch ID:	**50587**	TestNo:	**EPA 200.8**			Analysis Date:	**6/4/2015**			SeqNo:	**2015082**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium	9.219	1.0	10.00	0	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		

June 23, 2015

Shawn P. Duffy
CH2M HILL
155 Grand Avenue, Suite 1000
Oakland, CA 94612

TEL: (530) 229-3303
FAX: (530) 339-3303

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

Workorder No.: N015931

RE: PG&E Topock, 658274.01.IM.OP.00

Attention: Shawn P. Duffy

Enclosed are the results for sample(s) received on June 09, 2015 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,

Glen Gesmundo
QA Manager

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CLIENT: CH2M HILL
Project: PG&E Topock, 658274.01.IM.OP.00
Lab Order: N015931

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.

ASSET LABORATORIES
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ASSET Laboratories

Date: *23-Jun-15*

CLIENT: CH2M HILL
Project: PG&E Topock, 658274.01.IM.OP.00
Lab Order: N015931
Contract No: IM3PLANT-AR

Work Order Sample Summary

Lab Sample ID	Client Sample ID	Matrix	Collection Date	Date Received	Date Reported
N015931-001A	SC-700B-WDR-525	Water	6/9/2015 1:25:00 PM	6/9/2015	6/23/2015
N015931-001B	SC-700B-WDR-525	Water	6/9/2015 1:25:00 PM	6/9/2015	6/23/2015
N015931-001C	SC-700B-WDR-525	Water	6/9/2015 1:25:00 PM	6/9/2015	6/23/2015

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ANALYTICAL RESULTS

Print Date: *23-Jun-15*

CLIENT:	CH2M HILL	**Client Sample ID:**	SC-700B-WDR-525
Lab Order:	N015931	**Collection Date:**	6/9/2015 1:25:00 PM
Project:	PG&E Topock, 658274.01.IM.OP.00	**Matrix:**	WATER
Lab ID:	N015931-001		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
SPECIFIC CONDUCTANCE							
			EPA 120.1				
RunID: **WETCHEM_150610D**	QC Batch: **R100736**			PrepDate			Analyst: **LR**
Specific Conductance	6900	0.10	0.10		umhos/cm	1	6/10/2015 03:00 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: CH2M HILL
Work Order: N015931
Project: PG&E Topock, 658274.01.IM.OP.00

ANALYTICAL QC SUMMARY REPORT

TestCode: 120.1_WPGE

Sample ID **N015931-001A DUP** SampType: **DUP** TestCode: **120.1_WPGE** Units: **umhos/cm** Prep Date: RunNo: **100736**
Client ID: **ZZZZZZ** Batch ID: **R100736** TestNo: **EPA 120.1** Analysis Date: **6/10/2015** SeqNo: **2020265**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Specific Conductance	6950.000	0.10						6930	0.288	10	

Sample ID **N015932-012D DUP** SampType: **DUP** TestCode: **120.1_WPGE** Units: **umhos/cm** Prep Date: RunNo: **100736**
Client ID: **ZZZZZZ** Batch ID: **R100736** TestNo: **EPA 120.1** Analysis Date: **6/10/2015** SeqNo: **2020277**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Specific Conductance	1009.000	0.10						1012	0.297	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		

ASSET Laboratories

ANALYTICAL RESULTS

Print Date: *23-Jun-15*

CLIENT:	CH2M HILL	**Client Sample ID:**	SC-700B-WDR-525
Lab Order:	N015931	**Collection Date:**	6/9/2015 1:25:00 PM
Project:	PG&E Topock, 658274.01.IM.OP.00	**Matrix:**	WATER
Lab ID:	N015931-001		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
TOTAL FILTERABLE RESIDUE							
			SM2540C				
RunID: **WETCHEM_150610F**	QC Batch: **50642**				PrepDate	**6/10/2015**	Analyst: **LR**
Total Dissolved Solids (Residue, Filterable)	4000	50	50		mg/L	1	6/10/2015 02:48 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

Date: *23-Jun-15*

CLIENT: CH2M HILL
Work Order: N015931
Project: PG&E Topock, 658274.01.IM.OP.00

ANALYTICAL QC SUMMARY REPORT

TestCode: 160.1_2540C_W

Sample ID **MB-50642** SampType: **MBLK** TestCode: **160.1_2540C** Units: **mg/L** Prep Date: **6/10/2015** RunNo: **100738**
Client ID: **PBW** Batch ID: **50642** TestNo: **SM2540C** Analysis Date: **6/10/2015** SeqNo: **2020295**

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 **LCS-50642** SampType: **LCS** TestCode: **160.1_2540C** Units: **mg/L** Prep Date: **6/10/2015** RunNo: **100738**
Client ID: **LCSW** Batch ID: **50642** TestNo: **SM2540C** Analysis Date: **6/10/2015** SeqNo: **2020296**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	980.000	10	1000	0	98.0	80	120				

Sample ID **N015931-001A-DUP** SampType: **DUP** TestCode: **160.1_2540C** Units: **mg/L** Prep Date: **6/10/2015** RunNo: **100738**
Client ID: **ZZZZZZ** Batch ID: **50642** TestNo: **SM2540C** Analysis Date: **6/10/2015** SeqNo: **2020304**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	3960.000	50						4010	1.25	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		

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ANALYTICAL RESULTS

Print Date: *23-Jun-15*

CLIENT:	CH2M HILL	**Client Sample ID:**	SC-700B-WDR-525
Lab Order:	N015931	**Collection Date:**	6/9/2015 1:25:00 PM
Project:	PG&E Topock, 658274.01.IM.OP.00	**Matrix:**	WATER
Lab ID:	N015931-001		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
TOTAL METALS BY ICPMS							
EPA 200.8							
RunID: **ICP7_150615A**	QC Batch: **50658**				PrepDate	**6/12/2015**	Analyst: **CEI**
Manganese	ND	0.023	0.50		µg/L	1	6/15/2015 03:08 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

Date: *23-Jun-15*

CLIENT: CH2M HILL
Work Order: N015931
Project: PG&E Topock, 658274.01.IM.OP.00

ANALYTICAL QC SUMMARY REPORT

TestCode: 200.8_W

Sample ID **MB-50658** SampType: **MBLK** TestCode: **200.8_W** Units: **µg/L** Prep Date: **6/12/2015** RunNo: **100772**
Client ID: **PBW** Batch ID: **50658** TestNo: **EPA 200.8** Analysis Date: **6/15/2015** SeqNo: **2021928**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Manganese	ND	0.50									

Sample ID **LCS-50658** SampType: **LCS** TestCode: **200.8_W** Units: **µg/L** Prep Date: **6/12/2015** RunNo: **100772**
Client ID: **LCSW** Batch ID: **50658** TestNo: **EPA 200.8** Analysis Date: **6/15/2015** SeqNo: **2021929**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Manganese	99.272	0.50	100.0	0	99.3	85	115				

Sample ID **N015954-001B-MS** SampType: **MS** TestCode: **200.8_W** Units: **µg/L** Prep Date: **6/12/2015** RunNo: **100772**
Client ID: **ZZZZZZ** Batch ID: **50658** TestNo: **EPA 200.8** Analysis Date: **6/15/2015** SeqNo: **2021934**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Manganese	259.664	2.5	100.0	153.3	106	75	125				

Sample ID **N015954-001B-MSD** SampType: **MSD** TestCode: **200.8_W** Units: **µg/L** Prep Date: **6/12/2015** RunNo: **100772**
Client ID: **ZZZZZZ** Batch ID: **50658** TestNo: **EPA 200.8** Analysis Date: **6/15/2015** SeqNo: **2021935**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Manganese	261.346	2.5	100.0	153.3	108	75	125	259.7	0.646	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		

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ANALYTICAL RESULTS

Print Date: *23-Jun-15*

CLIENT:	CH2M HILL	**Client Sample ID:**	SC-700B-WDR-525
Lab Order:	N015931	**Collection Date:**	6/9/2015 1:25:00 PM
Project:	PG&E Topock, 658274.01.IM.OP.00	**Matrix:**	WATER
Lab ID:	N015931-001		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
HEXAVALENT CHROMIUM BY IC							
EPA 218.6							
RunID: **IC7_150610A** QC Batch: **R100780**				PrepDate			Analyst: **RB**
Hexavalent Chromium	ND	0.015	0.20		µg/L	1	6/10/2015 03:44 PM
TOTAL METALS BY ICPMS							
EPA 200.8							
RunID: **ICP7_150612A** QC Batch: **50658**				PrepDate	**6/12/2015**		Analyst: **CEI**
Chromium	ND	0.086	1.0		µg/L	1	6/12/2015 10:03 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		

ASSET Laboratories

Date: *23-Jun-15*

CLIENT: CH2M HILL
Work Order: N015931
Project: PG&E Topock, 658274.01.IM.OP.00

ANALYTICAL QC SUMMARY REPORT

TestCode: 200.8_W_CRPGE

Sample ID **MB-50658** SampType: **MBLK** TestCode: **200.8_W_CR** Units: **µg/L** Prep Date: **6/12/2015** RunNo: **100762**
Client ID: **PBW** Batch ID: **50658** TestNo: **EPA 200.8** Analysis Date: **6/12/2015** SeqNo: **2021374**

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

Sample ID **LCS-50658** SampType: **LCS** TestCode: **200.8_W_CR** Units: **µg/L** Prep Date: **6/12/2015** RunNo: **100762**
Client ID: **LCSW** Batch ID: **50658** TestNo: **EPA 200.8** Analysis Date: **6/12/2015** SeqNo: **2021375**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium	9.300	1.0	10.00	0	93.0	85	115				

Sample ID **N015954-001B-MS** SampType: **MS** TestCode: **200.8_W_CR** Units: **µg/L** Prep Date: **6/12/2015** RunNo: **100762**
Client ID: **ZZZZZZ** Batch ID: **50658** TestNo: **EPA 200.8** Analysis Date: **6/12/2015** SeqNo: **2021380**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium	14.407	1.0	10.00	5.628	87.8	75	125				

Sample ID **N015954-001B-MSD** SampType: **MSD** TestCode: **200.8_W_CR** Units: **µg/L** Prep Date: **6/12/2015** RunNo: **100762**
Client ID: **ZZZZZZ** Batch ID: **50658** TestNo: **EPA 200.8** Analysis Date: **6/12/2015** SeqNo: **2021381**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium	14.393	1.0	10.00	5.628	87.7	75	125	14.41	0.0965	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		

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CLIENT: CH2M HILL
Work Order: N015931
Project: PG&E Topock, 658274.01.IM.OP.00

ANALYTICAL QC SUMMARY REPORT

TestCode: 218.6_WU_PGE

Sample ID **MB-R100780** SampType: **MBLK** TestCode: **218.6_WU_P** Units: **µg/L** Prep Date: RunNo: **100780**
Client ID: **PBW** Batch ID: **R100780** TestNo: **EPA 218.6** Analysis Date: **6/10/2015** SeqNo: **2022368**

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-R100780** SampType: **LCS** TestCode: **218.6_WU_P** Units: **µg/L** Prep Date: RunNo: **100780**
Client ID: **LCSW** Batch ID: **R100780** TestNo: **EPA 218.6** Analysis Date: **6/10/2015** SeqNo: **2022369**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	5.002	0.20	5.000	0	100	90	110				

Sample ID **N015931-001BDUP** SampType: **DUP** TestCode: **218.6_WU_P** Units: **µg/L** Prep Date: RunNo: **100780**
Client ID: **ZZZZZZ** Batch ID: **R100780** TestNo: **EPA 218.6** Analysis Date: **6/10/2015** SeqNo: **2022371**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	0.127	0.20						0.1397	0	20	

Sample ID **N015931-001BMS** SampType: **MS** TestCode: **218.6_WU_P** Units: **µg/L** Prep Date: RunNo: **100780**
Client ID: **ZZZZZZ** Batch ID: **R100780** TestNo: **EPA 218.6** Analysis Date: **6/10/2015** SeqNo: **2022372**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	1.183	0.20	1.000	0.1397	104	90	110				

Sample ID **N015931-001BMSD** SampType: **MSD** TestCode: **218.6_WU_P** Units: **µg/L** Prep Date: RunNo: **100780**
Client ID: **ZZZZZZ** Batch ID: **R100780** TestNo: **EPA 218.6** Analysis Date: **6/10/2015** SeqNo: **2022373**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	1.162	0.20	1.000	0.1397	102	90	110	1.183	1.73	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		

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ANALYTICAL RESULTS

Print Date: *23-Jun-15*

CLIENT:	CH2M HILL	**Client Sample ID:**	SC-700B-WDR-525
Lab Order:	N015931	**Collection Date:**	6/9/2015 1:25:00 PM
Project:	PG&E Topock, 658274.01.IM.OP.00	**Matrix:**	WATER
Lab ID:	N015931-001		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
TURBIDITY							
			SM 2130B				
RunID: **WETCHEM_150610C**	QC Batch: **R100732**			PrepDate			Analyst: **LR**
Turbidity	0.22	0.10	0.10		NTU	1	6/10/2015 04:30 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

Date: *23-Jun-15*

CLIENT: CH2M HILL
Work Order: N015931
Project: PG&E Topock, 658274.01.IM.OP.00

ANALYTICAL QC SUMMARY REPORT

TestCode: 2130_W

Sample ID	**MB-R100732**	SampType:	**MBLK**	TestCode:	**2130_W**	Units:	**NTU**	Prep Date:		RunNo:	**100732**
Client ID:	**PBW**	Batch ID:	**R100732**	TestNo:	**SM 2130B**			Analysis Date:	**6/10/2015**	SeqNo:	**2020070**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Turbidity	ND	0.10									

Sample ID	**N015931-001ADUP**	SampType:	**DUP**	TestCode:	**2130_W**	Units:	**NTU**	Prep Date:		RunNo:	**100732**
Client ID:	**ZZZZZZ**	Batch ID:	**R100732**	TestNo:	**SM 2130B**			Analysis Date:	**6/10/2015**	SeqNo:	**2020072**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Turbidity	0.230	0.10						0.2200	4.44	30	

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis 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		

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WORK ORDER: N015931

ANALYST LIST

NAME	TEST METHOD
Claire Ignacio	EPA 200.8
Ryan Balilu	EPA 218.6
Lilia Ramit	EPA 120.1, SM 2540C, SM 2130B

CH2MHILL

CHAIN OF CUSTODY RECORD

Project Name PG&E Topock
Location PG&E Topock
Project Number 658274.01.IM.OP.00
Project Manager Scott O'Donnell
Sample Manager Shawn Duffy

Task Order
Project IM3PLANT-ARAR-WDR-525
Turnaround Time 10 Days
Shipping Date: 6/9/2015
COC Number: 525

			Container:	1 Liter Poly	250 ml Poly	1 Liter Poly	500 ml Poly	1 Liter Poly			
			Preservatives:	4°C	4°C	4°C	4°C	4°C			
			Filtered:	NA	NA	NA	NA	NA			
			Holding Time:	7	1	7	180	7			
	DATE	**TIME**	**Matrix**	CONDUCTIVITY (E120.1)	E218.6 Lab Filtered	TDS (SM2540C)	Total Metals(E200.8) Cr & Mn	Turbidity (SM2130)		Number of Containers	**COMMENTS**
SC-700B-WDR-525	6-9-15	1325	Water	X	X	X	X	X	N015931-01	3	
									TOTAL NUMBER OF CONTAINERS	3	

	Signatures	**Date/Time**
Approved by		
Sampled by		6-9-15 13:25
Relinquished by		6-9-15
Received by		6/9/15 @1601
Relinquished by		6/9/15 @1803
Received by		

Shipping Details
Method of Shipment: FedEx
On Ice: yes / no
Airbill No: 2-8°C IR#1
Lab Name: ASSET Laboratories
Lab Phone: (702) 307-2659 ICE

ATTN:
Sample Custody
and
Glen Gesmundo

Special Instructions:

Report Copy to
Shawn Duffy
(530) 229-3303

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:	6/9/2015	Workorder:	N015931
Rep sample Temp (Deg C):	2.8	IR Gun ID:	1
Temp Blank:	☑ Yes ☐ No		
Carrier name:	ASSET		
Last 4 digits of Tracking No.:	None	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 B MBC for jog 06/11/15

Reviewed By: jog 06/15/1

ASSET Laboratories

ICP-Metals in Water

Dilution Test Summary

Work Order No.: N015931
Test Method: EPA 200.8
Analysis Date: ~~6/11/2015~~ 6/12/2015

Matrix: Water
Batch No.: 50658

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

Comments:

Analyzed By: Mary Claire Ignacio

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

Sample ID	Analyte	Units	Calc Val	OQual	SAMPRefVal	%DIFF	%DIFFlimit
N015954-001B-DT 5X	Chromium	µg/L	6.243434346	NA	5.627780388	10.94%	10

Note: NA - Not applicable

ASSET Laboratories

ICP-Metals in Water

Dilution Test Summary

Work Order No.: N015931
Test Method: EPA 200.8
Analysis Date: 6/15/2015

Matrix: Water
Batch No.: 50658

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

Comments:

Analyzed By: Mary Claire Ignacio

Sample ID	Analyte	Units	Calc Val	OQual	SAMPRefVal	%DIFF	%DIFFlimit
N015954-001B-DT 25X	Manganese	µg/L	161.5311643	PASS	153.2889275	5.38%	10

Note: NA - Not applicable

ASSET Laboratories

Date: *15-Jun-15*

CLIENT: CH2M HILL
Work Order: N015931
Project: PG&E Topock, 658274.01.IM.OP.00

ANALYTICAL QC SUMMARY REPORT

TestCode: 200.8_W

Sample ID **N015954-001B-PS** SampType: **PS** TestCode: **200.8_W** Units: **µg/L** Prep Date: RunNo: **100772**
Client ID: **ZZZZZZ** Batch ID: **50658** TestNo: **EPA 200.8** Analysis Date: **6/15/2015** SeqNo: **2021933**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Manganese	269.003	2.5	100.0	153.3	116	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: CH2M HILL
Work Order: N015931
Project: PG&E Topock, 658274.01.IM.OP.00

ANALYTICAL QC SUMMARY REPORT

TestCode: 200.8_W_CRPGE

Sample ID	**N015954-001B-PS**	SampType:	**PS**	TestCode:	**200.8_W_CR**	Units:	**µg/L**	Prep Date:				RunNo:	**100762**
Client ID:	**ZZZZZZ**	Batch ID:	**50658**	TestNo:	**EPA 200.8**			Analysis Date:	**6/12/2015**			SeqNo:	**2021379**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium	14.744	1.0	10.00	5.628	91.2	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		

June 30, 2015

Shawn P. Duffy
CH2M HILL
155 Grand Avenue, Suite 1000
Oakland, CA 94612

TEL: (530) 229-3303
FAX: (530) 339-3303

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

Workorder No.: N016001

RE: PG&E Topock, 658274.01.IM.OP.00

Attention: Shawn P. Duffy

Enclosed are the results for sample(s) received on June 16, 2015 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,

Glen Gesmundo
QA Manager

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: CH2M HILL
Project: PG&E Topock, 658274.01.IM.OP.00
Lab Order: N016001

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.

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Date: *30-Jun-15*

CLIENT: CH2M HILL
Project: PG&E Topock, 658274.01.IM.OP.00
Lab Order: N016001
Contract No: IM3PLANT-AR

Work Order Sample Summary

Lab Sample ID	Client Sample ID	Matrix	Collection Date	Date Received	Date Reported
N016001-001A	SC-700B-WDR-526	Water	6/16/2015 1:20:00 PM	6/16/2015	6/30/2015
N016001-001B	SC-700B-WDR-526	Water	6/16/2015 1:20:00 PM	6/16/2015	6/30/2015
N016001-001C	SC-700B-WDR-526	Water	6/16/2015 1:20:00 PM	6/16/2015	6/30/2015

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ANALYTICAL RESULTS

Print Date: *30-Jun-15*

CLIENT:	CH2M HILL	**Client Sample ID:**	SC-700B-WDR-526
Lab Order:	N016001	**Collection Date:**	6/16/2015 1:20:00 PM
Project:	PG&E Topock, 658274.01.IM.OP.00	**Matrix:**	WATER
Lab ID:	N016001-001		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
SPECIFIC CONDUCTANCE							
			EPA 120.1				
RunID: **WETCHEM_150616C**	QC Batch: **R100819**			PrepDate			Analyst: **LR**
Specific Conductance	6500	0.10	0.10		umhos/cm	1	6/16/2015 04:15 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		

ASSET Laboratories

Date: *30-Jun-15*

CLIENT: CH2M HILL
Work Order: N016001
Project: PG&E Topock, 658274.01.IM.OP.00

ANALYTICAL QC SUMMARY REPORT

TestCode: 120.1_WPGE

Sample ID **N016001-001A DUP** SampType: **DUP** TestCode: **120.1_WPGE** Units: **umhos/cm** Prep Date: RunNo: **100819**
Client ID: **ZZZZZZ** Batch ID: **R100819** TestNo: **EPA 120.1** Analysis Date: **6/16/2015** SeqNo: **2023954**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Specific Conductance	6570.000	0.10						6540	0.458	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		

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ANALYTICAL RESULTS

Print Date: *30-Jun-15*

CLIENT:	CH2M HILL	**Client Sample ID:**	SC-700B-WDR-526
Lab Order:	N016001	**Collection Date:**	6/16/2015 1:20:00 PM
Project:	PG&E Topock, 658274.01.IM.OP.00	**Matrix:**	WATER
Lab ID:	N016001-001		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
TOTAL FILTERABLE RESIDUE							
			SM2540C				
RunID: **WETCHEM_150616B**	QC Batch: **50693**				PrepDate	**6/16/2015**	Analyst: **LR**
Total Dissolved Solids (Residue, Filterable)	3900	50	50		mg/L	1	6/16/2015 03:50 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		

ASSET Laboratories

Date: *30-Jun-15*

CLIENT: CH2M HILL
Work Order: N016001
Project: PG&E Topock, 658274.01.IM.OP.00

ANALYTICAL QC SUMMARY REPORT

TestCode: 160.1_2540C_W

Sample ID **MB-50693** SampType: **MBLK** TestCode: **160.1_2540C** Units: **mg/L** Prep Date: **6/16/2015** RunNo: **100816**
Client ID: **PBW** Batch ID: **50693** TestNo: **SM2540C** Analysis Date: **6/16/2015** SeqNo: **2023930**

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 **LCS-50693** SampType: **LCS** TestCode: **160.1_2540C** Units: **mg/L** Prep Date: **6/16/2015** RunNo: **100816**
Client ID: **LCSW** Batch ID: **50693** TestNo: **SM2540C** Analysis Date: **6/16/2015** SeqNo: **2023931**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	986.000	10	1000	0	98.6	80	120				

Sample ID **N016001-001A DUP** SampType: **DUP** TestCode: **160.1_2540C** Units: **mg/L** Prep Date: **6/16/2015** RunNo: **100816**
Client ID: **ZZZZZZ** Batch ID: **50693** TestNo: **SM2540C** Analysis Date: **6/16/2015** SeqNo: **2023938**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	3800.000	50						3885	2.21	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		

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ANALYTICAL RESULTS

Print Date: *30-Jun-15*

CLIENT:	CH2M HILL	**Client Sample ID:**	SC-700B-WDR-526
Lab Order:	N016001	**Collection Date:**	6/16/2015 1:20:00 PM
Project:	PG&E Topock, 658274.01.IM.OP.00	**Matrix:**	WATER
Lab ID:	N016001-001		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
TOTAL METALS BY ICPMS							
EPA 200.8							
RunID: **ICP7_150624A**	QC Batch: **50710**				PrepDate	**6/19/2015**	Analyst: **CEI**
Manganese	7.1	0.023	0.50		µg/L	1	6/24/2015 10:18 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		

ASSET Laboratories

Date: *30-Jun-15*

CLIENT: CH2M HILL
Work Order: N016001
Project: PG&E Topock, 658274.01.IM.OP.00

ANALYTICAL QC SUMMARY REPORT

TestCode: 200.8_W

Sample ID **MB-50710** SampType: **MBLK** TestCode: **200.8_W** Units: **µg/L** Prep Date: **6/19/2015** RunNo: **100941**
Client ID: **PBW** Batch ID: **50710** TestNo: **EPA 200.8** Analysis Date: **6/24/2015** SeqNo: **2028963**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Manganese	0.322	0.50									

Sample ID **LCS-50710** SampType: **LCS** TestCode: **200.8_W** Units: **µg/L** Prep Date: **6/19/2015** RunNo: **100941**
Client ID: **LCSW** Batch ID: **50710** TestNo: **EPA 200.8** Analysis Date: **6/24/2015** SeqNo: **2028966**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Manganese	99.318	0.50	100.0	0	99.3	85	115				

Sample ID **N016001-001C-MS** SampType: **MS** TestCode: **200.8_W** Units: **µg/L** Prep Date: **6/19/2015** RunNo: **100941**
Client ID: **ZZZZZZ** Batch ID: **50710** TestNo: **EPA 200.8** Analysis Date: **6/24/2015** SeqNo: **2028971**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Manganese	121.879	0.50	100.0	7.107	115	75	125				

Sample ID **N016001-001C-MSD** SampType: **MSD** TestCode: **200.8_W** Units: **µg/L** Prep Date: **6/19/2015** RunNo: **100941**
Client ID: **ZZZZZZ** Batch ID: **50710** TestNo: **EPA 200.8** Analysis Date: **6/24/2015** SeqNo: **2028972**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Manganese	120.742	0.50	100.0	7.107	114	75	125	121.9	0.937	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		

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ANALYTICAL RESULTS

Print Date: *30-Jun-15*

CLIENT:	CH2M HILL	**Client Sample ID:**	SC-700B-WDR-526
Lab Order:	N016001	**Collection Date:**	6/16/2015 1:20:00 PM
Project:	PG&E Topock, 658274.01.IM.OP.00	**Matrix:**	WATER
Lab ID:	N016001-001		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
HEXAVALENT CHROMIUM BY IC							
EPA 218.6							
RunID: **IC7_150617A** QC Batch: **R100880**				PrepDate			Analyst: **RB**
Hexavalent Chromium	ND	0.015	0.20		µg/L	1	6/17/2015 09:47 AM
TOTAL METALS BY ICPMS							
EPA 200.8							
RunID: **ICP7_150624A** QC Batch: **50710**				PrepDate	**6/19/2015**		Analyst: **CEI**
Chromium	ND	0.086	1.0		µg/L	1	6/24/2015 10:18 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		

ASSET Laboratories

Date: *30-Jun-15*

CLIENT: CH2M HILL
Work Order: N016001
Project: PG&E Topock, 658274.01.IM.OP.00

ANALYTICAL QC SUMMARY REPORT

TestCode: 200.8_W_CRPGE

Sample ID **MB-50710** SampType: **MBLK** TestCode: **200.8_W_CR** Units: **µg/L** Prep Date: **6/19/2015** RunNo: **100941**
Client ID: **PBW** Batch ID: **50710** TestNo: **EPA 200.8** Analysis Date: **6/24/2015** SeqNo: **2029019**

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

Sample ID **LCS-50710** SampType: **LCS** TestCode: **200.8_W_CR** Units: **µg/L** Prep Date: **6/19/2015** RunNo: **100941**
Client ID: **LCSW** Batch ID: **50710** TestNo: **EPA 200.8** Analysis Date: **6/24/2015** SeqNo: **2029022**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium	9.638	1.0	10.00	0	96.4	85	115				

Sample ID **N016001-001C-MS** SampType: **MS** TestCode: **200.8_W_CR** Units: **µg/L** Prep Date: **6/19/2015** RunNo: **100941**
Client ID: **ZZZZZZ** Batch ID: **50710** TestNo: **EPA 200.8** Analysis Date: **6/24/2015** SeqNo: **2029027**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium	10.619	1.0	10.00	0	106	75	125				

Sample ID **N016001-001C-MSD** SampType: **MSD** TestCode: **200.8_W_CR** Units: **µg/L** Prep Date: **6/19/2015** RunNo: **100941**
Client ID: **ZZZZZZ** Batch ID: **50710** TestNo: **EPA 200.8** Analysis Date: **6/24/2015** SeqNo: **2029028**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium	10.497	1.0	10.00	0	105	75	125	10.62	1.16	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		

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CLIENT: CH2M HILL
Work Order: N016001
Project: PG&E Topock, 658274.01.IM.OP.00

ANALYTICAL QC SUMMARY REPORT

TestCode: 218.6_WU_PGE

Sample ID **MB-R100880** SampType: **MBLK** TestCode: **218.6_WU_P** Units: **µg/L** Prep Date: RunNo: **100880**
Client ID: **PBW** Batch ID: **R100880** TestNo: **EPA 218.6** Analysis Date: **6/17/2015** SeqNo: **2026734**

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-R100880** SampType: **LCS** TestCode: **218.6_WU_P** Units: **µg/L** Prep Date: RunNo: **100880**
Client ID: **LCSW** Batch ID: **R100880** TestNo: **EPA 218.6** Analysis Date: **6/17/2015** SeqNo: **2026735**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	4.959	0.20	5.000	0	99.2	90	110				

Sample ID **N016001-001BDUP** SampType: **DUP** TestCode: **218.6_WU_P** Units: **µg/L** Prep Date: RunNo: **100880**
Client ID: **ZZZZZZ** Batch ID: **R100880** TestNo: **EPA 218.6** Analysis Date: **6/17/2015** SeqNo: **2026737**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	0.101	0.20						0.1019	0	20	

Sample ID **N016001-001BMS** SampType: **MS** TestCode: **218.6_WU_P** Units: **µg/L** Prep Date: RunNo: **100880**
Client ID: **ZZZZZZ** Batch ID: **R100880** TestNo: **EPA 218.6** Analysis Date: **6/17/2015** SeqNo: **2026738**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	1.165	0.20	1.000	0.1019	106	90	110				

Sample ID **N016001-001BMSD** SampType: **MSD** TestCode: **218.6_WU_P** Units: **µg/L** Prep Date: RunNo: **100880**
Client ID: **ZZZZZZ** Batch ID: **R100880** TestNo: **EPA 218.6** Analysis Date: **6/17/2015** SeqNo: **2026739**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	1.189	0.20	1.000	0.1019	109	90	110	1.165	2.06	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		

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CLIENT: CH2M HILL
Work Order: N016001
Project: PG&E Topock, 658274.01.IM.OP.00

ANALYTICAL QC SUMMARY REPORT

TestCode: 218.6_WU_PGE

Sample ID **N015944-004AMS** SampType: **MS** TestCode: **218.6_WU_P** Units: **µg/L** Prep Date: RunNo: **100880**
Client ID: **ZZZZZZ** Batch ID: **R100880** TestNo: **EPA 218.6** Analysis Date: **6/17/2015** SeqNo: **2026749**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	1.296	0.20	1.000	0.2570	104	90	110				

Sample ID **N015944-005AMS** SampType: **MS** TestCode: **218.6_WU_P** Units: **µg/L** Prep Date: RunNo: **100880**
Client ID: **ZZZZZZ** Batch ID: **R100880** TestNo: **EPA 218.6** Analysis Date: **6/17/2015** SeqNo: **2026751**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	1.232	0.20	1.000	0.1733	106	90	110				

Sample ID **N015944-012AMS** SampType: **MS** TestCode: **218.6_WU_P** Units: **µg/L** Prep Date: RunNo: **100880**
Client ID: **ZZZZZZ** Batch ID: **R100880** TestNo: **EPA 218.6** Analysis Date: **6/17/2015** SeqNo: **2026767**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	1.583	0.20	1.000	0.5323	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		

ASSET Laboratories

ANALYTICAL RESULTS

Print Date: *30-Jun-15*

CLIENT:	CH2M HILL	**Client Sample ID:**	SC-700B-WDR-526
Lab Order:	N016001	**Collection Date:**	6/16/2015 1:20:00 PM
Project:	PG&E Topock, 658274.01.IM.OP.00	**Matrix:**	WATER
Lab ID:	N016001-001		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
TURBIDITY							
			SM 2130B				
RunID: **WETCHEM_150616A**	QC Batch: **R100815**			PrepDate			Analyst: **LR**
Turbidity	0.20	0.10	0.10		NTU	1	6/16/2015 05:00 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

Date: *30-Jun-15*

CLIENT: CH2M HILL
Work Order: N016001
Project: PG&E Topock, 658274.01.IM.OP.00

ANALYTICAL QC SUMMARY REPORT

TestCode: 2130_W

Sample ID	**MB-R100815**	SampType:	**MBLK**	TestCode:	**2130_W**	Units:	**NTU**	Prep Date:		RunNo:	**100815**
Client ID:	**PBW**	Batch ID:	**R100815**	TestNo:	**SM 2130B**			Analysis Date:	**6/16/2015**	SeqNo:	**2023927**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Turbidity	ND	0.10									

Sample ID	**N016001-001A DUP**	SampType:	**DUP**	TestCode:	**2130_W**	Units:	**NTU**	Prep Date:		RunNo:	**100815**
Client ID:	**ZZZZZZ**	Batch ID:	**R100815**	TestNo:	**SM 2130B**			Analysis Date:	**6/16/2015**	SeqNo:	**2023929**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Turbidity	0.210	0.10						0.2000	4.88	30	

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis 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		

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LIST OF ANALYST/S

WORK ORDER: N016001

ANALYST LIST

NAME	TEST METHOD
Claire Ignacio	EPA 200.8
Ryan Balilu	EPA 218.6
Lilia Ramit	EPA 120.1, SM 2540C, SM 2130B

CH2MHILL

CHAIN OF CUSTODY RECORD

Project Name PG&E Topock
Location PG&E Topock
Project Number 658274.01.IM.OP.00
Project Manager Scott O'Donnell
Sample Manager Shawn Duffy

Task Order
Project IM3PLANT-ARAR-WDR-526
Turnaround Time 10 Days
Shipping Date: 6/16/2015
COC Number: 526

			Container:	1 Liter Poly	250 ml Poly	1 Liter Poly	500 ml Poly	1 Liter Poly				
			Preservatives:	4°C	4°C	4°C	4°C	4°C				
			Filtered:	NA	NA	NA	NA	NA				
			Holding Time:	7	1	7	180	7				
	DATE	**TIME**	**Matrix**	CONDUCTIVITY (E120.1)	E218.6 Lab Filtered	TDS (SM2540C)	Total Metals(E200.8) Cr & Mn	Turbidity (SM2130)			Number of Containers	**COMMENTS**
SC-700B-WDR-526	6-16-15	1320	Water	X	X	X	X	X	~~N015605~~ N016001 - 01		3	3
										TOTAL NUMBER OF CONTAINERS	3	3

	Signatures	Date/Time
Approved by		
Sampled by	Josh Rosby	6-16-15 1390
Relinquished by	Josh Rosby	6-16-15 1325
Received by	Doug Wilson	6/16/15 1325
Relinquished by	Doug Wilson	6/16/15 1537
Received by	[illegible]	6/16/15 1537

Shipping Details

Method of Shipment: FedEx
On Ice: (yes) / no 3.1°C IR#2
Airbill No:
Lab Name: ASSET Laboratories
Lab Phone: (702) 307-2659

ATTN:
Sample Custody
and
Glen Gesmundo

Special Instructions:

Report Copy to
Shawn Duffy
(530) 229-3303

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:	6/16/2015	Workorder:	N016001
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: Sample for metal was lab preserved.

Checklist Completed B JPG jpg 06/17/15

Reviewed By: gsg 06/22/15

EPA 200.8

Metals Technical Batch Review Checklist (CH2MHILL)

ASSET LABORATORIES - LAS VEGAS

FIRST LEVEL REVIEW:

QC Batch Number: 50710
ASSET #: N016001

Instrument ID: ICPMS-02
Analyst: CEI
Date Analyzed: 6/24/2015

Method:

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

Initial Calibration and Initial Calibration Verification	Ist 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					
Interference Check						
5. ICS A and AB at the start and end of sequence or twice during an 8-hr period.	X					
6. Are ICSA and AB within ± 20% of expected value?	X					
Continuing Calibration						
7. CCV after every 10 samples and end of analysis sequence.	X					
8. For CCV, all analytes within ± 10% of expected value?	X					
9. Calibration blank after ICVand CCV analysis.	X					
10. Do all calibration blanks (ICB and CCBs) meet criteria? (< PQL)	X					
Sample Information						
11. All samples are within linear dynamic range.	X					
12. All hits above PQL have %RSD of less than or equal to 15%? (ICP/ICPMS only)	X					
13. Are all samples analyzed/digested within hold time.	X					
14. Dilution test performed and within ± 10% of undiluted sample.	X					
15. When dilution test fails, post digestion spike recovery within 80-120% of expected value.	X					
16. For samples < 4 ppb, does the Cr result differs with Cr6+ by no more than 0.7 ppb?	X					
17. For samples > 4 ppb, does the Cr result differs with Cr6+ by no more than 20%?			X			
18 For samples that failed Cr6 vs CrT criteria, are samples reanalyzed for confirmation?			X			
19. For samples with Total and Dissolved analysis, is Total concentration higher or equal to Dissolved concentration?			X			
QC Items						
20. IS are within control limits (70-130% for ICPMS).	X					
21. Method blank values are below the PQL .	X					
22. LCS compounds within control limits.	X					
23. MS/MSD, RPD's are within control limits	X					
Raw Data and Miscellaneous Information						
24. Are Non-Conformances documented			X			
25. Runlog complete and included in package.	X					
26. Digestion log complete and included in package (if applicable)	X					
27. All sample raw data present in package.	X					
Preliminary Report						
28. Does the raw data match the preliminary report?	X					
29. Are analytical results correct?(Ex. dilutions, calculations.etc.)	X					
30. 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 _____ 6/30/2015 Date: –

2nd Level Reviewer _____ 6/30/2015 Date: –

ASSET Laboratories

ICP-Metals in Water

Dilution Test Summary

Work Order No.: N016001
Test Method: EPA 200.8
Analysis Date: 6/24/2015

Matrix: Water
Batch No.: 50710

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 concentrations are < 25X RL's.

Sample ID	Analyte	Units	Calc Val	OQual	SAMPRefVal	%DIFF	%DIFFlimit
N016001-001C-DT 5X	Chromium	µg/L	0	NA	0		10
N016001-001C-DT 5X	Manganese	µg/L	8.355825819	NA	7.107071094	17.57%	10

Note: NA - Not applicable

ASSET Laboratories

Date: *25-Jun-15*

CLIENT: CH2M HILL
Work Order: N016001
Project: PG&E Topock, 658274.01.IM.OP.00

ANALYTICAL QC SUMMARY REPORT

TestCode: 200.8_W

Sample ID **N016001-001C-PS**	SampType: **PS**	TestCode: **200.8_W**	Units: **µg/L**	Prep Date:		RunNo: **100941**	
Client ID: **ZZZZZZ**	Batch ID: **50710**	TestNo: **EPA 200.8**		Analysis Date: **6/24/2015**		SeqNo: **2028970**	

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Manganese	119.685	0.50	100.0	7.107	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: CH2M HILL
Work Order: N016001
Project: PG&E Topock, 658274.01.IM.OP.00

ANALYTICAL QC SUMMARY REPORT

TestCode: 200.8_W_CRPGE

Sample ID	N016001-001C-PS	SampType:	PS	TestCode:	200.8_W_CR	Units:	µg/L	Prep Date:		RunNo:	100941
Client ID:	ZZZZZZ	Batch ID:	50710	TestNo:	EPA 200.8			Analysis Date:	6/24/2015	SeqNo:	2029026

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium	10.551	1.0	10.00	0	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		

July 08, 2015

Shawn P. Duffy
CH2M HILL
155 Grand Avenue, Suite 1000
Oakland, CA 94612

TEL: (530) 229-3303
FAX: (530) 339-3303

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

Workorder No.: N016085

RE: PG&E Topock, 658274.01.IM.OP.00

Attention: Shawn P. Duffy

Enclosed are the results for sample(s) received on June 23, 2015 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,

Glen Gesmundo
QA Manager

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: CH2M HILL
Project: PG&E Topock, 658274.01.IM.OP.00
Lab Order: N016085

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.

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ASSET Laboratories

Date: *08-Jul-15*

CLIENT: CH2M HILL
Project: PG&E Topock, 658274.01.IM.OP.00
Lab Order: N016085
Contract No: IM3PLANT-AR

Work Order Sample Summary

Lab Sample ID	Client Sample ID	Matrix	Collection Date	Date Received	Date Reported
N016085-001A	SC-700B-WDR-527	Water	6/23/2015 2:20:00 PM	6/23/2015	7/8/2015
N016085-001B	SC-700B-WDR-527	Water	6/23/2015 2:20:00 PM	6/23/2015	7/8/2015
N016085-001C	SC-700B-WDR-527	Water	6/23/2015 2:20:00 PM	6/23/2015	7/8/2015

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ANALYTICAL RESULTS

Print Date: *08-Jul-15*

CLIENT:	CH2M HILL	**Client Sample ID:**	SC-700B-WDR-527
Lab Order:	N016085	**Collection Date:**	6/23/2015 2:20:00 PM
Project:	PG&E Topock, 658274.01.IM.OP.00	**Matrix:**	WATER
Lab ID:	N016085-001		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
SPECIFIC CONDUCTANCE							
EPA 120.1							
RunID: **WETCHEM_150624B**	QC Batch: **R100927**			PrepDate			Analyst: **LR**
Specific Conductance	7000	0.10	0.10		umhos/cm	1	6/24/2015 09:15 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		

ASSET Laboratories

Date: *08-Jul-15*

CLIENT: CH2M HILL
Work Order: N016085
Project: PG&E Topock, 658274.01.IM.OP.00

ANALYTICAL QC SUMMARY REPORT

TestCode: 120.1_WPGE

Sample ID **N016085-001A DUP** SampType: **DUP** TestCode: **120.1_WPGE** Units: **umhos/cm** Prep Date: RunNo: **100927**
Client ID: **ZZZZZZ** Batch ID: **R100927** TestNo: **EPA 120.1** Analysis Date: **6/24/2015** SeqNo: **2028449**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Specific Conductance	7020.000	0.10						7020	0	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		

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ANALYTICAL RESULTS

Print Date: *08-Jul-15*

CLIENT:	CH2M HILL	**Client Sample ID:**	SC-700B-WDR-527
Lab Order:	N016085	**Collection Date:**	6/23/2015 2:20:00 PM
Project:	PG&E Topock, 658274.01.IM.OP.00	**Matrix:**	WATER
Lab ID:	N016085-001		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
TOTAL FILTERABLE RESIDUE							
			SM2540C				
RunID: **WETCHEM_150624F**	QC Batch: **50749**				PrepDate	**6/24/2015**	Analyst: **LR**
Total Dissolved Solids (Residue, Filterable)	3800	50	50		mg/L	1	6/24/2015 02:13 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

Date: *08-Jul-15*

CLIENT: CH2M HILL
Work Order: N016085
Project: PG&E Topock, 658274.01.IM.OP.00

ANALYTICAL QC SUMMARY REPORT

TestCode: 160.1_2540C_W

Sample ID **MB-50749** SampType: **MBLK** TestCode: **160.1_2540C** Units: **mg/L** Prep Date: **6/24/2015** RunNo: **100947**
Client ID: **PBW** Batch ID: **50749** TestNo: **SM2540C** Analysis Date: **6/24/2015** SeqNo: **2029152**

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 **LCS-50749** SampType: **LCS** TestCode: **160.1_2540C** Units: **mg/L** Prep Date: **6/24/2015** RunNo: **100947**
Client ID: **LCSW** Batch ID: **50749** TestNo: **SM2540C** Analysis Date: **6/24/2015** SeqNo: **2029153**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	998.000	10	1000	0	99.8	80	120				

Sample ID **N016085-001A DUP** SampType: **DUP** TestCode: **160.1_2540C** Units: **mg/L** Prep Date: **6/24/2015** RunNo: **100947**
Client ID: **ZZZZZZ** Batch ID: **50749** TestNo: **SM2540C** Analysis Date: **6/24/2015** SeqNo: **2029160**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	3795.000	50						3830	0.918	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		

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ANALYTICAL RESULTS

Print Date: *08-Jul-15*

CLIENT:	CH2M HILL	**Client Sample ID:**	SC-700B-WDR-527
Lab Order:	N016085	**Collection Date:**	6/23/2015 2:20:00 PM
Project:	PG&E Topock, 658274.01.IM.OP.00	**Matrix:**	WATER
Lab ID:	N016085-001		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
TOTAL METALS BY ICPMS							
EPA 200.8							
RunID: **ICP7_150625B**	QC Batch: **50757**				PrepDate	**6/25/2015**	Analyst: **CEI**
Manganese	ND	0.023	0.50		µg/L	1	6/25/2015 01:29 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

Date: *08-Jul-15*

CLIENT: CH2M HILL
Work Order: N016085
Project: PG&E Topock, 658274.01.IM.OP.00

ANALYTICAL QC SUMMARY REPORT

TestCode: 200.8_W

Sample ID **MB-50757** SampType: **MBLK** TestCode: **200.8_W** Units: **µg/L** Prep Date: **6/25/2015** RunNo: **100953**
Client ID: **PBW** Batch ID: **50757** TestNo: **EPA 200.8** Analysis Date: **6/25/2015** SeqNo: **2029622**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Manganese	ND	0.50									

Sample ID **LCS-50757** SampType: **LCS** TestCode: **200.8_W** Units: **µg/L** Prep Date: **6/25/2015** RunNo: **100953**
Client ID: **LCSW** Batch ID: **50757** TestNo: **EPA 200.8** Analysis Date: **6/25/2015** SeqNo: **2029623**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Manganese	105.779	0.50	100.0	0	106	85	115				

Sample ID **N016085-001C-MS** SampType: **MS** TestCode: **200.8_W** Units: **µg/L** Prep Date: **6/25/2015** RunNo: **100953**
Client ID: **ZZZZZZ** Batch ID: **50757** TestNo: **EPA 200.8** Analysis Date: **6/25/2015** SeqNo: **2029633**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Manganese	89.680	0.50	100.0	0	89.7	75	125				

Sample ID **N016085-001C-MSD** SampType: **MSD** TestCode: **200.8_W** Units: **µg/L** Prep Date: **6/25/2015** RunNo: **100953**
Client ID: **ZZZZZZ** Batch ID: **50757** TestNo: **EPA 200.8** Analysis Date: **6/25/2015** SeqNo: **2029634**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Manganese	90.815	0.50	100.0	0	90.8	75	125	89.68	1.26	20	

Qualifiers:

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

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ANALYTICAL RESULTS

Print Date: *08-Jul-15*

CLIENT:	CH2M HILL	**Client Sample ID:**	SC-700B-WDR-527
Lab Order:	N016085	**Collection Date:**	6/23/2015 2:20:00 PM
Project:	PG&E Topock, 658274.01.IM.OP.00	**Matrix:**	WATER
Lab ID:	N016085-001		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
HEXAVALENT CHROMIUM BY IC							
EPA 218.6							
RunID: **IC7_150624A** QC Batch: **R100930** PrepDate							Analyst: **RB**
Hexavalent Chromium	ND	0.015	0.20		µg/L	1	6/24/2015 11:47 AM
TOTAL METALS BY ICPMS							
EPA 200.8							
RunID: **ICP7_150625B** QC Batch: **50757** PrepDate **6/25/2015**							Analyst: **CEI**
Chromium	ND	0.086	1.0		µg/L	1	6/25/2015 01:29 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

Date: *08-Jul-15*

CLIENT: CH2M HILL
Work Order: N016085
Project: PG&E Topock, 658274.01.IM.OP.00

ANALYTICAL QC SUMMARY REPORT

TestCode: 200.8_W_CRPGE

Sample ID **MB-50757** SampType: **MBLK** TestCode: **200.8_W_CR** Units: **µg/L** Prep Date: **6/25/2015** RunNo: **100953**
Client ID: **PBW** Batch ID: **50757** TestNo: **EPA 200.8** Analysis Date: **6/25/2015** SeqNo: **2029579**

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

Sample ID **LCS-50757** SampType: **LCS** TestCode: **200.8_W_CR** Units: **µg/L** Prep Date: **6/25/2015** RunNo: **100953**
Client ID: **LCSW** Batch ID: **50757** TestNo: **EPA 200.8** Analysis Date: **6/25/2015** SeqNo: **2029580**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium	10.450	1.0	10.00	0	105	85	115				

Sample ID **N016085-001C-MS** SampType: **MS** TestCode: **200.8_W_CR** Units: **µg/L** Prep Date: **6/25/2015** RunNo: **100953**
Client ID: **ZZZZZZ** Batch ID: **50757** TestNo: **EPA 200.8** Analysis Date: **6/25/2015** SeqNo: **2029590**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium	11.167	1.0	10.00	0.2367	109	75	125				

Sample ID **N016085-001C-MSD** SampType: **MSD** TestCode: **200.8_W_CR** Units: **µg/L** Prep Date: **6/25/2015** RunNo: **100953**
Client ID: **ZZZZZZ** Batch ID: **50757** TestNo: **EPA 200.8** Analysis Date: **6/25/2015** SeqNo: **2029591**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium	11.257	1.0	10.00	0.2367	110	75	125	11.17	0.803	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		

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CLIENT: CH2M HILL
Work Order: N016085
Project: PG&E Topock, 658274.01.IM.OP.00

ANALYTICAL QC SUMMARY REPORT

TestCode: 218.6_WU_PGE

Sample ID **MB-R100930** SampType: **MBLK** TestCode: **218.6_WU_P** Units: **µg/L** Prep Date: RunNo: **100930**
Client ID: **PBW** Batch ID: **R100930** TestNo: **EPA 218.6** Analysis Date: **6/24/2015** SeqNo: **2028529**

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-R100930** SampType: **LCS** TestCode: **218.6_WU_P** Units: **µg/L** Prep Date: RunNo: **100930**
Client ID: **LCSW** Batch ID: **R100930** TestNo: **EPA 218.6** Analysis Date: **6/24/2015** SeqNo: **2028531**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	5.099	0.20	5.000	0	102	90	110				

Sample ID **N016073-001ADUP** SampType: **DUP** TestCode: **218.6_WU_P** Units: **µg/L** Prep Date: RunNo: **100930**
Client ID: **ZZZZZZ** Batch ID: **R100930** TestNo: **EPA 218.6** Analysis Date: **6/24/2015** SeqNo: **2028533**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	1.732	0.20						1.725	0.382	20	

Sample ID **N016073-001AMS** SampType: **MS** TestCode: **218.6_WU_P** Units: **µg/L** Prep Date: RunNo: **100930**
Client ID: **ZZZZZZ** Batch ID: **R100930** TestNo: **EPA 218.6** Analysis Date: **6/24/2015** SeqNo: **2028534**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	2.801	0.20	1.000	1.725	108	90	110				

Sample ID **N016073-001AMSD** SampType: **MSD** TestCode: **218.6_WU_P** Units: **µg/L** Prep Date: RunNo: **100930**
Client ID: **ZZZZZZ** Batch ID: **R100930** TestNo: **EPA 218.6** Analysis Date: **6/24/2015** SeqNo: **2028535**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	2.769	0.20	1.000	1.725	104	90	110	2.801	1.15	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: CH2M HILL
Work Order: N016085
Project: PG&E Topock, 658274.01.IM.OP.00

ANALYTICAL QC SUMMARY REPORT

TestCode: 218.6_WU_PGE

Sample ID	**N016085-001BMS**	SampType:	**MS**	TestCode:	**218.6_WU_P**	Units:	**µg/L**	Prep Date:			RunNo:	**100930**	
Client ID:	**ZZZZZZ**	Batch ID:	**R100930**	TestNo:	**EPA 218.6**			Analysis Date:	**6/24/2015**		SeqNo:	**2028538**	

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	1.189	0.20	1.000	0.1576	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		

ASSET Laboratories

ANALYTICAL RESULTS

Print Date: *08-Jul-15*

CLIENT:	CH2M HILL	**Client Sample ID:**	SC-700B-WDR-527
Lab Order:	N016085	**Collection Date:**	6/23/2015 2:20:00 PM
Project:	PG&E Topock, 658274.01.IM.OP.00	**Matrix:**	WATER
Lab ID:	N016085-001		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
TURBIDITY							
			SM 2130B				
RunID: **WETCHEM_150624A**	QC Batch: **R100926**			PrepDate			Analyst: **LR**
Turbidity	0.22	0.10	0.10		NTU	1	6/24/2015 09:45 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: CH2M HILL
Work Order: N016085
Project: PG&E Topock, 658274.01.IM.OP.00

ANALYTICAL QC SUMMARY REPORT

TestCode: 2130_W

Sample ID	MB-R100926	SampType:	MBLK	TestCode:	2130_W	Units:	NTU	Prep Date:		RunNo:	100926
Client ID:	PBW	Batch ID:	R100926	TestNo:	SM 2130B			Analysis Date:	6/24/2015	SeqNo:	2028442

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Turbidity	ND	0.10									

Sample ID	N016085-001ADUP	SampType:	DUP	TestCode:	2130_W	Units:	NTU	Prep Date:		RunNo:	100926
Client ID:	ZZZZZZ	Batch ID:	R100926	TestNo:	SM 2130B			Analysis Date:	6/24/2015	SeqNo:	2028444

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Turbidity	0.220	0.10						0.2200	0	30	

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis 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		

CH2MHILL

CHAIN OF CUSTODY RECORD

Project Name PG&E Topock
Location PG&E Topock
Project Number 658274.01.IM.OP.00
Project Manager Scott O'Donnell
Sample Manager Shawn Duffy

Task Order
Project IM3PLANT-ARAR-WDR-527
Turnaround Time 10 Days
Shipping Date:
COC Number: 527

			Container:	1 Liter Poly	250 ml Poly	1 Liter Poly	500 ml Poly	1 Liter Poly				
			Preservatives:	4°C	4°C	4°C	4°C	4°C				
			Filtered:	NA	NA	NA	NA	NA				
			Holding Time:	7	1	7	180	7				
	DATE	**TIME**	**Matrix**	CONDUCTIVITY (E120.1)	E218.6 Lab Filtered	TDS (SM2540C)	Total Metals(E200.8) Cr & Mn	Turbidity (SM2130)			Number of Containers	**COMMENTS**
SC-700B-~~WDR-526~~-WDR-527	6-23-15	1420	Water	X	X	X	X	X	N016085-01		3	
SPD										TOTAL NUMBER OF CONTAINERS	3	

Please correct the sample ID to SC-700B-WDR-527

Shawn P. Duffy
06-29-2015

5.0°C IR#2

	Signatures	Date/Time
Approved by		
Sampled by	Josh Rosenberg	6-23-15 14:30
Relinquished by	Ryan Phelps	6-23-15 14:30
Received by	Cindy Hoffman	6-23-15 14:31
Relinquished by	Cindy Hoffman	6-23-15 16:35
Received by	Cindy Hoffman	6-23-15 16:36

Shipping Details
Method of Shipment: FedEx
On Ice: (yes) / no
Airbill No:
Lab Name: ASSET Laboratories
Lab Phone: (702) 307-2659

ATTN:
Sample Custody
and
Glen Gesmundo

Special Instructions:

Report Copy to
Shawn Duffy
(530) 229-3303

CH2MHILL

CHAIN OF CUSTODY RECORD

Project Name PG&E Topock
Location PG&E Topock
Project Number 658274.01.IM.OP.00
Project Manager Scott O'Donnell
Sample Manager Shawn Duffy

Task Order
Project IM3PLANT-ARAR-WDR-527
Turnaround Time 10 Days
Shipping Date:
COC Number: 527

			Container:	1 Liter Poly	250 ml Poly	1 Liter Poly	500 ml Poly	1 Liter Poly				
			Preservatives:	4°C	4°C	4°C	4°C	4°C				
			Filtered:	NA	NA	NA	NA	NA				
			Holding Time:	7	1	7	180	7				
	DATE	**TIME**	**Matrix**	CONDUCTIVITY (E120.1)	E218.6 Lab Filtered	TDS (SM2540C)	Total Metals(E200.8) Cr & Mn	Turbidity (SM2130)			Number of Containers	**COMMENTS**
SC-700B-WDR-526-WDR-527	6-23-15	1420	Water	X	X	X	X	X	N016085-01		3	
										TOTAL NUMBER OF CONTAINERS	3	

5.0°C IR#2

	Signatures	Date/Time
Approved by		
Sampled by	Josh Rosenberg	6-23-15 14:30
Relinquished by	Ryan Phelps	6-23-15 14:30
Received by	Cindy Hutton	6-23-15 14:31
Relinquished by	Cindy Hutton	6-23-15 16:35
Received by	Cindy Hutton	6-23-15 16:36

Shipping Details
Method of Shipment: FedEx
On Ice: (yes) / no
Airbill No:
Lab Name: ASSET Laboratories
Lab Phone: (702) 307-2659

ATTN:
Sample Custody
and
Glen Gesmundo

Special Instructions:

Report Copy to
Shawn Duffy
(530) 229-3303

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:	6/23/2015	Workorder:	N016085
Rep sample Temp (Deg C):	5.0	IR Gun ID:	2
Temp Blank:	☑ Yes ☐ No		
Carrier name:	ASSET		
Last 4 digits of Tracking No.:	NA	Packing Material Used:	None
Cooling process:	☑ Ice ☐ Ice Pack ☐ Dry Ice ☐ Other ☐ None		

Sample Receipt Checklist

1. Shipping container/cooler in good condition?	Yes ☑	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 metal analysis is at pH7 upon receipt.

Checklist Completed B JPG jpg 06/25/15

Reviewed By: gsg 06/30/15

Sample Control

From: Marlon B. Cartin <marlon@assetlaboratories.com>
Sent: Monday, June 29, 2015 2:58 PM
To: samplecontrol.lv@assetlaboratories.com
Subject: FW: PG&E Topock, 658274.01.IM.OP.00 (ASSET LABS No. N016085)
Attachments: IM3Plant-ARAR-WDR-527_COC_Weekly_corrected.pdf

Forwarding.

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: Shawn.Duffy@CH2M.com [mailto:Shawn.Duffy@CH2M.com]
Sent: Monday, June 29, 2015 2:57 PM
To: nancy@assetlaboratories.com; marlon@assetlaboratories.com; glen@assetlaboratories.com
Cc: Erlene.Contreras@CH2M.com; Priya.Kumar@CH2M.com
Subject: RE: PG&E Topock, 658274.01.IM.OP.00 (ASSET LABS No. N016085)

Please see the attached for the corrected COC.

Shawn

From: nancy@assetlaboratories.com [mailto:nancy@assetlaboratories.com]
Sent: Monday, June 29, 2015 8:36 AM
To: Duffy, Shawn/RDD
Subject: RE: PG&E Topock, 658274.01.IM.OP.00 (ASSET LABS No. N016085)

Sorry Shawn. I only saw your email just now.

Thanks,
Nancy

From: Shawn.Duffy@CH2M.com [mailto:Shawn.Duffy@CH2M.com]
Sent: Friday, June 26, 2015 12:39 PM
To: nancy@assetlaboratories.com
Subject: RE: PG&E Topock, 658274.01.IM.OP.00 (ASSET LABS No. N016085)

Can you please send me the COC for this sample? The sample ID is not correct.

Shawn

From: nancy@assetlaboratories.com [mailto:nancy@assetlaboratories.com]
Sent: Friday, June 26, 2015 8:43 AM
To: Duffy, Shawn/RDD
Cc: SWR/RDD Electronic Data
Subject: PG&E Topock, 658274.01.IM.OP.00 (ASSET LABS No. N016085)

Enclosed is the partial preliminary report for the above project.

Thanks,

Nancy Sibucao
Project Manager
Nevada: 3151 W. Post Road, Las Vegas, NV 89118 | **P:** 702.307.2659 Ext. 412 | **F:** 702.307.2691
California: 11060 Artesia Blvd., Ste. C, Cerritos, CA 90703 | **P:** 562.219.7435 | **F:** 562.219.7436
www.assetlaboratories.com

ASSET LABORATORIES
ANALYTICAL SUPPORT SERVICES FOR ENVIRONMENTAL TECHNOLOGIES

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ASSET Laboratories

ICP-Metals in Water

Dilution Test Summary

Work Order No.: N016085
Test Method: EPA 200.8
Analysis Date: 6/25/2015

Matrix: Water
Batch No.: 50757

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 concentrations are < 25X RL's.

Sample ID	Analyte	Units	Calc Val	OQual	SAMPRefVal	%DIFF	%DIFFlimit
N016085-001C-DT 5X	Chromium	µg/L	0	NA	0.236707989		10
N016085-001C-DT 5X	Manganese	µg/L	0	NA	0		10

Note: NA - Not applicable

ASSET Laboratories

Date: *25-Jun-15*

CLIENT: CH2M HILL
Work Order: N016085
Project: PG&E Topock, 658274.01.IM.OP.00

ANALYTICAL QC SUMMARY REPORT

TestCode: 200.8_W

Sample ID	**N016085-001C-PS**	SampType:	**PS**	TestCode:	**200.8_W**	Units:	**µg/L**	Prep Date:				RunNo:	**100953**
Client ID:	**ZZZZZZ**	Batch ID:	**50757**	TestNo:	**EPA 200.8**			Analysis Date:	**6/25/2015**			SeqNo:	**2029632**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Manganese	87.731	0.50	100.0	0	87.7	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		

CLIENT: CH2M HILL
Work Order: N016085
Project: PG&E Topock, 658274.01.IM.OP.00

ANALYTICAL QC SUMMARY REPORT

TestCode: 200.8_W_CRPGE

Sample ID	**N016085-001C-PS**	SampType:	**PS**	TestCode:	**200.8_W_CR**	Units:	**µg/L**	Prep Date:				RunNo:	**100953**
Client ID:	**ZZZZZZ**	Batch ID:	**50757**	TestNo:	**EPA 200.8**			Analysis Date:	**6/25/2015**			SeqNo:	**2029589**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium	11.120	1.0	10.00	0.2367	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		

July 08, 2015

Shawn P. Duffy
CH2M HILL
155 Grand Avenue, Suite 1000
Oakland, CA 94612

TEL: (530) 229-3303
FAX: (530) 339-3303

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

Workorder No.: N016135

RE: PG&E Topock, 658274.01.IM.OP.00

Attention: Shawn P. Duffy

Enclosed are the results for sample(s) received on June 30, 2015 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.

This is an amended report. Please disregard all previous documentation that corresponds to the page(s) enclosed.

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,

Glen Gesmundo
QA Manager

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: CH2M HILL
Project: PG&E Topock, 658274.01.IM.OP.00
Lab Order: N016135

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 200.8:

Matrix Spike (MS) and Matrix Spike Duplicate (MSD) on QC samples N016135-001C-MS and N016135-001C-MSD are outside recovery criteria for Manganese possibly due to matrix interference. The associated Laboratory Control Sample (LCS) recovery was acceptable.

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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ASSET Laboratories

Date: *08-Jul-15*

CLIENT: CH2M HILL
Project: PG&E Topock, 658274.01.IM.OP.00
Lab Order: N016135
Contract No: IM3PLANT-AR

Work Order Sample Summary

Lab Sample ID	Client Sample ID	Matrix	Collection Date	Date Received	Date Reported
N016135-001A	SC-700B-WDR-528	Water	6/30/2015 2:20:00 PM	6/30/2015	7/8/2015
N016135-001B	SC-700B-WDR-528	Water	6/30/2015 2:20:00 PM	6/30/2015	7/8/2015
N016135-001C	SC-700B-WDR-528	Water	6/30/2015 2:20:00 PM	6/30/2015	7/8/2015

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ANALYTICAL RESULTS

Print Date: *08-Jul-15*

CLIENT: CH2M HILL
Lab Order: N016135
Project: PG&E Topock, 658274.01.IM.OP.00
Lab ID: N016135-001

Client Sample ID: SC-700B-WDR-528
Collection Date: 6/30/2015 2:20:00 PM
Matrix: WATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
SPECIFIC CONDUCTANCE							
EPA 120.1							
RunID: **WETCHEM_150630D** QC Batch: **R101011** PrepDate Analyst: **LR**							
Specific Conductance	6500	0.10	0.10		umhos/cm	1	6/30/2015 05:00 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

Date: *08-Jul-15*

CLIENT: CH2M HILL
Work Order: N016135
Project: PG&E Topock, 658274.01.IM.OP.00

ANALYTICAL QC SUMMARY REPORT

TestCode: 120.1_WPGE

Sample ID **N016135-001A DUP** SampType: **DUP** TestCode: **120.1_WPGE** Units: **umhos/cm** Prep Date: RunNo: **101011**
Client ID: **ZZZZZZ** Batch ID: **R101011** TestNo: **EPA 120.1** Analysis Date: **6/30/2015** SeqNo: **2031195**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Specific Conductance	6500.000	0.10						6510	0.154	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		

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ANALYTICAL RESULTS

Print Date: *08-Jul-15*

CLIENT: CH2M HILL
Lab Order: N016135
Project: PG&E Topock, 658274.01.IM.OP.00
Lab ID: N016135-001

Client Sample ID: SC-700B-WDR-528
Collection Date: 6/30/2015 2:20:00 PM
Matrix: WATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
TOTAL FILTERABLE RESIDUE							
			SM2540C				
RunID: **WETCHEM_150701C**	QC Batch: **50802**				PrepDate	**7/1/2015**	Analyst: **LR**
Total Dissolved Solids (Residue, Filterable)	4100	50	50		mg/L	1	7/1/2015 02:30 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

Date: *08-Jul-15*

CLIENT: CH2M HILL
Work Order: N016135
Project: PG&E Topock, 658274.01.IM.OP.00

ANALYTICAL QC SUMMARY REPORT

TestCode: 160.1_2540C_W

Sample ID **MB-50802** SampType: **MBLK** TestCode: **160.1_2540C** Units: **mg/L** Prep Date: **7/1/2015** RunNo: **101018**
Client ID: **PBW** Batch ID: **50802** TestNo: **SM2540C** Analysis Date: **7/1/2015** SeqNo: **2031304**

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 **LCS-50802** SampType: **LCS** TestCode: **160.1_2540C** Units: **mg/L** Prep Date: **7/1/2015** RunNo: **101018**
Client ID: **LCSW** Batch ID: **50802** TestNo: **SM2540C** Analysis Date: **7/1/2015** SeqNo: **2031305**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	989.000	10	1000	0	98.9	80	120				

Sample ID **N016135-001A DUP** SampType: **DUP** TestCode: **160.1_2540C** Units: **mg/L** Prep Date: **7/1/2015** RunNo: **101018**
Client ID: **ZZZZZZ** Batch ID: **50802** TestNo: **SM2540C** Analysis Date: **7/1/2015** SeqNo: **2031308**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	4025.000	50						4095	1.72	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		

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ANALYTICAL RESULTS

Print Date: *08-Jul-15*

CLIENT:	CH2M HILL	**Client Sample ID:**	SC-700B-WDR-528
Lab Order:	N016135	**Collection Date:**	6/30/2015 2:20:00 PM
Project:	PG&E Topock, 658274.01.IM.OP.00	**Matrix:**	WATER
Lab ID:	N016135-001		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
TOTAL METALS BY ICPMS							
EPA 200.8							
RunID: **ICP7_150702A**	QC Batch: **50795**				PrepDate	**7/1/2015**	Analyst: **CEI**
Manganese	ND	0.023	0.50		µg/L	1	7/2/2015 01:08 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: CH2M HILL
Work Order: N016135
Project: PG&E Topock, 658274.01.IM.OP.00

ANALYTICAL QC SUMMARY REPORT

TestCode: 200.8_W

Sample ID **MB-50795** SampType: **MBLK** TestCode: **200.8_W** Units: **µg/L** Prep Date: **7/1/2015** RunNo: **101051**
Client ID: **PBW** Batch ID: **50795** TestNo: **EPA 200.8** Analysis Date: **7/2/2015** SeqNo: **2032967**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Manganese	0.048	0.50									

Sample ID **LCS-50795** SampType: **LCS** TestCode: **200.8_W** Units: **µg/L** Prep Date: **7/1/2015** RunNo: **101051**
Client ID: **LCSW** Batch ID: **50795** TestNo: **EPA 200.8** Analysis Date: **7/2/2015** SeqNo: **2032968**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Manganese	96.244	0.50	100.0	0	96.2	85	115				

Sample ID **N016135-001C-MS** SampType: **MS** TestCode: **200.8_W** Units: **µg/L** Prep Date: **7/1/2015** RunNo: **101051**
Client ID: **ZZZZZZ** Batch ID: **50795** TestNo: **EPA 200.8** Analysis Date: **7/2/2015** SeqNo: **2032972**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Manganese	71.483	0.50	100.0	0	71.5	75	125				S

Sample ID **N016135-001C-MSD** SampType: **MSD** TestCode: **200.8_W** Units: **µg/L** Prep Date: **7/1/2015** RunNo: **101051**
Client ID: **ZZZZZZ** Batch ID: **50795** TestNo: **EPA 200.8** Analysis Date: **7/2/2015** SeqNo: **2032973**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Manganese	72.102	0.50	100.0	0	72.1	75	125	71.48	0.862	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		

ASSET Laboratories

ANALYTICAL RESULTS

Print Date: *08-Jul-15*

CLIENT: CH2M HILL
Lab Order: N016135
Project: PG&E Topock, 658274.01.IM.OP.00
Lab ID: N016135-001

Client Sample ID: SC-700B-WDR-528
Collection Date: 6/30/2015 2:20:00 PM
Matrix: WATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
HEXAVALENT CHROMIUM BY IC							
EPA 218.6							
RunID: **IC7_150706A** QC Batch: **R101064** PrepDate							Analyst: **RB**
Hexavalent Chromium	ND	0.015	0.20		µg/L	1	7/6/2015 02:04 PM
TOTAL METALS BY ICPMS							
EPA 200.8							
RunID: **ICP7_150702A** QC Batch: **50795** PrepDate **7/1/2015**							Analyst: **CEI**
Chromium	ND	0.086	1.0		µg/L	1	7/2/2015 01:08 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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NEVADA
3151 W. Post Rd., Las Vegas, NV 89118
P: 702.307.2659 F: 702.307.2691

ASSET Laboratories

Date: *08-Jul-15*

CLIENT: CH2M HILL
Work Order: N016135
Project: PG&E Topock, 658274.01.IM.OP.00

ANALYTICAL QC SUMMARY REPORT

TestCode: 200.8_W_CRPGE

Sample ID **MB-50795** SampType: **MBLK** TestCode: **200.8_W_CR** Units: **µg/L** Prep Date: **7/1/2015** RunNo: **101051**
Client ID: **PBW** Batch ID: **50795** TestNo: **EPA 200.8** Analysis Date: **7/2/2015** SeqNo: **2032923**

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

Sample ID **LCS-50795** SampType: **LCS** TestCode: **200.8_W_CR** Units: **µg/L** Prep Date: **7/1/2015** RunNo: **101051**
Client ID: **LCSW** Batch ID: **50795** TestNo: **EPA 200.8** Analysis Date: **7/2/2015** SeqNo: **2032924**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium	9.251	1.0	10.00	0	92.5	85	115				

Sample ID **N016135-001C-MS** SampType: **MS** TestCode: **200.8_W_CR** Units: **µg/L** Prep Date: **7/1/2015** RunNo: **101051**
Client ID: **ZZZZZZ** Batch ID: **50795** TestNo: **EPA 200.8** Analysis Date: **7/2/2015** SeqNo: **2032928**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium	9.030	1.0	10.00	0.09291	89.4	75	125				

Sample ID **N016135-001C-MSD** SampType: **MSD** TestCode: **200.8_W_CR** Units: **µg/L** Prep Date: **7/1/2015** RunNo: **101051**
Client ID: **ZZZZZZ** Batch ID: **50795** TestNo: **EPA 200.8** Analysis Date: **7/2/2015** SeqNo: **2032929**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium	9.056	1.0	10.00	0.09291	89.6	75	125	9.030	0.283	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		

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CLIENT: CH2M HILL
Work Order: N016135
Project: PG&E Topock, 658274.01.IM.OP.00

ANALYTICAL QC SUMMARY REPORT

TestCode: 218.6_WU_PGE

Sample ID **MB-R101064** SampType: **MBLK** TestCode: **218.6_WU_P** Units: **µg/L** Prep Date: RunNo: **101064**
Client ID: **PBW** Batch ID: **R101064** TestNo: **EPA 218.6** Analysis Date: **7/6/2015** SeqNo: **2033451**

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-R101064** SampType: **LCS** TestCode: **218.6_WU_P** Units: **µg/L** Prep Date: RunNo: **101064**
Client ID: **LCSW** Batch ID: **R101064** TestNo: **EPA 218.6** Analysis Date: **7/6/2015** SeqNo: **2033452**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	4.941	0.20	5.000	0	98.8	90	110				

Sample ID **N016135-001BMS** SampType: **MS** TestCode: **218.6_WU_P** Units: **µg/L** Prep Date: RunNo: **101064**
Client ID: **ZZZZZZ** Batch ID: **R101064** TestNo: **EPA 218.6** Analysis Date: **7/6/2015** SeqNo: **2033454**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	1.068	0.20	1.000	0.06190	101	90	110				

Sample ID **N016150-001ADUP** SampType: **DUP** TestCode: **218.6_WU_P** Units: **µg/L** Prep Date: RunNo: **101064**
Client ID: **ZZZZZZ** Batch ID: **R101064** TestNo: **EPA 218.6** Analysis Date: **7/6/2015** SeqNo: **2033458**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	19.994	1.0						19.93	0.336	20	

Sample ID **N016150-001AMS** SampType: **MS** TestCode: **218.6_WU_P** Units: **µg/L** Prep Date: RunNo: **101064**
Client ID: **ZZZZZZ** Batch ID: **R101064** TestNo: **EPA 218.6** Analysis Date: **7/6/2015** SeqNo: **2033461**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	44.932	1.0	25.00	19.93	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: CH2M HILL
Work Order: N016135
Project: PG&E Topock, 658274.01.IM.OP.00

ANALYTICAL QC SUMMARY REPORT

TestCode: 218.6_WU_PGE

Sample ID	**N016150-001AMSD**	SampType:	**MSD**	TestCode:	**218.6_WU_P**	Units:	**µg/L**	Prep Date:			RunNo:	**101064**
Client ID:	**ZZZZZZ**	Batch ID:	**R101064**	TestNo:	**EPA 218.6**			Analysis Date:	**7/6/2015**		SeqNo:	**2033462**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	44.522	1.0	25.00	19.93	98.4	90	110	44.93	0.918	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: *08-Jul-15*

CLIENT: CH2M HILL
Lab Order: N016135
Project: PG&E Topock, 658274.01.IM.OP.00
Lab ID: N016135-001

Client Sample ID: SC-700B-WDR-528
Collection Date: 6/30/2015 2:20:00 PM
Matrix: WATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
TURBIDITY							
			SM 2130B				
RunID: **WETCHEM_150630C**	QC Batch: **R101010**			PrepDate			Analyst: **LR**
Turbidity	0.14	0.10	0.10		NTU	1	6/30/2015 05:00 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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Date: *08-Jul-15*

CLIENT: CH2M HILL
Work Order: N016135
Project: PG&E Topock, 658274.01.IM.OP.00

ANALYTICAL QC SUMMARY REPORT

TestCode: 2130_W

Sample ID	**MB-R101010**	SampType:	**MBLK**	TestCode:	**2130_W**	Units:	**NTU**	Prep Date:		RunNo:	**101010**
Client ID:	**PBW**	Batch ID:	**R101010**	TestNo:	**SM 2130B**			Analysis Date:	**6/30/2015**	SeqNo:	**2031191**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Turbidity	ND	0.10									

Sample ID	**N016135-001A DUP**	SampType:	**DUP**	TestCode:	**2130_W**	Units:	**NTU**	Prep Date:		RunNo:	**101010**
Client ID:	**ZZZZZZ**	Batch ID:	**R101010**	TestNo:	**SM 2130B**			Analysis Date:	**6/30/2015**	SeqNo:	**2031193**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Turbidity	0.140	0.10						0.1400	0	30	

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis 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		

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CH2MHILL

CHAIN OF CUSTODY RECORD

Project Name PG&E Topock
Location PG&E Topock
Project Number 658274.01.IM.OP.00
Project Manager Scott O'Donnell
Sample Manager Shawn Duffy

Task Order
Project IM3PLANT-ARAR-WDR-528
Turnaround Time 10 Days
Shipping Date:
COC Number: 528

			Container:	1 Liter Poly	250 ml Poly	1 Liter Poly	500 ml Poly	1 Liter Poly				
			Preservatives:	4°C	4°C	4°C	4°C	4°C				
			Filtered:	NA	NA	NA	NA	NA				
			Holding Time:	7	1	7	180	7				
	DATE	**TIME**	**Matrix**	CONDUCTIVITY (E120.1)	E218.6 Lab Filtered	TDS (SM2540C)	Total Metals(E200.8) Cr & Mn	Turbidity (SM2130)		Number of Containers	**COMMENTS**
SC-700B-WDR-528	6-30-15	1420	Water	X	X	X	X	X	N016135 - 01	3	
									TOTAL NUMBER OF CONTAINERS	3	

3.6°C IR#2

	Signatures	**Date/Time**
Approved by		6-30-15
Sampled by		14:30
Relinquished by		
Received by		6-30-15 1435
Relinquished by		6-30-15 1641
Received by		6-30-15 1642

Shipping Details
Method of Shipment: FedEx
On Ice: yes / no
Airbill No:
Lab Name: ASSET Laboratories
Lab Phone: (702) 307-2659

ATTN:
Sample Custody
and
Glen Gesmundo

Special Instructions:

Report Copy to
Shawn Duffy
530-229-3303

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:	6/30/2015	Workorder:	N016135
Rep sample Temp (Deg C):	3.6	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 metals is at pH8 upon receipt.

Checklist Completed B JPG jpg 07/01/15

Reviewed By: gsg 7/6/15

ASSET Laboratories

ICP-Metals in Water

Dilution Test Summary

Work Order No.: N016135
Test Method: EPA 200.8
Analysis Date: 7/2/2015

Matrix: Water
Batch No.: 50795

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

Comments:

Analyzed By: Mary Claire Ignacio

Dilution test is not applicable to Mn & Cr . The calculated concentrations are < 25X RL's.

Sample ID	Analyte	Units	Calc Val	OQual	SAMPRefVal	%DIFF	%DIFFlimit
N016135-001C-DT 5X	Chromium	µg/L	0	NA	0.092910178	100.00%	10
N016135-001C-DT 5X	Manganese	µg/L	0	NA	0		10

Note: NA - Not applicable

ASSET Laboratories

Date: *06-Jul-15*

CLIENT: CH2M HILL
Work Order: N016135
Project: PG&E Topock, 658274.01.IM.OP.00

ANALYTICAL QC SUMMARY REPORT

TestCode: 200.8_W

Sample ID **N016135-001C-PS** SampType: **PS** TestCode: **200.8_W** Units: **µg/L** Prep Date: RunNo: **101051**
Client ID: **ZZZZZZ** Batch ID: **50795** TestNo: **EPA 200.8** Analysis Date: **7/2/2015** SeqNo: **2032971**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Manganese	74.324	0.50	100.0	0	74.3	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		

CLIENT: CH2M HILL
Work Order: N016135
Project: PG&E Topock, 658274.01.IM.OP.00

ANALYTICAL QC SUMMARY REPORT

TestCode: 200.8_W_CRPGE

Sample ID	N016135-001C-PS	SampType:	PS	TestCode:	200.8_W_CR	Units:	µg/L	Prep Date:		RunNo:	101051
Client ID:	ZZZZZZ	Batch ID:	50795	TestNo:	EPA 200.8			Analysis Date:	7/2/2015	SeqNo:	2032927

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium	9.140	1.0	10.00	0.09291	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		

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IRVINE, CA 92612
(714) 730-6239 • FAX (714) 730-6462
www.truesdail.com

REPORT

Client: **Advanced Technology Laboratories-NV**
3151 W Post Rd
Las Vegas, NV 89118
Attention: Marlon Cartin
Project Name: ATL-NV

Work Order No.: 15F0182
Printed: 07/08/2015

CASE NARRATIVE

Truesdail Laboratories, Inc. is pleased to submit this report summarizing the Ammonia and Reactive Soluble Silica results. A summary table for this laboratory number is included in Section 2. Complete laboratory reports, wet chemistry raw data, quality control data and chain of custody forms for sampling period are included in Sections 3 and 4. Analytical raw data are under Section 5.

The samples were received and delivered with the chain of custody on June 9, 2015, intact and in chilled condition. The samples will be kept in a locked refrigerator for 30 days; thereafter will be kept in warm storage for additional 2 months before disposal.

If you have any questions or require additional information, please contact me at (714) 730-6239 ext. 201.

SAMPLE RECEIPT SUMMARY

Sample ID	Laboratory ID	Matrix	Type	Date Sampled	Date Received
SC-100B-524	15F0182-01	Water	Grab	06/02/2015 10:30	06/09/2015 16:20
SC-700B-524	15F0182-02	Water	Grab	06/02/2015 10:45	06/09/2015 16:20

DEFINITIONS

Symbol	Definition
DF	Dilution Factor
MDL	Method Detection Limit
ND	Not Detected
RL	Reporting Limit

Respectfully yours,

Lyn Phaerakkakit
Project Manager

This report applies only to the sample, or samples, investigated and is not necessarily indicative of the quality or condition of apparently identical or similar products. As a mutual protection to clients, the public and these laboratories, this report is submitted and accepted for the exclusive use of the client to whom it is addressed and upon the condition that it is not to be used, in whole or in part, in any advertising or publicity matter without prior written authorization from Truesdail Laboratories.

TRUESDAIL LABORATORIES, INC.

Client: Advanced Technology Laboratories-N Project Name: ATL-NV

Printed: 07/08/2015

SC-100B-524

15F0182-01 (Water)

Analyte	Result	RL	Units	DF	Batch	Analyzed	Analyst	Method	Notes
Truesdail Laboratories, Inc									
Wet Chemistry									
Ammonia	ND	0.0500	mg/L	1	1506345	06/17/2015 18:57	AL	SM 4500-NH3 D M	
Silica	**17.5**	1.00	mg/L	25	1506266	06/12/2015 14:03	JT	SM 4500-Si D	

SC-700B-524

15F0182-02 (Water)

Analyte	Result	RL	Units	DF	Batch	Analyzed	Analyst	Method	Notes
Truesdail Laboratories, Inc									
Wet Chemistry									
Ammonia	**0.0581**	0.0500	mg/L	1	1506345	06/17/2015 19:01	AL	SM 4500-NH3 D M	

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TRUESDAIL LABORATORIES, INC.

Client: Advanced Technology Laboratories-N Project Name: ATL-NV

Printed: 07/08/2015

QUALITY CONTROL

Wet Chemistry

Truesdail Laboratories, Inc

Analyte	Result	RL	Units	Spike Level	Source Result	%REC	% Rec Limits	RPD	RPD Limit	Note
Batch: 1506266 - SM 4500-Si D										
Blank (1506266-BLK1)				Prepared & Analyzed: 6/12/2015						
Silica	ND	0.0400	mg/L							
LCS (1506266-BS1)				Prepared & Analyzed: 6/12/2015						
Silica	0.389	0.0400	mg/L	0.376		104	90-110			
Duplicate (1506266-DUP1)		**Source: 15F0182-01**		Prepared & Analyzed: 6/12/2015						
Silica	17.5	1.00	mg/L		17.5			0	20	
Matrix Spike (1506266-MS1)		**Source: 15F0182-01**		Prepared & Analyzed: 6/12/2015						
Silica	25.4	1.00	mg/L	9.40	17.5	84	75-125			
Batch: 1506345 - SM 4500-NH3 B										
Blank (1506345-BLK1)				Prepared & Analyzed: 6/17/2015						
Ammonia	ND	0.0500	mg/L							
LCS (1506345-BS1)				Prepared & Analyzed: 6/17/2015						
Ammonia	0.373	0.0500	mg/L	0.400		93	90-110			
Duplicate (1506345-DUP1)		**Source: 15F0182-01**		Prepared & Analyzed: 6/17/2015						
Ammonia	0.0388	0.0500	mg/L		0.0354			9	20	
Matrix Spike (1506345-MS1)		**Source: 15F0182-02**		Prepared & Analyzed: 6/17/2015						
Ammonia	0.427	0.0500	mg/L	0.400	0.0581	92	75-125			
Matrix Spike Dup (1506345-MSD1)		**Source: 15F0182-02**		Prepared & Analyzed: 6/17/2015						
Ammonia	0.466	0.0500	mg/L	0.400	0.0581	102	75-125	9	20	

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ANALYSIS DATA SHEET

Inorganics

Client: **Advanced Technology Laboratories-NV**
Client Sample ID: **SC-100B-524**
Lab Sample ID: **15F0182-01**
Project: **ATL-NV**

Date Sampled: 06/02/15 10:30 Matrix: Water

CAS NO.	Analyte	Concentration (mg/L)	MDL	RL	DF	Q	Analyst	Analyzed	Method
7664-41-7	Ammonia	ND	0.0318	0.0500	1		AL	06/17/15 18:57	SM 4500-NH3 D M

ANALYSIS DATA SHEET

Inorganics

Client: **Advanced Technology Laboratories-NV**
Client Sample ID: **SC-700B-524**
Lab Sample ID: **15F0182-02**
Project: **ATL-NV**

Date Sampled: 06/02/15 10:45 Matrix: Water

CAS NO.	Analyte	Concentration (mg/L)	MDL	RL	DF	Q	Analyst	Analyzed	Method
7664-41-7	Ammonia	0.0581	0.0318	0.0500	1		AL	06/17/15 19:01	SM 4500-NH3 D M

METHOD BLANK DATA SHEET

SM 4500-NH3 D M

Client: Advanced Technology Laboratories-NV

Project: ATL-NV
Laboratory ID: 1506345-BLK1

Prepared:	06/17/15 13:57	Preparation:	SM 4500-NH3 B	Matrix:	Water
Analyzed:	06/17/15 18:52	Instrument:	TL01	File ID:	1506345-010
Batch:	1506345	Sequence:	5F17002		

CAS NO.	COMPOUND	CONC. (mg/L)	MDL	RL	Q
7664-41-7	Ammonia	ND	0.0318	0.0500	

LCS / LCS DUPLICATE RECOVERY

SM 4500-NH3 D M

Client: **Advanced Technology Laboratories-NV**
Project: **ATL-NV**
Work Order: **15F0182**

Matrix: Water
Prep Method: SM 4500-NH3 B
Prep Batch: 1506345
Lab Sample ID: 1506345-BS1

ANALYTE	SPIKE ADDED (mg/L)	LCS CONCENTRATION (mg/L)	LCS % REC.	QC LIMITS REC.
Ammonia	0.400	0.373	93	90 - 110

* Values outside of QC limits

MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY

SC-700B-524

Client: **Advanced Technology Laboratories-NV**
Project: **ATL-NV**
Work Order: **15F0182**

Matrix: Water
Prep Batch: 1506345

Analysis Method: SM 4500-NH3 D M
Prep Method: SM 4500-NH3 B
Laboratory ID: 1506345-MS1
Source Sample ID: 15F0182-02

ANALYTE	SPIKE ADDED (mg/L)	SAMPLE CONCENTRATION (mg/L)	MS CONCENTRATION (mg/L)	MS % REC.	QC LIMITS REC.
Ammonia	0.400	0.0581	0.427	92	75 - 125

ANALYTE	SPIKE ADDED (mg/L)	MSD CONCENTRATION (mg/L)	MSD % REC. #	% RPD	QC LIMITS RPD	QC LIMITS REC.
Ammonia	0.400	0.466	102	9	20	75 - 125

* Values outside of QC limits

DUPLICATES

SC-100B-524

Client: **Advanced Technology Laboratories-NV**
Project: **ATL-NV**

Matrix:	Water	Laboratory ID:	1506345-DUP1
Prep Batch:	1506345	Initial/Final:	50 mL / 50 mL
Prep Method:	SM 4500-NH3 B	Analysis:	SM 4500-NH3 D M

ANALYTE	SAMPLE CONCENTRATION (mg/L)	DUPLICATE CONCENTRATION (mg/L)	RPD %	Q	CONTROL LIMIT
Ammonia	0.0354	0.0388			20

* Values outside of QC limits

ANALYSIS DATA SHEET

Inorganics

Client: **Advanced Technology Laboratories-NV**
Client Sample ID: **SC-100B-524**
Lab Sample ID: **15F0182-01**
Project: **ATL-NV**

Date Sampled: 06/02/15 10:30 Matrix: Water

CAS NO.	Analyte	Concentration (mg/L)	MDL	RL	DF	Q	Analyst	Analyzed	Method
7631-86-9	Silica	17.5	0.252	1.00	25		JT	06/12/15 14:03	SM 4500-Si D

METHOD BLANK DATA SHEET

SM 4500-Si D

Client: Advanced Technology Laboratories-NV

Project: ATL-NV
Laboratory ID: 1506266-BLK1

Prepared:	06/12/15 14:02	Preparation:	SM 4500-Si D	Matrix:	Water
Analyzed:	06/12/15 14:02	Instrument:	TL01	File ID:	
Batch:	1506266	Sequence:	5F18004		

CAS NO.	COMPOUND	CONC. (mg/L)	MDL	RL	Q
7631-86-9	Silica	ND	0.0101	0.0400	

LCS / LCS DUPLICATE RECOVERY

SM 4500-Si D

Client: **Advanced Technology Laboratories-NV**
Project: **ATL-NV**
Work Order: **15F0182**

Matrix: Water
Prep Method: SM 4500-Si D
Prep Batch: 1506266
Lab Sample ID: 1506266-BS1

ANALYTE	SPIKE ADDED (mg/L)	LCS CONCENTRATION (mg/L)	LCS % REC.	QC LIMITS REC.
Silica	0.376	0.389	104	90 - 110

* Values outside of QC limits

MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY

SC-100B-524

Client: **Advanced Technology Laboratories-NV**
Project: **ATL-NV**
Work Order: **15F0182**

Matrix: Water
Prep Batch: 1506266

Analysis Method: SM 4500-Si D
Prep Method: SM 4500-Si D
Laboratory ID: 1506266-MS1
Source Sample ID: 15F0182-01

ANALYTE	SPIKE ADDED (mg/L)	SAMPLE CONCENTRATION (mg/L)	MS CONCENTRATION (mg/L)	MS % REC.	QC LIMITS REC.
Silica	9.40	17.5	25.4	84	75 - 125

* Values outside of QC limits

DUPLICATES

SC-100B-524

Client: **Advanced Technology Laboratories-NV**
Project: **ATL-NV**

Matrix:	Water	Laboratory ID:	1506266-DUP1
Prep Batch:	1506266	Initial/Final:	50 mL / 50 mL
Prep Method:	SM 4500-Si D	Analysis:	SM 4500-Si D

ANALYTE	SAMPLE CONCENTRATION (mg/L)	DUPLICATE CONCENTRATION (mg/L)	RPD %	Q	CONTROL LIMIT
Silica	17.5	17.5	0		20

* Values outside of QC limits

15F 0182

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:
Truesdail
14201 Franklin Ave.
Tustin, CA 92680

TEL: (714) 730-6239
FAX: (714) 730-6462
Acct #:

Field Sampler:

03-Jun-15

	Sample ID	Matrix	Date Collected	Bottle Type	Requested Tests: SM 4500-SiO2 C	Requested Tests: SM4500-NH3C	
	N015875-001B / SC-100B-524	Water	6/2/2015 10:30:00 AM	8OZP		1	
-1	N015875-001H / SC-100B-524	Water	6/2/2015 10:30:00 AM	8OZP	1		
-2	N015875-002A / SC-700B-524	Water	6/2/2015 10:45:00 AM	8OZP		1	

ALERT !!
Level IV QC

General Comments: Please email sample receipt acknowledgement to the PM.

Please use PO#: N15875A For questions, call Marlon at (702)-307-2659. Please e-mail results to reports.lv@assetlaboratories.com by: Normal TAT

Please analyze for Ammonia and Soluble Reactive Silica. CH2MHill Samples.

		Date/Time			Date/Time
Relinquished by:	[signature]	6/3/15 @ 17:00	**Received by:**	GSO# 528141057	
Relinquished by:			**Received by:**	Linda, TCI	6-9-15 16:20

Truesdail laboratories, Inc

Data reveiw Check list

ALERT !!
Level IV QC

Log-in check list
For level III data package

Client: ATL

Lab Number: 15F 0182

Received Date: 6-9-15

Sample receiving review	Yes	No	N/A	Comment
Was special login form received by login personnel?			✓	
Was COC received and signed by client and login personnel?	✓			
Were all sampls temperature measured and recorded on COC?	✓			
Did you measure and record the pH on all metals samples on COC?			✓	
Has sample integrity and analysis discrepancy form been filled out completely?	✓			
Were all interacompany yellow forms generated and stamped with **" alert level III QC"** note?			✓	
Have check -in and check out lists been filled out and attached to appropriate form?	✓			
Were sample containers labeled with TLI numbers, date, and time sampled?	✓			
Did you notify analyst or group leader about short holding time?	✓			
Was a copy of COC attached to all yellow intracompany form?			✓	
For special clients, have all their samples been logged into the internal COC book?	✓			
Were samples locked in fridge or special storage area?	✓			
Was temperature recorded in the log book?	✓			

Sample receiving Signature: Linda

July 14, 2015

Shawn P. Duffy
CH2M HILL
155 Grand Avenue, Suite 1000
Oakland, CA 94612

TEL: (530) 229-3303
FAX: (530) 339-3303

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

Workorder No.: N016226

RE: PG&E Topock, 658274.01.IM.OP.00

Attention: Shawn P. Duffy

Enclosed are the results for sample(s) received on July 09, 2015 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,

Glen Gesmundo
QA Manager

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.

ASSET Laboratories **Date:** *14-Jul-15*

CLIENT: CH2M HILL
Project: PG&E Topock, 658274.01.IM.OP.00
Lab Order: N016226

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:

Matrix Spike (MS) and Matrix Spike Duplicate (MSD) are outside recovery criteria for some analytes on QC samples N016189-035A-MS and N016189-035A-MSD possibly due to matrix interference. The associated Laboratory Control Sample (LCS) recovery was acceptable.

Matrix Spike (MS) and Matrix Spike Duplicate (MSD) are outside recovery criteria for Manganese on QC samples N016189-035A-MS and N016189-035A-MSD since the analyte concentration in the sample is disproportionate to the spike level. The associated Laboratory Control Sample (LCS) recovery was acceptable.

RPD for Matrix Spike(MS) and Matrix Spike Duplicate(MSD) is outside criteria for Manganese ; however, the analytical batch was validated by the Laboratory Control Sample (LCS).

Analytical Comments for EPA 7199:

Matrix Spike (MS) and Matrix Spike Duplicate (MSD) are outside recovery criteria on QC samples N016226-001C-MS and N016226-001C-MSD possibly due to matrix interference. The associated Laboratory Control Sample (LCS) recovery was acceptable.

ASSET LABORATORIES
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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

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ASSET Laboratories

Date: *14-Jul-15*

CLIENT: CH2M HILL
Project: PG&E Topock, 658274.01.IM.OP.00
Lab Order: N016226
Contract No: IM3PLANT-AR

Work Order Sample Summary

Lab Sample ID	Client Sample ID	Matrix	Collection Date	Date Received	Date Reported
N016226-001A	Phase Separator-Sludge-528	Soil	7/9/2015 1:30:00 PM	7/9/2015	7/14/2015
N016226-001B	Phase Separator-Sludge-528	Soil	7/9/2015 1:30:00 PM	7/9/2015	7/14/2015
N016226-001C	Phase Separator-Sludge-528	Soil	7/9/2015 1:30:00 PM	7/9/2015	7/14/2015

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ASSET Laboratories

ANALYTICAL RESULTS

Print Date: *14-Jul-15*

CLIENT:	CH2M HILL	**Client Sample ID:**	Phase Separator-Sludge-528
Lab Order:	N016226	**Collection Date:**	7/9/2015 1:30:00 PM
Project:	PG&E Topock, 658274.01.IM.OP.00	**Matrix:**	SOIL
Lab ID:	N016226-001		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
ANIONS BY ION CHROMATOGRAPHY							
EPA 300.0							
RunID: **IC2_150713A** QC Batch: **R101154** PrepDate Analyst: **QBM**							
Fluoride	40	0.79	3.3		mg/Kg-dry	1	7/13/2015 02:28 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

Date: *14-Jul-15*

CLIENT: CH2M HILL
Work Order: N016226
Project: PG&E Topock, 658274.01.IM.OP.00

ANALYTICAL QC SUMMARY REPORT

TestCode: 300_S

Sample ID **LCS-R101154** SampType: **LCS** TestCode: **300_S** Units: **mg/Kg** Prep Date: RunNo: **101154**
Client ID: **LCSS** Batch ID: **R101154** TestNo: **EPA 300.0** Analysis Date: **7/13/2015** SeqNo: **2037945**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Fluoride	25.240	1.0	25.00	0	101	90	110				

Sample ID **MB-R101154** SampType: **MBLK** TestCode: **300_S** Units: **mg/Kg** Prep Date: RunNo: **101154**
Client ID: **PBS** Batch ID: **R101154** TestNo: **EPA 300.0** Analysis Date: **7/13/2015** SeqNo: **2037946**

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

Sample ID **N016226-001ADUP** SampType: **DUP** TestCode: **300_S** Units: **mg/Kg-dry** Prep Date: RunNo: **101154**
Client ID: **ZZZZZZ** Batch ID: **R101154** TestNo: **EPA 300.0** Analysis Date: **7/13/2015** SeqNo: **2037950**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Fluoride	39.722	3.3						40.35	1.56	20	

Sample ID **N016226-001AMS** SampType: **MS** TestCode: **300_S** Units: **mg/Kg-dry** Prep Date: RunNo: **101154**
Client ID: **ZZZZZZ** Batch ID: **R101154** TestNo: **EPA 300.0** Analysis Date: **7/13/2015** SeqNo: **2037951**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Fluoride	121.804	3.3	82.41	40.35	98.8	80	120				

Sample ID **N016226-001AMSD** SampType: **MSD** TestCode: **300_S** Units: **mg/Kg-dry** Prep Date: RunNo: **101154**
Client ID: **ZZZZZZ** Batch ID: **R101154** TestNo: **EPA 300.0** Analysis Date: **7/13/2015** SeqNo: **2037952**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Fluoride	130.078	3.3	82.41	40.35	109	80	120	121.8	6.57	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		

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ANALYTICAL RESULTS

Print Date: *14-Jul-15*

CLIENT: CH2M HILL
Lab Order: N016226
Project: PG&E Topock, 658274.01.IM.OP.00
Lab ID: N016226-001

Client Sample ID: Phase Separator-Sludge-528
Collection Date: 7/9/2015 1:30:00 PM
Matrix: SOIL

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
TOTAL METALS BY ICP							
	EPA 3050B		**EPA 6010B**				
RunID: **ICP2_150712A**	QC Batch: **50860**			PrepDate	**7/10/2015**		Analyst: **HG**
Antimony	ND	0.23	6.6		mg/Kg-dry	1	7/12/2015 09:03 AM
Arsenic	12	0.17	3.3		mg/Kg-dry	1	7/12/2015 09:03 AM
Barium	56	0.025	3.3		mg/Kg-dry	1	7/12/2015 09:03 AM
Beryllium	ND	0.053	3.3		mg/Kg-dry	1	7/12/2015 09:03 AM
Cadmium	ND	0.17	3.3		mg/Kg-dry	1	7/12/2015 09:03 AM
Chromium	2900	0.21	3.3		mg/Kg-dry	1	7/12/2015 09:03 AM
Cobalt	6.8	0.084	3.3		mg/Kg-dry	1	7/12/2015 09:03 AM
Copper	250	0.13	6.6		mg/Kg-dry	1	7/12/2015 09:03 AM
Lead	ND	0.12	3.3		mg/Kg-dry	1	7/12/2015 09:03 AM
Manganese	500	0.19	3.3		mg/Kg-dry	1	7/12/2015 09:03 AM
Molybdenum	10	0.060	3.3		mg/Kg-dry	1	7/12/2015 09:03 AM
Nickel	53	0.043	3.3		mg/Kg-dry	1	7/12/2015 09:03 AM
Selenium	6.0	0.22	3.3		mg/Kg-dry	1	7/12/2015 09:03 AM
Silver	ND	0.050	3.3		mg/Kg-dry	1	7/12/2015 09:03 AM
Thallium	ND	0.16	6.6		mg/Kg-dry	1	7/12/2015 09:03 AM
Vanadium	30	0.25	3.3		mg/Kg-dry	1	7/12/2015 09:03 AM
Zinc	22	0.27	3.3		mg/Kg-dry	1	7/12/2015 09:03 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

Date: *14-Jul-15*

CLIENT: CH2M HILL
Work Order: N016226
Project: PG&E Topock, 658274.01.IM.OP.00

ANALYTICAL QC SUMMARY REPORT

TestCode: 6010_SPGE

Sample ID **MB-50860** SampType: **MBLK** TestCode: **6010_SPGE** Units: **mg/Kg** Prep Date: **7/10/2015** RunNo: **101118**
Client ID: **PBS** Batch ID: **50860** TestNo: **EPA 6010B** **EPA 3050B** Analysis Date: **7/12/2015** SeqNo: **2035714**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Antimony	0.105	2.0									
Arsenic	0.059	1.0									
Barium	0.031	1.0									
Beryllium	ND	1.0									
Cadmium	ND	1.0									
Chromium	ND	1.0									
Cobalt	ND	1.0									
Copper	0.146	2.0									
Lead	ND	1.0									
Manganese	ND	1.0									
Molybdenum	0.090	1.0									
Nickel	0.106	1.0									
Selenium	ND	1.0									
Silver	0.018	1.0									
Thallium	0.106	2.0									
Vanadium	ND	1.0									

Sample ID **LCS-50860** SampType: **LCS** TestCode: **6010_SPGE** Units: **mg/Kg** Prep Date: **7/10/2015** RunNo: **101118**
Client ID: **LCSS** Batch ID: **50860** TestNo: **EPA 6010B** **EPA 3050B** Analysis Date: **7/12/2015** SeqNo: **2035715**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Antimony	25.616	2.0	25.00	0	102	85	115				
Arsenic	25.435	1.0	25.00	0	102	85	115				
Barium	25.249	1.0	25.00	0	101	85	115				
Beryllium	23.901	1.0	25.00	0	95.6	85	115				
Cadmium	23.302	1.0	25.00	0	93.2	85	115				
Chromium	24.213	1.0	25.00	0	96.9	85	115				
Cobalt	25.066	1.0	25.00	0	100	85	115				

Qualifiers:

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

CLIENT: CH2M HILL
Work Order: N016226
Project: PG&E Topock, 658274.01.IM.OP.00

ANALYTICAL QC SUMMARY REPORT

TestCode: 6010_SPGE

Sample ID **LCS-50860** SampType: **LCS** TestCode: **6010_SPGE** Units: **mg/Kg** Prep Date: **7/10/2015** RunNo: **101118**
Client ID: **LCSS** Batch ID: **50860** TestNo: **EPA 6010B** **EPA 3050B** Analysis Date: **7/12/2015** SeqNo: **2035715**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Copper	23.861	2.0	25.00	0	95.4	85	115				
Lead	24.880	1.0	25.00	0	99.5	85	115				
Molybdenum	23.244	1.0	25.00	0	93.0	85	115				
Nickel	24.408	1.0	25.00	0	97.6	85	115				
Selenium	23.172	1.0	25.00	0	92.7	85	115				
Silver	23.759	1.0	25.00	0	95.0	85	115				
Thallium	23.357	2.0	25.00	0	93.4	85	115				
Vanadium	24.653	1.0	25.00	0	98.6	85	115				

Sample ID **N016189-035A-MS** SampType: **MS** TestCode: **6010_SPGE** Units: **mg/Kg-dry** Prep Date: **7/10/2015** RunNo: **101118**
Client ID: **ZZZZZZ** Batch ID: **50860** TestNo: **EPA 6010B** **EPA 3050B** Analysis Date: **7/12/2015** SeqNo: **2035739**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Antimony	6.753	2.3	28.59	0	23.6	75	125				S
Arsenic	26.733	1.1	28.59	1.609	87.9	75	125				
Barium	95.246	1.1	28.59	67.09	98.5	75	125				
Beryllium	23.485	1.1	28.59	0.3006	81.1	75	125				
Cadmium	23.575	1.1	28.59	0	82.4	75	125				
Chromium	70.459	1.1	28.59	43.94	92.8	75	125				
Cobalt	30.214	1.1	28.59	10.55	68.8	75	125				S
Copper	37.917	2.3	28.59	12.78	87.9	75	125				
Lead	29.338	1.1	28.59	4.146	88.1	75	125				
Manganese	226.637	1.1	57.19	475.3	-435	75	125				S
Molybdenum	18.322	1.1	28.59	0	64.1	75	125				S
Nickel	64.221	1.1	28.59	46.98	60.3	75	125				S
Selenium	22.731	1.1	28.59	0.7217	77.0	75	125				
Silver	21.488	1.1	28.59	0	75.1	75	125				
Thallium	21.493	2.3	28.59	0	75.2	75	125				
Vanadium	53.982	1.1	28.59	25.89	98.2	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: CH2M HILL
Work Order: N016226
Project: PG&E Topock, 658274.01.IM.OP.00

ANALYTICAL QC SUMMARY REPORT

TestCode: 6010_SPGE

Sample ID **N016189-035A-MSD** SampType: **MSD** TestCode: **6010_SPGE** Units: **mg/Kg-dry** Prep Date: **7/10/2015** RunNo: **101118**
Client ID: **ZZZZZZ** Batch ID: **50860** TestNo: **EPA 6010B** **EPA 3050B** Analysis Date: **7/12/2015** SeqNo: **2035740**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Antimony	7.558	2.3	28.65	0	26.4	75	125	6.753	11.2	20	S
Arsenic	27.008	1.1	28.65	1.609	88.7	75	125	26.73	1.03	20	
Barium	97.427	1.1	28.65	67.09	106	75	125	95.25	2.26	20	
Beryllium	23.602	1.1	28.65	0.3006	81.3	75	125	23.49	0.497	20	
Cadmium	23.282	1.1	28.65	0	81.3	75	125	23.58	1.25	20	
Chromium	60.170	1.1	28.65	43.94	56.7	75	125	70.46	15.8	20	S
Cobalt	30.612	1.1	28.65	10.55	70.0	75	125	30.21	1.31	20	S
Copper	34.625	2.3	28.65	12.78	76.3	75	125	37.92	9.08	20	
Lead	28.089	1.1	28.65	4.146	83.6	75	125	29.34	4.35	20	
Manganese	622.338	1.1	57.30	475.3	257	75	125	226.6	93.2	20	SR
Molybdenum	19.383	1.1	28.65	0	67.7	75	125	18.32	5.62	20	S
Nickel	58.305	1.1	28.65	46.98	39.5	75	125	64.22	9.66	20	S
Selenium	22.773	1.1	28.65	0.7217	77.0	75	125	22.73	0.186	20	
Silver	21.533	1.1	28.65	0	75.2	75	125	21.49	0.207	20	
Thallium	20.433	2.3	28.65	0	71.3	75	125	21.49	5.06	20	S
Vanadium	49.509	1.1	28.65	25.89	82.4	75	125	53.98	8.64	20	

Sample ID **N016189-035A-MS** SampType: **MS** TestCode: **6010_SPGE** Units: **mg/Kg-dry** Prep Date: **7/10/2015** RunNo: **101118**
Client ID: **ZZZZZZ** Batch ID: **50860** TestNo: **EPA 6010B** **EPA 3050B** Analysis Date: **7/12/2015** SeqNo: **2037083**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Zinc	58.548	1.1	28.59	36.28	77.9	75	125				

Sample ID **N016189-035A-MSD** SampType: **MSD** TestCode: **6010_SPGE** Units: **mg/Kg-dry** Prep Date: **7/10/2015** RunNo: **101118**
Client ID: **ZZZZZZ** Batch ID: **50860** TestNo: **EPA 6010B** **EPA 3050B** Analysis Date: **7/12/2015** SeqNo: **2037084**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Zinc	59.917	1.1	28.65	36.28	82.5	75	125	58.55	2.31	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: CH2M HILL
Work Order: N016226
Project: PG&E Topock, 658274.01.IM.OP.00

ANALYTICAL QC SUMMARY REPORT

TestCode: 6010_SPGE

Sample ID	MB-50860	SampType:	MBLK	TestCode:	6010_SPGE	Units:	mg/Kg	Prep Date:	7/10/2015	RunNo:	101136
Client ID:	PBS	Batch ID:	50860	TestNo:	EPA 6010B	EPA 3050B		Analysis Date:	7/13/2015	SeqNo:	2037270

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Zinc	0.334	1.0									

Sample ID	LCS-50860	SampType:	LCS	TestCode:	6010_SPGE	Units:	mg/Kg	Prep Date:	7/10/2015	RunNo:	101136
Client ID:	LCSS	Batch ID:	50860	TestNo:	EPA 6010B	EPA 3050B		Analysis Date:	7/13/2015	SeqNo:	2037271

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Manganese	49.602	1.0	50.00	0	99.2	85	115				

Sample ID	LCS-50860	SampType:	LCS	TestCode:	6010_SPGE	Units:	mg/Kg	Prep Date:	7/10/2015	RunNo:	101118
Client ID:	LCSS	Batch ID:	50860	TestNo:	EPA 6010B	EPA 3050B		Analysis Date:	7/12/2015	SeqNo:	2038073

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Zinc	24.713	1.0	25.00	0	98.9	85	115				

Qualifiers:

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

ASSET Laboratories

ANALYTICAL RESULTS

Print Date: *14-Jul-15*

CLIENT:	CH2M HILL	**Client Sample ID:**	Phase Separator-Sludge-528
Lab Order:	N016226	**Collection Date:**	7/9/2015 1:30:00 PM
Project:	PG&E Topock, 658274.01.IM.OP.00	**Matrix:**	SOIL
Lab ID:	N016226-001		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
HEXAVALENT CHROMIUM BY IC							
EPA 3060A			**EPA 7199**				
RunID: **IC1_150713A**	QC Batch: **50873**			PrepDate	**7/11/2015**		Analyst: **RB**
Hexavalent Chromium	81	0.17	3.3		mg/Kg-dry	5	7/13/2015 12:44 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

Date: *14-Jul-15*

CLIENT: CH2M HILL
Work Order: N016226
Project: PG&E Topock, 658274.01.IM.OP.00

ANALYTICAL QC SUMMARY REPORT

TestCode: 7199_S_PGE

Sample ID **MB-50873** SampType: **MBLK** TestCode: **7199_S_PGE** Units: **mg/Kg** Prep Date: **7/11/2015** RunNo: **101134**
Client ID: **PBS** Batch ID: **50873** TestNo: **EPA 7199** **EPA 3060A** Analysis Date: **7/13/2015** SeqNo: **2037220**

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-50873** SampType: **LCS** TestCode: **7199_S_PGE** Units: **mg/Kg** Prep Date: **7/11/2015** RunNo: **101134**
Client ID: **LCSS** Batch ID: **50873** TestNo: **EPA 7199** **EPA 3060A** Analysis Date: **7/13/2015** SeqNo: **2037221**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	3.873	0.20	4.000	0	96.8	80	120				

Sample ID **N016226-001CREP** SampType: **DUP** TestCode: **7199_S_PGE** Units: **mg/Kg-dry** Prep Date: **7/11/2015** RunNo: **101134**
Client ID: **ZZZZZZ** Batch ID: **50873** TestNo: **EPA 7199** **EPA 3060A** Analysis Date: **7/13/2015** SeqNo: **2037223**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	81.192	3.3						81.27	0.0976	20	

Sample ID **N016226-001C-DUP** SampType: **DUP** TestCode: **7199_S_PGE** Units: **mg/Kg-dry** Prep Date: **7/11/2015** RunNo: **101134**
Client ID: **ZZZZZZ** Batch ID: **50873** TestNo: **EPA 7199** **EPA 3060A** Analysis Date: **7/13/2015** SeqNo: **2037224**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	81.336	3.3						81.27	0.0798	20	

Sample ID **N016226-001C-MS** SampType: **MS** TestCode: **7199_S_PGE** Units: **mg/Kg-dry** Prep Date: **7/11/2015** RunNo: **101134**
Client ID: **ZZZZZZ** Batch ID: **50873** TestNo: **EPA 7199** **EPA 3060A** Analysis Date: **7/13/2015** SeqNo: **2037225**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	97.976	3.3	13.08	81.27	128	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: CH2M HILL
Work Order: N016226
Project: PG&E Topock, 658274.01.IM.OP.00

ANALYTICAL QC SUMMARY REPORT

TestCode: 7199_S_PGE

Sample ID	N016226-001C-MSD	SampType:	MSD	TestCode:	7199_S_PGE	Units:	mg/Kg-dry	Prep Date:	7/11/2015	RunNo:	101134
Client ID:	ZZZZZZ	Batch ID:	50873	TestNo:	EPA 7199	EPA 3060A		Analysis Date:	7/13/2015	SeqNo:	2037226

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	90.495	3.3	13.09	81.27	70.5	75	125	97.98	7.94	20	S

Sample ID	N016226-001C-MS_I	SampType:	MS	TestCode:	7199_S_PGE	Units:	mg/Kg-dry	Prep Date:	7/11/2015	RunNo:	101134
Client ID:	ZZZZZZ	Batch ID:	50873	TestNo:	EPA 7199	EPA 3060A		Analysis Date:	7/13/2015	SeqNo:	2037227

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	2068.372	33	2184	81.27	91.0	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 RESULTS

Print Date: *14-Jul-15*

CLIENT:	CH2M HILL	**Client Sample ID:**	Phase Separator-Sludge-528
Lab Order:	N016226	**Collection Date:**	7/9/2015 1:30:00 PM
Project:	PG&E Topock, 658274.01.IM.OP.00	**Matrix:**	SOIL
Lab ID:	N016226-001		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
TOTAL MERCURY BY COLD VAPOR TECHNIQUE							
EPA 7471A							
RunID: **AA1_150713B**	QC Batch: **50859**				PrepDate **7/11/2015**		Analyst: **CEI**
Mercury	ND	0.010	0.33		mg/Kg-dry	1	7/13/2015 10:59 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		

CLIENT: CH2M HILL
Work Order: N016226
Project: PG&E Topock, 658274.01.IM.OP.00

ANALYTICAL QC SUMMARY REPORT

TestCode: 7471_S_PGE

Sample ID **MB-50859** SampType: **MBLK** TestCode: **7471_S_PGE** Units: **mg/Kg** Prep Date: **7/11/2015** RunNo: **101133**
Client ID: **PBS** Batch ID: **50859** TestNo: **EPA 7471A** Analysis Date: **7/12/2015** SeqNo: **2037151**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	ND	0.10									

Sample ID **LCS-50859** SampType: **LCS** TestCode: **7471_S_PGE** Units: **mg/Kg** Prep Date: **7/11/2015** RunNo: **101133**
Client ID: **LCSS** Batch ID: **50859** TestNo: **EPA 7471A** Analysis Date: **7/12/2015** SeqNo: **2037152**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	0.387	0.10	0.4167	0	93.0	75	125				

Sample ID **N016189-035A-MS** SampType: **MS** TestCode: **7471_S_PGE** Units: **mg/Kg-dry** Prep Date: **7/11/2015** RunNo: **101133**
Client ID: **ZZZZZZ** Batch ID: **50859** TestNo: **EPA 7471A** Analysis Date: **7/12/2015** SeqNo: **2037153**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	0.432	0.11	0.4767	0.004852	89.7	75	125				

Sample ID **N016189-035A-MSD** SampType: **MSD** TestCode: **7471_S_PGE** Units: **mg/Kg-dry** Prep Date: **7/11/2015** RunNo: **101133**
Client ID: **ZZZZZZ** Batch ID: **50859** TestNo: **EPA 7471A** Analysis Date: **7/12/2015** SeqNo: **2037154**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	0.473	0.11	0.4743	0.004852	98.7	75	125	0.4325	9.00	20	

Qualifiers:

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

ASSET Laboratories

ANALYTICAL RESULTS

Print Date: *14-Jul-15*

CLIENT:	CH2M HILL	**Client Sample ID:**	Phase Separator-Sludge-528
Lab Order:	N016226	**Collection Date:**	7/9/2015 1:30:00 PM
Project:	PG&E Topock, 658274.01.IM.OP.00	**Matrix:**	SOIL
Lab ID:	N016226-001		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
PERCENT MOISTURE							
			D2216				
RunID: **WETCHEM_150710A**	QC Batch: **R101114**			PrepDate			Analyst: **LR**
Percent Moisture	69.66	0.1000	0.1000		wt%	1	7/10/2015 10:00 AM

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

ASSET Laboratories

Date: *14-Jul-15*

CLIENT: CH2M HILL
Work Order: N016226
Project: PG&E Topock, 658274.01.IM.OP.00

ANALYTICAL QC SUMMARY REPORT

TestCode: PMOIST

Sample ID **MB-R101114** SampType: **MBLK** TestCode: **PMOIST** Units: **wt%** Prep Date: RunNo: **101114**
Client ID: **PBS** Batch ID: **R101114** TestNo: **D2216** Analysis Date: **7/10/2015** SeqNo: **2035564**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Percent Moisture	ND	0.1000									

Sample ID **N016226-001B DUP** SampType: **DUP** TestCode: **PMOIST** Units: **wt%** Prep Date: RunNo: **101114**
Client ID: **ZZZZZZ** Batch ID: **R101114** TestNo: **D2216** Analysis Date: **7/10/2015** SeqNo: **2035580**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Percent Moisture	67.541	0.1000						69.66	3.09	30	

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis 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
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"

CH2MHILL

CHAIN OF CUSTODY RECORD

Project Name PG&E Topock
Location PG&E Topock
Project Number 658274.01.IM.OP.00
Project Manager Scott O'Donnell
Sample Manager Shawn Duffy

Task Order
Project IM3PLANT-ARAR-WDR-528-SLUDGE
Turnaround Time 3 Days
Shipping Date: 7/9/2015
COC Number: 528-s

				Anions (E300_Soil) Fl	Metals (6010B_Soil) Title 22, Mercury, Mn	Metals (7199)		Number of Containers	COMMENTS
Container:				Glass Jar(8 oz)	Glass Jar(8 oz)	4 oz jar			
Preservatives:				none	none	4'C			
Filtered:				NA	NA	NA			
Holding Time:				NA	NA	180			
	DATE	**TIME**	**Matrix**						
Phase Separator-Sludge-528	7-9-15	1330	Soil	x	x	x	N016226-01	5	
							TOTAL NUMBER OF CONTAINERS	5	

5.5°C IR#2

	Signatures	Date/Time
Approved by		
Sampled by		
Relinquished by		7-9-15 1530
Received by		7-9-15 1600
Relinquished by		7-9-15 1845
Received by		7-9-15 1845

Shipping Details
Method of Shipment: FedEx
On Ice: yes / no
Airbill No:
Lab Name:
Lab Phone:

ATTN:
Sample Custody

Special Instructions:

Report Copy to
Shawn Duffy
530-229-3303

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:	7/9/2015	Workorder:	N016226
Rep sample Temp (Deg C):	5.5	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 JPG jpg 07/10/15

Reviewed By: jpg 07/13/15

Analyst List

ASSET Laboratories Work Order: N016226

Item	Pages
Quennie Manimtim	EPA 300.0
Claire Ignacio	EPA 6010B, EPA 7471A
Ryan Balilu	EPA 7199
Lilia Ramit	D2216

Sample Calculation

METHOD: EPA 300
TEST NAME: INORGANIC ANIONS BY IC
MATRIX: WATER

FORMULA:

Calculate the Fluoride concentration, in mg/kg-dry, in the original sample as follows:

$$\text{Fluoride, mg/kg-dry} = \frac{A * DF * 0.05 * 100}{B * (100\text{-}\%\text{Moisture})}$$

where:

A = mg/L, IC calculated concentration
DF = dilution factor
B = weight of sample in kg

For **N016226-001A**, concentration in mg/kg-dry is calculated as follows:

$$\text{Fluoride, mg/kg-dry} = \frac{1.224 * 1 * 0.05 * 100}{0.005\ (100\text{-}69.6644)}$$

$$= 40.348633$$

Reporting **N016226-001A** results in two significant figures,

Fluoride, mg/kg-dry= 40

7/14/2015

SAMPLE CALCULATION

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

FORMULA:

Calculate the Arsenic concentration, in mg/kg , in the original sample as follows:

$$\text{Arsenic, mg/kg - dry} = A * DF * PF * \frac{100}{(100 - PMOIST)}$$

where:

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

For Sample **N016226-01B** , the concentration in mg/kg - dry is calculated as follows:

$$\text{Arsenic, mg/kg - dry} = 0.07405053 * 1 * \frac{0.10}{0.002005} * \frac{100}{(100 - 69.6644)}$$

$$\text{Arsenic, mg/kg - dry} = 12.174782$$

Reporting results in two significant figures,

Arsenic , mg/kg - dry = 12

ASSET Laboratories

ICP-Metals in Water

Dilution Test Summary

Work Order No.: N016226
Test Method: EPA 6010B
Analysis Date: 7/12/2015; 7/13/2015

Matrix: Soil
Batch No.: 50860

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

Comments:

Analyzed By: Hanah Glodoviza

Dilution test of Ba, Cr, Mn, Ni, V & Zn failed.
Dilution test is not applicable to the rest of analytes. The calculated values are < 25X RL.

Sample ID	Analyte	Units	Calc Val	OQual	SAMPrefval	%DIFF	%DIFFlimit
N016189-035A-DT 5X	Antimony	mg/kg	0	NA	0		10
N016189-035A-DT 5X	Arsenic	mg/kg	2.267659543	NA	1.608695849	40.96%	10
N016189-035A-DT 5X	Barium	mg/kg	79.4169809	FAIL!	67.09274599	18.37%	10
N016189-035A-DT 5X	Beryllium	mg/kg	0.221034675	NA	0.300610831	26.47%	10
N016189-035A-DT 5X	Cadmium	mg/kg	0	NA	0		10
N016189-035A-DT 5X	Chromium	mg/kg	51.76957974	FAIL!	43.93702171	17.83%	10
N016189-035A-DT 5X	Cobalt	mg/kg	12.08655189	NA	10.54983556	14.57%	10
N016189-035A-DT 5X	Copper	mg/kg	14.79351038	NA	12.77853116	15.77%	10
N016189-035A-DT 5X	Lead	mg/kg	4.953188885	NA	4.146139273	19.47%	10
N016189-035A-DT 5X	Manganese	mg/kg	558.1198382	FAIL!	475.2921351	17.43%	10
N016189-035A-DT 5X	Molybdenum	mg/kg	0	NA	0		10
N016189-035A-DT 5X	Nickel	mg/kg	54.46521345	FAIL!	46.97766468	15.94%	10
N016189-035A-DT 5X	Selenium	mg/kg	1.035134855	NA	0.721677064	43.43%	10
N016189-035A-DT 5X	Silver	mg/kg	0	NA	0		10
N016189-035A-DT 5X	Thallium	mg/kg	0	NA	0		10
N016189-035A-DT 5X	Vanadium	mg/kg	30.37918199	FAIL!	25.89048436	17.34%	10
N016189-035A-DT 5X	Zinc	mg/kg	43.71271622	FAIL!	36.27704833	20.50%	10

Note: NA - Not Applicable

CLIENT: CH2M HILL
Work Order: N016226
Project: PG&E Topock, 658274.01.IM.OP.00

ANALYTICAL QC SUMMARY REPORT

TestCode: 6010_SPGE

Sample ID **N016189-035A-PS** SampType: **PS** TestCode: **6010_SPGE** Units: **mg/Kg-dry** Prep Date: RunNo: **101118**
Client ID: **ZZZZZZ** Batch ID: **50860** TestNo: **EPA 6010B** **EPA 3050B** Analysis Date: **7/12/2015** SeqNo: **2035735**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Antimony	4.698	2.3	28.61	0	16.4	80	120				S
Arsenic	7.497	1.1	28.61	1.609	20.6	80	120				S
Barium	66.539	1.1	28.61	67.09	-1.93	80	120				S
Beryllium	5.652	1.1	28.61	0.3006	18.7	80	120				S
Cadmium	5.187	1.1	28.61	0	18.1	80	120				S
Chromium	44.718	1.1	28.61	43.94	2.73	80	120				S
Cobalt	14.690	1.1	28.61	10.55	14.5	80	120				S
Copper	17.125	2.3	28.61	12.78	15.2	80	120				S
Lead	9.383	1.1	28.61	4.146	18.3	80	120				S
Manganese	419.441	1.1	57.22	475.3	-97.6	80	120				S
Molybdenum	5.005	1.1	28.61	0	17.5	80	120				S
Nickel	46.147	1.1	28.61	46.98	-2.90	80	120				S
Selenium	5.865	1.1	28.61	0.7217	18.0	80	120				S
Silver	3.375	1.1	28.61	0	11.8	80	120				S
Thallium	4.045	2.3	28.61	0	14.1	80	120				S
Vanadium	29.009	1.1	28.61	25.89	10.9	80	120				S

Sample ID **N016189-035A-PS** SampType: **PS** TestCode: **6010_SPGE** Units: **mg/Kg-dry** Prep Date: RunNo: **101118**
Client ID: **ZZZZZZ** Batch ID: **50860** TestNo: **EPA 6010B** **EPA 3050B** Analysis Date: **7/12/2015** SeqNo: **2037079**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Zinc	35.466	1.1	28.61	36.28	-2.84	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		

Sample Calculation

METHOD: EPA 7199
TEST NAME: HEXAVALENT CHROMIUM BY IC
MATRIX: Soil

FORMULA:

Calculate the Hexavalent Chromium concentration, in mg/Kg, in the original sample as follows:

$$Cr^{+6}\text{ ,mg/Kg-dry} = \frac{(A * DF * 0.1 * 20) \times 100}{B * (100\text{-}\%Moisture) * 1000}$$

where:

A = µg/L, IC Cr+6 calculated concentration
DF = dilution factor
B = weight of sample in Kg
20 = dilution due to the matrix of the digestate

For Sample **N016226-001C** , the concentration in mg/Kg-dry is calculated as follows:

$$Cr^{+6}\text{ ,mg/Kg-dry} = \frac{6.170928 * 5 * 0.1 * 20 * 100}{0.002503 \ (100 - 69.664) * 1000}$$

$$Cr^{+6}\text{ ,mg/Kg-dry} = 81.27126890$$

Reporting results in two significant figures,

$$\mathbf{Cr^{+6}\text{ ,mg/Kg-dry} = 81}$$

Sample Calculation

Work Order No.: **N016226**
Test Method: **EPA 7471A**
Test Name: **Mercury in Solid by Cold-Vapor Technique**
Matrix: **SOIL**

FORMULA:

Mercury, mg/Kg-dry = A * DF * PF * (100/100-Pmoist)

Where,

A = ug/L, calculated concentration of the Sample

DF = dilution factor used

PF = Final Volume of Digestate / Wt. Of Sample used in Grams.

Pmoist = Percent Moisture content of the Sample

To calculate the Mercury concentration in mg/Kg-Dry in the sample is as follows:

For Sample: ***N016226-001B***

A =	*0.30156*	*ug/L*
DF =	*1*	*unit less*
Wt. Of Sample =	*0.6*	*grams*
Final Vol. =	*0.05*	*liters*
Pmoist =	*69.6644*	*%*

Using the formula:

Mercury, mg/Kg-dry = A * DF * PF * (100/100-Pmoist)

The concentration in mg/Kg-dry will be equal to:

Mercury, mg/Kg-dry = ***0.08284***

Since reporting limit is 0.12 mg/Kg-dry,

Mercury, mg/Kg-dry = ***ND***

SAMPLE CALCULATION

METHOD: ASTM D 2216-05
TEST NAME: Determination of Water Content
MATRIX: SOIL

FORMULA:

Calculate the % Moisture in the original sample as follows:

% Moisture = ((A-B) / (A-C)) * 100

where:

A = mass of aluminum dish + sample before drying, g,
B = mass of aluminum dish + sample after drying, g,
C = mass of aluminum dish, g,

For N016226-001B, % Moisture are calculated as follows:

% Moisture = ((2.3312-1.6317)) / (2.3312-1.3271)) * 100
% Moisture = 69.664%

Julia Ramit 7/10/2015

Analytical Bench Log Book

WDR pH Results

If the on site laboratory pH result for T-700 tank is less than pH 6.6 or greater than pH 8.3 the Injection well should be shut down until the problem is fixed.

	Sample Name	Date of sampling	Time of sampling	Date of analysis	Time of analysis	pH Meter #1, #2, or #3 etc. See cover Sheet for Serial Number	Date pH meter Calibrated	Time pH meter Calibrated	Slope of the Curve	Analyst Name (for the pH result)	pH Result
1	SC-700B	4-7-15	11:10	4-7-15	11:28	HQ440d	4-7-15	0352	-56.67	Ryan Phelps	7.30
Notes:											
2	SC-700B	4-7-15	11:15	4-7-15	11:33	HQ440d	4-7-15	0352	-56.67	Ryan Phelps	7.53
Notes:											
3	SC-701	4-7-15	11:05	4-7-15	11:34	HQ440d	4-7-15	0352	-56.67	Ryan Phelps	8.28
Notes:											
4	SC-700B	4/14/15	11:25	4/14/15	11:30	HQ440D	4/14/15	3:43	-57.96	CHRIS LENTZ	7.14
Notes:											
5	SC-700B	4-21-15	1305	4-21-15	1309	HQ440D	4-21-15	0756	-58.18	Ryan Phelps	7.03
Notes:											
6	SC-700B	4-28-15	9:55	4-28-15	10:00	HQ440D	4-28-15	8:22	-58.12	Ryan Phelps	7.05
Notes:											
7	SC-700B	5-5-15	0712	5-5-15	0715	HQ440D	5-5-15	0700	-58.02	JADE	7.05
Notes:											

Reminder: WDR Required pH Range for the Effluent (SC-700B) is: 6.5 - 8.4

Analytical Bench Log Book

WDR pH Results

If the on site laboratory pH result for T-700 tank is less than pH 6.6 or greater than pH 8.3 the Injection well should be shut down until the problem is fixed.

	Sample Name	Date of sampling	Time of sampling	Date of analysis	Time of analysis	pH Meter #1, #2, or #3 etc. See cover Sheet for Serial Number	Date pH meter Calibrated	Time pH meter Calibrated	Slope of the Curve	Analyst Name (for the pH result)	pH Result
1	SC-100B	5-5-15	0710	5-5-15	0713	HQ 440 D	5-5-15	0700	-58.02	J Andre	7.23
Notes:											
2	SC-700B	5-12-15	14:15	5-12-15	1421	HQ 440D	5-12-15	0814	-57.87	Ryan Phelps	6.97
Notes:											
3	SC-700B	5-19-15	1300	5-19-15	1311	HQ440D	5-19-15	0014	-57.88	Ryan Phelps	7.03
Notes:											
4	SC-700B	5/26/15	08:35	5/26/15	0840	HQ440D	5/26/15	01:05	-57.59	CHRIS LGATZ	6.98
Notes:											
5	SC-100B	6-2-15	1030	6-2-15	1036	HQ 440D	6-2-15	0700	-57.88	Josh R	7.33
Notes:											
6	SC-700B	6-2-15	1045	6-2-15	1050	HQ 440D	6-2-15	0700	-57.88	Josh R	6.91
Notes:											
7											
Notes:											

Reminder: WDR Required pH Range for the Effluent (SC-700B) is: 6.5 - 8.4

Sample N...e	Date of sampling	Time of sampling	Date of analysis	Time of analysis	#1, #2, or #3 std See cover Sheet for Serial Number	Date pH meter Calibrated	Time pH meter Calibrated	Slope of the Curve	Analyst Name (for the pH result)	( ) Result
[illegible]	6-9-15	[illegible]	6-9-15	[illegible]	[illegible]	6-9-15	[illegible]	N/A	Josh R	7.61
tos:										
[illegible] 100B	6-9-15	13:26	6-9-15	1330	HQ440d	6-9-15	0011	-57.88	Ryan Phelps	6.90
tos:										
SC-700B	6-16-15	1320	6-16-15	1324	HQ440d	6-16-15	0037	-58.27	Josh R	7.39
tos:										
SC-700B	6-23-15	1420	6-23-15	1424	HQ440D	6-23-15	00:11	-58.29	Josh R.	7.01
tos:										
SL-700B	6-30-15	1415	6-30-15	1420	HQ440D	6-30-15	0008	-58.40	CHRIS LENTZ	7.20
tos:										
tos:										
tos:										

Reminder: WDR Required pH Range for the Effluent (SC-700B) is: 6.5 - 8.4

p.1
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