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April 13, 2018

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California Regional Water Quality Control Board
Colorado River Basin Region
73-720 Fred Waring Drive, Suite 100
Palm Desert, CA 92260

**Subject:** **Topock IM-3 First Quarter 2018 Monitoring Report**
**PG&E Topock Compressor Station, Needles, California**
**Interim Measure No. 3 Groundwater Treatment System**
**(Document ID: PGE20180413A)**

Dear Ms. Innis and Mr. Stormo:

Enclosed is the First Quarter 2018 Monitoring 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 843,929,643 gallons of water and removed approximately 7,370 pounds of total chromium from August 1, 2005 through March 31, 2018.

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 First Quarter 2018 Monitoring Report

cc: Aaron Yue, California Department of Toxic Substances Control

# *Topock Project Executive Abstract*

Document Title:

Topock IM-3 First Quarter 2018 Monitoring Report

Submitting Agency/Authored by: U.S. Department of the Interior and Regional Water Quality Control Board

Final Document? ☒ Yes ☐ No

Date of Document: April 13, 2018

Who Created this Document?: (i.e. PG&E, DTSC, DOI, Other)

PG&E

Document ID Number:

PGE20180413A

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 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 First Quarter 2018 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.

Written by: PG&E

Recommendations:

This report is for your information only.

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

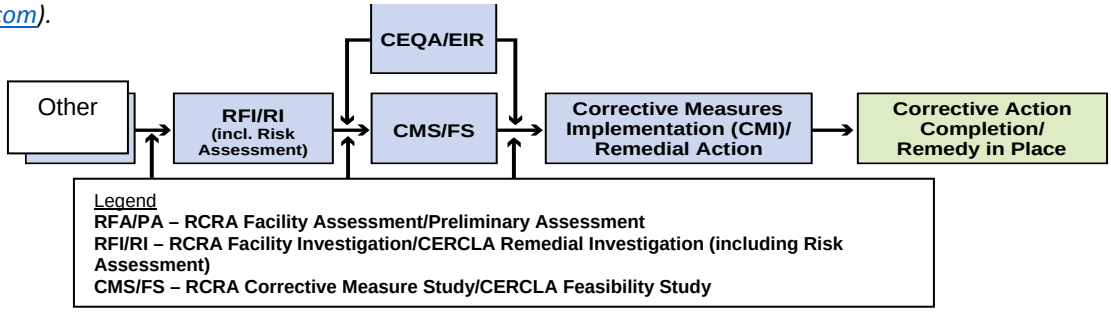
The Topock IM-3 First Quarter 2018 Monitoring Report is related to the Interim Measure. PG&E is currently operating the IM-3 groundwater treatment system as authorized by the U.S. Department of the Interior (DOI) Waste Discharge Applicable or Relevant and Appropriate Requirements (ARARs) as documented 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

# First Quarter 2018 Monitoring Report Interim Measure No. 3 Groundwater Treatment System

Document ID: PGE20180413A

PG&E Topock Compressor Station
Needles, California

*Prepared for*

Colorado River Basin Regional Water Quality Control Board

and

United States Department of the Interior

*on behalf of*

Pacific Gas and Electric Company

April 13, 2018

ch2m
155 Grand Avenue, Suite 800
Oakland, CA 94612

# First Quarter 2018 Monitoring Report
# for 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

April 13, 2018

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

Dennis Fink

Dennis Fink, P.E.
Project Engineer

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**Appendix**

A First Quarter 2018 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 |
| HMI | human-machine interface |
| IM | Interim Measure |
| IW | injection well |
| MRP | Monitoring and Reporting Program |
| PG&E | Pacific Gas and Electric Company |
| PST | Pacific Standard Time |
| Regional Water Board | Colorado River Basin Regional Water Quality Control Board |
| RO | reverse osmosis |
| Truesdail | 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 First Quarter 2018.** 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.

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

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

During the First Quarter 2018, extraction well TW-3D operated at a target pumping rate of 135 gallons per minute (gpm), excluding periods of planned and unplanned downtime. Wells PE-1 and TW-2D were only operated to collect a sample. The recorded operational run time for the IM-3 groundwater extraction system (combined or individual pumping), by month, was approximately:

- 98.3 percent during January 2018
- 96.7 percent during February 2018
- 95.7 percent during March 2018

Operation of the groundwater treatment system results in the following three out-flow components:

- **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. Disposal occurs each time a sludge waste storage bin reaches capacity or within 90 days of the start date for accumulation in the storage container.

Activities during the First Quarter 2018 are detailed in Section 4.

SECTION 4

# Groundwater Treatment System Flow Rates

The First Quarter 2018 treatment system monthly average flow rates (influent, effluent, and RO concentrate) are presented in Table 2.

The system influent flow rate was measured by flow meters at groundwater extraction wells TW-2S, TW-2D, TW-3D, and PE-1 (Figure TP-PR-10-10-03). The treatment system effluent flow rate was measured by flow meters in the piping into injection wells IW-2 and IW-3 (Figure TP-PR-10-10-11). The RO concentrate flow rate was measured by a flow meter 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 treated approximately 16,991,873 gallons of extracted groundwater during the First Quarter 2018. The IM-3 facility also treated approximately 18,900 gallons of injection well backwashing/re-development water and 375 gallons of purge water from site sampling activities.

Five containers of solids (sludge) were transported offsite from the IM-3 facility during First Quarter 2018.

Periods of planned and unplanned extraction system downtime (that together resulted in approximately 3.1 percent downtime during First Quarter 2018) are summarized below. The times shown are in Pacific Standard Time (PST) to be consistent with other data collected (e.g., water level data) at the site.

## 4.1 January 2018

During January 2018, extraction well TW-3D operated at a target pump rate of 135 gpm excluding periods of planned and unplanned downtime. Extraction well TW-2S was not operated during January 2018. Extraction wells TW-2D and PE-01 were only operated to collect a sample during January 2018. The operational run time for the IM-3 groundwater extraction system (combined or individual pumping) was 98.3 percent during the January 2018 reporting period.

The IM-3 facility treated approximately 5,950,063 gallons of extracted groundwater during January 2018.

Periods of planned and unplanned extraction system downtime (that together resulted an approximately 1.7 percent downtime during January 2018) are summarized below. The times shown are in PST to be consistent with other data collected (e.g., water level data) at the site.

- **January 3, 2018 (planned):** The extraction well system was offline from 7:46 a.m. to 10:54 a.m. to change out microfilter modules due to high transmembrane pressure. Extraction system downtime was 3 hours 8 minutes.
- **January 4, 2018 (unplanned):** The extraction system was offline from 10:58 a.m. to 11:00 a.m. due to a programmable logic controller (PLC) and human-machine interface (HMI) connectivity issue. Extraction system downtime was 2 minutes.
- **January 5, 2018 (planned):** The extraction system was offline from 10:32 a.m. to 10:44 a.m. due to testing of the pipeline critical alarms and leak detection system. Extraction system downtime was 12 minutes.
- **January 9, 2018 (unplanned):** The extraction well system was offline from 3:34 a.m. to 4:00 a.m. due to loss of power from the City of Needles. Extraction system downtime was 26 minutes.

- **January 9, 2018 (planned):** The extraction well system was offline from 11:20 a.m. to 1:08 p.m. to change out microfilter modules due to high transmembrane pressure. Extraction system downtime was 1 hour 48 minutes.
- **January 13, 2018 (unplanned):** The extraction well system was offline from 12:12 p.m. to 1:46 p.m. due to the Clarifier Feed Pump (P-400) shutting off for unknown reasons, which caused a high level at Raw Water Storage Tank (T-100). Extraction system downtime was 1 hour 34 minutes.
- **January 16, 2018 (planned):** The extraction well system was offline from 4:48 p.m. to 5:08 p.m. due to a blockage in the piping between Iron Oxidation Tanks T-301A, B, and C; this situation forced the plant to operate at slower pumping rates, which caused high levels in the Chromium Reduction Reactor Tank (T-300A) and T-100. Extraction system downtime was 20 minutes.
- **January 19, 2018 (planned):** The extraction well system was offline from 10:12 a.m. to 11:56 a.m. to change out microfilter modules due to high transmembrane pressure. Extraction system downtime was 1 hour 44 minutes.
- **January 22, 2018 (planned):** The extraction well system was offline from 10:04 a.m. to 11:30 a.m. due to a blockage in the piping between Iron Oxidation Tanks T-301A, B, and C; this situation forced the plant to operate at slower rates, which caused a high level in T-100. Extraction was shut down to lower the tank level in T-100. Extraction system downtime was 1 hour 26 minutes.
- **January 24, 2018 (planned):** The extraction well system was offline from 9:02 a.m. to 10:04 a.m. due to a blockage in the piping between Iron Oxidation Tanks T-301A, B, and C; this situation forced the plant to operate at slower rates, which caused a high level in T-100. Extraction was shut down to lower the tank level in T-100. Extraction system downtime was 1 hour 2 minutes.
- **January 30, 2018 (planned):** The extraction well system was offline from 2:38 a.m. to 3:20 a.m. due a valve failure in the air line at T-100. Extraction system downtime was 42 minutes.

## 4.2 February 2018

During February 2018, extraction well TW-3D operated at a target pump rate of 135 gpm excluding periods of planned and unplanned downtime. Extraction well TW-2S was not operated during February 2018. Extraction wells TW-2D and PE-01 were only operated to collect a sample during February 2018. The operational run time for the IM-3 groundwater extraction system (combined or individual pumping) was 96.7 percent during the February 2018 reporting period.

The IM-3 facility treated approximately 5,276,125 gallons of extracted groundwater during February 2018. The IM-3 facility treated 375 gallons of purge water during February 2018.

Periods of planned and unplanned extraction system downtime (that together resulted an approximately 3.3 percent downtime during February 2018) are summarized below. The times shown are in PST to be consistent with other data collected (e.g., water level data) at the site.

- **February 1, 2018 (planned):** The extraction well system was offline from 10:10 a.m. to 11:16 a.m. to change out microfilter modules due to high transmembrane pressure. Extraction system downtime was 1 hour 6 minutes.
- **February 2, 2018 (planned):** The extraction system was offline from 11:40 a.m. to 12:04 p.m. due to testing of the pipeline critical alarms and leak detection system. Extraction system downtime was 24 minutes.

- **February 6, 2018 (unplanned):** The extraction system was offline from 3:22 p.m. to 4:02 p.m. due to collecting a total depth measurement at extraction well TW-3D. Extraction system downtime was 40 minutes.
- **February 9, 2018 (planned):** The extraction well system was offline from 10:08 a.m. to 12:40 p.m. to change out microfilter modules due to high transmembrane pressure. Extraction system downtime was 2 hours 32 minutes.
- **February 14, 2018 (unplanned):** The extraction well system was offline from 1:10 a.m. to 1:32 p.m. because the ferrous chloride feed pump (P800) failed and was replaced. Extraction system downtime was 12 hours 22 minutes.
- **February 21, 2018 (unplanned):** The extraction well system was offline from 7:18 a.m. to 7:26 a.m. due to loss of power from the City of Needles. Extraction system downtime was 8 minutes.
- **February 22, 2018 (unplanned):** The extraction well system was offline from 6:26 a.m. to 7:12 a.m. due to variable frequency drive (VFD) motor problems at the Clarifier Feed Pump (P-400). Extraction system downtime was 46 minutes.
- **February 23, 2018 (planned):** The extraction well system was offline from 9:50 a.m. to 9:58 a.m. due to switching between TW-3D and TW-2D to collect a sample at TW-2D. Extraction system downtime was 8 minutes.
- **February 23, 2018 (unplanned):** The extraction well system was offline from 11:02 a.m. to 3:24 a.m. due to the VFD giving erratic output signals that indicated that P-400 had scale buildup. The plant was shut down to remove the scaling. Also, microfilter modules were changed out due to high transmembrane pressure. Extraction system downtime was 4 hours 22 minutes.

## 4.3 March 2018

During March 2018, extraction well TW-3D 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 March 2018. Extraction well PE-01 was only operated to collect a sample during March 2018. The operational run time for the IM-3 groundwater extraction system (combined or individual pumping) was 95.7 percent during the March 2018 reporting period.

The IM-3 facility treated approximately 5,765,116 gallons of extracted groundwater during March 2018. The IM-3 facility treated 18,900 gallons of water from injection well backwashing/re-development from Groundwater Partners. Five containers of solids from the IM No. 3 facility were transported offsite during March 2018.

Periods of planned and unplanned extraction system downtime (that together resulted an approximately 4.3 percent downtime during March 2018) are summarized below. The times shown are in PST to be consistent with other data collected (e.g., water level data) at the site.

- **March 1, 2018 (unplanned):** The extraction system was offline from 9:54 a.m. to 3:00 p.m. to replace a VFD at the Clarifier Feed Pump (P-400). Extraction system downtime was 5 hours 6 minutes.
- **March 1, 2018 (unplanned):** The extraction well system was offline from 3:58 p.m. to 4:32 p.m. due to a malfunctioning valve controller. The plant was shut down so the operator could reset the controller and the valve. Extraction system downtime was 34 minutes.

- **March 2, 2018 (unplanned):** The extraction system was offline from 4:18 p.m. to 5:40 p.m. to lower the water level in the Raw Water Storage Tank (T-100). Extraction system downtime was 1 hour 22 minutes.
- **March 3, 2018 (unplanned):** The extraction system was offline from 5:14 a.m. to 5:20 a.m. due to a malfunctioning Flow Control Valve (FCV-602), which got stuck in the closed position. The plant was shut down to purge the airline. Extraction system downtime was 6 minutes.
- **March 3, 2018 (unplanned):** The extraction system was offline from 10:14 a.m. to 11:32 a.m. due to a PLC and HMI connectivity issue. Extraction system downtime was 1 hour 18 minutes.
- **March 4, 2018 (unplanned):** The extraction system was offline from 2:48 a.m. to 3:02 a.m. due to a PLC and HMI connectivity issue. Extraction system downtime was 14 minutes.
- **March 4, 2018 (unplanned):** The extraction system was offline from 5:44 a.m. to 7:10 a.m. and from 6:50 p.m. to 7:50 p.m. to lower the water level in the Raw Water Storage Tank (T-100). Extraction system downtime was 2 hour 26 minutes.
- **March 5, 2018 (planned):** The extraction system was offline from 9:50 a.m. to 1:30 p.m. due to testing of the pipeline critical alarms and leak detection system, to change out microfilter modules due to high transmembrane pressure, and to clean out the chromium reduction reactor. Extraction system downtime was 3 hours 40 minutes.
- **March 7, 2018 (unplanned):** The extraction system was offline from 5:34 p.m. to 7:10 p.m. to lower the water level in the Raw Water Storage Tank (T-100). Extraction system downtime was 1 hour 36 minutes.
- **March 8, 2018 (unplanned):** The extraction system was offline from 8:08 a.m. to 12:42 p.m. and from 1:30 p.m. to 2:50 p.m. to change some hand operated valves between tanks due to scale buildup. Extraction system downtime was 5 hours 54 minutes.
- **March 9, 2018 (unplanned):** The extraction system was offline from 9:38 p.m. to 9:50 p.m. and from 10:02 p.m. to 12:00 am to lower the water level in the Raw Water Storage Tank (T-100). Extraction system downtime was 2 hours 10 minutes.
- **March 10, 2018 (unplanned):** The extraction system was offline from 11:34 a.m. to 1:24 p.m. to clean the pipe between Iron Oxidation Reactor No. 2 (T-301B) and Iron Oxidation Reactor No. 3 (T-301C). Extraction system downtime was 1 hours 50 minutes.
- **March 11, 2018 (unplanned):** The extraction system was offline from 5:38 p.m. to 7:00 p.m. to lower the water level in the Raw Water Storage Tank (T-100). Extraction system downtime was 1 hour 22 minutes.
- **March 16, 2018 (unplanned):** The extraction system was offline from 8:20 a.m. to 9:50 a.m. to lower the water level in the Raw Water Storage Tank (T-100) due to the Raw Water Feed Pump (P-200) shutting off. Extraction system downtime was 1 hours 30 minutes.
- **March 17, 2018 (planned):** The extraction system was offline from 12:02 p.m. to 2:00 p.m. to lower the water level in the Raw Water Storage Tank (T-100) due to receiving injection well backwash water. Extraction system downtime was 1 hours 58 minutes.
- **March 22, 2018 (planned):** The extraction system was offline from 10:06 a.m. to 11:12 a.m. to change out microfilter modules due to high transmembrane pressure. Extraction system downtime was 1 hour 6 minutes.

SECTION 5

# 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.

During the First Quarter 2018, 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.

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 6

# Analytical Results

Laboratory reports for samples collected in the First Quarter 2018 were prepared by certified analytical laboratories, and are presented in Appendix A.

Samples were collected in accordance with the ARARs sampling frequency requirements. See Table 3 for sample collection dates.

The influent sampling analytical results are presented in Table 4. The effluent sampling analytical results are presented in Table 5. The RO concentrate sampling analytical results are presented in Table 6. The sludge sampling analytical results are presented in Table 7.

Table 8 identifies the laboratory that performed each analysis and lists the following required information:

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

SECTION 7

# 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, or new releases of hazardous waste or hazardous waste constituents, or new solid waste management units were identified during the reporting period.

SECTION 8

# 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: April 13, 2018

# Tables

Table 1. Sampling Station Descriptions

*First Quarter 2018 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). |

**Note:**

### = 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

*First Quarter 2018 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) |
|---|---|---|---|
| January 2018 Average Monthly Flowrate | 133.3 | 133.8 | 0.9 |
| February 2018 Average Monthly Flowrate | 130.9 | 131.1 | 1.2 |
| March 2018 Average Monthly Flowrate | 129.1 | 129.9 | 1.1 |

**Notes:**

gpm: gallons per minute

[a] Extraction well TW-3D was operated during the First Quarter 2018. Extraction wells TW-2D and PE-01 were only operated to collect a sample. Extraction well TW-2S was not operated during the First Quarter 2018.

[b] The difference between influent flow rate and the sum of the effluent and reverse osmosis concentrate flow rates during the First Quarter 2018 is approximately 1.2 percent.

Table 3. Sample Collection Dates

*First Quarter 2018 Monitoring Report for Interim Measure No. 3 Groundwater Treatment System*

| Parameter | Sample Collection Dates | Results |
|---|---|---|
| Influent | January 2, 2018 | See Table 4 |
| | February 6, 2018 | |
| | March 7, 2018 | |
| Effluent | January 2, 2018 | See Table 5 |
| | February 6, 2018 | |
| | March 7, 2018 | |
| Reverse Osmosis Concentrate | January 2, 2018 | See Table 6 |
| Sludge[a] | January 2, 2018 | See Table 7 |

**Notes:**

[a] Sludge samples analysis is required quarterly by composite; sludge samples were collected from each container prior to shipment off-site, and combined for the composite sample of the preceding quarter.

**TABLE 4**
Topock IM-3 Waste Discharge Applicable or Relevant and Appropriate Requirements (ARARs)
Influent Monitoring Results [a]
*First Quarter 2018 Monitoring Report for Interim Measure No.3 Groundwater Treatment System*

| Sampling Frequency | | Monthly | | | | | | Quarterly | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 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 | --- | 0.0960 | 3.30 | 2.70 | 0.0780 | 0.0310 | 0.0250 | 0.0700 | 0.0380 | 0.260 | 0.0320 | 0.0370 | 0.0560 | 0.0390 | 0.0400 | 0.110 | 1.10 | 1.80 | 0.270 |
| **Sample ID** | **Date** | | | | | | | | | | | | | | | | | | | | | | |
| **SC-100B-WDR-568** | **1/2/2018** | **4400** | **0.120** | **7700** | **7.2** | **560** | **540** | **ND (50.0)** | **ND (0.200)J** | **ND (0.500)** | **2.70** | **30.0** | **1.20** | **ND (1.00)J** | **2.40** | **ND (1.00)** | **6.60** | **21.0** | **ND (1.00)** | **3.20** | **510** | **ND (20.0)** | **ND (10.0)** |
| RL | | 50.0 | 0.100 | 0.100 | --- | 5.00 | 20.0 | 50.0 | 0.200 | 0.500 | 0.100 | 1.00 | 0.100 | 1.00 | 0.500 | 1.00 | 0.500 | 0.500 | 1.00 | 0.250 | 25.0 | 20.0 | 10.0 |
| **SC-100B-WDR-569** | **2/6/2018** | **4400** | **ND (0.100)** | **6700** | **7.2** | **540** | **570** | **---** | **---** | **---** | **---** | **---** | **---** | **---** | **---** | **---** | **7.70** | **---** | **---** | **---** | **---** | **---** | **---** |
| RL | | 50.0 | 0.100 | 0.100 | --- | 5.00 | 20.0 | --- | --- | --- | --- | --- | --- | --- | --- | --- | 0.500 | --- | --- | --- | --- | --- | --- |
| **SC-100B-WDR-570** | **3/7/2018** | **4400** | **0.260** | **8000** | **7.2** | **550** | **520** | **---** | **---** | **---** | **---** | **---** | **---** | **---** | **---** | **---** | **7.30** | **---** | **---** | **---** | **---** | **---** | **---** |
| RL | | 50.0 | 0.100 | 0.100 | --- | 5.00 | 20.0 | --- | --- | --- | --- | --- | --- | --- | --- | --- | 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
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]
*First Quarter 2018 Monitoring Report for Interim Measure No.3 Groundwater Treatment System*

| | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **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** | | **Monthly** | | | | | | | | | | | | | | | | | | | | | |
| **Analytes** | | 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 |
| **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 | --- | 0.0190 | 0.0330 | 2.70 | 0.0780 | 0.0310 | 0.0250 | 0.0700 | 0.0380 | 0.260 | 0.0130 | 0.0370 | 0.0560 | 0.0390 | 0.0400 | 0.110 | 1.10 | 1.80 | 0.270 |
| **Sample ID** | **Date** | | | | | | | | | | | | | | | | | | | | | | |
| **SC-700B-WDR-568** | **1/2/2018** | **4100** | **0.140** | **7200** | **7.2** | **ND (1.00)** | **ND (1.00)** | **ND (50.0)** | **ND (0.200)J** | **ND (0.500)** | **ND (0.100)** | **14.0** | **1.20** | **ND (1.00)** | **2.10** | **ND (1.00)** | **2.80** | **21.0** | **ND (1.00)** | **3.00 J** | **490** | **ND (20.0)** | **ND (10.0)** |
| RL | | 50.0 | 0.100 | 0.100 | --- | 1.00 | 1.00 | 50.0 | 0.200 | 0.500 | 0.100 | 1.00 | 0.100 | 1.00 | 0.200 | 1.00 | 0.500 | 0.500 | 1.00 | 0.250 | 25.0 | 20.0 | 10.0 |
| **SC-700B-WDR-569** | **2/6/2018** | **4200** | **ND (0.100)** | **6500** | **7.0** | **ND (1.00)** | **ND (0.200)** | **ND (50.0)** | **ND (0.200)** | **ND (0.500)** | **ND (0.100)** | **17.0** | **1.10** | **ND (1.00)J** | **2.50** | **ND (5.00)** | **2.20** | **20.0** | **ND (1.00)** | **2.80** | **490** | **ND (20.0)** | **ND (10.0)** |
| RL | | 50.0 | 0.100 | 0.100 | --- | 1.00 | 0.200 | 50.0 | 0.200 | 0.500 | 0.100 | 1.00 | 0.100 | 1.00 | 0.500 | 5.00 | 0.500 | 0.500 | 1.00 | 0.250 | 25.0 | 20.0 | 10.0 |
| **SC-700B-WDR-570** | **3/7/2018** | **4200** | **0.270** | **7800** | **7.1** | **ND (1.00)** | **ND (0.200)** | **ND (50.0)** | **ND (0.200)** | **ND (0.500)** | **0.110** | **15.0** | **1.10** | **ND (1.00)** | **2.30** | **ND (5.00)** | **6.80** | **20.0** | **1.20** | **2.90 J** | **480** | **ND (20.0)** | **ND (10.0)** |
| RL | | 50.0 | 0.100 | 0.100 | --- | 1.00 | 0.200 | 50.0 | 0.200 | 0.500 | 0.100 | 1.00 | 0.100 | 1.00 | 0.500 | 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
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]
*First Quarter 2018 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 | --- | 0.000096 | 0.00083 | 0.00016 | 0.00012 | 0.00035 | 0.0011 | 0.00024 | 0.00013 | 0.0013 | 0.130 | 0.00092 | 0.00019 | 0.000087 | 0.00020 | 0.00014 | 0.00030 | 0.00074 | 0.00011 | 0.0013 |
| **Sample ID** | **Date** | | | | | | | | | | | | | | | | | | | | | | |
| **SC-701-WDR-568** | **1/2/2018** | **41000** | **53000** | **7.8** | **ND (0.0050)** | **ND (0.0050)** | **ND (0.0025)** | **0.00160** | **0.130** | **ND (0.0120)** | **ND (0.0025)** | **ND (0.0025)** | **ND (0.0050)** | **20.0** | **ND (0.0250)** | **0.210** | **ND (0.00020)** | **0.00720** | **0.0450** | **ND (0.0025)** | **ND (0.0120)** | **ND (0.0050)** | **ND (0.0500)** |
| RL | | 500 | 0.100 | --- | 0.0050 | 0.0050 | 0.0025 | 0.00050 | 0.0050 | 0.0120 | 0.0025 | 0.0025 | 0.0050 | 2.00 | 0.0250 | 0.0025 | 0.00020 | 0.0050 | 0.0025 | 0.0025 | 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]
*First Quarter 2018 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 | | 0.0850 | 0.610 | 0.390 | 0.460 | 0.0890 | 0.0800 | 0.0760 | 0.0760 | 0.0840 | 0.290 | 0.0840 | 0.0750 | 0.0250 | 0.0880 | 0.320 | 0.0860 | 0.340 | 0.0770 | 0.130 |
| Sample ID | Date | | | | | | | | | | | | | | | | | | | |
| **Phase Separator-568-Sludge** | **1/2/2018** | **2600** | **47.0** | **ND (4.20)** | **11.0** | **69.0** | **ND (2.10)** | **ND (2.10)** | **4.20** | **150** | **27.0** | **ND (2.10)** | **3.20** | **ND (0.210)** | **32.0** | **ND (2.10)** | **ND (2.10)** | **5.90** | **32.0** | **30.0** |
| RL | | 2.10 | 2.10 | 4.20 | 2.10 | 2.10 | 2.10 | 2.10 | 2.10 | 4.20 | 4.20 | 2.10 | 2.10 | 0.210 | 2.10 | 2.10 | 2.10 | 4.20 | 2.10 | 2.10 |

**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.

[c] Sludge samples analysis is required quarterly by composite; sludge samples were collected from each container prior to shipment off-site, and combined for the composite sample of the preceding quarter.

**TABLE 8**

Topock IM-3 Waste Discharge Applicable or Relevant and Appropriate Requirements (ARARs)
Monitoring Information
*First Quarter 2018 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-568 | George Gloria | 1/2/2018 | 3:20:00 PM | ASSET | EPA 120.1 | SC | 1/3/2018 | Lilia Ramit |
| | | | | | ASSET | EPA 200.7 | AL | 1/4/2018 | Claire Ignacio |
| | | | | | ASSET | EPA 200.7 | B | 1/4/2018 | Claire Ignacio |
| | | | | | ASSET | EPA 200.7 | FE | 1/4/2018 | Claire Ignacio |
| | | | | | ASSET | EPA 200.8 | AS | 1/6/2018 | Claire Ignacio |
| | | | | | ASSET | EPA 200.8 | BA | 1/6/2018 | Claire Ignacio |
| | | | | | ASSET | EPA 200.8 | CR | 1/6/2018 | Claire Ignacio |
| | | | | | ASSET | EPA 200.8 | CU | 1/6/2018 | Claire Ignacio |
| | | | | | ASSET | EPA 200.8 | MN | 1/6/2018 | Claire Ignacio |
| | | | | | ASSET | EPA 200.8 | MO | 1/6/2018 | Claire Ignacio |
| | | | | | ASSET | EPA 200.8 | NI | 1/6/2018 | Claire Ignacio |
| | | | | | ASSET | EPA 200.8 | PB | 1/6/2018 | Claire Ignacio |
| | | | | | ASSET | EPA 200.8 | SB | 1/6/2018 | Claire Ignacio |
| | | | | | ASSET | EPA 200.8 | ZN | 1/6/2018 | Claire Ignacio |
| | | | | | ASSET | EPA 218.6 | CR6 | 1/3/2018 | Ria Abes |
| | | | | | ASSET | EPA 300.0 | FL | 1/3/2018 | Ria Abes |
| | | | | | ASSET | EPA 300.0 | SO4 | 1/3/2018 | Ria Abes |
| | | | | | ASSET | SM 2540C | TDS | 1/3/2018 | Lilia Ramit |
| | | | | | ASSET | SM 4500-NO3F | NO3NO2N | 1/5/2018 | Quennie Manimtim |
| | | | | | ASSET | SM2130B | TRB | 1/3/2018 | Lilia Ramit |
| | | | | | BCLabs | SM4500NH3G | NH3N | 1/10/2018 | Quennie Manimtim |
| | | | | 3:25:00 PM | Field | HACH | PH | 1/2/2018 | G. Gloria |
| SC-100B | SC-100B-WDR-569 | George Gloria | 2/6/2018 | 3:20:00 PM | Field | HACH | PH | 2/6/2018 | G. Gloria |
| | | | | 3:26:00 PM | ASSET | EPA 120.1 | SC | 2/7/2018 | Mark Gesmundo |
| | | | | | ASSET | EPA 200.8 | CR | 2/7/2018 | Claire Ignacio |
| | | | | | ASSET | EPA 200.8 | MN | 2/7/2018 | Claire Ignacio |
| | | | | | ASSET | EPA 218.6 | CR6 | 2/7/2018 | Ria Abes |
| | | | | | ASSET | SM 2540C | TDS | 2/8/2018 | Lilia Ramit |
| | | | | | ASSET | SM2130B | TRB | 2/7/2018 | Quennie Manimtim |
| SC-100B | SC-100B-WDR-570 | Ryan Phelps | 3/7/2018 | 1:35:00 PM | ASSET | EPA 120.1 | SC | 3/8/2018 | Lilia Ramit |
| | | | | | ASSET | EPA 200.8 | CR | 3/13/2018 | Claire Ignacio |
| | | | | | ASSET | EPA 200.8 | MN | 3/13/2018 | Claire Ignacio |
| | | | | | ASSET | EPA 218.6 | CR6 | 3/8/2018 | Ria Abes |
| | | | | | Field | HACH | PH | 3/7/2018 | Ryan Phelps |
| | | | | | ASSET | SM 2540C | TDS | 3/8/2018 | Lilia Ramit |

**TABLE 8**
Topock IM-3 Waste Discharge Applicable or Relevant and Appropriate Requirements (ARARs)
Monitoring Information
*First Quarter 2018 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-570 | Ryan Phelps | 3/7/2018 | 1:35:00 PM | ASSET | SM2130B | TRB | 3/8/2018 | Lilia Ramit |
| SC-700B | SC-700B-WDR-568 | George Gloria | 1/2/2018 | 3:10:00 PM | ASSET | EPA 120.1 | SC | 1/3/2018 | Lilia Ramit |
| | | | | | ASSET | EPA 200.7 | AL | 1/4/2018 | Claire Ignacio |
| | | | | | ASSET | EPA 200.7 | B | 1/4/2018 | Claire Ignacio |
| | | | | | ASSET | EPA 200.7 | FE | 1/4/2018 | Claire Ignacio |
| | | | | | ASSET | EPA 200.8 | AS | 1/6/2018 | Claire Ignacio |
| | | | | | ASSET | EPA 200.8 | BA | 1/6/2018 | Claire Ignacio |
| | | | | | ASSET | EPA 200.8 | CR | 1/6/2018 | Claire Ignacio |
| | | | | | ASSET | EPA 200.8 | CU | 1/6/2018 | Claire Ignacio |
| | | | | | ASSET | EPA 200.8 | MN | 1/6/2018 | Claire Ignacio |
| | | | | | ASSET | EPA 200.8 | MO | 1/6/2018 | Claire Ignacio |
| | | | | | ASSET | EPA 200.8 | NI | 1/6/2018 | Claire Ignacio |
| | | | | | ASSET | EPA 200.8 | PB | 1/6/2018 | Claire Ignacio |
| | | | | | ASSET | EPA 200.8 | SB | 1/6/2018 | Claire Ignacio |
| | | | | | ASSET | EPA 200.8 | ZN | 1/6/2018 | Claire Ignacio |
| | | | | | ASSET | EPA 218.6 | CR6 | 1/3/2018 | Ria Abes |
| | | | | | ASSET | EPA 300.0 | FL | 1/3/2018 | Ria Abes |
| | | | | | ASSET | EPA 300.0 | SO4 | 1/3/2018 | Ria Abes |
| | | | | | ASSET | SM 2540C | TDS | 1/3/2018 | Lilia Ramit |
| | | | | | ASSET | SM 4500-NO3F | NO3NO2N | 1/5/2018 | Quennie Manimtim |
| | | | | | ASSET | SM2130B | TRB | 1/3/2018 | Lilia Ramit |
| | | | | | BCLabs | SM4500NH3G | NH3N | 1/10/2018 | Quennie Manimtim |
| | | | | 3:15:00 PM | Field | HACH | PH | 1/2/2018 | G. Gloria |
| SC-700B | SC-700B-WDR-569 | George Gloria | 2/6/2018 | 3:20:00 PM | Field | HACH | PH | 2/6/2018 | G. Gloria |
| | | | | 3:29:00 PM | ASSET | EPA 120.1 | SC | 2/7/2018 | Mark Gesmundo |
| | | | | | ASSET | EPA 200.7 | AL | 2/14/2018 | Claire Ignacio |
| | | | | | ASSET | EPA 200.7 | B | 2/14/2018 | Claire Ignacio |
| | | | | | ASSET | EPA 200.7 | FE | 2/14/2018 | Claire Ignacio |
| | | | | | ASSET | EPA 200.8 | AS | 2/7/2018 | Claire Ignacio |
| | | | | | ASSET | EPA 200.8 | BA | 2/7/2018 | Claire Ignacio |
| | | | | | ASSET | EPA 200.8 | CR | 2/7/2018 | Claire Ignacio |
| | | | | | ASSET | EPA 200.8 | CU | 2/7/2018 | Claire Ignacio |
| | | | | | ASSET | EPA 200.8 | MN | 2/7/2018 | Claire Ignacio |
| | | | | | ASSET | EPA 200.8 | MO | 2/7/2018 | Claire Ignacio |
| | | | | | ASSET | EPA 200.8 | NI | 2/7/2018 | Claire Ignacio |

**TABLE 8**

Topock IM-3 Waste Discharge Applicable or Relevant and Appropriate Requirements (ARARs)
Monitoring Information
*First Quarter 2018 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-569 | George Gloria | 2/6/2018 | 3:29:00 PM | ASSET | EPA 200.8 | PB | 2/7/2018 | Claire Ignacio |
| | | | | | ASSET | EPA 200.8 | SB | 2/7/2018 | Claire Ignacio |
| | | | | | ASSET | EPA 200.8 | ZN | 2/7/2018 | Claire Ignacio |
| | | | | | ASSET | EPA 218.6 | CR6 | 2/7/2018 | Ria Abes |
| | | | | | ASSET | EPA 300.0 | FL | 2/7/2018 | Ria Abes |
| | | | | | ASSET | EPA 300.0 | SO4 | 2/7/2018 | Ria Abes |
| | | | | | ASSET | SM 2540C | TDS | 2/8/2018 | Lilia Ramit |
| | | | | | ASSET | SM 4500-NO3F | NO3NO2N | 2/16/2018 | Quennie Manimtim |
| | | | | | ASSET | SM2130B | TRB | 2/7/2018 | Quennie Manimtim |
| | | | | | BCLabs | SM4500NH3G | NH3N | 2/21/2018 | Quennie Manimtim |
| SC-700B | SC-700B-WDR-570 | Ryan Phelps | 3/7/2018 | 1:25:00 PM | ASSET | EPA 120.1 | SC | 3/8/2018 | Lilia Ramit |
| | | | | | ASSET | EPA 200.7 | AL | 3/13/2018 | Claire Ignacio |
| | | | | | ASSET | EPA 200.7 | B | 3/14/2018 | Claire Ignacio |
| | | | | | ASSET | EPA 200.7 | FE | 3/13/2018 | Claire Ignacio |
| | | | | | ASSET | EPA 200.8 | AS | 3/19/2018 | Claire Ignacio |
| | | | | | ASSET | EPA 200.8 | BA | 3/14/2018 | Claire Ignacio |
| | | | | | ASSET | EPA 200.8 | CR | 3/13/2018 | Claire Ignacio |
| | | | | | ASSET | EPA 200.8 | CU | 3/13/2018 | Claire Ignacio |
| | | | | | ASSET | EPA 200.8 | MN | 3/13/2018 | Claire Ignacio |
| | | | | | ASSET | EPA 200.8 | MO | 3/13/2018 | Claire Ignacio |
| | | | | | ASSET | EPA 200.8 | NI | 3/14/2018 | Claire Ignacio |
| | | | | | ASSET | EPA 200.8 | PB | 3/14/2018 | Claire Ignacio |
| | | | | | ASSET | EPA 200.8 | SB | 3/13/2018 | Claire Ignacio |
| | | | | | ASSET | EPA 200.8 | ZN | 3/14/2018 | Claire Ignacio |
| | | | | | ASSET | EPA 218.6 | CR6 | 3/8/2018 | Ria Abes |
| | | | | | ASSET | EPA 300.0 | FL | 3/8/2018 | Ria Abes |
| | | | | | ASSET | EPA 300.0 | SO4 | 3/8/2018 | Ria Abes |
| | | | | | Field | HACH | PH | 3/7/2018 | Ryan Phelps |
| | | | | | ASSET | SM 2540C | TDS | 3/8/2018 | Lilia Ramit |
| | | | | | ASSET | SM 4500-NO3F | NO3NO2N | 3/9/2018 | Quennie Manimtim |
| | | | | | ASSET | SM2130B | TRB | 3/8/2018 | Lilia Ramit |
| | | | | | BCLabs | SM4500NH3G | NH3N | 3/23/2018 | Quennie Manimtim |
| SC-701 | SC-701-WDR-568 | George Gloria | 1/2/2018 | 3:00:00 PM | ASSET | EPA 120.1 | SC | 1/3/2018 | Lilia Ramit |
| | | | | | ASSET | EPA 200.8 | AG | 1/6/2018 | Claire Ignacio |
| | | | | | ASSET | EPA 200.8 | AS | 1/6/2018 | Claire Ignacio |

**TABLE 8**

Topock IM-3 Waste Discharge Applicable or Relevant and Appropriate Requirements (ARARs)
Monitoring Information
*First Quarter 2018 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-701 | SC-701-WDR-568 | George Gloria | 1/2/2018 | 3:00:00 PM | ASSET | EPA 200.8 | BA | 1/6/2018 | Claire Ignacio |
| | | | | | ASSET | EPA 200.8 | BE | 1/6/2018 | Claire Ignacio |
| | | | | | ASSET | EPA 200.8 | CD | 1/6/2018 | Claire Ignacio |
| | | | | | ASSET | EPA 200.8 | CO | 1/6/2018 | Claire Ignacio |
| | | | | | ASSET | EPA 200.8 | CR | 1/6/2018 | Claire Ignacio |
| | | | | | ASSET | EPA 200.8 | CU | 1/6/2018 | Claire Ignacio |
| | | | | | ASSET | EPA 200.8 | MN | 1/6/2018 | Claire Ignacio |
| | | | | | ASSET | EPA 200.8 | MO | 1/6/2018 | Claire Ignacio |
| | | | | | ASSET | EPA 200.8 | NI | 1/6/2018 | Claire Ignacio |
| | | | | | ASSET | EPA 200.8 | PB | 1/6/2018 | Claire Ignacio |
| | | | | | ASSET | EPA 200.8 | SB | 1/6/2018 | Claire Ignacio |
| | | | | | ASSET | EPA 200.8 | SE | 1/6/2018 | Claire Ignacio |
| | | | | | ASSET | EPA 200.8 | TL | 1/6/2018 | Claire Ignacio |
| | | | | | ASSET | EPA 200.8 | V | 1/6/2018 | Claire Ignacio |
| | | | | | ASSET | EPA 200.8 | ZN | 1/6/2018 | Claire Ignacio |
| | | | | | ASSET | EPA 218.6 | CR6 | 1/3/2018 | Ria Abes |
| | | | | | ASSET | EPA 245.1 | HG | 1/4/2018 | Mark Gesmundo |
| | | | | | ASSET | EPA 300.0 | FL | 1/3/2018 | Ria Abes |
| | | | | | ASSET | SM 2540C | TDS | 1/3/2018 | Lilia Ramit |
| | | | | 3:05:00 PM | Field | HACH | PH | 1/2/2018 | G. Gloria |
| Phase Separator | Phase Separator-568-Sludge | George Gloria | 1/2/2018 | 3:30:00 PM | ASSET | EPA 300.0 | FL | 1/4/2018 | Ria Abes |
| | | | | | ASSET | EPA 6010B | AG | 1/6/2018 | Claire Ignacio |
| | | | | | ASSET | EPA 6010B | AS | 1/6/2018 | Claire Ignacio |
| | | | | | ASSET | EPA 6010B | BA | 1/6/2018 | Claire Ignacio |
| | | | | | ASSET | EPA 6010B | BE | 1/6/2018 | Claire Ignacio |
| | | | | | ASSET | EPA 6010B | CD | 1/6/2018 | Claire Ignacio |
| | | | | | ASSET | EPA 6010B | CO | 1/6/2018 | Claire Ignacio |
| | | | | | ASSET | EPA 6010B | CR | 1/6/2018 | Claire Ignacio |
| | | | | | ASSET | EPA 6010B | CU | 1/6/2018 | Claire Ignacio |
| | | | | | ASSET | EPA 6010B | MN | 1/6/2018 | Claire Ignacio |
| | | | | | ASSET | EPA 6010B | MO | 1/6/2018 | Claire Ignacio |
| | | | | | ASSET | EPA 6010B | NI | 1/6/2018 | Claire Ignacio |
| | | | | | ASSET | EPA 6010B | PB | 1/6/2018 | Claire Ignacio |
| | | | | | ASSET | EPA 6010B | SB | 1/6/2018 | Claire Ignacio |
| | | | | | ASSET | EPA 6010B | SE | 1/6/2018 | Claire Ignacio |
| | | | | | ASSET | EPA 6010B | TL | 1/6/2018 | Claire Ignacio |

**TABLE 8**

Topock IM-3 Waste Discharge Applicable or Relevant and Appropriate Requirements (ARARs)
Monitoring Information
*First Quarter 2018 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-568-Sludge | George Gloria | 1/2/2018 | 3:30:00 PM | ASSET | EPA 6010B | V | 1/6/2018 | Claire Ignacio |
| | | | | | ASSET | EPA 6010B | ZN | 1/6/2018 | Claire Ignacio |
| | | | | | ASSET | EPA 7471A | HG | 1/5/2018 | Mark Gesmundo |
| | | | | | ASSET | SW 7199 | CR6 | 1/3/2018 | Ria Abes |

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

# Figures

Parcel No. 650-151-06
Fort Mojave Indian Tribe
(Formerly owned by PG&E)

BLM

BLM

East Mesa
Injection Area

CW-4
CW-3
CW-2
CW-1

IW-1
IW-2
IW-3

IM3
Treatment
Plant

66

Park Moabi Rd./National Trails Highway

Colorado River

MW-20
Bench

TW-02S
TW-03D
TW-02D
MW-20-130
PE-01

Historic Route 66

BAT CAVE WASH

BN&SF RAILROAD

INTERSTATE 40

500
550
600

**LEGEND**

- IM3 Injection Well
- Observation Well Cluster
- Compliance Monitoring Well Cluster
- Exploratory Boring
- Groundwater Monitoring Well
- IM Extraction Well
- IM3 Treatment Facility Pipelines
- IM3 Effluent Pipeline

N

0 170 340 680 Feet

California State Plane NAD83 Zone 5 US Feet

**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

ALM

LEAK DETECTION PANEL - 003

–120V

PLANT ALARM R YL1000 | PLANT ALARM R YL1001 | PLANT ALARM R YL1002 | PLANT ALARM R YL1003

PLANT ALARM HORN H YL1004

TREATMENT PLANT CONTROL PANEL LCP - 100

CLOSED | OPENED | OPEN | TEMP REM | pH | LVL | COND.

RUN | ON | REM | FLOW

LVL | POSITION | FLOW CONTROL

RUN | ON | REM | PSL | FLOW FLOW

CH-104-1HB-E
TP-PR-10-10- 09 [B6]
SULFURIC ACID P-801B
1/2"-CH-104-1HB-E
V-CH-104-01
BPR

TW-103-1HB
TP-PR-10-10- 08 [D6]
TREATED WATER R.O. BYPASS
4"-TW-103-1HB

TW-105-1HB
TP-PR-10-10- 08 [B6]
R.O. TREATED WATER
4"-TW-105-1HB

STATIC MIXER 4"x3" 4"x3"

120 VAC
AIT 606
AE 606
AIT 702
AE 702
120 VAC

1" V-1390

V-TW-105-02

HS 200 HOA
HS 700 HOA

TW-128-1HB
TP-PR-10-10- 04 [B6]
SEAL WATER
1/2"-TW-128-1HB

N.C. V-TW-114-01
V-TW-114-02

HOA HS 100A

TW-104-1HB
TP-PR-10-10- 08 [A1]
OFF-SPEC RECYCLE FROM R.O. FEED
4"-TW-104-1HB

LIT 200
120 VAC
LE 200

RW-125-1HB
TP-PR-10-10- 07 [B1]
OFF-SPEC RECYCLE FROM MICROFILTER FEED
4"-RW-125-1HB

WS-111-1HB
TP-PR-10-10-06 [C6]
FROM PROCESS DRAINS TANK
4"-WS-111-1HB

4"-TW-114-1HB

LIT 700
120 VAC
LE 700

VFD - 1100

3"-TW-143-1HB

VENT
MANHOLE

27,000 GAL.
TREATED WATER STORAGE TANK
PERMEATE
T-700

6"-DR-115-1HB

PRV 700
SET @ 50 PSI
3"x2" 3"x2"

TOTAL FLOWMETER TO INJECTION WELLS

1"-TW-129-1HB
V-1390
TW-129-1HB
TP-PR-10-10- 09 [C1]
TO POLYELECTROLYTE MAKE-DOWN SYSTEM

1/2"-TW-128-1HB
V-1390
TW-128-1HB
TP-PR-10-10- 04,05..
SEAL WATER TO PUMPS SHTS 04, 05, 06, 07, 08

FUTURE

2"-TW-127-1HB

SAMPLING STATION B

FIT 702
FE 702
SC
4"x3" 4"x3"
TW-120-1HB
MAG
TP-PR-10-10- 11 [C1]
4"-TW-120-1HB
TO INJECTION WELLS
V-TW-120-01

PI 700
V-1390
FIT 700
SC
4"x3" 4"x3"
TW-117-1HB
MAG
TP-PR-10-10- 10 [A1]
TREATED WATER TO BAKER TANKS
V-TW-117-01
V-TW-117-02

RW-107-1KB
TP-PR-10-10-03 [B6]
RAW WATER FROM EXTRACTION WELLS
4" IN 8"-RW-107-1KB

LSH 201A-(H)
SAMPLING STATION A
ZSC 100 ZSO 100 SV 100
90 PSIG AIR SET
4"-RW-110-1HB
F.C.
RW 1KB RW 1HB
V-RW-110-01
FV 100

RO 200
2"-RW-113-1HB
MINIMUM RECIRC. 40 GPM MIN.

6"-DR-101-1HB
V-DR-101-01
V-TW-116-01
V-TW-126-01
6"-TW-116-1HB
6"x3"
T
EJ-TW-116-01
4"x1 1/2"
TS-TW-116-01
P-700
TREATED WATER TRANSFER PUMP 150 GPM X 150 FT. H20

RW-127-1KB
TP-PR-10-10-03 [B6]
FROM VALVE VAULT 1 SPARE
4" IN 8"-RW-127-1KB

NOTE 1
LEAK DETECTION (TYP 8)
NOTE 1
SPARE

4" IN 8"-RW-107-1KB
4" IN 8"-RW-127-1KB
V-RW-107-01 V-RW-127-01
VALVE VAULT No. 4
RW 1HB
RW 1HB
RW 1KB
RW 1KB
FUTURE
4" IN 8" SPARE
4" IN 8" PE-3

27,000 GAL.
RAW WATER STORAGE TANK
T-100

6"-DR-114-1HB
6"-DR-100-1HB
V-DR-100-01

VENT
MANHOLE

V-RW-111-01

SOV 200
1/2" x 3/8"
PI 200
V-1390
SC
EJ-RW-111-01
6"x4"
6"-TW-RW-111-1HB
PS-RW-111-01
4"x3"
V-RW-112-01
P-200
RAW WATER FEED PUMP
190 GPM X 35 FT H20
V-1390

4"x3"
V-RW-112-02
FE 200
FIT 200

3"-TW-126-1HB

FIC 200
ZT 200
SEAL WATER PUMP
25 GPM X 115 FT. H20
3"x1 1/4"
V-TW-126-02
4"x2 1/2"
AIR SET 80 PSIG
FCV - 200
F.C.
4"x2 1/2"

SEAL WATER TANK
PI 1100
PT 1100
T-1100
P-1100
BFP
2"x1"
V-TW-127-01
PS-TW-127-01
PSL 1100

V-1390
V-1390
V-1390
V-1390

TW-125-1HB
2"
TP-PR-10-10- 05,06..
FIELD ROUTE TO FLUSH SYS. HOSE CONNS.

4"-RW-112-1HB
RW-112-1HB
TP-PR-10-10- 05 [C1]
TO TREATMENT SYSTEM CONTINUOUS FLOW

NOTES

1. PROVIDE LEAK DETECTION AT LOWS AND/OR EVERY 500 FT.

THIS CONTAINMENT ENCOMPASSES ENTIRE PLANT, WITH EXCEPTION OF SEPARATE CHEMICAL CONTAINMENTS.

SECONDARY CONTAINMENT - PROCESS PLANT

| NO. | DATE | REVISION | BY | CHK | REVISION APPROVAL | | REV 4 | DATE 09/21/05 | PRINT DISTRIBUTION |
|---|---|---|---|---|---|---|---|---|---|
| 0 | 07/28/04 | FOR INTERNAL REVIEW | EFC | AJ | DISCIPLINE | REVIEWED | DISCIPLINE | REVIEWED | DATE |
| 0 | 09/03/04 | APPROVED FOR CONSTRUCTION | EFC | AJ | CIVIL | | ELECTRICAL | | STATUS |
| 1 | 10/13/04 | REVISED AND APPROVED FOR CONSTRUCTION | EFC | AJ | STRUCTURAL | | INST & CONTROL | | REV. |
| 2 | 01/23/05 | REVISED AND APPROVED FOR CONSTRUCTION | EFC | AJ | MECHANICAL | | ARCHITECTURAL | | CLIENT |
| 3 | 02/14/05 | ADDED RECIRC. LINE AND PRV VALVE TO T-700 – APPROVED FOR CONSTRUCTION | EFC | AJ | PROCESS | | ENVIRONMENTAL | | FIELD |
| 4 | 09/21/05 | REVISED PER AS-BUILT CONDITIONS | EFC | AJ | PIPING | | GEN. ARRANG. | | INTRA CO. |

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

| 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 | 4 | / / | | |

SCALE NONE

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

PROJ NO. 315994

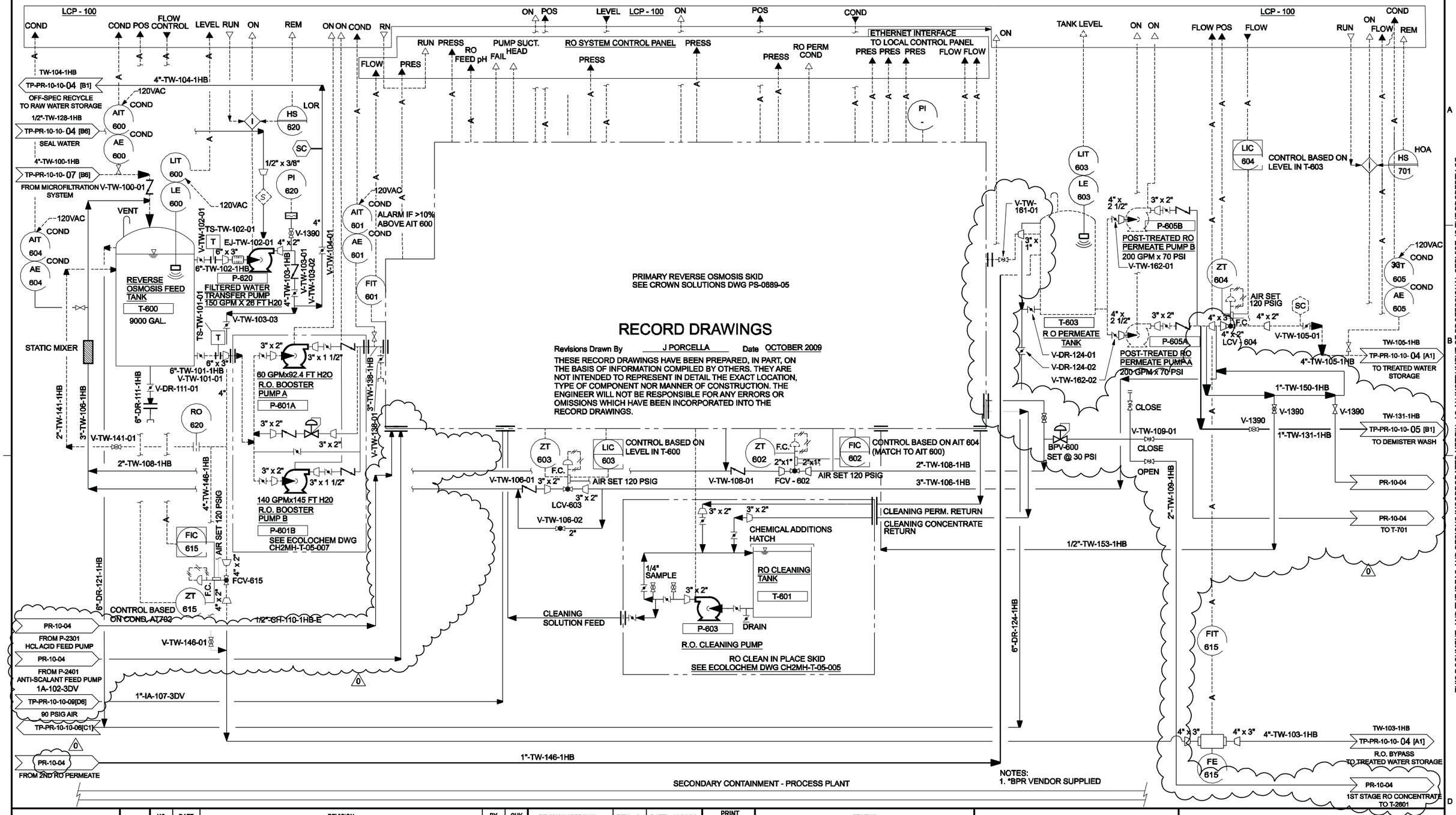
CH2MHILL

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:




| 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 | DATE | |
| CIVIL | SJ | ELECTRICAL | FH | STATUS | |
| STRUCTURAL | | INST & CONTROL | JG | REV. | |
| MECHANICAL | SJ | ARCHITECTURAL | | CLIENT | |
| PROCESS | DF | ENVIRONMENTAL | | FIELD | |
| PIPING | SJ | GEN. ARRANG. | SJ | INTRA CO. | |

PRINT DISTRIBUTION

| STATUS | 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 |

**
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 #

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

COND LVL RUN ON FLOW

PR-10-03 — TO SEAL WATER TRUNK LINE

HOA HS 701

1 1/2" TW-154-1HB

PR-10-03
TO PRIMARY RO FROM P-2301
HCI ACID PUMP

LOCATED IN CHEMICAL STORAGE AREA

1/2" CH-112-1HB

HCI ACID TOTE

HYDRO-CHLORIC ACID (HCI) PUMP SKID SEE CROWN DWG PS-0689-03

FROM P-2302
3/8" CH-113-1HB

LOCATED NEAR EXISTING RO

1/2" CH-114-1HB

SECONDARY RO ANTI-SCALANT CHEMICAL DRUM

ANTISCALANT FEED PUMP SKID SEE CROWN DWG PS-0689-04

PRIMARY RO ANTI-SCALANT CHEMICAL DRUM

1/4" CH-115-1HB
FROM P-2402

V-1390 NO

PR-10-03
TO PRIMARY RO FROM P-2401
ANTI-SCALANT FEED PUMP

1A-102-3DV
TP-PR-10-10-09[06]
90 PSIG AIR

1"-1A-108-3DV

120VAC

AIT 701 COND

AE 701 COND

1 1/2" TW-152-1HB
RECYCLE

1ST STAGE RO CONCENTATE
PR-10-03

1 1/2"-TW-148-1HB

2"x1 1/2"

V-1390 NO

2" TW-109-1HB

V-1390 NC

LIT 701

LE 701

120VAC

VENT

T-2601
SECONDARY RO FEED TANK
SEE CROWN DWG PS-0689-06

1 1/2" TW-149-1HB

V-1390 NC

P-2701
SECONDARY RO FEED PUMP SEE CROWN DWG PS-0689-07

1 1/2" TW-151-1HB

SECONDARY REVERSE OSMOSIS SKID
SEE CROWN SOLUTION DWG:
PS-0689-08
(NOTE 3)

1" TW-146-1HB

PERMEATE
PR-10-03
TO T-603 TANK

V-1390

SAMPLING STATION D

SC

PR-10-03
FROM PRIMARY RO

CLOSE

2"x1"

OPEN V-1390

V-DR-112-01

SEAL WATER

SOV 701

S

SEAL WATER
TP-PR-10-10-08 [B6]

1/2"x3/8"

RO CONCENTRATE STORAGE TANK
7,200 GAL.
T-701
8000 GAL.

PI 701

V-1390

TS-TW-111-01

T 6"x1 1/2"

V-TW-111-01

EJ-TW-111-01

6"-TW-111-1HB

P-107

3"x1"

V-TW-112-01

FIT 701

FE 701

RD CONCENTRATE FLOWMETER

3"x1"

MAG

3"x2"

V-TW-112-03

6"-DR-112-1HB

RO CONCENTRATE
TRANSFER PUMP
80 GPM X 85 FT H20

TO TRENCH DRAIN

1" TW-147-1HB

TW-112-1RB
TP-PR-10-10 [C1]
RO CONCENTRATE

## 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.



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

RESPONSIBLE ENGINEER: John Porcella Exp. 9-30-10 C70145 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 | | PRINT DISTRIBUTION | |
|---|---|---|---|---|---|
| DISCIPLINE | REVIEWED | DISCIPLINE | REVIEWED | DATE | |
| CIVIL | SJ | ELECTRICAL | FH | STATUS | |
| STRUCTURAL | | INST & CONTROL | JG | REV. | |
| MECHANICAL | SJ | ARCHITECTURAL | | CLIENT | |
| PROCESS | DF | ENVIRONMENTAL | | FIELD | |
| PIPING | SJ | GEN. ARRANG. | SJ | INTRA CO. | |

| STATUS | REV | DATE | SDE | PEM |
|---|---|---|---|---|
| ISSUED | | | | |
| 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

BAR IS ONE INCH ON ORIGINAL DRAWING. 0 1"

FILENAME: PR-10-04.dgn PLOT DATE: 11/19/2009 PLOT TIME: 10:28:26 AM

CONTROL PANEL

PLC

REM ON RUN REM ON RUN HI TORQUE REM ON RUN CLOSE OPEN REM REM OPEN OPEN LAH TURB OPEN REM RUN LVL ON REM REM LT ON RUNOPEN LAH RM OPEN REM LAH LAH

HS 400A LOR · HS 400B LOR · HS 400C LOR · HS 401 HOA · HS 402 LOR · HS 404 HOA

CH-109-1HB-E
TP-PR-10-10- 09 [C6]
POLYELECTROLYTE FEED CH-108-1HB-E
1/2"-CH-109-1HB-E
V-CH-109-01

TP-PR-10-10- 09 [C6]
POLYELECTROLYTE FEED
1/2"-CH-108-1HB-E
V-CH-108-01

RW-121-1HB
TP-PR-10-10- 05 [C6]
FROM CHEM REDUCTION AND COAGULATION SYSTEM IA-104-3DV
4"-RW-121-1HB

TP-PR-10-10- 09 [D6]
90 PSIG AIR
1"-IA-104-3DV

HS 400 HOA · HS 410 HOA · NSH 400 TORQUE · AIT 400 120VAC TURB · LIT 402 120VAC · SV 404

M-400-A · M-400-B · M-400-C · CL-400 CLARIFIER

SEE PARKSON DRAWING 10066701-01

6"-DR-107-1HB

SV 400 · ZSC 400 · ZSO 400 · AIR SET 120 PSIG · F. C. · FV - 400 · AE 400 TURB · SV 401 120 PSIG AIR SET · PI 401 · PE 401 · LE 402 · M-402

4"-WS-102-1HB

1/4" / 1" SLOPE TO PRE-TREATED WATER TANK

6"-RW-122-1HB
RW-122-1HB
TP-PR-10-10- 07 [B1]
MICROFILTRATION SYSTEM

120 PSIG AIR SET · HS 403 HOA · SV 403 · PI 404 · PE 404 · 1/2" · 2" x 1" · V-WS-103-01 · V-WS-103-02 · WS-103-1HB
TP-PR-10-10- 05 [B1]
SLUDGE RECYCLE

4" x 1" · P-404 SLUDGE RECYCLE PUMP 20 GPM X 30 FT. H2O · 2"-WS-103-1HB · V-WS-109-01 · 2"-WS-109-1HB

SC · ZSC 410 · ZSO 410 · AIR SET 120 PSIG · SV 410 · F. C. · FV - 410 · V-WS-104-01

4"-WS-100-1HB

4" x 1" · 2"-WS-101-1HB · 2" x 1" · V-WS-101-01 · 4" x 2"

P-401 SLUDGE WITHDRAWAL PUMP 20 GPM X 30 FT. H2O

SLUDGE HOLDING TANK 6000 GAL · T-402 · VENT · DECANT

2" x 1" · 2" V-1790 (TYP 5) · 4" (TYP 5) AIR/SIGHT GAP · 4"

PI 403 · PE 403

3% - 5% SOLIDS · 2"-WS-105-1HB · V-WS-108-01 · V-WS-105-01 · 2"-WS-107-1HB · V-WS-107-01 · P-403 SEPARATOR FEED PUMP 20 GPM X 30 FT. H2O · 2" x 1" · 2"-WS-106-1HB · V-WS-106-01 · 4"-WS-110-1HB

HS 900 LOR · 4"-WS-108-1HB · V-WS-110-01

TRUCK FILL FOR OFF-SITE DISPOSAL

120VAC · LIT 900 · LE 900 · 1/2" x 3/8" · VENT

V-WS-111-02 · V-WS-111-03 · 4"-WS-111-1HB · V-WS-111-01 · PS-WS-111-01 · V-1390 · 1"-DR-106-1HB · V-WS-113-01 · 2"-WS-113-1HB · 4" x 2"

WS-111-1HB
TP-PR-10-10- 04 [B1]
TO RAW WATER STORAGE TANK

LSH 405B · FH-WS-106-01 · LSH 405A · SAMPLING STATION E

LSHH 405

UNIT 2 CAKE CAKE · UNIT 1 CAKE CAKE

FH-WS-112-02 · 2"-WS-112-1HB · FH-WS-112-01

480 VAC · LCP - 405

P-405 PHASE SEPARATOR SUMP PUMP PACKAGE 25 GPM x 25 FT. H2O

PUMPOUT VAULT

PS-405 PHASE SEPARATORS ALTERNATING DURING OPERATION

TRENCH
TP-PR-10-10- 08 [D6]
R.O. GRAVITY DRAINS
TRENCH

DR-109-1HB
TP-PR-10-10- 07 [C6]
FROM M.F. SYSTEM GRAVITY DRAIN
3"-DR-109-1HB

TRENCH
TP-PR-10-10- 07 [D6]
FROM M.F. SYSTEM PRETREATED WATER TANK
TRENCH

4"-WS-104-1HB

DR-110-1HB
TP-PR-10-10- 07 [C6]
FILTER BACKWASH FROM MICROFILTRATION SYSTEM
4"-DR-110-1HB

TRENCH
TP-PR-10-10- 05 [D6]
GRAVITY DRAIN
TRENCH

TW-128-1HB
TP-PR-10-10- 04 [B6]
SEAL WATER
1/2"-TW-128-1HB

SECONDARY CONTAINMENT - PROCESS PLANT

T-900A PROCESS SUMP · NOTE 1

LSH 900

PROCESS DRAIN TANK 5,000 GAL. T-900 · P-900 PROCESS DRAIN PUMP · V-DR-113-01 · VERTICAL WET PIT 175 GPM x 37 FT. H2O · 6"-DR-113-1HB

NOTES:

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

| 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 |

REVISION APPROVAL

| DISCIPLINE | REVIEWED | DISCIPLINE | REVIEWED | DATE |
|---|---|---|---|---|
| CIVIL | | ELECTRICAL | | STATUS |
| STRUCTURAL | | INST & CONTROL | | REV. |
| MECHANICAL | | ARCHITECTURAL | | CLIENT |
| PROCESS | | ENVIRONMENTAL | | FIELD |
| PIPING | | GEN. ARRANG. | | INTRA CO. |

REV 2 DATE 01/23/05

PRINT DISTRIBUTION

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

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 | 2 | 01/23/05 | | |

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 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"

CONTROL PANEL LCP-100

WELL TW-3D CONTROL

WELL TW-2S CONTROL

WELL TW-2D CONTROL

WELL PE-1 CONTROL

LEAK DETECTION PANEL - 003

ALM

120V

LSH LVL RUN ON RM PRESS FLOW LSH LSHH

HOA HS 102

HOA HS 100

HOA HS 101

HOA HS 103

HOLD

LSH 002 LSHH 002

4" IN 8"-RW-141-1KB

FUTURE 4"-RW-140-1HB V-RW-140-01 NOTE 1

VALVE VAULT No. 2

4" IN 8"-RW-142-1KB

FUTURE 4"-RW-139-1HB V-RW-139-01 NOTE 1

3"-RW-138-1HB V-RW-138-01

3" IN 6"-RW-137-1KB

4"-RW-105-1HB

V-RW-105-05

4" IN 8"-FUTURE

4" IN 8"-RW-135-1KB

LSH 102A NOTE 1

FI 102

LSH 001 LSHH 001

VENT LT 100

FE 100 FIT 100 PIT 100 PE 100

3"x2" V-RW-105-02

3"-RW-105-1HB THROTTLING

MAG

V-1390

V-RW-105-01

VALVE VAULT No. 1

Well TW-2S Flowmeter

3" IN 6"-RW-104-1KB

LSH 100A NOTE 1

1" V-1390

LT 101

4" x 3" 4"-RW-105-1HB EJ-RW-105-01

FE 101 FIT 101 PIT 101 PE 101

3"x2" V-RW-102-02

3"-RW-102-1HB THROTTLING

V-RW-102-01

Well TW-2D Flowmeter

3" IN 6"-RW-101-1KB

LSH 101A NOTE 1

4" IN 8"-RW-127-1KB SPARE

4" IN 8"-RW-127-1KB TP-PR-10-10-04 [C1] SPARE TO VALVE VAULT 4

NOTES 1 & 2

V-RW-105-06 THROTTLING V-RW-105-04

V-RW-105-03

4" IN 8"-RW-107-1KB TP-PR-10-10-04 [C1] TO RAW WATER STORAGE

V-RW-108-02 THROTTLING

4"-RW-130-1HB

LT 103 VENT

FE 103 FIT 103 PIT 103 PE 103

3"x2" V-RW-108-01

3"-RW-108-1HB V-RW-130-02 V-RW-130-01

V-1390

NOTE 1 LSH

4" IN 8"-RW-131-1KB TO BAKER TANKS V-RW-131-01

4" IN 8"-RW-133-1KB

LSH 103A NOTE 1

4"x3" V-RW-132-02

Well PE-1 Flowmeter

VENT LT 102

PI 102 PIT 102 PRV 102 PE 102 FIT 102 FE 102

V-1390 V-1390 V-1390

SET AT 120 PSI

3"x2" 3"-RW-134-1HB V-RW-134-01 3"x2"

MAG

4"x3" V-RW-134-02

Well TW-3D Flowmeter

LSH 102

WELL VAULT No. 4

LSH 100

PI 100 V-1390 3"-RW-103-1HB V-RW-103-01 V-RW-103-02

WELL VAULT No. 2

LSH 101

PRV 101 PI 101 V-1390 SET AT 120 PSI 3"-RW-100-1HB V-RW-100-01 V-RW-100-02

WELL VAULT No. 1

LSH 103

PRV 103 PI 103 V-1390 SET AT 120 PSI 3"x2" 3"-RW-132-1HB V-RW-132-01 V-RW-132-02

WELL VAULT No. 3

LE 102 P-102

EXTRACTION WELL TW-3D

135 GPM x 248 FT. H20

LE 100 P-100

EXTRACTION WELL TW-2S

40 GPM x 180 FT. H20

LE 101 P-101

EXTRACTION WELL TW-2D

90 GPM x 245 FT. H20

LE 103 P-103

EXTRACTION WELL PE-1

40 GPM x 235 FT. H20

NOTES

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



| 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 | 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 | 12/9/05 | AJ for KLM | AJ |

SCALE NONE

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

REGISTERED PROFESSIONAL ENGINEER KENNETH L. MARTINS No. CH4876 CIVIL STATE OF CALIFORNIA

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

BAR IS ONE INCH
tppr101003.dwg 12/07/2005 01:06:58 PM

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

FIBER OPTIC ETHERNET LINK TO TREATMENT PLANT CONTROL PANEL LCP-100

INJECTION WELL CONTROL PANEL

PLC | LAH | FLOW | PRESS | CLOSE | OPEN | CLOSED | OPENED | LAH | FLOW | LVL | PRESS | CLOSE | OPEN | CLOSED | OPENED | LVL

SOLAR VOLTAIC POWER SUPPLY

## Well IW-02 Flowmeter

FIT 1202 | PIT 1202 | FE 1202 | ZSC 1202 | ZSO 1202 | SV 1202 | S | PI 1202 | LIT 1202

V-1390 | V-1390 | V-1390

4"-TW-142-1HB | V-TW-142-01 | 4" x 2" | MAG | UG | AG | 1KA | 1HB

FV-1202
SHUT-OFF VALVE
CLA-VAL (Or Equivalent)

V-TW-142-02 | 3" x 2"
THROTTLING

VAC / PRESSURE GAUGE

1HB | 3DA | 3"-TW-145-3DA

V-TW-145-01 | 3" | V-AHP-101-01 | 1/2"-AHP-101-3DA | FLANGED WELL HEAD

NOTE 1

AIR / VACUUM RELEASE
PI 1202A | V-1910 | 1/2" | V-AHP-103-02 | V-AHP-103-01 | V-1301 | V-1301 | 1"-AHP-103-2CA

INJECTION WELL IW-02

LSH 1202 | LE 1202

4"-TW-123-1KA

## Well IW-03 Flowmeter

3"-TW-133-1KA
SPARE

AIR RELEASE VALVE
V-1911 | 3/4" | V-1100

FUTURE | 4"

TW-120-1HB
TP-PR-10-10-04 [C6]
R.O. PERMEATE
FROM TREATED WATER STORAGE

4"-TW-120-1HB | 4"-TW-121-1KA | 4"-TW-122-1PV

AG | UG | 1HB | 1KA | UG | AG | 1KA | 1PV | AG | UG | 1PV | 1KA

FIT 1203 | PIT 1203 | FE 1203 | ZSC 1203 | ZSO 1203 | SV 1203 | S | PI 1203 | LIT 1203

V-1390 | V-1390 | V-1390

4"-TW-135-1HB | V-TW-135-01 | 4" x 2" | MAG | UG | AG | 1KA | 1HB

FV-1203
SHUT-OFF VALVE
CLA-VAL (Or Equivalent)

V-TW-135-02 | 3" x 2"
THROTTLING

VAC / PRESSURE GAUGE

1HB | 3DA | 3"-TW-144-3DA

V-TW-144-01 | 3" | V-AHP-100-01 | 1/2"-AHP-100-3DA | FLANGED WELL HEAD

NOTE 1

AIR / VACUUM RELEASE
PI 1203A | V-1910 | 1/2" | V-AHP-102-02 | V-AHP-102-01 | V-1301 | V-1301 | 1"-AHP-102-2CA

INJECTION WELL IW-03

LSH 1203 | LE 1203

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

| NO. | DATE | REVISION | BY | CHK | REVISION APPROVAL | | REV 4 | DATE 03/10/05 | | PRINT DISTRIBUTION | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| A | 07/28/04 | FOR INTERNAL REVIEW | EFC | AJ | DISCIPLINE | REVIEWED | DISCIPLINE | REVIEWED | | DATE | |
| 0 | 09/03/04 | APPROVED FOR CONSTRUCTION | EFC | AJ | CIVIL | | ELECTRICAL | | | STATUS | |
| 1 | 10/13/04 | REVISED AND APPROVED FOR CONSTRUCTION | EFC | AJ | STRUCTURAL | | INST & CONTROL | | | REV. | |
| 2 | 01/23/05 | REVISED AND APPROVED FOR CONSTRUCTION | EFC | AJ | MECHANICAL | | ARCHITECTURAL | | | CLIENT | |
| 3 | 02/14/05 | REVISED AND APPROVED FOR CONSTRUCTION | EFC | AJ | PROCESS | | ENVIRONMENTAL | | | FIELD | |
| 4 | 03/10/05 | REMOVED HOLD AND APPROVED FOR CONSTRUCTION | EFC | AJ | PIPING | | GEN. ARRANG. | | | INTRA CO. | |

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

| 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

PROCESS AND INSTRUMENTATION DIAGRAM
SHEET 11
INJECTION WELLS

CH2MHILL

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

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

BAR IS ONE INCH ON ORIGINAL DRAWING. 0 1"

# Appendix A
# First Quarter 2018 Laboratory Analytical Reports

January 15, 2018

Doug Scott
CH2M HILL
155 Grand Avenue, Suite 1000
Oakland, CA 94612
TEL: (970) 731-0636
FAX: (510) 622-9129

Workorder No.: N027788

RE: PG&E Topock, 680375.03.IM.OP.00

Attention: Doug Scott

Enclosed are the results for sample(s) received on January 02, 2018 by ASSET Laboratories . The sample(s) are tested for the parameters as indicated in the enclosed chain of custody in accordance with the applicable laboratory certifications.

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

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

Sincerely,

Nancy Liburdi for

Quennie Manimtim
Laboratory Director

**CLIENT:** CH2M HILL
**Project:** PG&E Topock, 680375.03.IM.OP.00
**Lab Order:** N027788

# CASE NARRATIVE

SAMPLE RECEIVING/GENERAL COMMENTS:

Samples were received intact with proper chain of custody documentation.

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

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

Samples were analyzed within method holding time.

Analytical Comments for EPA 300.0:

Matrix Spike (MS) and Matrix Spike Duplicate (MSD) are outside recovery criteria in QC samples N027788-001A-MS and N027788-001A-MSD possibly due to matrix interference. The associated Laboratory Control Sample (LCS) recovery was acceptable.

Analytical Comments for EPA 6010B:

Matrix Spike (MS) and Matrix Spike Duplicate (MSD) recovery biased high for Antimony in QC samples N027788-001B-MS and N027788-001B-MSD. Sample was non-detect (ND) for this analyte therefore reanalysis of the sample was not necessary.

Analytical Comments for EPA 7199:

Matrix Spike (MS) and Matrix Spike Duplicate (MSD) are outside recovery criteria in QC samples N027788-001A-MS and N027788-001A-MSD possibly due to matrix interference. Matrix Spike Insoluble and Post Spike met acceptance criteria. The associated Laboratory Control Sample (LCS) recovery was also acceptable.

**CLIENT:** CH2M HILL
**Project:** PG&E Topock, 680375.03.IM.OP.00
**Lab Order:** N027788
**Contract No:** IM3PLANT-AR

## Work Order Sample Summary

| Lab Sample ID | Client Sample ID | Matrix | Collection Date | Date Received | Date Reported |
|---|---|---|---|---|---|
| N027788-001A | Phase Separator-568-Sludge | Soil | 1/2/2018 3:30:00 PM | 1/2/2018 | 1/15/2018 |
| N027788-001B | Phase Separator-568-Sludge | Soil | 1/2/2018 3:30:00 PM | 1/2/2018 | 1/15/2018 |

**CLIENT:** CH2M HILL
**Lab Order:** N027788
**Project:** PG&E Topock, 680375.03.IM.OP.00
**Lab ID:** N027788-001

**Client Sample ID:** Phase Separator-568-Sludge
**Collection Date:** 1/2/2018 3:30:00 PM
**Matrix:** SOIL

| Analyses | Result | MDL | PQL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|---|
| **ANIONS BY ION CHROMATOGRAPHY** | | | | | | | |
| | | | **EPA 300.0** | | | | |
| RunID: **NV00922-IC8_180104A** | QC Batch: **R121220** | | | PrepDate | | | Analyst: **RAB** |
| Fluoride | 27 | 0.29 | 4.2 | | mg/Kg-dry | 2 | 1/4/2018 01:45 PM |

**Qualifiers:**

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

**CLIENT:** CH2M HILL
**Work Order:** N027788
**Project:** PG&E Topock, 680375.03.IM.OP.00

# ANALYTICAL QC SUMMARY REPORT

**TestCode: 300_S**

| Sample ID | MB-R121220 | SampType: | MBLK | TestCode: | 300_S | Units: | mg/Kg | Prep Date: | | RunNo: | 121220 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Client ID: | PBS | Batch ID: | R121220 | TestNo: | EPA 300.0 | | | Analysis Date: | 1/4/2018 | SeqNo: | 2885578 |

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

| Sample ID | LCS-R121220 | SampType: | LCS | TestCode: | 300_S | Units: | mg/Kg | Prep Date: | | RunNo: | 121220 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Client ID: | LCSS | Batch ID: | R121220 | TestNo: | EPA 300.0 | | | Analysis Date: | 1/4/2018 | SeqNo: | 2885579 |

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Fluoride | 11.843 | 1.0 | 12.50 | 0 | 94.7 | 90 | 110 | | | | |

| Sample ID | N027788-001ADUP | SampType: | DUP | TestCode: | 300_S | Units: | mg/Kg-dry | Prep Date: | | RunNo: | 121220 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Client ID: | ZZZZZZ | Batch ID: | R121220 | TestNo: | EPA 300.0 | | | Analysis Date: | 1/4/2018 | SeqNo: | 2885581 |

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Fluoride | 26.878 | 4.2 | | | | | | 26.93 | 0.204 | 20 | |

| Sample ID | N027788-001AMS | SampType: | MS | TestCode: | 300_S | Units: | mg/Kg-dry | Prep Date: | | RunNo: | 121220 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Client ID: | ZZZZZZ | Batch ID: | R121220 | TestNo: | EPA 300.0 | | | Analysis Date: | 1/4/2018 | SeqNo: | 2885582 |

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Fluoride | 45.677 | 4.2 | 26.45 | 26.93 | 70.9 | 80 | 120 | | | | S |

| Sample ID | N027788-001AMSD | SampType: | MSD | TestCode: | 300_S | Units: | mg/Kg-dry | Prep Date: | | RunNo: | 121220 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Client ID: | ZZZZZZ | Batch ID: | R121220 | TestNo: | EPA 300.0 | | | Analysis Date: | 1/4/2018 | SeqNo: | 2885583 |

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Fluoride | 46.888 | 4.2 | 26.45 | 26.93 | 75.5 | 80 | 120 | 45.68 | 2.61 | 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
**Lab Order:** N027788
**Project:** PG&E Topock, 680375.03.IM.OP.00
**Lab ID:** N027788-001

**Client Sample ID:** Phase Separator-568-Sludge
**Collection Date:** 1/2/2018 3:30:00 PM
**Matrix:** SOIL

## TOTAL METALS BY ICP

**EPA 3050B** **EPA 6010B**

RunID: **NV00922-ICP2_180106B** QC Batch: **66267** PrepDate **1/5/2018** Analyst: **CEI**

| Analyses | Result | MDL | PQL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|---|
| Antimony | ND | 0.39 | 4.2 | | mg/Kg-dry | 1 | 1/6/2018 10:36 AM |
| Arsenic | 11 | 0.46 | 2.1 | | mg/Kg-dry | 1 | 1/6/2018 10:36 AM |
| Barium | 69 | 0.089 | 2.1 | | mg/Kg-dry | 1 | 1/6/2018 10:36 AM |
| Beryllium | ND | 0.080 | 2.1 | | mg/Kg-dry | 1 | 1/6/2018 10:36 AM |
| Cadmium | ND | 0.076 | 2.1 | | mg/Kg-dry | 1 | 1/6/2018 10:36 AM |
| Chromium | 2600 | 0.085 | 2.1 | | mg/Kg-dry | 1 | 1/6/2018 10:36 AM |
| Cobalt | 4.2 | 0.076 | 2.1 | | mg/Kg-dry | 1 | 1/6/2018 10:36 AM |
| Copper | 150 | 0.084 | 4.2 | | mg/Kg-dry | 1 | 1/6/2018 10:36 AM |
| Lead | ND | 0.084 | 2.1 | | mg/Kg-dry | 1 | 1/6/2018 10:36 AM |
| Manganese | 390 | 0.17 | 2.1 | | mg/Kg-dry | 1 | 1/6/2018 10:36 AM |
| Molybdenum | 3.2 | 0.075 | 2.1 | | mg/Kg-dry | 1 | 1/6/2018 10:36 AM |
| Nickel | 32 | 0.088 | 2.1 | | mg/Kg-dry | 1 | 1/6/2018 10:36 AM |
| Selenium | ND | 0.32 | 2.1 | | mg/Kg-dry | 1 | 1/6/2018 10:36 AM |
| Silver | ND | 0.086 | 2.1 | | mg/Kg-dry | 1 | 1/6/2018 10:36 AM |
| Thallium | 5.9 | 0.34 | 4.2 | | mg/Kg-dry | 1 | 1/6/2018 10:36 AM |
| Vanadium | 32 | 0.077 | 2.1 | | mg/Kg-dry | 1 | 1/6/2018 10:36 AM |
| Zinc | 30 | 0.13 | 2.1 | | mg/Kg-dry | 1 | 1/6/2018 10:36 AM |

**Qualifiers:**

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

**CLIENT:** CH2M HILL
**Work Order:** N027788
**Project:** PG&E Topock, 680375.03.IM.OP.00

# ANALYTICAL QC SUMMARY REPORT

**TestCode: 6010_SPGE**

| Sample ID **MB-66267** | SampType: **MBLK** | TestCode: **6010_SPGE** | Units: **mg/Kg** | Prep Date: **1/5/2018** | RunNo: **121241** |
|---|---|---|---|---|---|
| Client ID: **PBS** | Batch ID: **66267** | TestNo: **EPA 6010B** | **EPA 3050B** | Analysis Date: **1/6/2018** | SeqNo: **2888937** |

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Antimony | ND | 2.0 | | | | | | | | | |
| Arsenic | ND | 1.0 | | | | | | | | | |
| Barium | ND | 1.0 | | | | | | | | | |
| Beryllium | ND | 1.0 | | | | | | | | | |
| Cadmium | ND | 1.0 | | | | | | | | | |
| Chromium | ND | 1.0 | | | | | | | | | |
| Cobalt | ND | 1.0 | | | | | | | | | |
| Copper | ND | 2.0 | | | | | | | | | |
| Lead | ND | 1.0 | | | | | | | | | |
| Manganese | ND | 1.0 | | | | | | | | | |
| Molybdenum | ND | 1.0 | | | | | | | | | |
| Nickel | ND | 1.0 | | | | | | | | | |
| Selenium | 0.156 | 1.0 | | | | | | | | | |
| Silver | ND | 1.0 | | | | | | | | | |
| Thallium | ND | 2.0 | | | | | | | | | |
| Vanadium | ND | 1.0 | | | | | | | | | |
| Zinc | ND | 1.0 | | | | | | | | | |

| Sample ID **LCS-66267** | SampType: **LCS** | TestCode: **6010_SPGE** | Units: **mg/Kg** | Prep Date: **1/5/2018** | RunNo: **121241** |
|---|---|---|---|---|---|
| Client ID: **LCSS** | Batch ID: **66267** | TestNo: **EPA 6010B** | **EPA 3050B** | Analysis Date: **1/6/2018** | SeqNo: **2888938** |

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Antimony | 26.392 | 2.0 | 25.00 | 0 | 106 | 85 | 115 | | | | |
| Arsenic | 26.024 | 1.0 | 25.00 | 0 | 104 | 85 | 115 | | | | |
| Barium | 26.084 | 1.0 | 25.00 | 0 | 104 | 85 | 115 | | | | |
| Beryllium | 25.005 | 1.0 | 25.00 | 0 | 100 | 85 | 115 | | | | |
| Cadmium | 24.553 | 1.0 | 25.00 | 0 | 98.2 | 85 | 115 | | | | |
| Chromium | 25.167 | 1.0 | 25.00 | 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 | | |

**CLIENT:** CH2M HILL
**Work Order:** N027788
**Project:** PG&E Topock, 680375.03.IM.OP.00

# ANALYTICAL QC SUMMARY REPORT

**TestCode: 6010_SPGE**

| Sample ID | LCS-66267 | SampType: | LCS | TestCode: | 6010_SPGE | Units: | mg/Kg | Prep Date: | 1/5/2018 | RunNo: | 121241 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Client ID: | LCSS | Batch ID: | 66267 | TestNo: | EPA 6010B | EPA 3050B | | Analysis Date: | 1/6/2018 | SeqNo: | 2888938 |

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Cobalt | 25.287 | 1.0 | 25.00 | 0 | 101 | 85 | 115 | | | | |
| Copper | 25.118 | 2.0 | 25.00 | 0 | 100 | 85 | 115 | | | | |
| Lead | 25.894 | 1.0 | 25.00 | 0 | 104 | 85 | 115 | | | | |
| Manganese | 50.034 | 1.0 | 50.00 | 0 | 100 | 85 | 115 | | | | |
| Molybdenum | 25.158 | 1.0 | 25.00 | 0 | 101 | 85 | 115 | | | | |
| Nickel | 24.992 | 1.0 | 25.00 | 0 | 100 | 85 | 115 | | | | |
| Selenium | 25.612 | 1.0 | 25.00 | 0 | 102 | 85 | 115 | | | | |
| Silver | 25.807 | 1.0 | 25.00 | 0 | 103 | 85 | 115 | | | | |
| Thallium | 25.281 | 2.0 | 25.00 | 0 | 101 | 85 | 115 | | | | |
| Vanadium | 24.052 | 1.0 | 25.00 | 0 | 96.2 | 85 | 115 | | | | |
| Zinc | 24.693 | 1.0 | 25.00 | 0 | 98.8 | 85 | 115 | | | | |

| Sample ID | N027788-001B-DUP | SampType: | DUP | TestCode: | 6010_SPGE | Units: | mg/Kg-dry | Prep Date: | 1/5/2018 | RunNo: | 121241 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Client ID: | ZZZZZZ | Batch ID: | 66267 | TestNo: | EPA 6010B | EPA 3050B | | Analysis Date: | 1/6/2018 | SeqNo: | 2888940 |

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Antimony | ND | 4.2 | | | | | | 0 | 0 | 20 | |
| Arsenic | 12.276 | 2.1 | | | | | | 10.95 | 11.4 | 20 | |
| Barium | 68.729 | 2.1 | | | | | | 68.53 | 0.293 | 20 | |
| Beryllium | ND | 2.1 | | | | | | 0 | 0 | 20 | |
| Cadmium | 1.077 | 2.1 | | | | | | 1.059 | 0 | 20 | |
| Chromium | 2621.560 | 2.1 | | | | | | 2613 | 0.325 | 20 | |
| Cobalt | 4.287 | 2.1 | | | | | | 4.230 | 1.33 | 20 | |
| Copper | 148.967 | 4.2 | | | | | | 148.5 | 0.328 | 20 | |
| Lead | ND | 2.1 | | | | | | 0 | 0 | 20 | |
| Manganese | 395.958 | 2.1 | | | | | | 394.9 | 0.277 | 20 | |
| Molybdenum | 2.994 | 2.1 | | | | | | 3.156 | 5.26 | 20 | |
| Nickel | 31.479 | 2.1 | | | | | | 31.67 | 0.604 | 20 | |
| Selenium | ND | 2.1 | | | | | | 0.9780 | 0 | 20 | |
| Silver | ND | 2.1 | | | | | | 0 | 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:** N027788
**Project:** PG&E Topock, 680375.03.IM.OP.00

# ANALYTICAL QC SUMMARY REPORT

**TestCode: 6010_SPGE**

| Sample ID | N027788-001B-DUP | SampType: | DUP | TestCode: | 6010_SPGE | Units: | mg/Kg-dry | Prep Date: | 1/5/2018 | RunNo: | 121241 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Client ID: | ZZZZZZ | Batch ID: | 66267 | TestNo: | EPA 6010B | EPA 3050B | | Analysis Date: | 1/6/2018 | SeqNo: | 2888940 |

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Thallium | 6.039 | 4.2 | | | | | | 5.930 | 1.82 | 20 | |
| Vanadium | 31.543 | 2.1 | | | | | | 31.60 | 0.175 | 20 | |
| Zinc | 30.179 | 2.1 | | | | | | 29.90 | 0.942 | 20 | |

| Sample ID | N027788-001B-MS | SampType: | MS | TestCode: | 6010_SPGE | Units: | mg/Kg-dry | Prep Date: | 1/5/2018 | RunNo: | 121241 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Client ID: | ZZZZZZ | Batch ID: | 66267 | TestNo: | EPA 6010B | EPA 3050B | | Analysis Date: | 1/6/2018 | SeqNo: | 2888943 |

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Antimony | 71.998 | 4.2 | 52.87 | 0 | 136 | 75 | 125 | | | | S |
| Arsenic | 72.285 | 2.1 | 52.87 | 10.95 | 116 | 75 | 125 | | | | |
| Barium | 121.817 | 2.1 | 52.87 | 68.53 | 101 | 75 | 125 | | | | |
| Beryllium | 50.767 | 2.1 | 52.87 | 0 | 96.0 | 75 | 125 | | | | |
| Cadmium | 45.371 | 2.1 | 52.87 | 1.059 | 83.8 | 75 | 125 | | | | |
| Chromium | 2662.976 | 2.1 | 52.87 | 2613 | 94.4 | 75 | 125 | | | | |
| Cobalt | 56.819 | 2.1 | 52.87 | 4.230 | 99.5 | 75 | 125 | | | | |
| Copper | 207.879 | 4.2 | 52.87 | 148.5 | 112 | 75 | 125 | | | | |
| Lead | 45.751 | 2.1 | 52.87 | 0 | 86.5 | 75 | 125 | | | | |
| Manganese | 498.690 | 2.1 | 105.7 | 394.9 | 98.2 | 75 | 125 | | | | |
| Molybdenum | 52.937 | 2.1 | 52.87 | 3.156 | 94.2 | 75 | 125 | | | | |
| Nickel | 76.637 | 2.1 | 52.87 | 31.67 | 85.1 | 75 | 125 | | | | |
| Selenium | 54.760 | 2.1 | 52.87 | 0.9780 | 102 | 75 | 125 | | | | |
| Silver | 60.293 | 2.1 | 52.87 | 0 | 114 | 75 | 125 | | | | |
| Thallium | 52.062 | 4.2 | 52.87 | 5.930 | 87.3 | 75 | 125 | | | | |
| Vanadium | 78.851 | 2.1 | 52.87 | 31.60 | 89.4 | 75 | 125 | | | | |
| Zinc | 76.257 | 2.1 | 52.87 | 29.90 | 87.7 | 75 | 125 | | | | |

| Sample ID | N027788-001B-MSD | SampType: | MSD | TestCode: | 6010_SPGE | Units: | mg/Kg-dry | Prep Date: | 1/5/2018 | RunNo: | 121241 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Client ID: | ZZZZZZ | Batch ID: | 66267 | TestNo: | EPA 6010B | EPA 3050B | | Analysis Date: | 1/6/2018 | SeqNo: | 2888944 |

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|

**Qualifiers:**

- B Analyte detected in the associated Method Blank
- 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:** N027788
**Project:** PG&E Topock, 680375.03.IM.OP.00

# ANALYTICAL QC SUMMARY REPORT

**TestCode: 6010_SPGE**

| Sample ID | N027788-001B-MSD | SampType: | MSD | TestCode: | 6010_SPGE | Units: | mg/Kg-dry | Prep Date: | 1/5/2018 | RunNo: | 121241 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Client ID: | ZZZZZZ | Batch ID: | 66267 | TestNo: | EPA 6010B | EPA 3050B | | Analysis Date: | 1/6/2018 | SeqNo: | 2888944 |

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Antimony | 73.032 | 4.2 | 52.87 | 0 | 138 | 75 | 125 | 72.00 | 1.43 | 20 | S |
| Arsenic | 73.276 | 2.1 | 52.87 | 10.95 | 118 | 75 | 125 | 72.28 | 1.36 | 20 | |
| Barium | 122.810 | 2.1 | 52.87 | 68.53 | 103 | 75 | 125 | 121.8 | 0.812 | 20 | |
| Beryllium | 51.528 | 2.1 | 52.87 | 0 | 97.5 | 75 | 125 | 50.77 | 1.49 | 20 | |
| Cadmium | 46.346 | 2.1 | 52.87 | 1.059 | 85.7 | 75 | 125 | 45.37 | 2.12 | 20 | |
| Chromium | 2678.089 | 2.1 | 52.87 | 2613 | 123 | 75 | 125 | 2663 | 0.566 | 20 | |
| Cobalt | 56.973 | 2.1 | 52.87 | 4.230 | 99.8 | 75 | 125 | 56.82 | 0.270 | 20 | |
| Copper | 210.178 | 4.2 | 52.87 | 148.5 | 117 | 75 | 125 | 207.9 | 1.10 | 20 | |
| Lead | 45.765 | 2.1 | 52.87 | 0 | 86.6 | 75 | 125 | 45.75 | 0.0306 | 20 | |
| Manganese | 504.942 | 2.1 | 105.7 | 394.9 | 104 | 75 | 125 | 498.7 | 1.25 | 20 | |
| Molybdenum | 53.474 | 2.1 | 52.87 | 3.156 | 95.2 | 75 | 125 | 52.94 | 1.01 | 20 | |
| Nickel | 77.504 | 2.1 | 52.87 | 31.67 | 86.7 | 75 | 125 | 76.64 | 1.13 | 20 | |
| Selenium | 55.825 | 2.1 | 52.87 | 0.9780 | 104 | 75 | 125 | 54.76 | 1.93 | 20 | |
| Silver | 61.351 | 2.1 | 52.87 | 0 | 116 | 75 | 125 | 60.29 | 1.74 | 20 | |
| Thallium | 51.800 | 4.2 | 52.87 | 5.930 | 86.8 | 75 | 125 | 52.06 | 0.505 | 20 | |
| Vanadium | 79.001 | 2.1 | 52.87 | 31.60 | 89.7 | 75 | 125 | 78.85 | 0.190 | 20 | |
| Zinc | 78.143 | 2.1 | 52.87 | 29.90 | 91.3 | 75 | 125 | 76.26 | 2.44 | 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 | **Client Sample ID:** | Phase Separator-568-Sludge |
| **Lab Order:** | N027788 | **Collection Date:** | 1/2/2018 3:30:00 PM |
| **Project:** | PG&E Topock, 680375.03.IM.OP.00 | **Matrix:** | SOIL |
| **Lab ID:** | N027788-001 | | |

| Analyses | Result | MDL | PQL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|---|
| **HEXAVALENT CHROMIUM BY IC** | | | | | | | |
| **EPA 3060A** | | | **EPA 7199** | | | | |
| RunID: **NV00922-IC6_180103A** | QC Batch: **66237** | | | PrepDate | **1/3/2018** | | Analyst: **RAB** |
| Hexavalent Chromium | 47 | 0.61 | 2.1 | | mg/Kg-dry | 5 | 1/3/2018 06:22 PM |

**Qualifiers:**

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

**CLIENT:** CH2M HILL
**Work Order:** N027788
**Project:** PG&E Topock, 680375.03.IM.OP.00

# ANALYTICAL QC SUMMARY REPORT

**TestCode: 7199_S_PGE**

| Sample ID **MB-66237** | SampType: **MBLK** | TestCode: **7199_S_PGE** | Units: **mg/Kg** | Prep Date: **1/3/2018** | RunNo: **121200** |
|---|---|---|---|---|---|
| Client ID: **PBS** | Batch ID: **66237** | TestNo: **EPA 7199** | **EPA 3060A** | Analysis Date: **1/3/2018** | SeqNo: **2884050** |

| 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-66237** | SampType: **LCS** | TestCode: **7199_S_PGE** | Units: **mg/Kg** | Prep Date: **1/3/2018** | RunNo: **121200** |
|---|---|---|---|---|---|
| Client ID: **LCSS** | Batch ID: **66237** | TestNo: **EPA 7199** | **EPA 3060A** | Analysis Date: **1/3/2018** | SeqNo: **2884051** |

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Hexavalent Chromium | 4.055 | 0.20 | 4.000 | 0 | 101 | 80 | 120 | | | | |

| Sample ID **N027788-001A-REP** | SampType: **DUP** | TestCode: **7199_S_PGE** | Units: **mg/Kg-dry** | Prep Date: **1/3/2018** | RunNo: **121200** |
|---|---|---|---|---|---|
| Client ID: **ZZZZZZ** | Batch ID: **66237** | TestNo: **EPA 7199** | **EPA 3060A** | Analysis Date: **1/3/2018** | SeqNo: **2884053** |

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Hexavalent Chromium | 46.637 | 2.1 | | | | | | 47.25 | 1.31 | 20 | |

| Sample ID **N027788-001A-DUP** | SampType: **DUP** | TestCode: **7199_S_PGE** | Units: **mg/Kg-dry** | Prep Date: **1/3/2018** | RunNo: **121200** |
|---|---|---|---|---|---|
| Client ID: **ZZZZZZ** | Batch ID: **66237** | TestNo: **EPA 7199** | **EPA 3060A** | Analysis Date: **1/3/2018** | SeqNo: **2884054** |

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Hexavalent Chromium | 43.018 | 2.1 | | | | | | 47.25 | 9.38 | 20 | |

| Sample ID **N027788-001A-MS** | SampType: **MS** | TestCode: **7199_S_PGE** | Units: **mg/Kg-dry** | Prep Date: **1/3/2018** | RunNo: **121200** |
|---|---|---|---|---|---|
| Client ID: **ZZZZZZ** | Batch ID: **66237** | TestNo: **EPA 7199** | **EPA 3060A** | Analysis Date: **1/3/2018** | SeqNo: **2884055** |

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Hexavalent Chromium | 47.486 | 2.1 | 8.429 | 47.25 | 2.79 | 75 | 125 | | | | S |

**Qualifiers:**

- B Analyte detected in the associated Method Blank
- ND Not Detected at the Reporting Limit
- DO Surrogate Diluted Out
- E Value above quantitation range
- R RPD outside accepted recovery limits

Calculations are based on raw values

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

**CLIENT:** CH2M HILL
**Work Order:** N027788
**Project:** PG&E Topock, 680375.03.IM.OP.00

# ANALYTICAL QC SUMMARY REPORT

**TestCode: 7199_S_PGE**

| Sample ID | N027788-001A-MSD | SampType: | MSD | TestCode: | 7199_S_PGE | Units: | mg/Kg-dry | Prep Date: | 1/3/2018 | RunNo: | 121200 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Client ID: | ZZZZZZ | Batch ID: | 66237 | TestNo: | EPA 7199 | EPA 3060A | | Analysis Date: | 1/3/2018 | SeqNo: | 2884056 |

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Hexavalent Chromium | 52.617 | 2.1 | 8.442 | 47.25 | 63.6 | 75 | 125 | 47.49 | 10.3 | 20 | S |

| Sample ID | N027788-001A-MS I | SampType: | MS | TestCode: | 7199_S_PGE | Units: | mg/Kg-dry | Prep Date: | 1/3/2018 | RunNo: | 121200 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Client ID: | ZZZZZZ | Batch ID: | 66237 | TestNo: | EPA 7199 | EPA 3060A | | Analysis Date: | 1/3/2018 | SeqNo: | 2884057 |

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Hexavalent Chromium | 1295.182 | 21 | 1375 | 47.25 | 90.8 | 75 | 125 | | | | |

| Sample ID | N027788-001A-PS | SampType: | MS | TestCode: | 7199_S_PGE | Units: | mg/Kg-dry | Prep Date: | | RunNo: | 121200 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Client ID: | ZZZZZZ | Batch ID: | 66237 | TestNo: | EPA 7199 | EPA 3060A | | Analysis Date: | 1/3/2018 | SeqNo: | 2884062 |

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Hexavalent Chromium | 91.848 | 2.1 | 42.20 | 47.25 | 106 | 75 | 125 | | | | |

**Qualifiers:**

- B Analyte detected in the associated Method Blank
- ND Not Detected at the Reporting Limit
- DO Surrogate Diluted Out
- E Value above quantitation range
- R RPD outside accepted recovery limits

Calculations are based on raw values

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

| | | | |
|---|---|---|---|
| **CLIENT:** | CH2M HILL | **Client Sample ID:** | Phase Separator-568-Sludge |
| **Lab Order:** | N027788 | **Collection Date:** | 1/2/2018 3:30:00 PM |
| **Project:** | PG&E Topock, 680375.03.IM.OP.00 | **Matrix:** | SOIL |
| **Lab ID:** | N027788-001 | | |

| Analyses | Result | MDL | PQL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|---|
| **TOTAL MERCURY BY COLD VAPOR TECHNIQUE** | | | | | | | |
| | | | **EPA 7471A** | | | | |
| RunID: **NV00922-AA1_180105A** | QC Batch: **66266** | | | PrepDate | **1/5/2018** | | Analyst: **MG** |
| Mercury | ND | 0.025 | 0.21 | | mg/Kg-dry | 1 | 1/5/2018 10:42 AM |

**Qualifiers:**

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

**CLIENT:** CH2M HILL
**Work Order:** N027788
**Project:** PG&E Topock, 680375.03.IM.OP.00

# ANALYTICAL QC SUMMARY REPORT

**TestCode: 7471_S_PGE**

| Sample ID **MB-66266** | SampType: **MBLK** | TestCode: **7471_S_PGE** | Units: **mg/Kg** | Prep Date: **1/5/2018** | RunNo: **121226** |
|---|---|---|---|---|---|
| Client ID: **PBS** | Batch ID: **66266** | TestNo: **EPA 7471A** | | Analysis Date: **1/5/2018** | SeqNo: **2887420** |

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

| Sample ID **LCS-66266** | SampType: **LCS** | TestCode: **7471_S_PGE** | Units: **mg/Kg** | Prep Date: **1/5/2018** | RunNo: **121226** |
|---|---|---|---|---|---|
| Client ID: **LCSS** | Batch ID: **66266** | TestNo: **EPA 7471A** | | Analysis Date: **1/5/2018** | SeqNo: **2887421** |

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Mercury | 0.422 | 0.10 | 0.4167 | 0 | 101 | 75 | 125 | | | | |

| Sample ID **N027788-001B-MS** | SampType: **MS** | TestCode: **7471_S_PGE** | Units: **mg/Kg-dry** | Prep Date: **1/5/2018** | RunNo: **121226** |
|---|---|---|---|---|---|
| Client ID: **ZZZZZZ** | Batch ID: **66266** | TestNo: **EPA 7471A** | | Analysis Date: **1/5/2018** | SeqNo: **2887422** |

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Mercury | 1.022 | 0.21 | 0.8714 | 0.05187 | 111 | 75 | 125 | | | | |

| Sample ID **N027788-001B-MSD** | SampType: **MSD** | TestCode: **7471_S_PGE** | Units: **mg/Kg-dry** | Prep Date: **1/5/2018** | RunNo: **121226** |
|---|---|---|---|---|---|
| Client ID: **ZZZZZZ** | Batch ID: **66266** | TestNo: **EPA 7471A** | | Analysis Date: **1/5/2018** | SeqNo: **2887423** |

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Mercury | 1.053 | 0.21 | 0.8743 | 0.05187 | 115 | 75 | 125 | 1.022 | 2.98 | 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 | | |

**CLIENT:** CH2M HILL
**Lab Order:** N027788
**Project:** PG&E Topock, 680375.03.IM.OP.00
**Lab ID:** N027788-001

**Client Sample ID:** Phase Separator-568-Sludge
**Collection Date:** 1/2/2018 3:30:00 PM
**Matrix:** SOIL

| Analyses | Result | MDL | PQL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|---|
| **PERCENT MOISTURE** | | | | | | | |
| | | | **D2216** | | | | |
| RunID: **NV00922-WC_180103A** | QC Batch: **R121195** | | | PrepDate | | | Analyst: **LR** |
| Percent Moisture | 52.73 | 0.1000 | 0.1000 | | wt% | 1 | 1/3/2018 11:45 AM |

**Qualifiers:**

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

**CLIENT:** CH2M HILL
**Work Order:** N027788
**Project:** PG&E Topock, 680375.03.IM.OP.00

# ANALYTICAL QC SUMMARY REPORT

**TestCode: PMOIST**

| Sample ID **MB-R121195** | SampType: **MBLK** | TestCode: **PMOIST** | Units: **wt%** | Prep Date: | RunNo: **121195** |
|---|---|---|---|---|---|
| Client ID: **PBS** | Batch ID: **R121195** | TestNo: **D2216** | | Analysis Date: **1/3/2018** | SeqNo: **2884010** |

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Percent Moisture | ND | 0.1000 | | | | | | | | | |

| Sample ID **N027788-001BDUP** | SampType: **DUP** | TestCode: **PMOIST** | Units: **wt%** | Prep Date: | RunNo: **121195** |
|---|---|---|---|---|---|
| Client ID: **ZZZZZZ** | Batch ID: **R121195** | TestNo: **D2216** | | Analysis Date: **1/3/2018** | SeqNo: **2884012** |

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Percent Moisture | 52.273 | 0.1000 | | | | | | 52.73 | 0.878 | 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** Page 1 OF 1

Project Name PG&E Topock
Location PG&E Topock
Project Number 680375.03.IM.OP.00
Project Manager Scott O'Donnell
Sample Manager Shawn Duffy

Task Order
Project IM3PLANT-ARAR-WDR-568-SLUDGE
Turnaround Time 10 Days
Shipping Date:
COC Number: 568-S

| | | | | 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 | | Anions (E300_Soil) Fl | Metals (6010B_Soil) Title 22, Mercury, Mn | Metals (7199) | | Number of Containers | COMMENTS |
| Phase Separator-568-Sludge | 01-02-18 | 1530 | Soil | | x | x | x | N027788 - 01 | 5 | |
| | | | | | | | | TOTAL NUMBER OF CONTAINERS | 5 | |

| Signatures | | Date/Time |
|---|---|---|
| Approved by | Scott Rodell | 01-02-18-1500 |
| Sampled by | | 01-02-18 1542 |
| Relinquished by | | 01-02-18 1542 |
| Received by | | 1/2/18@1542 |
| Relinquished by | | 1/2/18@1800 |
| Received by | | |

**Shipping Details**
Method of Shipment: FedEx
On Ice: (yes) / no 4.1°C ICE
Airbill No: 12#2
Lab Name: ASSET Laboratories
Lab Phone: (702) 307-2659

**ATTN:**
Sample Custody
and
Marlon Cartin

**Special Instructions:**

**Report Copy to**
Doug Scott
(970) 731-0636

## 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: | 1/2/2018 | Workorder: | N027788 |
| Rep sample Temp (Deg C): | 4.1 | IR Gun ID: | 2 |
| Temp Blank: | ☑ Yes ☐ No | | |
| Carrier name: | ASSET | | |
| Last 4 digits of Tracking No.: | NA | Packing Material Used: | None |
| Cooling process: | ☑ Ice ☐ Ice Pack ☐ Dry Ice ☐ Other ☐ None | | |

### Sample Receipt Checklist

| | | | |
|---|---|---|---|
| 1. Shipping container/cooler in good condition? | Yes ☑ | 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?<br>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:

For:

Checklist Completed By: MBC 1/3/2018

Reviewed By: 01/04/2018

# WORK ORDER Summary

*03-Jan-18*

**WorkOrder:** N027788

**Client ID:** CH2HI01

**Project:** PG&E Topock, 680375.03.IM.OP.00 **QC Level:** Level IV **Date Received:** 1/2/2018

**Comments:** Report Copy to Doug Scott

| Sample ID | Client Sample ID | Date Collected | Date Due | Matrix | Test No | Test Name | Hld | MS | Sub | Storage |
|---|---|---|---|---|---|---|---|---|---|---|
| N027788-001A | Phase Separator-568-Sludge | 1/2/2018 3:30:00 PM | 1/16/2018 | Soil | EPA 300.0 | ANIONS BY ION CHROMATOGRAPHY | ☐ | ☐ | ☐ | WS |
| | | | 1/16/2018 | | EPA 3060A | Prep for Hexavalend Chromium | ☐ | ☐ | ☐ | WS |
| | | | 1/16/2018 | | EPA 7199 | Hexavalent Chromium by IC | ☐ | ☐ | ☐ | WS |
| N027788-001B | | | 1/16/2018 | | EPA 3050B | SOPREP TOTAL METALS | ☐ | ☐ | ☐ | WS |
| | | | 1/16/2018 | | EPA 6010B | TOTAL METALS BY ICP | ☐ | ☐ | ☐ | WS |
| | | | 1/16/2018 | | | MERCURY PREP | ☐ | ☐ | ☐ | WS |
| | | | 1/16/2018 | | EPA 7471A | TOTAL MERCURY BY COLD VAPOR TECHNIQUE | ☐ | ☐ | ☐ | WS |
| | | | 1/16/2018 | | D2216 | PERCENT MOISTURE | ☐ | ☐ | ☐ | WS |
| N027788-002A | FOLDER | 1/16/2018 | 1/16/2018 | | Folder | Folder | ☐ | ☐ | ☐ | LAB |
| | | | 1/16/2018 | | Folder | Folder | ☐ | ☐ | ☐ | LAB |

## List of Analysts

## ASSET Laboratories Work Order: N027788

| NAME | TEST METHOD |
|---|---|
| Claire Ignacio | EPA 6010B |
| Ria Abes | EPA 300.0, EPA 7199 |
| Lilia Ramit | ASTM D2216 |
| Mark Gesmundo | EPA 7471A |

January 15, 2018

Doug Scott
CH2M HILL
155 Grand Avenue, Suite 1000
Oakland, CA 94612

TEL: (970) 731-0636
FAX: (510) 622-9129

Workorder No.: N027789

RE: PG&E Topock, 680375.03.IM.OP.00

Attention: Doug Scott

Enclosed are the results for sample(s) received on January 02, 2018 by ASSET Laboratories . The sample(s) are tested for the parameters as indicated in the enclosed chain of custody in accordance with the applicable laboratory certifications.

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

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

Sincerely,

Nancy Liburdi for

Quennie Manimtim
Laboratory Director

**CLIENT:** CH2M HILL
**Project:** PG&E Topock, 680375.03.IM.OP.00
**Lab Order:** N027789

# CASE NARRATIVE

SAMPLE RECEIVING/GENERAL COMMENTS:

Samples were received intact with proper chain of custody documentation.

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

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

Samples were analyzed within method holding time.

Subcontracted Analyses:

Ammonia was subcontracted to BC Labs- Bakersfield,CA.

Analytical Comments for EPA 200.8:

Dilution was necessary for sample N027789-003 due to associated internal standard not meeting method criteria possibly due to matrix interference. Sample was analyzed with dilution and internal standard met method criteria. Affected analytes for this failed internal standard were reported at dilution that meet internal standard recovery limit.

Matrix Spike (MS) and Matrix Spike Duplicate (MSD) are outside recovery criteria for some analytes in QC samples N027789-001E-MS and N027789-001E-MSD possibly due to matrix interference. The associated Laboratory Control Sample (LCS) recovery was acceptable.

Matrix Spike Duplicate (MSD) is outside recovery criteria for Chromium in QC sample N027789-001E-MSD since the analyte concentration in the sample is disproportionate to the spike level. The associated Laboratory Control Sample (LCS) recovery was acceptable.

Analytical Comments for EPA 218.6:

Dilution was necessary for samples N027789-002 and -003 due to matrix interference. Samples were analyzed at lower dilution however matrix spike recovery and/or retention time criteria were not met indicating possible matrix interference. Samples were reported at dilution that meet matrix spike recovery limit and the detected peak within retention time window.

Analytical Comments for EPA 300.0:

Method Blank has hit greater than 1/2 the reporting limit for Sulfate. Sample results for this analyte were greater than 10x the Method Blank concentration therefore, reanalysis of the samples was not necessary.

## ASSET Laboratories

**Date:** *15-Jan-18*

**CLIENT:** CH2M HILL
**Project:** PG&E Topock, 680375.03.IM.OP.00
**Lab Order:** N027789
**Contract No:** IM3PLANT-AR

# Work Order Sample Summary

| Lab Sample ID | Client Sample ID | Matrix | Collection Date | Date Received | Date Reported |
|---|---|---|---|---|---|
| N027789-001A | SC-100B-WDR-568 | Water | 1/2/2018 3:20:00 PM | 1/3/2018 | 1/15/2018 |
| N027789-001B | SC-100B-WDR-568 | Water | 1/2/2018 3:20:00 PM | 1/2/2018 | 1/15/2018 |
| N027789-001C | SC-100B-WDR-568 | Water | 1/2/2018 3:20:00 PM | 1/2/2018 | 1/15/2018 |
| N027789-001D | SC-100B-WDR-568 | Water | 1/2/2018 3:20:00 PM | 1/2/2018 | 1/15/2018 |
| N027789-001E | SC-100B-WDR-568 | Water | 1/2/2018 3:20:00 PM | 1/2/2018 | 1/15/2018 |
| N027789-002A | SC-700B-WDR-568 | Water | 1/2/2018 3:10:00 PM | 1/2/2018 | 1/15/2018 |
| N027789-002B | SC-700B-WDR-568 | Water | 1/2/2018 3:10:00 PM | 1/2/2018 | 1/15/2018 |
| N027789-002C | SC-700B-WDR-568 | Water | 1/2/2018 3:10:00 PM | 1/2/2018 | 1/15/2018 |
| N027789-002D | SC-700B-WDR-568 | Water | 1/2/2018 3:10:00 PM | 1/2/2018 | 1/15/2018 |
| N027789-002E | SC-700B-WDR-568 | Water | 1/2/2018 3:10:00 PM | 1/2/2018 | 1/15/2018 |
| N027789-003A | SC-701-WDR-568 | Water | 1/2/2018 3:00:00 PM | 1/2/2018 | 1/15/2018 |
| N027789-003B | SC-701-WDR-568 | Water | 1/2/2018 3:00:00 PM | 1/2/2018 | 1/15/2018 |
| N027789-003C | SC-701-WDR-568 | Water | 1/2/2018 3:00:00 PM | 1/2/2018 | 1/15/2018 |

**CLIENT:** CH2M HILL
**Lab Order:** N027789
**Project:** PG&E Topock, 680375.03.IM.OP.00
**Lab ID:** N027789-001

**Client Sample ID:** SC-100B-WDR-568
**Collection Date:** 1/2/2018 3:20:00 PM
**Matrix:** WATER

| Analyses | Result | MDL | PQL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|---|
| **SPECIFIC CONDUCTANCE** | | | | | | | |
| | | | **EPA 120.1** | | | | |
| RunID: **NV00922-WC_180103B** | QC Batch: **R121196** | | | PrepDate | | | Analyst: **LR** |
| Specific Conductance | 7700 | 0.10 | 0.10 | | umhos/cm | 1 | 1/3/2018 10:10 AM |

**Qualifiers:**

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

**CLIENT:** CH2M HILL
**Lab Order:** N027789
**Project:** PG&E Topock, 680375.03.IM.OP.00
**Lab ID:** N027789-002

**Client Sample ID:** SC-700B-WDR-568
**Collection Date:** 1/2/2018 3:10:00 PM
**Matrix:** WATER

| Analyses | Result | MDL | PQL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|---|
| **SPECIFIC CONDUCTANCE** | | | | | | | |
| | | | **EPA 120.1** | | | | |
| RunID: **NV00922-WC_180103B** | QC Batch: **R121196** | | | PrepDate | | | Analyst: **LR** |
| Specific Conductance | 7200 | 0.10 | 0.10 | | umhos/cm | 1 | 1/3/2018 10:10 AM |

**Qualifiers:**

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

| | | | |
|---|---|---|---|
| **CLIENT:** | CH2M HILL | **Client Sample ID:** | SC-701-WDR-568 |
| **Lab Order:** | N027789 | **Collection Date:** | 1/2/2018 3:00:00 PM |
| **Project:** | PG&E Topock, 680375.03.IM.OP.00 | **Matrix:** | WATER |
| **Lab ID:** | N027789-003 | | |

| Analyses | Result | MDL | PQL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|---|
| **SPECIFIC CONDUCTANCE** | | | | | | | |
| | | | **EPA 120.1** | | | | |
| RunID: **NV00922-WC_180103B** | QC Batch: **R121196** | | | PrepDate | | | Analyst: **LR** |
| Specific Conductance | 53000 | 0.10 | 0.10 | | umhos/cm | 1 | 1/3/2018 10:10 AM |

**Qualifiers:**

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

**CLIENT:** CH2M HILL
**Work Order:** N027789
**Project:** PG&E Topock, 680375.03.IM.OP.00

# ANALYTICAL QC SUMMARY REPORT

**TestCode: 120.1_WPGE**

| Sample ID | **N027789-003ADUP** | SampType: | **DUP** | TestCode: | **120.1_WPGE** | Units: | **umhos/cm** | Prep Date: | | RunNo: | **121196** |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Client ID: | **ZZZZZZ** | Batch ID: | **R121196** | TestNo: | **EPA 120.1** | | | Analysis Date: | **1/3/2018** | SeqNo: | **2884017** |

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Specific Conductance | 52800.000 | 0.10 | | | | | | 52600 | 0.380 | 2 | |

**Qualifiers:**

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

| | | | |
|---|---|---|---|
| **CLIENT:** | CH2M HILL | **Client Sample ID:** | SC-100B-WDR-568 |
| **Lab Order:** | N027789 | **Collection Date:** | 1/2/2018 3:20:00 PM |
| **Project:** | PG&E Topock, 680375.03.IM.OP.00 | **Matrix:** | WATER |
| **Lab ID:** | N027789-001 | | |

| Analyses | Result | MDL | PQL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|---|
| **TOTAL FILTERABLE RESIDUE** | | | | | **SM2540C** | | |
| RunID: **NV00922-WC_180103G** | QC Batch: **66246** | | | | PrepDate | **1/3/2018** | Analyst: **LR** |
| Total Dissolved Solids (Residue, Filterable) | 4400 | 50 | 50 | | mg/L | 1 | 1/3/2018 01:07 PM |

**Qualifiers:**

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

| | | | |
|---|---|---|---|
| **CLIENT:** | CH2M HILL | **Client Sample ID:** | SC-700B-WDR-568 |
| **Lab Order:** | N027789 | **Collection Date:** | 1/2/2018 3:10:00 PM |
| **Project:** | PG&E Topock, 680375.03.IM.OP.00 | **Matrix:** | WATER |
| **Lab ID:** | N027789-002 | | |

| Analyses | Result | MDL | PQL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|---|
| **TOTAL FILTERABLE RESIDUE** | | | | | | | |
| | | | **SM2540C** | | | | |
| RunID: **NV00922-WC_180103G** | QC Batch: **66246** | | | | PrepDate | **1/3/2018** | Analyst: **LR** |
| Total Dissolved Solids (Residue, Filterable) | 4100 | 50 | 50 | | mg/L | 1 | 1/3/2018 01:07 PM |

**Qualifiers:**

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

| | | | |
|---|---|---|---|
| **CLIENT:** | CH2M HILL | **Client Sample ID:** | SC-701-WDR-568 |
| **Lab Order:** | N027789 | **Collection Date:** | 1/2/2018 3:00:00 PM |
| **Project:** | PG&E Topock, 680375.03.IM.OP.00 | **Matrix:** | WATER |
| **Lab ID:** | N027789-003 | | |

| Analyses | Result | MDL | PQL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|---|
| **TOTAL FILTERABLE RESIDUE** | | | | | | | |
| | | | **SM2540C** | | | | |
| RunID: **NV00922-WC_180103G** | QC Batch: **66246** | | | | PrepDate | **1/3/2018** | Analyst: **LR** |
| Total Dissolved Solids (Residue, Filterable) | 41000 | 500 | 500 | | mg/L | 1 | 1/3/2018 01:07 PM |

**Qualifiers:**

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

**CLIENT:** CH2M HILL
**Work Order:** N027789
**Project:** PG&E Topock, 680375.03.IM.OP.00

# ANALYTICAL QC SUMMARY REPORT

**TestCode: 160.1_2540C_W**

| Sample ID | LCS-66246 | SampType: | LCS | TestCode: | 160.1_2540C | Units: | mg/L | Prep Date: | 1/3/2018 | RunNo: | 121225 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Client ID: | LCSW | Batch ID: | 66246 | TestNo: | SM2540C | | | Analysis Date: | 1/3/2018 | SeqNo: | 2885751 |

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Total Dissolved Solids (Residue, Filtera | 932.000 | 10 | 1000 | 0 | 93.2 | 80 | 120 | | | | |

| Sample ID | MB-66246 | SampType: | MBLK | TestCode: | 160.1_2540C | Units: | mg/L | Prep Date: | 1/3/2018 | RunNo: | 121225 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Client ID: | PBW | Batch ID: | 66246 | TestNo: | SM2540C | | | Analysis Date: | 1/3/2018 | SeqNo: | 2885752 |

| 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 | N027789-003ADUP | SampType: | DUP | TestCode: | 160.1_2540C | Units: | mg/L | Prep Date: | 1/3/2018 | RunNo: | 121225 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Client ID: | ZZZZZZ | Batch ID: | 66246 | TestNo: | SM2540C | | | Analysis Date: | 1/3/2018 | SeqNo: | 2885757 |

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Total Dissolved Solids (Residue, Filtera | 42950.000 | 500 | | | | | | 41200 | 4.16 | 5 | |

**Qualifiers:**

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

**CLIENT:** CH2M HILL
**Lab Order:** N027789
**Project:** PG&E Topock, 680375.03.IM.OP.00
**Lab ID:** N027789-001

**Client Sample ID:** SC-100B-WDR-568
**Collection Date:** 1/2/2018 3:20:00 PM
**Matrix:** WATER

| Analyses | Result | MDL | PQL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|---|
| **TOTAL METALS BY ICP** | | | | | | | |
| | | | **EPA 200.7** | | | | |
| RunID: **NV00922-ICP2_180104E** | QC Batch: **66254** | | | | PrepDate | **1/4/2018** | Analyst: **CEI** |
| Aluminum | ND | 2.7 | 50 | | µg/L | 1 | 1/4/2018 05:41 PM |
| Boron | 1200 | 38 | 100 | | µg/L | 1 | 1/4/2018 05:41 PM |
| Iron | ND | 1.8 | 20 | | µg/L | 1 | 1/4/2018 05:41 PM |

**Qualifiers:**

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

| | | | |
|---|---|---|---|
| **CLIENT:** | CH2M HILL | **Client Sample ID:** | SC-700B-WDR-568 |
| **Lab Order:** | N027789 | **Collection Date:** | 1/2/2018 3:10:00 PM |
| **Project:** | PG&E Topock, 680375.03.IM.OP.00 | **Matrix:** | WATER |
| **Lab ID:** | N027789-002 | | |

| Analyses | Result | MDL | PQL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|---|
| **TOTAL METALS BY ICP** | | | | | | | |
| | | | **EPA 200.7** | | | | |
| RunID: **NV00922-ICP2_180104E** | QC Batch: **66254** | | | | PrepDate | **1/4/2018** | Analyst: **CEI** |
| Aluminum | ND | 2.7 | 50 | | µg/L | 1 | 1/4/2018 06:16 PM |
| Boron | 1200 | 38 | 100 | | µg/L | 1 | 1/4/2018 06:16 PM |
| Iron | ND | 1.8 | 20 | | µg/L | 1 | 1/4/2018 06:16 PM |

**Qualifiers:**

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

**CLIENT:** CH2M HILL
**Work Order:** N027789
**Project:** PG&E Topock, 680375.03.IM.OP.00

# ANALYTICAL QC SUMMARY REPORT

**TestCode: 200.7_WPGEPPB**

| Sample ID **MB-66254** | SampType: **MBLK** | TestCode: **200.7_WPGE** | Units: **µg/L** | Prep Date: **1/4/2018** | RunNo: **121219** |
|---|---|---|---|---|---|
| Client ID: **PBW** | Batch ID: **66254** | TestNo: **EPA 200.7** | | Analysis Date: **1/4/2018** | SeqNo: **2885503** |

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Aluminum | 3.003 | 50 | | | | | | | | | |
| Boron | ND | 100 | | | | | | | | | |
| Iron | 2.259 | 20 | | | | | | | | | |

| Sample ID **LCS-66254** | SampType: **LCS** | TestCode: **200.7_WPGE** | Units: **µg/L** | Prep Date: **1/4/2018** | RunNo: **121219** |
|---|---|---|---|---|---|
| Client ID: **LCSW** | Batch ID: **66254** | TestNo: **EPA 200.7** | | Analysis Date: **1/4/2018** | SeqNo: **2885504** |

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Aluminum | 10612.042 | 50 | 10000 | 0 | 106 | 85 | 115 | | | | |
| Boron | 5026.715 | 100 | 5000 | 0 | 101 | 85 | 115 | | | | |
| Iron | 113.939 | 20 | 100.0 | 0 | 114 | 85 | 115 | | | | |

| Sample ID **N027789-001E-MS** | SampType: **MS** | TestCode: **200.7_WPGE** | Units: **µg/L** | Prep Date: **1/4/2018** | RunNo: **121219** |
|---|---|---|---|---|---|
| Client ID: **ZZZZZZ** | Batch ID: **66254** | TestNo: **EPA 200.7** | | Analysis Date: **1/4/2018** | SeqNo: **2885508** |

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Aluminum | 10597.223 | 50 | 10000 | 0 | 106 | 75 | 125 | | | | |
| Boron | 6236.428 | 100 | 5000 | 1157 | 102 | 75 | 125 | | | | |
| Iron | 99.114 | 20 | 100.0 | 0 | 99.1 | 75 | 125 | | | | |

| Sample ID **N027789-001E-MSD** | SampType: **MSD** | TestCode: **200.7_WPGE** | Units: **µg/L** | Prep Date: **1/4/2018** | RunNo: **121219** |
|---|---|---|---|---|---|
| Client ID: **ZZZZZZ** | Batch ID: **66254** | TestNo: **EPA 200.7** | | Analysis Date: **1/4/2018** | SeqNo: **2885509** |

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Aluminum | 10621.477 | 50 | 10000 | 0 | 106 | 75 | 125 | 10600 | 0.229 | 20 | |
| Boron | 6266.966 | 100 | 5000 | 1157 | 102 | 75 | 125 | 6236 | 0.488 | 20 | |
| Iron | 100.755 | 20 | 100.0 | 0 | 101 | 75 | 125 | 99.11 | 1.64 | 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
**Lab Order:** N027789
**Project:** PG&E Topock, 680375.03.IM.OP.00
**Lab ID:** N027789-001

**Client Sample ID:** SC-100B-WDR-568
**Collection Date:** 1/2/2018 3:20:00 PM
**Matrix:** WATER

## TOTAL METALS BY ICPMS

**EPA 200.8**

RunID: **NV00922-ICP7_180106A** QC Batch: **66250** PrepDate **1/4/2018** Analyst: **CEI**

| Analyses | Result | MDL | PQL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|---|
| Antimony | ND | 0.031 | 0.50 | | µg/L | 1 | 1/6/2018 12:53 PM |
| Arsenic | 2.7 | 0.025 | 0.10 | | µg/L | 1 | 1/6/2018 01:19 AM |
| Barium | 30 | 0.070 | 1.0 | | µg/L | 1 | 1/6/2018 12:53 PM |
| Copper | ND | 0.26 | 1.0 | | µg/L | 1 | 1/6/2018 01:19 AM |
| Lead | ND | 0.037 | 1.0 | | µg/L | 1 | 1/6/2018 12:53 PM |
| Manganese | 6.6 | 0.056 | 0.50 | | µg/L | 1 | 1/6/2018 01:19 AM |
| Molybdenum | 21 | 0.039 | 0.50 | | µg/L | 1 | 1/6/2018 01:19 AM |
| Nickel | ND | 0.040 | 1.0 | | µg/L | 1 | 1/6/2018 01:19 AM |
| Zinc | ND | 0.27 | 10 | | µg/L | 1 | 1/6/2018 01:19 AM |

**Qualifiers:**

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

**CLIENT:** CH2M HILL
**Lab Order:** N027789
**Project:** PG&E Topock, 680375.03.IM.OP.00
**Lab ID:** N027789-002

**Client Sample ID:** SC-700B-WDR-568
**Collection Date:** 1/2/2018 3:10:00 PM
**Matrix:** WATER

## TOTAL METALS BY ICPMS

**EPA 200.8**

RunID: **NV00922-ICP7_180106A** QC Batch: **66250** PrepDate **1/4/2018** Analyst: **CEI**

| Analyses | Result | MDL | PQL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|---|
| Antimony | ND | 0.031 | 0.50 | | µg/L | 1 | 1/6/2018 02:16 PM |
| Arsenic | ND | 0.025 | 0.10 | | µg/L | 1 | 1/6/2018 02:20 AM |
| Barium | 14 | 0.070 | 1.0 | | µg/L | 1 | 1/6/2018 02:16 PM |
| Copper | ND | 0.26 | 1.0 | | µg/L | 1 | 1/6/2018 02:20 AM |
| Lead | ND | 0.037 | 1.0 | | µg/L | 1 | 1/6/2018 02:16 PM |
| Manganese | 2.8 | 0.056 | 0.50 | | µg/L | 1 | 1/6/2018 02:20 AM |
| Molybdenum | 21 | 0.039 | 0.50 | | µg/L | 1 | 1/6/2018 02:20 AM |
| Nickel | ND | 0.040 | 1.0 | | µg/L | 1 | 1/6/2018 02:20 AM |
| Zinc | ND | 0.27 | 10 | | µg/L | 1 | 1/6/2018 02:20 AM |

**Qualifiers:**

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

**CLIENT:** CH2M HILL
**Lab Order:** N027789
**Project:** PG&E Topock, 680375.03.IM.OP.00
**Lab ID:** N027789-003

**Client Sample ID:** SC-701-WDR-568
**Collection Date:** 1/2/2018 3:00:00 PM
**Matrix:** WATER

## TOTAL METALS BY ICPMS

**EPA 200.8**

RunID: **NV00922-ICP7_180106A** QC Batch: **66250** PrepDate **1/4/2018** Analyst: **CEI**

| Analyses | Result | MDL | PQL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|---|
| Antimony | ND | 0.16 | 2.5 | | µg/L | 5 | 1/6/2018 12:36 PM |
| Arsenic | 1.6 | 0.12 | 0.50 | | µg/L | 5 | 1/6/2018 01:08 AM |
| Barium | 130 | 0.35 | 5.0 | | µg/L | 5 | 1/6/2018 12:36 PM |
| Beryllium | ND | 1.1 | 12 | | µg/L | 25 | 1/6/2018 12:42 PM |
| Cadmium | ND | 0.24 | 2.5 | | µg/L | 5 | 1/6/2018 12:36 PM |
| Cobalt | ND | 0.13 | 2.5 | | µg/L | 5 | 1/6/2018 01:08 AM |
| Copper | ND | 1.3 | 5.0 | | µg/L | 5 | 1/6/2018 01:08 AM |
| Lead | ND | 0.92 | 25 | | µg/L | 25 | 1/6/2018 12:42 PM |
| Manganese | 33 | 0.28 | 2.5 | | µg/L | 5 | 1/6/2018 01:08 AM |
| Molybdenum | 210 | 0.19 | 2.5 | | µg/L | 5 | 1/6/2018 01:08 AM |
| Nickel | 7.2 | 0.20 | 5.0 | | µg/L | 5 | 1/6/2018 01:08 AM |
| Selenium | 45 | 0.14 | 2.5 | | µg/L | 5 | 1/6/2018 01:08 AM |
| Silver | ND | 0.30 | 2.5 | | µg/L | 5 | 1/6/2018 01:08 AM |
| Thallium | ND | 0.74 | 12 | | µg/L | 25 | 1/6/2018 12:42 PM |
| Vanadium | ND | 0.11 | 5.0 | | µg/L | 5 | 1/6/2018 01:08 AM |
| Zinc | ND | 1.3 | 50 | | µg/L | 5 | 1/6/2018 01:08 AM |

**Qualifiers:**

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

**CLIENT:** CH2M HILL
**Work Order:** N027789
**Project:** PG&E Topock, 680375.03.IM.OP.00

# ANALYTICAL QC SUMMARY REPORT

**TestCode: 200.8_W**

| Sample ID **MB-66250** | SampType: **MBLK** | TestCode: **200.8_W** | Units: **µg/L** | Prep Date: **1/4/2018** | RunNo: **121245** |
|---|---|---|---|---|---|
| Client ID: **PBW** | Batch ID: **66250** | TestNo: **EPA 200.8** | | Analysis Date: **1/6/2018** | SeqNo: **2887017** |

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Arsenic | ND | 0.10 | | | | | | | | | |
| Cobalt | ND | 0.50 | | | | | | | | | |
| Copper | ND | 1.0 | | | | | | | | | |
| Manganese | ND | 0.50 | | | | | | | | | |
| Molybdenum | ND | 0.50 | | | | | | | | | |
| Nickel | ND | 1.0 | | | | | | | | | |
| Selenium | ND | 0.50 | | | | | | | | | |
| Silver | ND | 0.50 | | | | | | | | | |
| Vanadium | ND | 1.0 | | | | | | | | | |
| Zinc | ND | 10 | | | | | | | | | |

| Sample ID **LCS-66250** | SampType: **LCS** | TestCode: **200.8_W** | Units: **µg/L** | Prep Date: **1/4/2018** | RunNo: **121245** |
|---|---|---|---|---|---|
| Client ID: **LCSW** | Batch ID: **66250** | TestNo: **EPA 200.8** | | Analysis Date: **1/6/2018** | SeqNo: **2887018** |

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Arsenic | 9.653 | 0.10 | 10.00 | 0 | 96.5 | 85 | 115 | | | | |
| Cobalt | 10.314 | 0.50 | 10.00 | 0 | 103 | 85 | 115 | | | | |
| Copper | 9.652 | 1.0 | 10.00 | 0 | 96.5 | 85 | 115 | | | | |
| Manganese | 101.678 | 0.50 | 100.0 | 0 | 102 | 85 | 115 | | | | |
| Molybdenum | 9.757 | 0.50 | 10.00 | 0 | 97.6 | 85 | 115 | | | | |
| Nickel | 9.673 | 1.0 | 10.00 | 0 | 96.7 | 85 | 115 | | | | |
| Selenium | 10.341 | 0.50 | 10.00 | 0 | 103 | 85 | 115 | | | | |
| Silver | 9.199 | 0.50 | 10.00 | 0 | 92.0 | 85 | 115 | | | | |
| Vanadium | 10.642 | 1.0 | 10.00 | 0 | 106 | 85 | 115 | | | | |
| Zinc | 93.259 | 10 | 100.0 | 0 | 93.3 | 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:** N027789
**Project:** PG&E Topock, 680375.03.IM.OP.00

# ANALYTICAL QC SUMMARY REPORT

**TestCode: 200.8_W**

| Sample ID **N027789-001E-MS** | SampType: **MS** | TestCode: **200.8_W** | Units: **µg/L** | Prep Date: **1/4/2018** | RunNo: **121245** |
|---|---|---|---|---|---|
| Client ID: **ZZZZZZ** | Batch ID: **66250** | TestNo: **EPA 200.8** | | Analysis Date: **1/6/2018** | SeqNo: **2887032** |

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Arsenic | 12.913 | 0.10 | 10.00 | 2.720 | 102 | 75 | 125 | | | | |
| Cobalt | 9.069 | 0.50 | 10.00 | 0 | 90.7 | 75 | 125 | | | | |
| Copper | 4.991 | 1.0 | 10.00 | 0 | 49.9 | 75 | 125 | | | | S |
| Manganese | 102.211 | 0.50 | 100.0 | 6.620 | 95.6 | 75 | 125 | | | | |
| Molybdenum | 32.134 | 0.50 | 10.00 | 20.54 | 116 | 75 | 125 | | | | |
| Nickel | 8.506 | 1.0 | 10.00 | 0 | 85.1 | 75 | 125 | | | | |
| Selenium | 15.437 | 0.50 | 10.00 | 4.537 | 109 | 75 | 125 | | | | |
| Silver | 8.535 | 0.50 | 10.00 | 0 | 85.3 | 75 | 125 | | | | |
| Vanadium | 19.161 | 1.0 | 10.00 | 8.242 | 109 | 75 | 125 | | | | |
| Zinc | 102.367 | 10 | 100.0 | 0 | 102 | 75 | 125 | | | | |

| Sample ID **N027789-001E-MSD** | SampType: **MSD** | TestCode: **200.8_W** | Units: **µg/L** | Prep Date: **1/4/2018** | RunNo: **121245** |
|---|---|---|---|---|---|
| Client ID: **ZZZZZZ** | Batch ID: **66250** | TestNo: **EPA 200.8** | | Analysis Date: **1/6/2018** | SeqNo: **2887034** |

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Arsenic | 13.179 | 0.10 | 10.00 | 2.720 | 105 | 75 | 125 | 12.91 | 2.04 | 20 | |
| Cobalt | 8.978 | 0.50 | 10.00 | 0 | 89.8 | 75 | 125 | 9.069 | 1.00 | 20 | |
| Copper | 5.032 | 1.0 | 10.00 | 0 | 50.3 | 75 | 125 | 4.991 | 0.807 | 20 | S |
| Manganese | 101.420 | 0.50 | 100.0 | 6.620 | 94.8 | 75 | 125 | 102.2 | 0.778 | 20 | |
| Molybdenum | 32.345 | 0.50 | 10.00 | 20.54 | 118 | 75 | 125 | 32.13 | 0.653 | 20 | |
| Nickel | 8.534 | 1.0 | 10.00 | 0 | 85.3 | 75 | 125 | 8.506 | 0.334 | 20 | |
| Selenium | 15.466 | 0.50 | 10.00 | 4.537 | 109 | 75 | 125 | 15.44 | 0.187 | 20 | |
| Silver | 8.577 | 0.50 | 10.00 | 0 | 85.8 | 75 | 125 | 8.535 | 0.494 | 20 | |
| Vanadium | 18.806 | 1.0 | 10.00 | 8.242 | 106 | 75 | 125 | 19.16 | 1.87 | 20 | |
| Zinc | 103.824 | 10 | 100.0 | 0 | 104 | 75 | 125 | 102.4 | 1.41 | 20 | |

| Sample ID **MB-66250** | SampType: **MBLK** | TestCode: **200.8_W** | Units: **µg/L** | Prep Date: **1/4/2018** | RunNo: **121256** |
|---|---|---|---|---|---|
| Client ID: **PBW** | Batch ID: **66250** | TestNo: **EPA 200.8** | | Analysis Date: **1/6/2018** | SeqNo: **2887944** |

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|

**Qualifiers:**

- B Analyte detected in the associated Method Blank
- 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:** N027789
**Project:** PG&E Topock, 680375.03.IM.OP.00

# ANALYTICAL QC SUMMARY REPORT

**TestCode: 200.8_W**

| Sample ID | MB-66250 | SampType: | MBLK | TestCode: | 200.8_W | Units: | µg/L | Prep Date: | 1/4/2018 | RunNo: | 121256 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Client ID: | PBW | Batch ID: | 66250 | TestNo: | EPA 200.8 | | | Analysis Date: | 1/6/2018 | SeqNo: | 2887944 |

| 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 | | | | | | | | | |
| Beryllium | ND | 0.50 | | | | | | | | | |
| Cadmium | ND | 0.50 | | | | | | | | | |
| Lead | ND | 1.0 | | | | | | | | | |
| Thallium | ND | 0.50 | | | | | | | | | |

| Sample ID | LCS-66250 | SampType: | LCS | TestCode: | 200.8_W | Units: | µg/L | Prep Date: | 1/4/2018 | RunNo: | 121256 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Client ID: | LCSW | Batch ID: | 66250 | TestNo: | EPA 200.8 | | | Analysis Date: | 1/6/2018 | SeqNo: | 2887945 |

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Antimony | 9.699 | 0.50 | 10.00 | 0 | 97.0 | 85 | 115 | | | | |
| Barium | 9.985 | 1.0 | 10.00 | 0 | 99.8 | 85 | 115 | | | | |
| Beryllium | 9.566 | 0.50 | 10.00 | 0 | 95.7 | 85 | 115 | | | | |
| Cadmium | 9.869 | 0.50 | 10.00 | 0 | 98.7 | 85 | 115 | | | | |
| Lead | 9.822 | 1.0 | 10.00 | 0 | 98.2 | 85 | 115 | | | | |
| Thallium | 10.522 | 0.50 | 10.00 | 0 | 105 | 85 | 115 | | | | |

| Sample ID | N027789-001E-MS | SampType: | MS | TestCode: | 200.8_W | Units: | µg/L | Prep Date: | 1/4/2018 | RunNo: | 121256 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Client ID: | ZZZZZZ | Batch ID: | 66250 | TestNo: | EPA 200.8 | | | Analysis Date: | 1/6/2018 | SeqNo: | 2887958 |

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Antimony | 10.202 | 0.50 | 10.00 | 0 | 102 | 75 | 125 | | | | |
| Barium | 41.005 | 1.0 | 10.00 | 30.49 | 105 | 75 | 125 | | | | |
| Beryllium | 13.106 | 0.50 | 10.00 | 0 | 131 | 75 | 125 | | | | S |
| Cadmium | 9.671 | 0.50 | 10.00 | 0 | 96.7 | 75 | 125 | | | | |
| Lead | 10.169 | 1.0 | 10.00 | 0 | 102 | 75 | 125 | | | | |
| Thallium | 9.426 | 0.50 | 10.00 | 0.05872 | 93.7 | 75 | 125 | | | | |

**Qualifiers:**

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

**CLIENT:** CH2M HILL
**Work Order:** N027789
**Project:** PG&E Topock, 680375.03.IM.OP.00

# ANALYTICAL QC SUMMARY REPORT

**TestCode: 200.8_W**

| Sample ID | N027789-001E-MSD | SampType: | MSD | TestCode: | 200.8_W | Units: | µg/L | Prep Date: | 1/4/2018 | RunNo: | 121256 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Client ID: | ZZZZZZ | Batch ID: | 66250 | TestNo: | EPA 200.8 | | | Analysis Date: | 1/6/2018 | SeqNo: | 2887961 |

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Antimony | 10.183 | 0.50 | 10.00 | 0 | 102 | 75 | 125 | 10.20 | 0.183 | 20 | |
| Barium | 41.073 | 1.0 | 10.00 | 30.49 | 106 | 75 | 125 | 41.00 | 0.166 | 20 | |
| Beryllium | 12.918 | 0.50 | 10.00 | 0 | 129 | 75 | 125 | 13.11 | 1.44 | 20 | S |
| Cadmium | 9.517 | 0.50 | 10.00 | 0 | 95.2 | 75 | 125 | 9.671 | 1.61 | 20 | |
| Lead | 10.183 | 1.0 | 10.00 | 0 | 102 | 75 | 125 | 10.17 | 0.133 | 20 | |
| Thallium | 9.511 | 0.50 | 10.00 | 0.05872 | 94.5 | 75 | 125 | 9.426 | 0.891 | 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
**Lab Order:** N027789
**Project:** PG&E Topock, 680375.03.IM.OP.00
**Lab ID:** N027789-001

**Client Sample ID:** SC-100B-WDR-568
**Collection Date:** 1/2/2018 3:20:00 PM
**Matrix:** WATER

| Analyses | Result | MDL | PQL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|---|
| **HEXAVALENT CHROMIUM BY IC** | | | | | | | |
| | | | **EPA 218.6** | | | | |
| RunID: **NV00922-IC7_180103A** | QC Batch: **R121208** | | | PrepDate | | | Analyst: **RAB** |
| Hexavalent Chromium | 540 | 3.3 | 20 | | µg/L | 100 | 1/3/2018 11:14 AM |
| **TOTAL METALS BY ICPMS** | | | | | | | |
| | | | **EPA 200.8** | | | | |
| RunID: **NV00922-ICP7_180105E** | QC Batch: **66250** | | | PrepDate | **1/4/2018** | | Analyst: **CEI** |
| Chromium | 560 | 0.096 | 5.0 | | µg/L | 5 | 1/6/2018 01:24 AM |

**Qualifiers:**

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

**CLIENT:** CH2M HILL
**Lab Order:** N027789
**Project:** PG&E Topock, 680375.03.IM.OP.00
**Lab ID:** N027789-002

**Client Sample ID:** SC-700B-WDR-568
**Collection Date:** 1/2/2018 3:10:00 PM
**Matrix:** WATER

| Analyses | Result | MDL | PQL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|---|
| **HEXAVALENT CHROMIUM BY IC** | | | | | | | |
| | | | **EPA 218.6** | | | | |
| RunID: **NV00922-IC7_180103A** QC Batch: **R121208** | | | | PrepDate | | | Analyst: **RAB** |
| Hexavalent Chromium | ND | 0.17 | 1.0 | | µg/L | 5 | 1/3/2018 01:22 PM |
| **TOTAL METALS BY ICPMS** | | | | | | | |
| | | | **EPA 200.8** | | | | |
| RunID: **NV00922-ICP7_180105E** QC Batch: **66250** | | | | PrepDate | **1/4/2018** | | Analyst: **CEI** |
| Chromium | ND | 0.019 | 1.0 | | µg/L | 1 | 1/6/2018 02:20 AM |

**Qualifiers:**

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

| | | | |
|---|---|---|---|
| **CLIENT:** | CH2M HILL | **Client Sample ID:** | SC-701-WDR-568 |
| **Lab Order:** | N027789 | **Collection Date:** | 1/2/2018 3:00:00 PM |
| **Project:** | PG&E Topock, 680375.03.IM.OP.00 | **Matrix:** | WATER |
| **Lab ID:** | N027789-003 | | |

| Analyses | Result | MDL | PQL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|---|
| **HEXAVALENT CHROMIUM BY IC** | | | | | | | |
| | | | **EPA 218.6** | | | | |
| RunID: **NV00922-IC7_180103A** | QC Batch: **R121208** | | | PrepDate | | | Analyst: **RAB** |
| Hexavalent Chromium | ND | 0.83 | 5.0 | | µg/L | 25 | 1/3/2018 01:43 PM |
| **TOTAL METALS BY ICPMS** | | | | | | | |
| | | | **EPA 200.8** | | | | |
| RunID: **NV00922-ICP7_180105E** | QC Batch: **66250** | | | PrepDate | **1/4/2018** | | Analyst: **CEI** |
| Chromium | ND | 0.096 | 5.0 | | µg/L | 5 | 1/6/2018 01:08 AM |

**Qualifiers:**

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

**CLIENT:** CH2M HILL
**Work Order:** N027789
**Project:** PG&E Topock, 680375.03.IM.OP.00

# ANALYTICAL QC SUMMARY REPORT

**TestCode: 200.8_W_CRPGE**

| Sample ID **MB-66250** | SampType: **MBLK** | TestCode: **200.8_W_CR** | Units: **µg/L** | Prep Date: **1/4/2018** | RunNo: **121244** |
|---|---|---|---|---|---|
| Client ID: **PBW** | Batch ID: **66250** | TestNo: **EPA 200.8** | | Analysis Date: **1/6/2018** | SeqNo: **2887674** |

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

| Sample ID **LCS-66250** | SampType: **LCS** | TestCode: **200.8_W_CR** | Units: **µg/L** | Prep Date: **1/4/2018** | RunNo: **121244** |
|---|---|---|---|---|---|
| Client ID: **LCSW** | Batch ID: **66250** | TestNo: **EPA 200.8** | | Analysis Date: **1/6/2018** | SeqNo: **2887675** |

| 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 **N027789-001E-MS** | SampType: **MS** | TestCode: **200.8_W_CR** | Units: **µg/L** | Prep Date: **1/4/2018** | RunNo: **121244** |
|---|---|---|---|---|---|
| Client ID: **ZZZZZZ** | Batch ID: **66250** | TestNo: **EPA 200.8** | | Analysis Date: **1/6/2018** | SeqNo: **2887690** |

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Chromium | 572.280 | 5.0 | 10.00 | 562.5 | 97.6 | 75 | 125 | | | | |

| Sample ID **N027789-001E-MSD** | SampType: **MSD** | TestCode: **200.8_W_CR** | Units: **µg/L** | Prep Date: **1/4/2018** | RunNo: **121244** |
|---|---|---|---|---|---|
| Client ID: **ZZZZZZ** | Batch ID: **66250** | TestNo: **EPA 200.8** | | Analysis Date: **1/6/2018** | SeqNo: **2887694** |

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Chromium | 576.354 | 5.0 | 10.00 | 562.5 | 138 | 75 | 125 | 572.3 | 0.709 | 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:** N027789
**Project:** PG&E Topock, 680375.03.IM.OP.00

# ANALYTICAL QC SUMMARY REPORT

**TestCode: 218.6_WU_PGE**

| Sample ID **MB-R121208** | SampType: **MBLK** | TestCode: **218.6_WU_P** | Units: **µg/L** | Prep Date: | RunNo: **121208** |
|---|---|---|---|---|---|
| Client ID: **PBW** | Batch ID: **R121208** | TestNo: **EPA 218.6** | | Analysis Date: **1/3/2018** | SeqNo: **2884780** |

| 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-R121208** | SampType: **LCS** | TestCode: **218.6_WU_P** | Units: **µg/L** | Prep Date: | RunNo: **121208** |
|---|---|---|---|---|---|
| Client ID: **LCSW** | Batch ID: **R121208** | TestNo: **EPA 218.6** | | Analysis Date: **1/3/2018** | SeqNo: **2884781** |

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Hexavalent Chromium | 5.128 | 0.20 | 5.000 | 0 | 103 | 90 | 110 | | | | |

| Sample ID **N027789-001CDUP** | SampType: **DUP** | TestCode: **218.6_WU_P** | Units: **µg/L** | Prep Date: | RunNo: **121208** |
|---|---|---|---|---|---|
| Client ID: **ZZZZZZ** | Batch ID: **R121208** | TestNo: **EPA 218.6** | | Analysis Date: **1/3/2018** | SeqNo: **2884783** |

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Hexavalent Chromium | 545.190 | 20 | | | | | | 540.7 | 0.834 | 20 | |

| Sample ID **N027789-001CMS** | SampType: **MS** | TestCode: **218.6_WU_P** | Units: **µg/L** | Prep Date: | RunNo: **121208** |
|---|---|---|---|---|---|
| Client ID: **ZZZZZZ** | Batch ID: **R121208** | TestNo: **EPA 218.6** | | Analysis Date: **1/3/2018** | SeqNo: **2884784** |

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Hexavalent Chromium | 1067.460 | 20 | 500.0 | 540.7 | 105 | 90 | 110 | | | | |

| Sample ID **N027789-001CMSD** | SampType: **MSD** | TestCode: **218.6_WU_P** | Units: **µg/L** | Prep Date: | RunNo: **121208** |
|---|---|---|---|---|---|
| Client ID: **ZZZZZZ** | Batch ID: **R121208** | TestNo: **EPA 218.6** | | Analysis Date: **1/3/2018** | SeqNo: **2884785** |

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Hexavalent Chromium | 1066.540 | 20 | 500.0 | 540.7 | 105 | 90 | 110 | 1067 | 0.0862 | 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:** N027789
**Project:** PG&E Topock, 680375.03.IM.OP.00

# ANALYTICAL QC SUMMARY REPORT

**TestCode: 218.6_WU_PGE**

| Sample ID | N027789-002CMS | SampType: | MS | TestCode: | 218.6_WU_P | Units: | µg/L | Prep Date: | | RunNo: | 121208 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Client ID: | ZZZZZZ | Batch ID: | R121208 | TestNo: | EPA 218.6 | | | Analysis Date: | 1/3/2018 | SeqNo: | 2884789 |

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Hexavalent Chromium | 5.309 | 1.0 | 5.000 | 0 | 106 | 90 | 110 | | | | |

| Sample ID | N027789-003BMS | SampType: | MS | TestCode: | 218.6_WU_P | Units: | µg/L | Prep Date: | | RunNo: | 121208 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Client ID: | ZZZZZZ | Batch ID: | R121208 | TestNo: | EPA 218.6 | | | Analysis Date: | 1/3/2018 | SeqNo: | 2884791 |

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Hexavalent Chromium | 25.263 | 5.0 | 25.00 | 0 | 101 | 90 | 110 | | | | |

**Qualifiers:**

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

| | | | |
|---|---|---|---|
| **CLIENT:** | CH2M HILL | **Client Sample ID:** | SC-100B-WDR-568 |
| **Lab Order:** | N027789 | **Collection Date:** | 1/2/2018 3:20:00 PM |
| **Project:** | PG&E Topock, 680375.03.IM.OP.00 | **Matrix:** | WATER |
| **Lab ID:** | N027789-001 | | |

| Analyses | Result | MDL | PQL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|---|
| **TURBIDITY** | | | | | | | |
| | | | **SM 2130B** | | | | |
| RunID: **NV00922-WC_180103C** | QC Batch: **R121197** | | | PrepDate | | | Analyst: **LR** |
| Turbidity | 0.12 | 0.10 | 0.10 | | NTU | 1 | 1/3/2018 11:25 AM |

**Qualifiers:**

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

| | | | |
|---|---|---|---|
| **CLIENT:** | CH2M HILL | **Client Sample ID:** | SC-700B-WDR-568 |
| **Lab Order:** | N027789 | **Collection Date:** | 1/2/2018 3:10:00 PM |
| **Project:** | PG&E Topock, 680375.03.IM.OP.00 | **Matrix:** | WATER |
| **Lab ID:** | N027789-002 | | |

| Analyses | Result | MDL | PQL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|---|
| **TURBIDITY** | | | | | | | |
| | | | **SM 2130B** | | | | |
| RunID: **NV00922-WC_180103C** | QC Batch: **R121197** | | | PrepDate | | | Analyst: **LR** |
| Turbidity | 0.14 | 0.10 | 0.10 | | NTU | 1 | 1/3/2018 11:25 AM |

**Qualifiers:**

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

**CLIENT:** CH2M HILL
**Work Order:** N027789
**Project:** PG&E Topock, 680375.03.IM.OP.00

# ANALYTICAL QC SUMMARY REPORT

**TestCode: 2130_W**

| Sample ID | **MB-R121197** | SampType: | **MBLK** | TestCode: | **2130_W** | Units: | **NTU** | Prep Date: | | RunNo: | **121197** |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Client ID: | **PBW** | Batch ID: | **R121197** | TestNo: | **SM 2130B** | | | Analysis Date: | **1/3/2018** | SeqNo: | **2884018** |

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

| Sample ID | **N027789-002BDUP** | SampType: | **DUP** | TestCode: | **2130_W** | Units: | **NTU** | Prep Date: | | RunNo: | **121197** |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Client ID: | **ZZZZZZ** | Batch ID: | **R121197** | TestNo: | **SM 2130B** | | | Analysis Date: | **1/3/2018** | SeqNo: | **2884021** |

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Turbidity | 0.130 | 0.10 | | | | | | 0.1400 | 7.41 | 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 | | |

| | | | |
|---|---|---|---|
| **CLIENT:** | CH2M HILL | **Client Sample ID:** | SC-701-WDR-568 |
| **Lab Order:** | N027789 | **Collection Date:** | 1/2/2018 3:00:00 PM |
| **Project:** | PG&E Topock, 680375.03.IM.OP.00 | **Matrix:** | WATER |
| **Lab ID:** | N027789-003 | | |

| Analyses | Result | MDL | PQL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|---|
| **TOTAL MERCURY BY COLD VAPOR TECHNIQUE** | | | | | | | |
| **EPA 245.1** | | | | | | | |
| RunID: **NV00922-AA1_180104A** QC Batch: **66253** | | | | PrepDate | **1/4/2018** | | Analyst: **MG** |
| Mercury | ND | 0.087 | 0.20 | | µg/L | 1 | 1/4/2018 12:58 PM |

**Qualifiers:**

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

**CLIENT:** CH2M HILL
**Work Order:** N027789
**Project:** PG&E Topock, 680375.03.IM.OP.00

# ANALYTICAL QC SUMMARY REPORT

**TestCode: 245.1_W**

| Sample ID | MB-66253 | SampType: | MBLK | TestCode: | 245.1_W | Units: | µg/L | Prep Date: | 1/4/2018 | RunNo: | 121205 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Client ID: | PBW | Batch ID: | 66253 | TestNo: | EPA 245.1 | | | Analysis Date: | 1/4/2018 | SeqNo: | 2884764 |

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

| Sample ID | LCS-66253 | SampType: | LCS | TestCode: | 245.1_W | Units: | µg/L | Prep Date: | 1/4/2018 | RunNo: | 121205 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Client ID: | LCSW | Batch ID: | 66253 | TestNo: | EPA 245.1 | | | Analysis Date: | 1/4/2018 | SeqNo: | 2884765 |

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Mercury | 4.794 | 0.20 | 5.000 | 0 | 95.9 | 85 | 115 | | | | |

| Sample ID | N027789-003C-MS | SampType: | MS | TestCode: | 245.1_W | Units: | µg/L | Prep Date: | 1/4/2018 | RunNo: | 121205 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Client ID: | ZZZZZZ | Batch ID: | 66253 | TestNo: | EPA 245.1 | | | Analysis Date: | 1/4/2018 | SeqNo: | 2884766 |

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Mercury | 4.871 | 0.20 | 5.000 | 0 | 97.4 | 75 | 125 | | | | |

| Sample ID | N027789-003C-MSD | SampType: | MSD | TestCode: | 245.1_W | Units: | µg/L | Prep Date: | 1/4/2018 | RunNo: | 121205 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Client ID: | ZZZZZZ | Batch ID: | 66253 | TestNo: | EPA 245.1 | | | Analysis Date: | 1/4/2018 | SeqNo: | 2884767 |

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Mercury | 5.021 | 0.20 | 5.000 | 0 | 100 | 75 | 125 | 4.871 | 3.04 | 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 | **Client Sample ID:** | SC-100B-WDR-568 |
| **Lab Order:** | N027789 | **Collection Date:** | 1/2/2018 3:20:00 PM |
| **Project:** | PG&E Topock, 680375.03.IM.OP.00 | **Matrix:** | WATER |
| **Lab ID:** | N027789-001 | | |

| Analyses | Result | MDL | PQL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|---|
| **ANIONS BY ION CHROMATOGRAPHY** | | | | | | | |
| | | | **EPA 300.0** | | | | |
| RunID: **NV00922-IC8_180103A** QC Batch: **R121189** | | | | PrepDate | | | Analyst: **RAB** |
| Fluoride | 2.4 | 0.032 | 0.50 | | mg/L | 5 | 1/3/2018 11:33 AM |
| **ANIONS BY ION CHROMATOGRAPHY** | | | | | | | |
| | | | **EPA 300.0** | | | | |
| RunID: **NV00922-IC8_180103A** QC Batch: **R121189** | | | | PrepDate | | | Analyst: **RAB** |
| Sulfate | 510 | 1.1 | 25 | | mg/L | 50 | 1/3/2018 01:05 PM |

**Qualifiers:**

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

**CLIENT:** CH2M HILL
**Lab Order:** N027789
**Project:** PG&E Topock, 680375.03.IM.OP.00
**Lab ID:** N027789-002

**Client Sample ID:** SC-700B-WDR-568
**Collection Date:** 1/2/2018 3:10:00 PM
**Matrix:** WATER

| Analyses | Result | MDL | PQL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|---|
| **ANIONS BY ION CHROMATOGRAPHY** | | | | | | | |
| | | | **EPA 300.0** | | | | |
| RunID: **NV00922-IC8_180103A** QC Batch: **R121189** | | | | PrepDate | | | Analyst: **RAB** |
| Fluoride | 2.1 | 0.013 | 0.20 | | mg/L | 2 | 1/3/2018 02:52 PM |
| **ANIONS BY ION CHROMATOGRAPHY** | | | | | | | |
| | | | **EPA 300.0** | | | | |
| RunID: **NV00922-IC8_180103A** QC Batch: **R121189** | | | | PrepDate | | | Analyst: **RAB** |
| Sulfate | 490 | 1.1 | 25 | | mg/L | 50 | 1/3/2018 02:37 PM |

**Qualifiers:**

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

| | | | |
|---|---|---|---|
| **CLIENT:** | CH2M HILL | **Client Sample ID:** | SC-701-WDR-568 |
| **Lab Order:** | N027789 | **Collection Date:** | 1/2/2018 3:00:00 PM |
| **Project:** | PG&E Topock, 680375.03.IM.OP.00 | **Matrix:** | WATER |
| **Lab ID:** | N027789-003 | | |

| Analyses | Result | MDL | PQL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|---|
| **ANIONS BY ION CHROMATOGRAPHY** | | | | | | | |
| | | | **EPA 300.0** | | | | |
| RunID: **NV00922-IC8_180103A** | QC Batch: **R121189** | | | PrepDate | | | Analyst: **RAB** |
| Fluoride | 20 | 0.13 | 2.0 | | mg/L | 20 | 1/3/2018 12:50 PM |

**Qualifiers:**

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

**CLIENT:** CH2M HILL
**Work Order:** N027789
**Project:** PG&E Topock, 680375.03.IM.OP.00

# ANALYTICAL QC SUMMARY REPORT

**TestCode: 300_W_FPGE**

| Sample ID | MB-R121189_F | SampType: | MBLK | TestCode: | 300_W_FPG | Units: | mg/L | Prep Date: | | RunNo: | 121189 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Client ID: | PBW | Batch ID: | R121189 | TestNo: | EPA 300.0 | | | Analysis Date: | 1/3/2018 | SeqNo: | 2883698 |

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

| Sample ID | LCS-R121189_F | SampType: | LCS | TestCode: | 300_W_FPG | Units: | mg/L | Prep Date: | | RunNo: | 121189 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Client ID: | LCSW | Batch ID: | R121189 | TestNo: | EPA 300.0 | | | Analysis Date: | 1/3/2018 | SeqNo: | 2883699 |

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Fluoride | 1.164 | 0.10 | 1.250 | 0 | 93.1 | 90 | 110 | | | | |

| Sample ID | N027789-001BDUP | SampType: | DUP | TestCode: | 300_W_FPG | Units: | mg/L | Prep Date: | | RunNo: | 121189 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Client ID: | ZZZZZZ | Batch ID: | R121189 | TestNo: | EPA 300.0 | | | Analysis Date: | 1/3/2018 | SeqNo: | 2883701 |

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Fluoride | 2.334 | 0.50 | | | | | | 2.352 | 0.747 | 20 | |

| Sample ID | N027789-001BMS | SampType: | MS | TestCode: | 300_W_FPG | Units: | mg/L | Prep Date: | | RunNo: | 121189 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Client ID: | ZZZZZZ | Batch ID: | R121189 | TestNo: | EPA 300.0 | | | Analysis Date: | 1/3/2018 | SeqNo: | 2883702 |

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Fluoride | 8.273 | 0.50 | 6.250 | 2.352 | 94.7 | 80 | 120 | | | | |

| Sample ID | N027789-001BMSD | SampType: | MSD | TestCode: | 300_W_FPG | Units: | mg/L | Prep Date: | | RunNo: | 121189 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Client ID: | ZZZZZZ | Batch ID: | R121189 | TestNo: | EPA 300.0 | | | Analysis Date: | 1/3/2018 | SeqNo: | 2883703 |

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Fluoride | 8.598 | 0.50 | 6.250 | 2.352 | 99.9 | 80 | 120 | 8.272 | 3.85 | 20 | |

**Qualifiers:**

- B Analyte detected in the associated Method Blank
- ND Not Detected at the Reporting Limit
- DO Surrogate Diluted Out
- E Value above quantitation range
- R RPD outside accepted recovery limits

Calculations are based on raw values

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

**CLIENT:** CH2M HILL
**Work Order:** N027789
**Project:** PG&E Topock, 680375.03.IM.OP.00

# ANALYTICAL QC SUMMARY REPORT

**TestCode: 300_W_SO4PGE**

| Sample ID | MB-R121189_SO4 | SampType: | MBLK | TestCode: | 300_W_SO4P | Units: | mg/L | Prep Date: | | RunNo: | 121189 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Client ID: | PBW | Batch ID: | R121189 | TestNo: | EPA 300.0 | | | Analysis Date: | 1/3/2018 | SeqNo: | 2883732 |

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Sulfate | 0.256 | 0.50 | | | | | | | | | |

| Sample ID | LCS-R121189_SO4 | SampType: | LCS | TestCode: | 300_W_SO4P | Units: | mg/L | Prep Date: | | RunNo: | 121189 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Client ID: | LCSW | Batch ID: | R121189 | TestNo: | EPA 300.0 | | | Analysis Date: | 1/3/2018 | SeqNo: | 2883733 |

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Sulfate | 3.953 | 0.50 | 4.000 | 0 | 98.8 | 90 | 110 | | | | |

| Sample ID | N027789-001BDUP | SampType: | DUP | TestCode: | 300_W_SO4P | Units: | mg/L | Prep Date: | | RunNo: | 121189 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Client ID: | ZZZZZZ | Batch ID: | R121189 | TestNo: | EPA 300.0 | | | Analysis Date: | 1/3/2018 | SeqNo: | 2883736 |

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Sulfate | 512.630 | 25 | | | | | | 511.8 | 0.155 | 20 | |

| Sample ID | N027789-001BMS | SampType: | MS | TestCode: | 300_W_SO4P | Units: | mg/L | Prep Date: | | RunNo: | 121189 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Client ID: | ZZZZZZ | Batch ID: | R121189 | TestNo: | EPA 300.0 | | | Analysis Date: | 1/3/2018 | SeqNo: | 2883739 |

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Sulfate | 710.665 | 25 | 200.0 | 511.8 | 99.4 | 80 | 120 | | | | |

| Sample ID | N027789-001BMSD | SampType: | MSD | TestCode: | 300_W_SO4P | Units: | mg/L | Prep Date: | | RunNo: | 121189 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Client ID: | ZZZZZZ | Batch ID: | R121189 | TestNo: | EPA 300.0 | | | Analysis Date: | 1/3/2018 | SeqNo: | 2883740 |

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Sulfate | 712.165 | 25 | 200.0 | 511.8 | 100 | 80 | 120 | 710.7 | 0.211 | 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 | **Client Sample ID:** | SC-100B-WDR-568 |
| **Lab Order:** | N027789 | **Collection Date:** | 1/2/2018 3:20:00 PM |
| **Project:** | PG&E Topock, 680375.03.IM.OP.00 | **Matrix:** | WATER |
| **Lab ID:** | N027789-001 | | |

| Analyses | Result | MDL | PQL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|---|
| **NITRATE/NITRITE-N BY CADMIUM REDUCTION** | | | | | | | |
| | | | **SM4500-NO3F** | | | | |
| RunID: **NV00922-WC_180105E** | QC Batch: **R121239** | | PrepDate | | | | Analyst: **QBM** |
| Nitrate/Nitrite as N | 3.2 | 0.11 | 0.25 | | mg/L | 5 | 1/5/2018 |

**Qualifiers:**

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

| | | | |
|---|---|---|---|
| **CLIENT:** | CH2M HILL | **Client Sample ID:** | SC-700B-WDR-568 |
| **Lab Order:** | N027789 | **Collection Date:** | 1/2/2018 3:10:00 PM |
| **Project:** | PG&E Topock, 680375.03.IM.OP.00 | **Matrix:** | WATER |
| **Lab ID:** | N027789-002 | | |

| Analyses | Result | MDL | PQL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|---|
| **NITRATE/NITRITE-N BY CADMIUM REDUCTION** | | | | | | | |
| | | | **SM4500-NO3F** | | | | |
| RunID: **NV00922-WC_180105E** | QC Batch: **R121239** | | PrepDate | | | | Analyst: **QBM** |
| Nitrate/Nitrite as N | 3.0 | 0.11 | 0.25 | | mg/L | 5 | 1/5/2018 |

**Qualifiers:**

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

**CLIENT:** CH2M HILL
**Work Order:** N027789
**Project:** PG&E Topock, 680375.03.IM.OP.00

# ANALYTICAL QC SUMMARY REPORT

**TestCode: 4500N03F_W**

| Sample ID **MB-R121239** | SampType: **MBLK** | TestCode: **4500N03F_W** | Units: **mg/L** | Prep Date: | | | RunNo: **121239** | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Client ID: **PBW** | Batch ID: **R121239** | TestNo: **SM4500-NO3** | | Analysis Date: **1/5/2018** | | | SeqNo: **2886037** | | | |
| 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-R121239** | SampType: **LCS** | TestCode: **4500N03F_W** | Units: **mg/L** | Prep Date: | | | RunNo: **121239** | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Client ID: **LCSW** | Batch ID: **R121239** | TestNo: **SM4500-NO3** | | Analysis Date: **1/5/2018** | | | SeqNo: **2886038** | | | |
| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
| Nitrate/Nitrite as N | 0.522 | 0.050 | 0.5000 | 0 | 104 | 85 | 115 | | | | |

| Sample ID **N027789-001DDUP** | SampType: **DUP** | TestCode: **4500N03F_W** | Units: **mg/L** | Prep Date: | | | RunNo: **121239** | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Client ID: **ZZZZZZ** | Batch ID: **R121239** | TestNo: **SM4500-NO3** | | Analysis Date: **1/5/2018** | | | SeqNo: **2886040** | | | |
| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
| Nitrate/Nitrite as N | 3.202 | 0.25 | | | | | | 3.245 | 1.33 | 20 | |

| Sample ID **N027789-002DMS** | SampType: **MS** | TestCode: **4500N03F_W** | Units: **mg/L** | Prep Date: | | | RunNo: **121239** | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Client ID: **ZZZZZZ** | Batch ID: **R121239** | TestNo: **SM4500-NO3** | | Analysis Date: **1/5/2018** | | | SeqNo: **2886042** | | | |
| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
| Nitrate/Nitrite as N | 5.587 | 0.25 | 2.500 | 2.954 | 105 | 75 | 125 | | | | |

| Sample ID **N027789-002DMSD** | SampType: **MSD** | TestCode: **4500N03F_W** | Units: **mg/L** | Prep Date: | | | RunNo: **121239** | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Client ID: **ZZZZZZ** | Batch ID: **R121239** | TestNo: **SM4500-NO3** | | Analysis Date: **1/5/2018** | | | SeqNo: **2886043** | | | |
| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
| Nitrate/Nitrite as N | 6.170 | 0.25 | 2.500 | 2.954 | 129 | 75 | 125 | 5.587 | 9.92 | 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

**CH2MHILL**

# CHAIN OF CUSTODY RECORD



**Project Name** PG&E Topock
**Location** PG&E Topock
**Project Number** 680375.03.IM.OP.00
**Project Manager** Scott O'Donnell
**Sample Manager** Shawn Duffy

**Task Order**
**Project** IM3PLANT-ARAR-WDR-568
**Turnaround Time** 10 Days
**Shipping Date:**
**COC Number:** 568

| | DATE | TIME | Matrix | AMMONIA (SM4500NH3D) | Anions (E300.0) Fl & SO4 | Anions (E300.0) Flouride | CONDUCTIVITY (E120.1) | E218.6 Lab Filtered | Nitrate/Nitrite (SM4500NO3-E) | TDS (SM2540C) | Total Metals (E200.8 Mn) | Total Metals(E200.7 and E200.8) | Total Title22Metals | Turbidity (SM2130) | | Number of Containers | COMMENTS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 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 | | | |
| SC-100B-WDR-568 | 01-02-13 | 1520 | Water | x | x | | x | x | x | x | | x | | x | N027789 - 01 | 4 | |
| SC-700B-WDR-568 | 01-02-13 | 1510 | Water | x | x | | x | x | x | x | | x | | x | - 02 | 4 | |
| SC-701-WDR-568 | 01-02-13 | 1500 | Water | | | x | x | x | | x | x | | x | | - 03 | 3 | |
| | | | | | | | | | | | | | | | TOTAL NUMBER OF CONTAINERS | 11 | |

| Signatures | | Date/Time |
|---|---|---|
| Approved by | Scott O'Donnell | 1-2-13 1500 |
| Sampled by | | 01-02-13 1540 |
| Relinquished by | | 01-02-13 1540 |
| Received by | | 1/2/13 @ 1542 |
| Relinquished by | | 1/2/13 @ 1800 |
| Received by | | |

**Shipping Details**
**Method of Shipment:** FedEx
**On Ice:** (yes) / no 4.1°C ICE
**Airbill No:** 1R#2
**Lab Name:** ASSET Laboratories
**Lab Phone:** (702) 307-2659

**ATTN:**
Sample Custody
and
Marlon Cartin

**Special Instructions:**
The SC-100B & SC-700B Total metals List:
Cr,Al,Sb,As,Ba,B,Cu,Pb,Mn,Mo,Ni,Fe,Zn

**Report Copy to**
Doug Scott
(970) 731-0636

## 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: | 1/2/2018 | Workorder: | N027789 |
| Rep sample Temp (Deg C): | 4.1 | IR Gun ID: | 2 |
| Temp Blank: | ☑ Yes ☐ No | | |
| Carrier name: | ASSET | | |
| Last 4 digits of Tracking No.: | NA | Packing Material Used: | None |
| Cooling process: | ☑ Ice ☐ Ice Pack ☐ Dry Ice ☐ Other ☐ None | | |

### Sample Receipt Checklist

| | | | |
|---|---|---|---|
| 1. Shipping container/cooler in good condition? | Yes ☑ | 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?<br>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 Hex Cr were lab filtered an preserved with Ammonium buffer.
Samples for Metals were lab preserved with HNO3 and for NH3/NO3- with H2SO4, pH adjusted to < 2.

For:

Checklist Completed By: MBC 1/3/2018

Reviewed By: 01/04/2018

# ASSET Laboratories

## WORK ORDER Summary

*03-Jan-18*

**WorkOrder:** N027789

**Client ID:** CH2HI01

**Project:** PG&E Topock, 680375.03.IM.OP.00 **QC Level:** Level IV **Date Received:** 1/2/2018

**Comments:** The SC-100B & SC-700B

| Sample ID | Client Sample ID | Date Collected | Date Due | Matrix | Test No | Test Name | Hld | MS | Sub | Storage |
|---|---|---|---|---|---|---|---|---|---|---|
| N027789-001A | SC-100B-WDR-568 | 1/2/2018 3:20:00 PM | 1/16/2018 | Water | SM4500-NH3D | AMMONIA-N BY ION SELECTIVE ELECTRODE | ☐ | ☐ | ☑ | SUB |
| N027789-001B | | | 1/16/2018 | | EPA 120.1 | SPECIFIC CONDUCTANCE | ☐ | ☐ | ☐ | LSR |
| | | | 1/16/2018 | | SM2540C | TOTAL FILTERABLE RESIDUE | ☐ | ☐ | ☐ | LSR |
| | | | 1/16/2018 | | | Total Dissolved Solids Prep | ☐ | ☐ | ☐ | LSR |
| | | | 1/16/2018 | | SM 2130B | TURBIDITY | ☐ | ☐ | ☐ | LSR |
| | | | 1/16/2018 | | EPA 300.0 | ANIONS BY ION CHROMATOGRAPHY | ☐ | ☐ | ☐ | LSR |
| | | | 1/16/2018 | | EPA 300.0 | ANIONS BY ION CHROMATOGRAPHY | ☐ | ☐ | ☐ | LSR |
| N027789-001C | | | 1/16/2018 | | EPA 218.6 | Hexavalent Chromium by IC | ☐ | ☐ | ☐ | WW |
| N027789-001D | | | 1/16/2018 | | SM4500-NO3F | NITRATE/NITRITE-N BY CADMIUM REDUCTION | ☐ | ☐ | ☐ | WW |
| N027789-001E | | | 1/16/2018 | | | AQPREP TOTAL METALS: ICP, FLAA | ☐ | ☐ | ☐ | WW |
| | | | 1/16/2018 | | EPA 200.7 | TOTAL METALS BY ICP | ☐ | ☐ | ☐ | WW |
| | | | 1/16/2018 | | | AQPREP TOTAL METALS: ICP, FLAA | ☐ | ☐ | ☐ | WW |
| | | | 1/16/2018 | | EPA 200.8 | TOTAL METALS BY ICPMS | ☐ | ☐ | ☐ | WW |
| | | | 1/16/2018 | | EPA 200.8 | TOTAL METALS BY ICPMS | ☐ | ☐ | ☐ | WW |
| N027789-002A | SC-700B-WDR-568 | 1/2/2018 3:10:00 PM | 1/16/2018 | | SM4500-NH3D | AMMONIA-N BY ION SELECTIVE ELECTRODE | ☐ | ☐ | ☑ | SUB |
| N027789-002B | | | 1/16/2018 | | EPA 120.1 | SPECIFIC CONDUCTANCE | ☐ | ☐ | ☐ | LSR |
| | | | 1/16/2018 | | SM2540C | TOTAL FILTERABLE RESIDUE | ☐ | ☐ | ☐ | LSR |
| | | | 1/16/2018 | | | Total Dissolved Solids Prep | ☐ | ☐ | ☐ | LSR |
| | | | 1/16/2018 | | SM 2130B | TURBIDITY | ☐ | ☐ | ☐ | LSR |
| | | | 1/16/2018 | | EPA 300.0 | ANIONS BY ION CHROMATOGRAPHY | ☐ | ☐ | ☐ | LSR |
| | | | 1/16/2018 | | EPA 300.0 | ANIONS BY ION CHROMATOGRAPHY | ☐ | ☐ | ☐ | LSR |

# ASSET Laboratories

## WORK ORDER Summary

*03-Jan-18*

**WorkOrder:** N027789

**Client ID:** CH2HI01

**Project:** PG&E Topock, 680375.03.IM.OP.00 **QC Level:** Level IV **Date Received:** 1/2/2018

**Comments:** The SC-100B & SC-700B

| Sample ID | Client Sample ID | Date Collected | Date Due | Matrix | Test No | Test Name | Hld | MS | Sub | Storage |
|---|---|---|---|---|---|---|---|---|---|---|
| N027789-002C | SC-700B-WDR-568 | 1/2/2018 3:10:00 PM | 1/16/2018 | Water | EPA 218.6 | Hexavalent Chromium by IC | ☐ | ☐ | ☐ | WW |
| N027789-002D | | | 1/16/2018 | | SM4500-NO3F | NITRATE/NITRITE-N BY CADMIUM REDUCTION | ☐ | ☐ | ☐ | WW |
| N027789-002E | | | 1/16/2018 | | | AQPREP TOTAL METALS: ICP, FLAA | ☐ | ☐ | ☐ | WW |
| | | | 1/16/2018 | | EPA 200.7 | TOTAL METALS BY ICP | ☐ | ☐ | ☐ | WW |
| | | | 1/16/2018 | | | AQPREP TOTAL METALS: ICP, FLAA | ☐ | ☐ | ☐ | WW |
| | | | 1/16/2018 | | EPA 200.8 | TOTAL METALS BY ICPMS | ☐ | ☐ | ☐ | WW |
| | | | 1/16/2018 | | EPA 200.8 | TOTAL METALS BY ICPMS | ☐ | ☐ | ☐ | WW |
| N027789-003A | SC-701-WDR-568 | 1/2/2018 3:00:00 PM | 1/16/2018 | | EPA 120.1 | SPECIFIC CONDUCTANCE | ☐ | ☐ | ☐ | LSR |
| | | | 1/16/2018 | | SM2540C | TOTAL FILTERABLE RESIDUE | ☐ | ☐ | ☐ | LSR |
| | | | 1/16/2018 | | | Total Dissolved Solids Prep | ☐ | ☐ | ☐ | LSR |
| | | | 1/16/2018 | | EPA 300.0 | ANIONS BY ION CHROMATOGRAPHY | ☐ | ☐ | ☐ | LSR |
| N027789-003B | | | 1/16/2018 | | EPA 218.6 | Hexavalent Chromium by IC | ☐ | ☐ | ☐ | WW |
| N027789-003C | | | 1/16/2018 | | | AQPREP TOTAL METALS: ICP, FLAA | ☐ | ☐ | ☐ | WW |
| | | | 1/16/2018 | | EPA 200.8 | TOTAL METALS BY ICPMS | ☐ | ☐ | ☐ | WW |
| | | | 1/16/2018 | | EPA 200.8 | TOTAL METALS BY ICPMS | ☐ | ☐ | ☐ | WW |
| | | | 1/16/2018 | | EPA 245.1 | TOTAL MERCURY BY COLD VAPOR TECHNIQUE | ☐ | ☐ | ☐ | WW |
| | | | 1/16/2018 | | | MERCURY PREP | ☐ | ☐ | ☐ | WW |
| N027789-004A | FOLDER | 1/16/2018 | 1/16/2018 | | Folder | Folder | ☐ | ☐ | ☐ | LAB |
| | | | 1/16/2018 | | Folder | Folder | ☐ | ☐ | ☐ | LAB |

**ASSET Laboratories**
*3151-3153 W Post Rd., Las Vegas, NV 89118*
*www.atl-labs.com*
*TEL: 7023072659* *FAX: 7023072691*

# CHAIN-OF-CUSTODY RECORD



**QC Level: Level IV**

**Subcontractor:**

BC Labs
4100 Atlas Court
Bakersfield, CA 93308

TEL: (661) 327-4911
FAX: (661) 327-1918
Acct #:

Field Sampler: SIGNED

**04-Jan-18**

| | | | | Requested Tests | | |
|---|---|---|---|---|---|---|
| **Sample ID** | **Matrix** | **Date Collected** | **Bottle Type** | **SM4500-NH3D** | | |
| N027789-001A / SC-100B-WDR-568 | Water | 1/2/2018 3:20:00 PM | 32OZP | 1 | | |
| N027789-002A / SC-700B-WDR-568 | Water | 1/2/2018 3:10:00 PM | 32OZP | 1 | | |

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

Please use PO#:N27789A Please email Invoices and Account Receivable Statements to elvira@assetlaboratories.com. For questions, call Marlon at (702)-307-2659. Please e-mail results to reports.lv@assetlaboratories.com by: Normal TAT.

Please analyze for Ammonia by SM4500NH3D. CH2M Hill samples. EDD Requirement LabSpec7 edata.

GSO #: 538973191

| | | Date/Time | | | Date/Time |
|---|---|---|---|---|---|
| **Relinquished by:** | | 1/4/2018 17:00 | | **Received by:** | |
| **Relinquished by:** | | | | **Received by:** | |

# List of Analysts

## ASSET Laboratories Work Order: N027789

| NAME | TEST METHOD |
|---|---|
| Quennie Manimtim | SM 4500-NO3F |
| Claire Ignacio | EPA 200.7, EPA 200.8 |
| Ria Abes | EPA 218.6, EPA 300.0 |
| Lilia Ramit | EPA 120.1, SM 2540C, SM 2130B |
| Mark Gesmundo | EPA 245.1 |

# 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-WDR SG6 | 11-7-17 | 10:20 | 11-7-17 | 10:26 | HQ440D | 11-7-17 | 0030 | -52.94 | [signature] | 7.04 |
| | **Notes:** | | | | | | | | | | |
| 2 | SC-700B-WDR SG6 | 11-7-17 | 10:24 | 11-7-17 | 10:28 | HQ440D | 11-7-17 | 0030 | -52.94 | [signature] | 6.95 |
| | **Notes:** | | | | | | | | | | |
| 3 | SC-100B-WDR SG7 | 12-5-17 | 13:40 | 12-5-17 | 1345 | HQ440D | 12-5-17 | 0030 | -52.96 | [signature] | 7.03 |
| | **Notes:** | | | | | | | | | | |
| 4 | SC-700B-WDR SG7 | 12-5-17 | 1342 | 12-5-17 | 1346 | HQ440D | 12-5-17 | 0030 | -52.96 | [signature] | 7.01 |
| | **Notes:** | | | | | | | | | | |
| 5 | SC-701.WDR SG8 | 01-02-18 | 1500 | 01-02-18 | 1505 | HQ440D | 01-02-18 | 0030 | -56.70 | G. GLORIA | 7.82 |
| | **Notes:** | | | | | | | | | | |
| 6 | SC-700B WDR-SG8 | 01-02-18 | 1510 | 01-02-18 | 1515 | HQ440D | 01-02-18 | 0030 | -56.70 | G. GLORIA | 7.27 |
| | **Notes:** | | | | | | | | | | |
| 7 | SC-100B - WDR-SG8 | 01-02-18 | 1520 | 01-02-18 | 525 | HQ440D | 01-02-18 | 0030 | -56.70 | G. GLORIA | 7.28 |
| | **Notes:** | | | | | | | | | | |

**Reminder: WDR Required pH Range for the Effluent (SC-700B) is: 6.5 - 8.4**

February 20, 2018

Doug Scott
CH2M HILL
155 Grand Avenue, Suite 1000
Oakland, CA 94612
TEL: (970) 731-0636
FAX: (510) 622-9129

Workorder No.: N028455

RE: PG&E Topock, 680375.03.IM.OP.00

Attention: Doug Scott

Enclosed are the results for sample(s) received on February 06, 2018 by ASSET Laboratories . The sample(s) are tested for the parameters as indicated in the enclosed chain of custody in accordance with the applicable laboratory certifications.

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

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

Sincerely,

Nancy Liburdi for

Quennie Manimtim
Laboratory Director

SAMPLE RECEIVING/GENERAL COMMENTS:

Samples were received intact with proper chain of custody documentation.

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

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

Samples were analyzed within method holding time.

Subcontracted Analyses:

Ammonia was subcontracted to BC Labs- Bakersfield,CA.

Analytical Comments for EPA 200.8:

Dilution was necessary on some analytes for sample N028455-001 due to associated internal standard not meeting method criteria possibly due to matrix interference. Sample was analyzed with dilution and internal standard met method criteria. Affected analytes for this failed internal standard were reported at dilution that meet internal standard recovery limit.

Matrix Spike (MS) and Matrix Spike Duplicate (MSD) are outside recovery criteria for Chromium in QC samples N028455-001C-MS and N028455-001C-MSD since the analyte concentration in the sample is disproportionate to the spike level. The associated Laboratory Control Sample (LCS) recovery was acceptable.

Matrix Spike (MS) and Matrix Spike Duplicate (MSD) are outside recovery criteria for Copper in QC samples N028455-001C-MS and N028455-001C-MSD possibly due to matrix interference. The associated Laboratory Control Sample (LCS) recovery was acceptable.

## ASSET Laboratories

**Date:** *20-Feb-18*

**CLIENT:** CH2M HILL
**Project:** PG&E Topock, 680375.03.IM.OP.00
**Lab Order:** N028455
**Contract No:** IM3PLANT-AR

# Work Order Sample Summary

| Lab Sample ID | Client Sample ID | Matrix | Collection Date | Date Received | Date Reported |
|---|---|---|---|---|---|
| N028455-001A | SC-100B-WDR-569 | Water | 2/6/2018 3:26:00 PM | 2/6/2018 | 2/20/2018 |
| N028455-001B | SC-100B-WDR-569 | Water | 2/6/2018 3:26:00 PM | 2/6/2018 | 2/20/2018 |
| N028455-001C | SC-100B-WDR-569 | Water | 2/6/2018 3:26:00 PM | 2/6/2018 | 2/20/2018 |
| N028455-002A | SC-700B-WDR-569 | Water | 2/6/2018 3:29:00 PM | 2/6/2018 | 2/20/2018 |
| N028455-002B | SC-700B-WDR-569 | Water | 2/6/2018 3:29:00 PM | 2/6/2018 | 2/20/2018 |
| N028455-002C | SC-700B-WDR-569 | Water | 2/6/2018 3:29:00 PM | 2/6/2018 | 2/20/2018 |
| N028455-002D | SC-700B-WDR-569 | Water | 2/6/2018 3:29:00 PM | 2/6/2018 | 2/20/2018 |
| N028455-002E | SC-700B-WDR-569 | Water | 2/6/2018 3:29:00 PM | 2/6/2018 | 2/20/2018 |

| | | | |
|---|---|---|---|
| **CLIENT:** | CH2M HILL | **Client Sample ID:** | SC-100B-WDR-569 |
| **Lab Order:** | N028455 | **Collection Date:** | 2/6/2018 3:26:00 PM |
| **Project:** | PG&E Topock, 680375.03.IM.OP.00 | **Matrix:** | WATER |
| **Lab ID:** | N028455-001 | | |

| Analyses | Result | MDL | PQL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|---|
| **SPECIFIC CONDUCTANCE** | | | | | | | |
| | | | **EPA 120.1** | | | | |
| RunID: **NV00922-WC_180207B** | QC Batch: **R121898** | | | PrepDate | | | Analyst: **MG** |
| Specific Conductance | 6700 | 0.10 | 0.10 | | umhos/cm | 1 | 2/7/2018 11:00 AM |

**Qualifiers:**

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

| | | | |
|---|---|---|---|
| **CLIENT:** | CH2M HILL | **Client Sample ID:** | SC-700B-WDR-569 |
| **Lab Order:** | N028455 | **Collection Date:** | 2/6/2018 3:29:00 PM |
| **Project:** | PG&E Topock, 680375.03.IM.OP.00 | **Matrix:** | WATER |
| **Lab ID:** | N028455-002 | | |

| Analyses | Result | MDL | PQL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|---|
| **SPECIFIC CONDUCTANCE** | | | | | | | |
| | | | **EPA 120.1** | | | | |
| RunID: **NV00922-WC_180207B** | QC Batch: **R121898** | | | PrepDate | | | Analyst: **MG** |
| Specific Conductance | 6500 | 0.10 | 0.10 | | umhos/cm | 1 | 2/7/2018 11:00 AM |

**Qualifiers:**

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

**CLIENT:** CH2M HILL
**Work Order:** N028455
**Project:** PG&E Topock, 680375.03.IM.OP.00

# ANALYTICAL QC SUMMARY REPORT

**TestCode: 120.1_WPGE**

| Sample ID | **N028455-001ADUP** | SampType: | **DUP** | TestCode: | **120.1_WPGE** | Units: | **umhos/cm** | Prep Date: | | RunNo: | **121898** |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Client ID: | **ZZZZZZ** | Batch ID: | **R121898** | TestNo: | **EPA 120.1** | | | Analysis Date: | **2/7/2018** | SeqNo: | **2922608** |

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Specific Conductance | 6750.000 | 0.10 | | | | | | 6720 | 0.445 | 2 | |

**Qualifiers:**

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

| | | | |
|---|---|---|---|
| **CLIENT:** | CH2M HILL | **Client Sample ID:** | SC-100B-WDR-569 |
| **Lab Order:** | N028455 | **Collection Date:** | 2/6/2018 3:26:00 PM |
| **Project:** | PG&E Topock, 680375.03.IM.OP.00 | **Matrix:** | WATER |
| **Lab ID:** | N028455-001 | | |

| Analyses | Result | MDL | PQL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|---|
| **TOTAL FILTERABLE RESIDUE** | | | | | | | |
| | | | **SM2540C** | | | | |
| RunID: **NV00922-WC_180208D** | QC Batch: **66738** | | | | PrepDate | **2/8/2018** | Analyst: **LR** |
| Total Dissolved Solids (Residue, Filterable) | 4400 | 50 | 50 | | mg/L | 1 | 2/8/2018 01:39 PM |

**Qualifiers:**

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

| | | | |
|---|---|---|---|
| **CLIENT:** | CH2M HILL | **Client Sample ID:** | SC-700B-WDR-569 |
| **Lab Order:** | N028455 | **Collection Date:** | 2/6/2018 3:29:00 PM |
| **Project:** | PG&E Topock, 680375.03.IM.OP.00 | **Matrix:** | WATER |
| **Lab ID:** | N028455-002 | | |

| Analyses | Result | MDL | PQL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|---|
| **TOTAL FILTERABLE RESIDUE** | | | | | | | |
| | | | **SM2540C** | | | | |
| RunID: **NV00922-WC_180208D** | QC Batch: **66738** | | | | PrepDate | **2/8/2018** | Analyst: **LR** |
| Total Dissolved Solids (Residue, Filterable) | 4200 | 50 | 50 | | mg/L | 1 | 2/8/2018 01:39 PM |

**Qualifiers:**

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

**CLIENT:** CH2M HILL
**Work Order:** N028455
**Project:** PG&E Topock, 680375.03.IM.OP.00

# ANALYTICAL QC SUMMARY REPORT

**TestCode: 160.1_2540C_W**

| Sample ID | LCS-66738 | SampType: | LCS | TestCode: | 160.1_2540C | Units: | mg/L | Prep Date: | 2/8/2018 | RunNo: | 121950 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Client ID: | LCSW | Batch ID: | 66738 | TestNo: | SM2540C | | | Analysis Date: | 2/8/2018 | SeqNo: | 2925577 |

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Total Dissolved Solids (Residue, Filtera | 959.000 | 10 | 1000 | 0 | 95.9 | 80 | 120 | | | | |

| Sample ID | MB-66738 | SampType: | MBLK | TestCode: | 160.1_2540C | Units: | mg/L | Prep Date: | 2/8/2018 | RunNo: | 121950 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Client ID: | PBW | Batch ID: | 66738 | TestNo: | SM2540C | | | Analysis Date: | 2/8/2018 | SeqNo: | 2925578 |

| 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 | N028455-001ADUP | SampType: | DUP | TestCode: | 160.1_2540C | Units: | mg/L | Prep Date: | 2/8/2018 | RunNo: | 121950 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Client ID: | ZZZZZZ | Batch ID: | 66738 | TestNo: | SM2540C | | | Analysis Date: | 2/8/2018 | SeqNo: | 2925580 |

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Total Dissolved Solids (Residue, Filtera | 4585.000 | 50 | | | | | | 4420 | 3.66 | 5 | |

**Qualifiers:**

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

| | | | |
|---|---|---|---|
| **CLIENT:** | CH2M HILL | **Client Sample ID:** | SC-700B-WDR-569 |
| **Lab Order:** | N028455 | **Collection Date:** | 2/6/2018 3:29:00 PM |
| **Project:** | PG&E Topock, 680375.03.IM.OP.00 | **Matrix:** | WATER |
| **Lab ID:** | N028455-002 | | |

| Analyses | Result | MDL | PQL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|---|
| **TOTAL METALS BY ICP** | | | | | | | |
| | | | **EPA 200.7** | | | | |
| RunID: **NV00922-ICP2_180214I** | QC Batch: **66716** | | | | PrepDate | **2/8/2018** | Analyst: **CEI** |
| Aluminum | ND | 40 | 50 | | µg/L | 1 | 2/14/2018 09:14 PM |
| Boron | 1100 | 74 | 100 | | µg/L | 1 | 2/14/2018 09:14 PM |
| Iron | ND | 18 | 20 | | µg/L | 1 | 2/14/2018 09:14 PM |

**Qualifiers:**

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

**CLIENT:** CH2M HILL
**Work Order:** N028455
**Project:** PG&E Topock, 680375.03.IM.OP.00

# ANALYTICAL QC SUMMARY REPORT

**TestCode: 200.7_WPGEPPB**

| Sample ID **MB-66716** | SampType: **MBLK** | TestCode: **200.7_WPGE** | Units: **µg/L** | Prep Date: **2/8/2018** | RunNo: **122070** |
|---|---|---|---|---|---|
| Client ID: **PBW** | Batch ID: **66716** | TestNo: **EPA 200.7** | | Analysis Date: **2/14/2018** | SeqNo: **2931270** |

| 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 **LCS1-66716** | SampType: **LCS** | TestCode: **200.7_WPGE** | Units: **µg/L** | Prep Date: **2/8/2018** | RunNo: **122070** |
|---|---|---|---|---|---|
| Client ID: **LCSW** | Batch ID: **66716** | TestNo: **EPA 200.7** | | Analysis Date: **2/14/2018** | SeqNo: **2931271** |

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Aluminum | 9926.123 | 50 | 10000 | 0 | 99.3 | 85 | 115 | | | | |
| Boron | 4769.079 | 100 | 5000 | 0 | 95.4 | 85 | 115 | | | | |
| Iron | 107.611 | 20 | 100.0 | 0 | 108 | 85 | 115 | | | | |

| Sample ID **N028455-002E-MS1** | SampType: **MS** | TestCode: **200.7_WPGE** | Units: **µg/L** | Prep Date: **2/8/2018** | RunNo: **122070** |
|---|---|---|---|---|---|
| Client ID: **ZZZZZZ** | Batch ID: **66716** | TestNo: **EPA 200.7** | | Analysis Date: **2/14/2018** | SeqNo: **2931275** |

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Aluminum | 10202.860 | 50 | 10000 | 0 | 102 | 75 | 125 | | | | |
| Boron | 6094.136 | 100 | 5000 | 1115 | 99.6 | 75 | 125 | | | | |
| Iron | 106.665 | 20 | 100.0 | 0 | 107 | 75 | 125 | | | | |

| Sample ID **N028455-002E-MSD** | SampType: **MSD** | TestCode: **200.7_WPGE** | Units: **µg/L** | Prep Date: **2/8/2018** | RunNo: **122070** |
|---|---|---|---|---|---|
| Client ID: **ZZZZZZ** | Batch ID: **66716** | TestNo: **EPA 200.7** | | Analysis Date: **2/14/2018** | SeqNo: **2931276** |

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Aluminum | 10136.272 | 50 | 10000 | 0 | 101 | 75 | 125 | 10200 | 0.655 | 20 | |
| Boron | 6064.220 | 100 | 5000 | 1115 | 99.0 | 75 | 125 | 6094 | 0.492 | 20 | |
| Iron | 106.333 | 20 | 100.0 | 0 | 106 | 75 | 125 | 106.7 | 0.312 | 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 | **Client Sample ID:** | SC-100B-WDR-569 |
| **Lab Order:** | N028455 | **Collection Date:** | 2/6/2018 3:26:00 PM |
| **Project:** | PG&E Topock, 680375.03.IM.OP.00 | **Matrix:** | WATER |
| **Lab ID:** | N028455-001 | | |

| Analyses | Result | MDL | PQL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|---|
| **TOTAL METALS BY ICPMS** | | | | | | | |
| | | | **EPA 200.8** | | | | |
| RunID: **NV00922-ICP7_180207B** | QC Batch: **66712** | | | | PrepDate | **2/7/2018** | Analyst: **CEI** |
| Manganese | 7.7 | 0.26 | 0.50 | | µg/L | 1 | 2/7/2018 03:34 PM |

**Qualifiers:**

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

| | | | |
|---|---|---|---|
| **CLIENT:** | CH2M HILL | **Client Sample ID:** | SC-700B-WDR-569 |
| **Lab Order:** | N028455 | **Collection Date:** | 2/6/2018 3:29:00 PM |
| **Project:** | PG&E Topock, 680375.03.IM.OP.00 | **Matrix:** | WATER |
| **Lab ID:** | N028455-002 | | |

| Analyses | Result | MDL | PQL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|---|
| **TOTAL METALS BY ICPMS** | | | | | | | |
| | | | **EPA 200.8** | | | | |
| RunID: **NV00922-ICP7_180207B** | QC Batch: **66712** | | | | PrepDate | **2/7/2018** | Analyst: **CEI** |
| Antimony | ND | 0.16 | 0.50 | | µg/L | 1 | 2/7/2018 04:37 PM |
| Arsenic | ND | 0.081 | 0.10 | | µg/L | 1 | 2/7/2018 04:37 PM |
| Barium | 17 | 0.15 | 1.0 | | µg/L | 1 | 2/7/2018 04:37 PM |
| Copper | ND | 0.55 | 1.0 | | µg/L | 1 | 2/7/2018 04:37 PM |
| Lead | ND | 0.64 | 5.0 | | µg/L | 5 | 2/7/2018 04:43 PM |
| Manganese | 2.2 | 0.26 | 0.50 | | µg/L | 1 | 2/7/2018 04:37 PM |
| Molybdenum | 20 | 0.21 | 0.50 | | µg/L | 1 | 2/7/2018 04:37 PM |
| Nickel | ND | 0.26 | 1.0 | | µg/L | 1 | 2/7/2018 04:37 PM |
| Zinc | ND | 2.3 | 10 | | µg/L | 1 | 2/7/2018 04:37 PM |

**Qualifiers:**

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

**CLIENT:** CH2M HILL
**Work Order:** N028455
**Project:** PG&E Topock, 680375.03.IM.OP.00

# ANALYTICAL QC SUMMARY REPORT

**TestCode: 200.8_W**

| Sample ID **MB-66712** | SampType: **MBLK** | TestCode: **200.8_W** | Units: **µg/L** | Prep Date: **2/7/2018** | RunNo: **121919** |
|---|---|---|---|---|---|
| Client ID: **PBW** | Batch ID: **66712** | TestNo: **EPA 200.8** | | Analysis Date: **2/7/2018** | SeqNo: **2923316** |

| 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 | | | | | | | | | |
| Barium | ND | 1.0 | | | | | | | | | |
| Copper | ND | 1.0 | | | | | | | | | |
| Lead | ND | 1.0 | | | | | | | | | |
| Manganese | ND | 0.50 | | | | | | | | | |
| Molybdenum | ND | 0.50 | | | | | | | | | |
| Nickel | ND | 1.0 | | | | | | | | | |
| Zinc | ND | 10 | | | | | | | | | |

| Sample ID **LCS-66712** | SampType: **LCS** | TestCode: **200.8_W** | Units: **µg/L** | Prep Date: **2/7/2018** | RunNo: **121919** |
|---|---|---|---|---|---|
| Client ID: **LCSW** | Batch ID: **66712** | TestNo: **EPA 200.8** | | Analysis Date: **2/7/2018** | SeqNo: **2923317** |

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Antimony | 9.425 | 0.50 | 10.00 | 0 | 94.3 | 85 | 115 | | | | |
| Arsenic | 9.771 | 0.10 | 10.00 | 0 | 97.7 | 85 | 115 | | | | |
| Barium | 9.640 | 1.0 | 10.00 | 0 | 96.4 | 85 | 115 | | | | |
| Copper | 9.835 | 1.0 | 10.00 | 0 | 98.4 | 85 | 115 | | | | |
| Lead | 9.728 | 1.0 | 10.00 | 0 | 97.3 | 85 | 115 | | | | |
| Manganese | 99.502 | 0.50 | 100.0 | 0 | 99.5 | 85 | 115 | | | | |
| Molybdenum | 9.594 | 0.50 | 10.00 | 0 | 95.9 | 85 | 115 | | | | |
| Nickel | 10.031 | 1.0 | 10.00 | 0 | 100 | 85 | 115 | | | | |
| Zinc | 91.905 | 10 | 100.0 | 0 | 91.9 | 85 | 115 | | | | |

| Sample ID **N028455-001C-MS** | SampType: **MS** | TestCode: **200.8_W** | Units: **µg/L** | Prep Date: **2/7/2018** | RunNo: **121919** |
|---|---|---|---|---|---|
| Client ID: **ZZZZZZ** | Batch ID: **66712** | TestNo: **EPA 200.8** | | Analysis Date: **2/7/2018** | SeqNo: **2923323** |

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|

**Qualifiers:**

- B Analyte detected in the associated Method Blank
- 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:** N028455
**Project:** PG&E Topock, 680375.03.IM.OP.00

# ANALYTICAL QC SUMMARY REPORT

**TestCode: 200.8_W**

| Sample ID | N028455-001C-MS | SampType: | MS | TestCode: | 200.8_W | Units: | µg/L | Prep Date: | 2/7/2018 | RunNo: | 121919 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Client ID: | ZZZZZZ | Batch ID: | 66712 | TestNo: | EPA 200.8 | | | Analysis Date: | 2/7/2018 | SeqNo: | 2923323 |

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Antimony | 10.064 | 0.50 | 10.00 | 0 | 101 | 75 | 125 | | | | |
| Arsenic | 13.496 | 0.10 | 10.00 | 2.781 | 107 | 75 | 125 | | | | |
| Barium | 40.978 | 1.0 | 10.00 | 30.03 | 109 | 75 | 125 | | | | |
| Copper | 3.667 | 1.0 | 10.00 | 0 | 36.7 | 75 | 125 | | | | S |
| Manganese | 101.191 | 0.50 | 100.0 | 7.653 | 93.5 | 75 | 125 | | | | |
| Molybdenum | 32.068 | 0.50 | 10.00 | 20.29 | 118 | 75 | 125 | | | | |
| Nickel | 8.831 | 1.0 | 10.00 | 0 | 88.3 | 75 | 125 | | | | |
| Zinc | 102.205 | 10 | 100.0 | 0 | 102 | 75 | 125 | | | | |

| Sample ID | N028455-001C-MS | SampType: | MS | TestCode: | 200.8_W | Units: | µg/L | Prep Date: | 2/7/2018 | RunNo: | 121919 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Client ID: | ZZZZZZ | Batch ID: | 66712 | TestNo: | EPA 200.8 | | | Analysis Date: | 2/7/2018 | SeqNo: | 2923324 |

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Lead | 10.423 | 5.0 | 10.00 | 0 | 104 | 75 | 125 | | | | |

| Sample ID | N028455-001C-MSD | SampType: | MSD | TestCode: | 200.8_W | Units: | µg/L | Prep Date: | 2/7/2018 | RunNo: | 121919 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Client ID: | ZZZZZZ | Batch ID: | 66712 | TestNo: | EPA 200.8 | | | Analysis Date: | 2/7/2018 | SeqNo: | 2923325 |

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Antimony | 10.064 | 0.50 | 10.00 | 0 | 101 | 75 | 125 | 10.06 | 0.00432 | 20 | |
| Arsenic | 13.357 | 0.10 | 10.00 | 2.781 | 106 | 75 | 125 | 13.50 | 1.03 | 20 | |
| Barium | 40.516 | 1.0 | 10.00 | 30.03 | 105 | 75 | 125 | 40.98 | 1.13 | 20 | |
| Copper | 3.722 | 1.0 | 10.00 | 0 | 37.2 | 75 | 125 | 3.667 | 1.50 | 20 | S |
| Manganese | 101.812 | 0.50 | 100.0 | 7.653 | 94.2 | 75 | 125 | 101.2 | 0.612 | 20 | |
| Molybdenum | 32.204 | 0.50 | 10.00 | 20.29 | 119 | 75 | 125 | 32.07 | 0.423 | 20 | |
| Nickel | 9.072 | 1.0 | 10.00 | 0 | 90.7 | 75 | 125 | 8.831 | 2.70 | 20 | |
| Zinc | 102.054 | 10 | 100.0 | 0 | 102 | 75 | 125 | 102.2 | 0.147 | 20 | |

**Qualifiers:**

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

**CLIENT:** CH2M HILL
**Work Order:** N028455
**Project:** PG&E Topock, 680375.03.IM.OP.00

# ANALYTICAL QC SUMMARY REPORT

**TestCode: 200.8_W**

| Sample ID | N028455-001C-MSD | SampType: | MSD | TestCode: | 200.8_W | Units: | µg/L | Prep Date: | 2/7/2018 | RunNo: | 121919 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Client ID: | ZZZZZZ | Batch ID: | 66712 | TestNo: | EPA 200.8 | | | Analysis Date: | 2/7/2018 | SeqNo: | 2923328 |

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Lead | 10.388 | 5.0 | 10.00 | 0 | 104 | 75 | 125 | 10.42 | 0.341 | 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
**Lab Order:** N028455
**Project:** PG&E Topock, 680375.03.IM.OP.00
**Lab ID:** N028455-001

**Client Sample ID:** SC-100B-WDR-569
**Collection Date:** 2/6/2018 3:26:00 PM
**Matrix:** WATER

| Analyses | Result | MDL | PQL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|---|
| **HEXAVALENT CHROMIUM BY IC** | | | | | | | |
| | | | **EPA 218.6** | | | | |
| RunID: **NV00922-IC7_180207B** QC Batch: **R121926** | | | | PrepDate | | | Analyst: **RAB** |
| Hexavalent Chromium | 570 | 3.3 | 20 | | µg/L | 100 | 2/7/2018 04:05 PM |
| **TOTAL METALS BY ICPMS** | | | | | | | |
| | | | **EPA 200.8** | | | | |
| RunID: **NV00922-ICP7_180207B** QC Batch: **66712** | | | | PrepDate | **2/7/2018** | | Analyst: **CEI** |
| Chromium | 540 | 0.65 | 5.0 | | µg/L | 5 | 2/7/2018 03:39 PM |

**Qualifiers:**

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

| | | | |
|---|---|---|---|
| **CLIENT:** | CH2M HILL | **Client Sample ID:** | SC-700B-WDR-569 |
| **Lab Order:** | N028455 | **Collection Date:** | 2/6/2018 3:29:00 PM |
| **Project:** | PG&E Topock, 680375.03.IM.OP.00 | **Matrix:** | WATER |
| **Lab ID:** | N028455-002 | | |

| Analyses | Result | MDL | PQL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|---|
| **HEXAVALENT CHROMIUM BY IC** | | | | | | | |
| | | | **EPA 218.6** | | | | |
| RunID: **NV00922-IC7_180207B** | QC Batch: **R121926** | | | PrepDate | | | Analyst: **RAB** |
| Hexavalent Chromium | ND | 0.033 | 0.20 | | µg/L | 1 | 2/7/2018 05:40 PM |
| **TOTAL METALS BY ICPMS** | | | | | | | |
| | | | **EPA 200.8** | | | | |
| RunID: **NV00922-ICP7_180207B** | QC Batch: **66712** | | | PrepDate | **2/7/2018** | | Analyst: **CEI** |
| Chromium | ND | 0.13 | 1.0 | | µg/L | 1 | 2/7/2018 04:37 PM |

**Qualifiers:**

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

**CLIENT:** CH2M HILL
**Work Order:** N028455
**Project:** PG&E Topock, 680375.03.IM.OP.00

# ANALYTICAL QC SUMMARY REPORT

**TestCode: 200.8_W_CRPGE**

| Sample ID **MB-66712** | SampType: **MBLK** | TestCode: **200.8_W_CR** | Units: **µg/L** | Prep Date: **2/7/2018** | RunNo: **121919** |
|---|---|---|---|---|---|
| Client ID: **PBW** | Batch ID: **66712** | TestNo: **EPA 200.8** | | Analysis Date: **2/7/2018** | SeqNo: **2923232** |

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

| Sample ID **LCS-66712** | SampType: **LCS** | TestCode: **200.8_W_CR** | Units: **µg/L** | Prep Date: **2/7/2018** | RunNo: **121919** |
|---|---|---|---|---|---|
| Client ID: **LCSW** | Batch ID: **66712** | TestNo: **EPA 200.8** | | Analysis Date: **2/7/2018** | SeqNo: **2923233** |

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Chromium | 9.851 | 1.0 | 10.00 | 0 | 98.5 | 85 | 115 | | | | |

| Sample ID **N028455-001C-MS** | SampType: **MS** | TestCode: **200.8_W_CR** | Units: **µg/L** | Prep Date: **2/7/2018** | RunNo: **121919** |
|---|---|---|---|---|---|
| Client ID: **ZZZZZZ** | Batch ID: **66712** | TestNo: **EPA 200.8** | | Analysis Date: **2/7/2018** | SeqNo: **2923240** |

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Chromium | 565.531 | 5.0 | 10.00 | 542.0 | 236 | 75 | 125 | | | | S |

| Sample ID **N028455-001C-MSD** | SampType: **MSD** | TestCode: **200.8_W_CR** | Units: **µg/L** | Prep Date: **2/7/2018** | RunNo: **121919** |
|---|---|---|---|---|---|
| Client ID: **ZZZZZZ** | Batch ID: **66712** | TestNo: **EPA 200.8** | | Analysis Date: **2/7/2018** | SeqNo: **2923244** |

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Chromium | 576.234 | 5.0 | 10.00 | 542.0 | 343 | 75 | 125 | 565.5 | 1.87 | 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:** N028455
**Project:** PG&E Topock, 680375.03.IM.OP.00

# ANALYTICAL QC SUMMARY REPORT

**TestCode: 218.6_WU_PGE**

| Sample ID | LCS-R121926 | SampType: | LCS | TestCode: | 218.6_WU_P | Units: | µg/L | Prep Date: | | RunNo: | 121926 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Client ID: | LCSW | Batch ID: | R121926 | TestNo: | EPA 218.6 | | | Analysis Date: | 2/7/2018 | SeqNo: | 2923792 | | |
| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual | | |
| Hexavalent Chromium | 5.163 | 0.20 | 5.000 | 0 | 103 | 90 | 110 | | | | | | |

| Sample ID | MB-R121926 | SampType: | MBLK | TestCode: | 218.6_WU_P | Units: | µg/L | Prep Date: | | RunNo: | 121926 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Client ID: | PBW | Batch ID: | R121926 | TestNo: | EPA 218.6 | | | Analysis Date: | 2/7/2018 | SeqNo: | 2923793 | | |
| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual | | |
| Hexavalent Chromium | ND | 0.20 | | | | | | | | | | | |

| Sample ID | N028455-001BMS | SampType: | MS | TestCode: | 218.6_WU_P | Units: | µg/L | Prep Date: | | RunNo: | 121926 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Client ID: | ZZZZZZ | Batch ID: | R121926 | TestNo: | EPA 218.6 | | | Analysis Date: | 2/7/2018 | SeqNo: | 2923795 | | |
| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual | | |
| Hexavalent Chromium | 1061.130 | 20 | 500.0 | 568.7 | 98.5 | 90 | 110 | | | | | | |

| Sample ID | N028455-001BMSD | SampType: | MSD | TestCode: | 218.6_WU_P | Units: | µg/L | Prep Date: | | RunNo: | 121926 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Client ID: | ZZZZZZ | Batch ID: | R121926 | TestNo: | EPA 218.6 | | | Analysis Date: | 2/7/2018 | SeqNo: | 2923796 | | |
| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual | | |
| Hexavalent Chromium | 1066.600 | 20 | 500.0 | 568.7 | 99.6 | 90 | 110 | 1061 | 0.514 | 20 | | | |

| Sample ID | N028455-002CMS | SampType: | MS | TestCode: | 218.6_WU_P | Units: | µg/L | Prep Date: | | RunNo: | 121926 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Client ID: | ZZZZZZ | Batch ID: | R121926 | TestNo: | EPA 218.6 | | | Analysis Date: | 2/7/2018 | SeqNo: | 2923805 | | |
| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual | | |
| Hexavalent Chromium | 0.974 | 0.20 | 1.000 | 0 | 97.4 | 90 | 110 | | | | | | |

**Qualifiers:**

- B Analyte detected in the associated Method Blank
- 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:** N028455
**Project:** PG&E Topock, 680375.03.IM.OP.00

# ANALYTICAL QC SUMMARY REPORT

**TestCode: 218.6_WU_PGE**

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Sample ID **N028470-003ADUP** | SampType: **DUP** | TestCode: **218.6_WU_P** | Units: **µg/L** | | Prep Date: | | | | RunNo: **121926** | | |
| Client ID: **ZZZZZZ** | Batch ID: **R121926** | TestNo: **EPA 218.6** | | | Analysis Date: **2/7/2018** | | | | SeqNo: **2923807** | | |
| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
| Hexavalent Chromium | 355.845 | 10 | | | | | | 360.1 | 1.18 | 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 | **Client Sample ID:** | SC-100B-WDR-569 |
| **Lab Order:** | N028455 | **Collection Date:** | 2/6/2018 3:26:00 PM |
| **Project:** | PG&E Topock, 680375.03.IM.OP.00 | **Matrix:** | WATER |
| **Lab ID:** | N028455-001 | | |

| Analyses | Result | MDL | PQL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|---|
| **TURBIDITY** | | | | | | | |
| | | | **SM 2130B** | | | | |
| RunID: **NV00922-WC_180207E** | QC Batch: **R121905** | | | PrepDate | | | Analyst: **QBM** |
| Turbidity | ND | 0.10 | 0.10 | | NTU | 1 | 2/7/2018 05:00 PM |

**Qualifiers:**

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

| | | | |
|---|---|---|---|
| **CLIENT:** | CH2M HILL | **Client Sample ID:** | SC-700B-WDR-569 |
| **Lab Order:** | N028455 | **Collection Date:** | 2/6/2018 3:29:00 PM |
| **Project:** | PG&E Topock, 680375.03.IM.OP.00 | **Matrix:** | WATER |
| **Lab ID:** | N028455-002 | | |

| Analyses | Result | MDL | PQL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|---|
| **TURBIDITY** | | | | | | | |
| | | | **SM 2130B** | | | | |
| RunID: **NV00922-WC_180207E** | QC Batch: **R121905** | | | PrepDate | | | Analyst: **QBM** |
| Turbidity | ND | 0.10 | 0.10 | | NTU | 1 | 2/7/2018 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 | | |

**CLIENT:** CH2M HILL
**Work Order:** N028455
**Project:** PG&E Topock, 680375.03.IM.OP.00

# ANALYTICAL QC SUMMARY REPORT

**TestCode: 2130_W**

| Sample ID | **MB-R121905** | SampType: | **MBLK** | TestCode: | **2130_W** | Units: | **NTU** | Prep Date: | | RunNo: | **121905** |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Client ID: | **PBW** | Batch ID: | **R121905** | TestNo: | **SM 2130B** | | | Analysis Date: | **2/7/2018** | SeqNo: | **2922749** |

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

| Sample ID | **N028455-002BDUP** | SampType: | **DUP** | TestCode: | **2130_W** | Units: | **NTU** | Prep Date: | | RunNo: | **121905** |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Client ID: | **ZZZZZZ** | Batch ID: | **R121905** | TestNo: | **SM 2130B** | | | Analysis Date: | **2/7/2018** | SeqNo: | **2922752** |

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Turbidity | ND | 0.10 | | | | | | 0 | 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 | | |

| | | | |
|---|---|---|---|
| **CLIENT:** | CH2M HILL | **Client Sample ID:** | SC-700B-WDR-569 |
| **Lab Order:** | N028455 | **Collection Date:** | 2/6/2018 3:29:00 PM |
| **Project:** | PG&E Topock, 680375.03.IM.OP.00 | **Matrix:** | WATER |
| **Lab ID:** | N028455-002 | | |

| Analyses | Result | MDL | PQL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|---|
| **ANIONS BY ION CHROMATOGRAPHY** | | | | | | | |
| | | | **EPA 300.0** | | | | |
| RunID: **NV00922-IC8_180207B** | QC Batch: **R121916** | | | PrepDate | | | Analyst: **RAB** |
| Fluoride | 2.5 | 0.032 | 0.50 | | mg/L | 5 | 2/7/2018 10:38 PM |
| **ANIONS BY ION CHROMATOGRAPHY** | | | | | | | |
| | | | **EPA 300.0** | | | | |
| RunID: **NV00922-IC8_180207B** | QC Batch: **R121916** | | | PrepDate | | | Analyst: **RAB** |
| Sulfate | 490 | 1.1 | 25 | | mg/L | 50 | 2/7/2018 11:40 PM |

**Qualifiers:**

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

**CLIENT:** CH2M HILL
**Work Order:** N028455
**Project:** PG&E Topock, 680375.03.IM.OP.00

# ANALYTICAL QC SUMMARY REPORT

**TestCode: 300_W_FPGE**

| Sample ID | LCS-R121916_F | SampType: | LCS | TestCode: | 300_W_FPG | Units: | mg/L | Prep Date: | | RunNo: | 121916 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Client ID: | LCSW | Batch ID: | R121916 | TestNo: | EPA 300.0 | | | Analysis Date: | 2/7/2018 | SeqNo: | 2924604 |

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Fluoride | 1.340 | 0.10 | 1.250 | 0 | 107 | 90 | 110 | | | | |

| Sample ID | MB-R121916_F | SampType: | MBLK | TestCode: | 300_W_FPG | Units: | mg/L | Prep Date: | | RunNo: | 121916 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Client ID: | PBW | Batch ID: | R121916 | TestNo: | EPA 300.0 | | | Analysis Date: | 2/7/2018 | SeqNo: | 2924605 |

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

| Sample ID | N028455-002BDUP | SampType: | DUP | TestCode: | 300_W_FPG | Units: | mg/L | Prep Date: | | RunNo: | 121916 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Client ID: | ZZZZZZ | Batch ID: | R121916 | TestNo: | EPA 300.0 | | | Analysis Date: | 2/7/2018 | SeqNo: | 2924609 |

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Fluoride | 2.571 | 0.50 | | | | | | 2.456 | 4.56 | 20 | |

| Sample ID | N028455-002BMS | SampType: | MS | TestCode: | 300_W_FPG | Units: | mg/L | Prep Date: | | RunNo: | 121916 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Client ID: | ZZZZZZ | Batch ID: | R121916 | TestNo: | EPA 300.0 | | | Analysis Date: | 2/7/2018 | SeqNo: | 2924610 |

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Fluoride | 9.236 | 0.50 | 6.250 | 2.456 | 108 | 80 | 120 | | | | |

| Sample ID | N028455-002BMSD | SampType: | MSD | TestCode: | 300_W_FPG | Units: | mg/L | Prep Date: | | RunNo: | 121916 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Client ID: | ZZZZZZ | Batch ID: | R121916 | TestNo: | EPA 300.0 | | | Analysis Date: | 2/7/2018 | SeqNo: | 2924611 |

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Fluoride | 9.050 | 0.50 | 6.250 | 2.456 | 106 | 80 | 120 | 9.236 | 2.03 | 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:** N028455
**Project:** PG&E Topock, 680375.03.IM.OP.00

# ANALYTICAL QC SUMMARY REPORT

**TestCode: 300_W_SO4PGE**

| Sample ID | LCS-R121916_SO4 | SampType: | LCS | TestCode: | 300_W_SO4P | Units: | mg/L | Prep Date: | | RunNo: | 121916 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Client ID: | LCSW | Batch ID: | R121916 | TestNo: | EPA 300.0 | | | Analysis Date: | 2/7/2018 | SeqNo: | 2924620 |

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Sulfate | 3.612 | 0.50 | 4.000 | 0 | 90.3 | 90 | 110 | | | | |

| Sample ID | MB-R121916_SO4 | SampType: | MBLK | TestCode: | 300_W_SO4P | Units: | mg/L | Prep Date: | | RunNo: | 121916 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Client ID: | PBW | Batch ID: | R121916 | TestNo: | EPA 300.0 | | | Analysis Date: | 2/7/2018 | SeqNo: | 2924621 |

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

| Sample ID | N028454-009CMS | SampType: | MS | TestCode: | 300_W_SO4P | Units: | mg/L | Prep Date: | | RunNo: | 121916 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Client ID: | ZZZZZZ | Batch ID: | R121916 | TestNo: | EPA 300.0 | | | Analysis Date: | 2/8/2018 | SeqNo: | 2924626 |

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Sulfate | 237.966 | 10 | 80.00 | 157.9 | 100 | 80 | 120 | | | | |

| Sample ID | N028454-009CMSD | SampType: | MSD | TestCode: | 300_W_SO4P | Units: | mg/L | Prep Date: | | RunNo: | 121916 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Client ID: | ZZZZZZ | Batch ID: | R121916 | TestNo: | EPA 300.0 | | | Analysis Date: | 2/8/2018 | SeqNo: | 2924627 |

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Sulfate | 237.178 | 10 | 80.00 | 157.9 | 99.1 | 80 | 120 | 238.0 | 0.332 | 20 | |

| Sample ID | N028454-011CDUP | SampType: | DUP | TestCode: | 300_W_SO4P | Units: | mg/L | Prep Date: | | RunNo: | 121916 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Client ID: | ZZZZZZ | Batch ID: | R121916 | TestNo: | EPA 300.0 | | | Analysis Date: | 2/8/2018 | SeqNo: | 2924632 |

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Sulfate | 52.943 | 2.5 | | | | | | 53.41 | 0.872 | 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
**Lab Order:** N028455
**Project:** PG&E Topock, 680375.03.IM.OP.00
**Lab ID:** N028455-002

**Client Sample ID:** SC-700B-WDR-569
**Collection Date:** 2/6/2018 3:29:00 PM
**Matrix:** WATER

| Analyses | Result | MDL | PQL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|---|
| **NITRATE/NITRITE-N BY CADMIUM REDUCTION** | | | | | | | |
| | | | **SM4500-NO3F** | | | | |
| RunID: **NV00922-WC_180216C** | QC Batch: **R122121** | | | PrepDate | | | Analyst: **QBM** |
| Nitrate/Nitrite as N | 2.8 | 0.16 | 0.25 | | mg/L | 5 | 2/16/2018 |

**Qualifiers:**

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

**CLIENT:** CH2M HILL
**Work Order:** N028455
**Project:** PG&E Topock, 680375.03.IM.OP.00

# ANALYTICAL QC SUMMARY REPORT

**TestCode: 4500N03F_W**

| Sample ID **MB-R122121** | SampType: **MBLK** | TestCode: **4500N03F_W** | Units: **mg/L** | Prep Date: | RunNo: **122121** |
|---|---|---|---|---|---|
| Client ID: **PBW** | Batch ID: **R122121** | TestNo: **SM4500-NO3** | | Analysis Date: **2/16/2018** | SeqNo: **2933564** |

| 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-R122121** | SampType: **LCS** | TestCode: **4500N03F_W** | Units: **mg/L** | Prep Date: | RunNo: **122121** |
|---|---|---|---|---|---|
| Client ID: **LCSW** | Batch ID: **R122121** | TestNo: **SM4500-NO3** | | Analysis Date: **2/16/2018** | SeqNo: **2933565** |

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Nitrate/Nitrite as N | 0.474 | 0.050 | 0.5000 | 0 | 94.8 | 85 | 115 | | | | |

| Sample ID **N028455-002DMS** | SampType: **MS** | TestCode: **4500N03F_W** | Units: **mg/L** | Prep Date: | RunNo: **122121** |
|---|---|---|---|---|---|
| Client ID: **ZZZZZZ** | Batch ID: **R122121** | TestNo: **SM4500-NO3** | | Analysis Date: **2/16/2018** | SeqNo: **2933571** |

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Nitrate/Nitrite as N | 5.603 | 0.25 | 2.500 | 2.834 | 111 | 75 | 125 | | | | |

| Sample ID **N028455-002DMSD** | SampType: **MSD** | TestCode: **4500N03F_W** | Units: **mg/L** | Prep Date: | RunNo: **122121** |
|---|---|---|---|---|---|
| Client ID: **ZZZZZZ** | Batch ID: **R122121** | TestNo: **SM4500-NO3** | | Analysis Date: **2/16/2018** | SeqNo: **2933572** |

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Nitrate/Nitrite as N | 5.557 | 0.25 | 2.500 | 2.834 | 109 | 75 | 125 | 5.602 | 0.824 | 20 | |

| Sample ID **N028469-002CDUP** | SampType: **DUP** | TestCode: **4500N03F_W** | Units: **mg/L** | Prep Date: | RunNo: **122121** |
|---|---|---|---|---|---|
| Client ID: **ZZZZZZ** | Batch ID: **R122121** | TestNo: **SM4500-NO3** | | Analysis Date: **2/16/2018** | SeqNo: **2933577** |

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Nitrate/Nitrite as N | 2.825 | 0.25 | | | | | | 2.503 | 12.1 | 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

**CH2MHILL**

# CHAIN OF CUSTODY RECORD



**Project Name** PG&E Topock
**Location** PG&E Topock
**Project Number** 680375.03.IM.OP.00
**Project Manager** Scott O'Donnell
**Sample Manager** Shawn Duffy

**Task Order**
**Project** IM3PLANT-ARAR-WDR-569
**Turnaround Time** 10 Days
**Shipping Date:**
**COC Number:** 569

| | DATE | TIME | Matrix | AMMONIA (SM4500NH3D) | Anions (E300.0) Fl, SO4 | CONDUCTIVITY (E120.1) | E218.6 Lab Filtered | Nitrate/Nitrite (SM4500NO3-E) | TDS (SM2540C) | Total Metals(E200.7 and E200.8) | Total Metals(E200.8) Cr & Mn | Turbidity (SM2130) | | Number of Containers | COMMENTS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Container:** | | | | 1 Liter Poly | 1 Liter Poly | 1 Liter Poly | 250 ml Poly | 1 Liter Poly | 1 Liter Poly | 500 ml Poly | 500 ml Poly | 1 Liter Poly | | | |
| **Preservatives:** | | | | 4°C Lab H2SO4 | 4°C | 4°C | 4°C | 4°C Lab H2SO4 | 4°C | 4°C | 4°C | 4°C | | | |
| **Filtered:** | | | | NA | NA | NA | NA | NA | NA | NA | NA | NA | | | |
| **Holding Time:** | | | | 28 | 7 | 7 | 1 | 28 | 7 | 180 | 180 | 7 | | | |
| SC-100B-WDR-569 | | | Water | | | X | X | | X | | X | X | N028455 - 01 | 3 | |
| SC-700B-WDR-569 | | | Water | X | X | X | X | X | X | X | | X | - 02 | 4 | |
| | | | | | | | | | | | | | TOTAL NUMBER OF CONTAINERS | 7 | |

| | Signatures | Date/Time |
|---|---|---|
| Approved by | Scott O'Donnell | 2-6-18 |
| Sampled by | | 02-06-18 15:20 |
| Relinquished by | | 02-06-18 15:40 |
| Received by | | 2-6-18 15:40 |
| Relinquished by | | 2/6/18 6:15pm |
| Received by | | 2/6/18 6:15pm |

**Shipping Details**
**Method of Shipment:** ~~FedEx~~ ASSET
**On Ice:** yes / no
**Airbill No:**
**Lab Name:** ASSET Laboratories
**Lab Phone:** (702) 307-2659

**ATTN:**
Sample Custody
and
Marlon Cartin

**Special Instructions:**
SC-700B Total metals List:
Cr,Al,Sb,As,Ba,B,Cu,Pb,Mn,Mo,Ni,Fe,Zn

**Report Copy to**
Doug Scott
(970) 731-0636

1.6°C IR #2

## 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: | 2/6/2018 | Workorder: | N028455 |
| Rep sample Temp (Deg C): | 1.6 | IR Gun ID: | 2 |

Temp Blank: ☑ Yes ☐ No

Carrier name: ASSET

Last 4 digits of Tracking No.: N/A  Packing Material Used: None

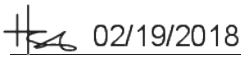
Cooling process: ☑ Ice ☐ Ice Pack ☐ Dry Ice ☐ Other ☐ None

### 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?<br>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: Collection date and time was taken from labels.
Samples for Hex Cr were lab filtered and preserved with Ammonium buffer.
Samples for Metals were lab preserved with HN03 and for NH3/NO3 - with H2SO4, pH adjusted to <2.

Checklist Completed B DA  2/7/2018

Reviewed By: 

# ASSET Laboratories

## WORK ORDER Summary

*07-Feb-18*

**WorkOrder:** N028455

**Client ID:** CH2HI01

**Project:** PG&E Topock, 680375.03.IM.OP.00 **QC Level:** Level IV **Date Received:** 2/6/2018

**Comments:** SC-700B Total metals list: Cr, Al, Sb, As, Ba, B, Cu, Pb, Mn, Mo, Ni, Fe, Zn

| Sample ID | Client Sample ID | Date Collected | Date Due | Matrix | Test No | Test Name | Hld | MS | Sub | Storage |
|---|---|---|---|---|---|---|---|---|---|---|
| N028455-001A | SC-100B-WDR-569 | 2/6/2018 3:26:00 PM | 2/20/2018 | Water | EPA 120.1 | SPECIFIC CONDUCTANCE | ☐ | ☐ | ☐ | WW |
| | | | 2/20/2018 | | SM2540C | TOTAL FILTERABLE RESIDUE | ☐ | ☐ | ☐ | WW |
| | | | 2/20/2018 | | | Total Dissolved Solids Prep | ☐ | ☐ | ☐ | WW |
| | | | 2/20/2018 | | SM 2130B | TURBIDITY | ☐ | ☐ | ☐ | WW |
| N028455-001B | | | 2/20/2018 | | EPA 218.6 | Hexavalent Chromium by IC | ☐ | ☐ | ☐ | WW |
| N028455-001C | | | 2/20/2018 | | | AQPREP TOTAL METALS: ICP, FLAA | ☐ | ☐ | ☐ | WW |
| | | | 2/20/2018 | | EPA 200.8 | TOTAL METALS BY ICPMS | ☐ | ☐ | ☐ | WW |
| | | | 2/20/2018 | | EPA 200.8 | TOTAL METALS BY ICPMS | ☐ | ☐ | ☐ | WW |
| N028455-002A | SC-700B-WDR-569 | 2/6/2018 3:29:00 PM | 2/20/2018 | | SM4500-NH3D | AMMONIA-N BY ION SELECTIVE ELECTRODE | ☐ | ☐ | ☑ | SUB |
| N028455-002B | | | 2/20/2018 | | EPA 120.1 | SPECIFIC CONDUCTANCE | ☐ | ☐ | ☐ | WW |
| | | | 2/20/2018 | | SM2540C | TOTAL FILTERABLE RESIDUE | ☐ | ☐ | ☐ | WW |
| | | | 2/20/2018 | | | Total Dissolved Solids Prep | ☐ | ☐ | ☐ | WW |
| | | | 2/20/2018 | | SM 2130B | TURBIDITY | ☐ | ☐ | ☐ | WW |
| | | | 2/20/2018 | | EPA 300.0 | ANIONS BY ION CHROMATOGRAPHY | ☐ | ☐ | ☐ | WW |
| | | | 2/20/2018 | | EPA 300.0 | ANIONS BY ION CHROMATOGRAPHY | ☐ | ☐ | ☐ | WW |
| N028455-002C | | | 2/20/2018 | | EPA 218.6 | Hexavalent Chromium by IC | ☐ | ☐ | ☐ | WW |
| N028455-002D | | | 2/20/2018 | | SM4500-NO3F | NITRATE/NITRITE-N BY CADMIUM REDUCTION | ☐ | ☐ | ☐ | WW |
| N028455-002E | | | 2/20/2018 | | | AQPREP TOTAL METALS: ICP, FLAA | ☐ | ☐ | ☐ | WW |
| | | | 2/20/2018 | | EPA 200.7 | TOTAL METALS BY ICP | ☐ | ☐ | ☐ | WW |
| | | | 2/20/2018 | | | AQPREP TOTAL METALS: ICP, FLAA | ☐ | ☐ | ☐ | WW |
| | | | 2/20/2018 | | EPA 200.8 | TOTAL METALS BY ICPMS | ☐ | ☐ | ☐ | WW |

# WORK ORDER Summary

*07-Feb-18*

**WorkOrder:** N028455

**Client ID:** CH2HI01

**Project:** PG&E Topock, 680375.03.IM.OP.00 **QC Level:** Level IV **Date Received:** 2/6/2018

**Comments:** SC-700B Total metals list: Cr, Al, Sb, As, Ba, B, Cu, Pb, Mn, Mo, Ni, Fe, Zn

| Sample ID | Client Sample ID | Date Collected | Date Due | Matrix | Test No | Test Name | Hld | MS | Sub | Storage |
|---|---|---|---|---|---|---|---|---|---|---|
| N028455-002E | SC-700B-WDR-569 | 2/6/2018 3:29:00 PM | 2/20/2018 | Water | EPA 200.8 | TOTAL METALS BY ICPMS | ☐ | ☐ | ☐ | WW |
| N028455-003A | FOLDER | 2/20/2018 | 2/20/2018 | | Folder | Folder | ☐ | ☐ | ☐ | LAB |
| | | | 2/20/2018 | | Folder | Folder | ☐ | ☐ | ☐ | LAB |

**ASSET Laboratories**
*3151-3153 W Post Rd., Las Vegas, NV 89118*
*www.atl-labs.com*
*TEL: 7023072659* *FAX: 7023072691*

# CHAIN-OF-CUSTODY RECORD



**QC Level: Level IV**

**Subcontractor:**

BC Labs
4100 Atlas Court
Bakersfield, CA 93308

TEL: (661) 327-4911
FAX: (661) 327-1918
Acct #:

Field Sampler: SIGNED

**07-Feb-18**

| | | | | Requested Tests | | |
|---|---|---|---|---|---|---|
| **Sample ID** | **Matrix** | **Date Collected** | **Bottle Type** | **SM4500-NH3D** | | |
| N028455-002A / SC-700B-WDR-569 | Water | 2/6/2018 3:29:00 PM | 32OZP | 1 | | |

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

Please use PO#:N28455A Please email Invoices and Account Receivable Statements to elvira@assetlaboratories.com. For questions, call Marlon at (702)-307-2659. Please e-mail results to reports.lv@assetlaboratories.com by: Normal TAT.

Please analyze for Ammonia by SM4500NH3D. EDD Requirement Labspec7 edata.

GSO #: 539384703

| | Date/Time | | Date/Time |
|---|---|---|---|
| **Relinquished by:** | 2/7/2018 17:00 | **Received by:** | |
| **Relinquished by:** | | **Received by:** | |

# List of Analysts

## ASSET Laboratories Work Order: N028455

| NAME | TEST METHOD |
|---|---|
| Quennie Manimtim | SM 2130B, SM 4500-NO3F |
| Claire Ignacio | EPA 200.7, EPA 200.8 |
| Ria Abes | EPA 218.6, EPA 300.0 |
| Lilia Ramit | SM 2540C |
| Mark Gesmundo | EPA 120.1 |

# 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-1003-WDR-569 | 22-06-13 | 15:20 | 22-06-13 | 1523 | HQ440D | 22-06-13 | 00:30 | -56.56 | G. GLORIA | 7.20 |
| | **Notes:** | | | | | | | | | | |
| 2 | SC-700B-WDR569 | 22-06-13 | 15:20 | 22-06-13 | 1524 | HQ440D | 22-06-13 | 00:30 | -56.56 | G. GLORIA | 7.04 |
| | **Notes:** | | | | | | | | | | |
| 3 | | | | | | | | | | | |
| | **Notes:** | | | | | | | | | | |
| 4 | | | | | | | | | | | |
| | **Notes:** | | | | | | | | | | |
| 5 | | | | | | | | | | | |
| | **Notes:** | | | | | | | | | | |
| 6 | | | | | | | | | | | |
| | **Notes:** | | | | | | | | | | |
| 7 | | | | | | | | | | | |
| | **Notes:** | | | | | | | | | | |

**Reminder: WDR Required pH Range for the Effluent (SC-700B) is: 6.5 - 8.4**

**CH2MHILL**

# CHAIN OF CUSTODY RECORD



**Project Name** PG&E Topock
**Location** PG&E Topock
**Project Number** 680375.03.IM.OP.00
**Project Manager** Scott O'Donnell
**Sample Manager** Shawn Duffy

**Task Order**
**Project** IM3PLANT-ARAR-WDR-570
**Turnaround Time** 10 Days
**Shipping Date:**
**COC Number:** 570

| | Container: | 1 Liter Poly | 1 Liter Poly | 1 Liter Poly | 250 ml Poly | 1 Liter Poly | 1 Liter Poly | 500 ml Poly | 500 ml Poly | 1 Liter Poly | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Preservatives: | 4°C Lab H2SO4 | 4°C | 4°C | 4°C | 4°C Lab H2SO4 | 4°C | 4°C | 4°C | 4°C | | | |
| | Filtered: | NA | NA | NA | NA | NA | NA | NA | NA | NA | | | |
| | Holding Time: | 28 | 7 | 7 | 1 | 28 | 7 | 180 | 180 | 7 | | | |
| | | AMMONIA (SM4500NH3D) | Anions (E300.0) Fl, SO4 | CONDUCTIVITY (E120.1) | E218.6 Lab Filtered | Nitrate/Nitrite (SM4500NO3-E) | TDS (SM2540C) | Total Metals(E200.7 and E200.8) | Total Metals(E200.8) Cr & Mn | Turbidity (SM2130) | | Number of Containers | COMMENTS |
| SC-100B-WDR-570 | 3-7-18 13:35 Water | | | X | X | | X | | X | X | N028968 - 01 | 3 | |
| SC-700B-WDR-570 | 3-7-18 13:25 Water | X | X | X | X | X | X | X | | X | - 02 | 4 | |
| | | | | | | | | | | | TOTAL NUMBER OF CONTAINERS | 7 | |

| | Signatures | Date/Time |
|---|---|---|
| Approved by | | 3-7-18 12:00 |
| Sampled by | | 3-7-18 13:25 |
| Relinquished by | | 3-7-18 13:40 |
| Received by | | 3/7/18 1340 |
| Relinquished by | | 3/7/18 1947 |
| Received by | | 3/7/18 1947 |

**Shipping Details**
**Method of Shipment:** FedEx
**On Ice:** (yes) / no 3.2°C
**Airbill No:** 7764
**Lab Name:** ASSET Laboratories
**Lab Phone:** (702) 307-2659

**ATTN:**
Sample Custody
and
Marlon Cartin

**Special Instructions:**
SC-700B Total metals List:
Cr,Al,Sb,As,Ba,B,Cu,Pb,Mn,Mo,Ni,Fe,Zn

**Report Copy to**
Doug Scott
(970) 731-0636

## 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: | 3/7/2018 | Workorder: | N028968 |
| Rep sample Temp (Deg C): | 3.2 | IR Gun ID: | 2 |
| Temp Blank: | ☑ Yes ☐ No | | |
| Carrier name: | ASSET | | |
| Last 4 digits of Tracking No.: | N/A | 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?<br>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 received at pH 7. Fraction for Hex Cr was lab filtered and preserved with Ammonium Buffer. Fraction for Metals was preserved with HNO3 and for Ammonia/NO3 with H2SO4.

For:

Checklist Completed By: DA 3/19/2018

Reviewed By: 03/20/2018

## ASSET Laboratories

# WORK ORDER Summary

*21-Mar-18*

**WorkOrder:** N028968

**Client ID:** CH2HI01

**Project:** PG&E Topock, 680375.03.IM.OP.00 **QC Level:** Level IV **Date Received:** 3/7/2018

**Comments:** SC-700B: Total metals List: Cr, Al, Sb, As, Ba, B, Cu, Pb, Mn, Mo, Ni, Fe, Zn

| Sample ID | Client Sample ID | Date Collected | Date Due | Matrix | Test No | Test Name | Hld | MS | Sub | Storage |
|---|---|---|---|---|---|---|---|---|---|---|
| N028968-001A | SC-100B-WDR-570 | 3/7/2018 1:35:00 PM | 3/21/2018 | Water | EPA 218.6 | Hexavalent Chromium by IC | ☐ | ☐ | ☐ | WW |
| N028968-001B | | | 3/21/2018 | | EPA 120.1 | SPECIFIC CONDUCTANCE | ☐ | ☐ | ☐ | WW |
| | | | 3/21/2018 | | SM2540C | TOTAL FILTERABLE RESIDUE | ☐ | ☐ | ☐ | WW |
| | | | 3/21/2018 | | | Total Dissolved Solids Prep | ☐ | ☐ | ☐ | WW |
| | | | 3/21/2018 | | SM 2130B | TURBIDITY | ☐ | ☐ | ☐ | WW |
| N028968-001C | | | 3/21/2018 | | | AQPREP TOTAL METALS: ICP, FLAA | ☐ | ☐ | ☐ | WW |
| | | | 3/21/2018 | | EPA 200.8 | TOTAL METALS BY ICPMS | ☐ | ☐ | ☐ | WW |
| | | | 3/21/2018 | | EPA 200.8 | TOTAL METALS BY ICPMS | ☐ | ☐ | ☐ | WW |
| N028968-002A | SC-700B-WDR-570 | 3/7/2018 1:25:00 PM | 3/21/2018 | | EPA 218.6 | Hexavalent Chromium by IC | ☐ | ☐ | ☐ | WW |
| N028968-002B | | | 3/21/2018 | | EPA 120.1 | SPECIFIC CONDUCTANCE | ☐ | ☐ | ☐ | WW |
| | | | 3/21/2018 | | SM2540C | TOTAL FILTERABLE RESIDUE | ☐ | ☐ | ☐ | WW |
| | | | 3/21/2018 | | | Total Dissolved Solids Prep | ☐ | ☐ | ☐ | WW |
| | | | 3/21/2018 | | SM 2130B | TURBIDITY | ☐ | ☐ | ☐ | WW |
| | | | 3/21/2018 | | EPA 300.0 | ANIONS BY ION CHROMATOGRAPHY | ☐ | ☐ | ☐ | WW |
| | | | 3/21/2018 | | EPA 300.0 | ANIONS BY ION CHROMATOGRAPHY | ☐ | ☐ | ☐ | WW |
| N028968-002C | | | 3/21/2018 | | | AQPREP TOTAL METALS: ICP, FLAA | ☐ | ☐ | ☐ | WW |
| | | | 3/21/2018 | | EPA 200.7 | TOTAL METALS BY ICP | ☐ | ☐ | ☐ | WW |
| | | | 3/21/2018 | | | AQPREP TOTAL METALS: ICP, FLAA | ☐ | ☐ | ☐ | WW |
| | | | 3/21/2018 | | EPA 200.8 | TOTAL METALS BY ICPMS | ☐ | ☐ | ☐ | WW |
| | | | 3/21/2018 | | EPA 200.8 | TOTAL METALS BY ICPMS | ☐ | ☐ | ☐ | WW |
| N028968-002D | | | 3/21/2018 | | SM4500-NO3F | NITRATE/NITRITE-N BY CADMIUM REDUCTION | ☐ | ☐ | ☐ | WW |

# WORK ORDER Summary

*21-Mar-18*

**WorkOrder:** N028968

**Client ID:** CH2HI01

**Project:** PG&E Topock, 680375.03.IM.OP.00 **QC Level:** Level IV **Date Received:** 3/7/2018

**Comments:** SC-700B: Total metals List: Cr, Al, Sb, As, Ba, B, Cu, Pb, Mn, Mo, Ni, Fe, Zn

| Sample ID | Client Sample ID | Date Collected | Date Due | Matrix | Test No | Test Name | Hld | MS | Sub | Storage |
|---|---|---|---|---|---|---|---|---|---|---|
| N028968-002E | SC-700B-WDR-570 | 3/7/2018 1:25:00 PM | 3/21/2018 | Water | SM4500-NH3D | AMMONIA-N BY ION SELECTIVE ELECTRODE | ☐ | ☐ | ☑ | SUB |
| N028968-003A | FOLDER | 3/21/2018 | 3/21/2018 | | Folder | Folder | ☐ | ☐ | ☐ | LAB |
| | | | 3/21/2018 | | Folder | Folder | ☐ | ☐ | ☐ | LAB |

**ASSET Laboratories**
*3151-3153 W Post Rd., Las Vegas, NV 89118*
*www.atl-labs.com*
*TEL: 7023072659* *FAX: 7023072691*

# CHAIN-OF-CUSTODY RECORD



**QC Level: Level IV**

**Subcontractor:**

BC Labs
4100 Atlas Court
Bakersfield, CA 93308

TEL: (661) 327-4911
FAX: (661) 327-1918
Acct #:

Field Sampler: Signed

**08-Mar-18**

| | | | | Requested Tests | | |
|---|---|---|---|---|---|---|
| **Sample ID** | **Matrix** | **Date Collected** | **Bottle Type** | **SM4500-NH3D** | | |
| N028968-002E / SC-700B-WDR-570 | Water | 3/7/2018 1:25:00 PM | 32OZP | 1 | | |

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

Please use PO#:N28968A Please email Invoices and Account Receivable Statements to elvira@assetlaboratories.com. For questions, call Marlon at (702)-307-2659. Please e-mail results to reports.lv@assetlaboratories.com by: Normal TAT.

Please analyze for Ammonia. EDD Requirement Labspec7 edata.

GSO #: 539746268

| | Date/Time | | Date/Time |
|---|---|---|---|
| **Relinquished by:** | 3/8/2018 17:00 | **Received by:** | |
| **Relinquished by:** | | **Received by:** | |

# List of Analysts

## ASSET Laboratories Work Order: N028968

| NAME | TEST METHOD |
|---|---|
| Quennie Manimtim | SM 4500-NO3F |
| Claire Ignacio | EPA 200.7, EPA 200.8 |
| Ria Abes | EPA 218.6, EPA 300.0 |
| Lilia Ramit | EPA 120.1, SM 2540C, SM 2130B |

March 21, 2018

Doug Scott
CH2M HILL
155 Grand Avenue, Suite 1000
Oakland, CA 94612

TEL: (970) 731-0636
FAX: (510) 622-9129

Workorder No.: N028968

RE: PG&E Topock, 680375.03.IM.OP.00

Attention: Doug Scott

Enclosed are the results for sample(s) received on March 07, 2018 by ASSET Laboratories . The sample(s) are tested for the parameters as indicated in the enclosed chain of custody in accordance with the applicable laboratory certifications.

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

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

Sincerely,

Nancy Liburdi for

Quennie Manimtim
Laboratory Director

**CLIENT:** CH2M HILL
**Project:** PG&E Topock, 680375.03.IM.OP.00
**Lab Order:** N028968

# 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 BC Labs- Bakersfield,CA.

Analytical Comments for EPA 200.8:

Dilution was necessary on some analytes for sample N028968-002 due to associated internal standard not meeting method criteria possibly due to matrix interference. Sample was 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.

## ASSET Laboratories

**Date:** *21-Mar-18*

**CLIENT:** CH2M HILL
**Project:** PG&E Topock, 680375.03.IM.OP.00
**Lab Order:** N028968
**Contract No:** IM3PLANT-AR

# Work Order Sample Summary

| Lab Sample ID | Client Sample ID | Matrix | Collection Date | Date Received | Date Reported |
|---|---|---|---|---|---|
| N028968-001A | SC-100B-WDR-570 | Water | 3/7/2018 1:35:00 PM | 3/7/2018 | 3/21/2018 |
| N028968-001B | SC-100B-WDR-570 | Water | 3/7/2018 1:35:00 PM | 3/7/2018 | 3/21/2018 |
| N028968-001C | SC-100B-WDR-570 | Water | 3/7/2018 1:35:00 PM | 3/7/2018 | 3/21/2018 |
| N028968-002A | SC-700B-WDR-570 | Water | 3/7/2018 1:25:00 PM | 3/7/2018 | 3/21/2018 |
| N028968-002B | SC-700B-WDR-570 | Water | 3/7/2018 1:25:00 PM | 3/7/2018 | 3/21/2018 |
| N028968-002C | SC-700B-WDR-570 | Water | 3/7/2018 1:25:00 PM | 3/7/2018 | 3/21/2018 |
| N028968-002D | SC-700B-WDR-570 | Water | 3/7/2018 1:25:00 PM | 3/7/2018 | 3/21/2018 |
| N028968-002E | SC-700B-WDR-570 | Water | 3/7/2018 1:25:00 PM | 3/7/2018 | 3/21/2018 |

| | | | |
|---|---|---|---|
| **CLIENT:** | CH2M HILL | **Client Sample ID:** | SC-100B-WDR-570 |
| **Lab Order:** | N028968 | **Collection Date:** | 3/7/2018 1:35:00 PM |
| **Project:** | PG&E Topock, 680375.03.IM.OP.00 | **Matrix:** | WATER |
| **Lab ID:** | N028968-001 | | |

| Analyses | Result | MDL | PQL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|---|
| **SPECIFIC CONDUCTANCE** | | | | | | | |
| | | | **EPA 120.1** | | | | |
| RunID: **NV00922-WC_180308B** | QC Batch: **R122535** | | | | PrepDate | | Analyst: **LR** |
| Specific Conductance | 8000 | 0.10 | 0.10 | | umhos/cm | 1 | 3/8/2018 10:00 AM |

**Qualifiers:**

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

**CLIENT:** CH2M HILL
**Lab Order:** N028968
**Project:** PG&E Topock, 680375.03.IM.OP.00
**Lab ID:** N028968-002

**Client Sample ID:** SC-700B-WDR-570
**Collection Date:** 3/7/2018 1:25:00 PM
**Matrix:** WATER

| Analyses | Result | MDL | PQL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|---|
| **SPECIFIC CONDUCTANCE** | | | | | | | |
| | | | **EPA 120.1** | | | | |
| RunID: **NV00922-WC_180308B** | QC Batch: **R122535** | | | PrepDate | | | Analyst: **LR** |
| Specific Conductance | 7800 | 0.10 | 0.10 | | umhos/cm | 1 | 3/8/2018 10:00 AM |

**Qualifiers:**

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

**CLIENT:** CH2M HILL
**Work Order:** N028968
**Project:** PG&E Topock, 680375.03.IM.OP.00

# ANALYTICAL QC SUMMARY REPORT

**TestCode: 120.1_WPGE**

Sample ID **N028968-001BDUP** SampType: **DUP** TestCode: **120.1_WPGE** Units: **umhos/cm** Prep Date: RunNo: **122535**
Client ID: **ZZZZZZ** Batch ID: **R122535** TestNo: **EPA 120.1** Analysis Date: **3/8/2018** SeqNo: **2950653**

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Specific Conductance | 7970.000 | 0.10 | | | | | | 7950 | 0.251 | 2 | |

**Qualifiers:**

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

| | | | |
|---|---|---|---|
| **CLIENT:** | CH2M HILL | **Client Sample ID:** | SC-100B-WDR-570 |
| **Lab Order:** | N028968 | **Collection Date:** | 3/7/2018 1:35:00 PM |
| **Project:** | PG&E Topock, 680375.03.IM.OP.00 | **Matrix:** | WATER |
| **Lab ID:** | N028968-001 | | |

| Analyses | Result | MDL | PQL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|---|
| **TOTAL FILTERABLE RESIDUE** | | | | | | | |
| | | | **SM2540C** | | | | |
| RunID: **NV00922-WC_180308E** | QC Batch: **67086** | | | | PrepDate | **3/8/2018** | Analyst: **LR** |
| Total Dissolved Solids (Residue, Filterable) | 4400 | 50 | 50 | | mg/L | 1 | 3/8/2018 01:05 PM |

**Qualifiers:**

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

| | | | |
|---|---|---|---|
| **CLIENT:** | CH2M HILL | **Client Sample ID:** | SC-700B-WDR-570 |
| **Lab Order:** | N028968 | **Collection Date:** | 3/7/2018 1:25:00 PM |
| **Project:** | PG&E Topock, 680375.03.IM.OP.00 | **Matrix:** | WATER |
| **Lab ID:** | N028968-002 | | |

| Analyses | Result | MDL | PQL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|---|
| **TOTAL FILTERABLE RESIDUE** | | | | | | | |
| | | | **SM2540C** | | | | |
| RunID: **NV00922-WC_180308E** | QC Batch: **67086** | | | | PrepDate | **3/8/2018** | Analyst: **LR** |
| Total Dissolved Solids (Residue, Filterable) | 4200 | 50 | 50 | | mg/L | 1 | 3/8/2018 01:05 PM |

**Qualifiers:**

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

**CLIENT:** CH2M HILL
**Work Order:** N028968
**Project:** PG&E Topock, 680375.03.IM.OP.00

# ANALYTICAL QC SUMMARY REPORT

**TestCode: 160.1_2540C_W**

| Sample ID | LCS-67086 | SampType: | LCS | TestCode: | 160.1_2540C | Units: | mg/L | Prep Date: | 3/8/2018 | RunNo: | 122538 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Client ID: | LCSW | Batch ID: | 67086 | TestNo: | SM2540C | | | Analysis Date: | 3/8/2018 | SeqNo: | 2951727 |

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Total Dissolved Solids (Residue, Filtera | 954.000 | 10 | 1000 | 0 | 95.4 | 80 | 120 | | | | |

| Sample ID | MB-67086 | SampType: | MBLK | TestCode: | 160.1_2540C | Units: | mg/L | Prep Date: | 3/8/2018 | RunNo: | 122538 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Client ID: | PBW | Batch ID: | 67086 | TestNo: | SM2540C | | | Analysis Date: | 3/8/2018 | SeqNo: | 2951728 |

| 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 | N028968-001BDUP | SampType: | DUP | TestCode: | 160.1_2540C | Units: | mg/L | Prep Date: | 3/8/2018 | RunNo: | 122538 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Client ID: | ZZZZZZ | Batch ID: | 67086 | TestNo: | SM2540C | | | Analysis Date: | 3/8/2018 | SeqNo: | 2951732 |

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Total Dissolved Solids (Residue, Filtera | 4335.000 | 50 | | | | | | 4395 | 1.37 | 5 | |

**Qualifiers:**

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

| | | | |
|---|---|---|---|
| **CLIENT:** | CH2M HILL | **Client Sample ID:** | SC-700B-WDR-570 |
| **Lab Order:** | N028968 | **Collection Date:** | 3/7/2018 1:25:00 PM |
| **Project:** | PG&E Topock, 680375.03.IM.OP.00 | **Matrix:** | WATER |
| **Lab ID:** | N028968-002 | | |

| Analyses | Result | MDL | PQL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|---|
| **TOTAL METALS BY ICP** | | | | | | | |
| | | | **EPA 200.7** | | | | |
| RunID: **NV00922-ICP2_180313C** | QC Batch: **67104** | | | | PrepDate | **3/9/2018** | Analyst: **CEI** |
| Aluminum | ND | 40 | 50 | | µg/L | 1 | 3/13/2018 04:00 PM |
| Boron | 1100 | 74 | 100 | | µg/L | 1 | 3/14/2018 12:23 PM |
| Iron | ND | 18 | 20 | | µg/L | 1 | 3/13/2018 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 | | |

**CLIENT:** CH2M HILL
**Work Order:** N028968
**Project:** PG&E Topock, 680375.03.IM.OP.00

# ANALYTICAL QC SUMMARY REPORT

**TestCode: 200.7_WPGEPPB**

| Sample ID **MB-67104** | SampType: **MBLK** | TestCode: **200.7_WPGE** | Units: **µg/L** | Prep Date: **3/9/2018** | RunNo: **122645** |
|---|---|---|---|---|---|
| Client ID: **PBW** | Batch ID: **67104** | TestNo: **EPA 200.7** | | Analysis Date: **3/13/2018** | SeqNo: **2954889** |

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Aluminum | ND | 50 | | | | | | | | | |
| Iron | ND | 20 | | | | | | | | | |

| Sample ID **LCS1-67104** | SampType: **LCS** | TestCode: **200.7_WPGE** | Units: **µg/L** | Prep Date: **3/9/2018** | RunNo: **122645** |
|---|---|---|---|---|---|
| Client ID: **LCSW** | Batch ID: **67104** | TestNo: **EPA 200.7** | | Analysis Date: **3/13/2018** | SeqNo: **2954890** |

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Aluminum | 10050.287 | 50 | 10000 | 0 | 101 | 85 | 115 | | | | |
| Iron | 106.773 | 20 | 100.0 | 0 | 107 | 85 | 115 | | | | |

| Sample ID **N028966-001D-MS1** | SampType: **MS** | TestCode: **200.7_WPGE** | Units: **µg/L** | Prep Date: **3/9/2018** | RunNo: **122645** |
|---|---|---|---|---|---|
| Client ID: **ZZZZZZ** | Batch ID: **67104** | TestNo: **EPA 200.7** | | Analysis Date: **3/13/2018** | SeqNo: **2954894** |

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Aluminum | 10540.614 | 50 | 10000 | 0 | 105 | 75 | 125 | | | | |
| Iron | 103.156 | 20 | 100.0 | 0 | 103 | 75 | 125 | | | | |

| Sample ID **N028966-001D-MSD** | SampType: **MSD** | TestCode: **200.7_WPGE** | Units: **µg/L** | Prep Date: **3/9/2018** | RunNo: **122645** |
|---|---|---|---|---|---|
| Client ID: **ZZZZZZ** | Batch ID: **67104** | TestNo: **EPA 200.7** | | Analysis Date: **3/13/2018** | SeqNo: **2954895** |

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Aluminum | 10436.999 | 50 | 10000 | 0 | 104 | 75 | 125 | 10540 | 0.988 | 20 | |
| Iron | 101.855 | 20 | 100.0 | 0 | 102 | 75 | 125 | 103.2 | 1.27 | 20 | |

| Sample ID **MB-67104** | SampType: **MBLK** | TestCode: **200.7_WPGE** | Units: **µg/L** | Prep Date: **3/9/2018** | RunNo: **122671** |
|---|---|---|---|---|---|
| Client ID: **PBW** | Batch ID: **67104** | TestNo: **EPA 200.7** | | Analysis Date: **3/14/2018** | SeqNo: **2956991** |

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|

**Qualifiers:**

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

**CLIENT:** CH2M HILL
**Work Order:** N028968
**Project:** PG&E Topock, 680375.03.IM.OP.00

# ANALYTICAL QC SUMMARY REPORT

**TestCode: 200.7_WPGEPPB**

| Sample ID | MB-67104 | SampType: | MBLK | TestCode: | 200.7_WPGE | Units: | µg/L | Prep Date: | 3/9/2018 | RunNo: | 122671 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Client ID: | PBW | Batch ID: | 67104 | TestNo: | EPA 200.7 | | | Analysis Date: | 3/14/2018 | SeqNo: | 2956991 |

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Boron | ND | 100 | | | | | | | | | |

| Sample ID | LCS1-67104 | SampType: | LCS | TestCode: | 200.7_WPGE | Units: | µg/L | Prep Date: | 3/9/2018 | RunNo: | 122671 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Client ID: | LCSW | Batch ID: | 67104 | TestNo: | EPA 200.7 | | | Analysis Date: | 3/14/2018 | SeqNo: | 2956992 |

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Boron | 4877.815 | 100 | 5000 | 0 | 97.6 | 85 | 115 | | | | |

| Sample ID | N028966-001D-MS1 | SampType: | MS | TestCode: | 200.7_WPGE | Units: | µg/L | Prep Date: | 3/9/2018 | RunNo: | 122671 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Client ID: | ZZZZZZ | Batch ID: | 67104 | TestNo: | EPA 200.7 | | | Analysis Date: | 3/14/2018 | SeqNo: | 2956996 |

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Boron | 5611.284 | 100 | 5000 | 585.0 | 101 | 75 | 125 | | | | |

| Sample ID | N028966-001D-MSD | SampType: | MSD | TestCode: | 200.7_WPGE | Units: | µg/L | Prep Date: | 3/9/2018 | RunNo: | 122671 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Client ID: | ZZZZZZ | Batch ID: | 67104 | TestNo: | EPA 200.7 | | | Analysis Date: | 3/14/2018 | SeqNo: | 2957001 |

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Boron | 5666.702 | 100 | 5000 | 585.0 | 102 | 75 | 125 | 5611 | 0.983 | 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 | **Client Sample ID:** | SC-100B-WDR-570 |
| **Lab Order:** | N028968 | **Collection Date:** | 3/7/2018 1:35:00 PM |
| **Project:** | PG&E Topock, 680375.03.IM.OP.00 | **Matrix:** | WATER |
| **Lab ID:** | N028968-001 | | |

| Analyses | Result | MDL | PQL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|---|
| **TOTAL METALS BY ICPMS** | | | | | | | |
| | | | **EPA 200.8** | | | | |
| RunID: **NV00922-ICP7_180313E** | QC Batch: **67105** | | | PrepDate | **3/9/2018** | | Analyst: **CEI** |
| Manganese | 7.3 | 0.26 | 0.50 | | µg/L | 1 | 3/13/2018 08:44 PM |

**Qualifiers:**

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

| | | | |
|---|---|---|---|
| **CLIENT:** | CH2M HILL | **Client Sample ID:** | SC-700B-WDR-570 |
| **Lab Order:** | N028968 | **Collection Date:** | 3/7/2018 1:25:00 PM |
| **Project:** | PG&E Topock, 680375.03.IM.OP.00 | **Matrix:** | WATER |
| **Lab ID:** | N028968-002 | | |

| Analyses | Result | MDL | PQL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|---|
| **TOTAL METALS BY ICPMS** | | | | | | | |
| | | | **EPA 200.8** | | | | |
| RunID: **NV00922-ICP7_180313E** | QC Batch: **67105** | | | | PrepDate | **3/9/2018** | Analyst: **CEI** |
| Antimony | ND | 0.16 | 0.50 | | µg/L | 1 | 3/13/2018 08:55 PM |
| Arsenic | 0.11 | 0.081 | 0.10 | | µg/L | 1 | 3/19/2018 10:37 PM |
| Barium | 15 | 0.15 | 1.0 | | µg/L | 1 | 3/14/2018 01:45 PM |
| Copper | ND | 0.55 | 1.0 | | µg/L | 1 | 3/13/2018 08:55 PM |
| Lead | ND | 0.64 | 5.0 | | µg/L | 5 | 3/14/2018 02:02 PM |
| Manganese | 6.8 | 0.26 | 0.50 | | µg/L | 1 | 3/13/2018 08:55 PM |
| Molybdenum | 20 | 0.21 | 0.50 | | µg/L | 1 | 3/13/2018 08:55 PM |
| Nickel | 1.2 | 0.26 | 1.0 | | µg/L | 1 | 3/14/2018 01:45 PM |
| Zinc | ND | 2.3 | 10 | | µg/L | 1 | 3/14/2018 01:45 PM |

**Qualifiers:**

| | |
|---|---|
| B | Analyte detected in the associated Method Blank |
| H | Holding times for preparation or analysis exceeded |
| S | Spike/Surrogate outside of limits due to matrix interference |
| DO | Surrogate Diluted Out |
| E | Value above quantitation range |
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**CLIENT:** CH2M HILL
**Work Order:** N028968
**Project:** PG&E Topock, 680375.03.IM.OP.00

# ANALYTICAL QC SUMMARY REPORT

**TestCode: 200.8_W**

| Sample ID **MB-67105** | SampType: **MBLK** | TestCode: **200.8_W** | Units: **µg/L** | Prep Date: **3/9/2018** | RunNo: **122662** |
|---|---|---|---|---|---|
| Client ID: **PBW** | Batch ID: **67105** | TestNo: **EPA 200.8** | | Analysis Date: **3/13/2018** | SeqNo: **2956668** |

| 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 | | | | | | | | | |
| Copper | 0.675 | 1.0 | | | | | | | | | |
| Manganese | ND | 0.50 | | | | | | | | | |
| Molybdenum | ND | 0.50 | | | | | | | | | |

| Sample ID **LCS-67105** | SampType: **LCS** | TestCode: **200.8_W** | Units: **µg/L** | Prep Date: **3/9/2018** | RunNo: **122662** |
|---|---|---|---|---|---|
| Client ID: **LCSW** | Batch ID: **67105** | TestNo: **EPA 200.8** | | Analysis Date: **3/13/2018** | SeqNo: **2956669** |

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Antimony | 9.712 | 0.50 | 10.00 | 0 | 97.1 | 85 | 115 | | | | |
| Arsenic | 10.366 | 0.10 | 10.00 | 0 | 104 | 85 | 115 | | | | |
| Copper | 10.852 | 1.0 | 10.00 | 0 | 109 | 85 | 115 | | | | |
| Manganese | 100.673 | 0.50 | 100.0 | 0 | 101 | 85 | 115 | | | | |
| Molybdenum | 10.005 | 0.50 | 10.00 | 0 | 100 | 85 | 115 | | | | |

| Sample ID **N028966-001D-MS** | SampType: **MS** | TestCode: **200.8_W** | Units: **µg/L** | Prep Date: **3/9/2018** | RunNo: **122662** |
|---|---|---|---|---|---|
| Client ID: **ZZZZZZ** | Batch ID: **67105** | TestNo: **EPA 200.8** | | Analysis Date: **3/13/2018** | SeqNo: **2956675** |

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Antimony | 10.013 | 0.50 | 10.00 | 0 | 100 | 75 | 125 | | | | |
| Arsenic | 12.841 | 0.10 | 10.00 | 2.055 | 108 | 75 | 125 | | | | |
| Copper | 18.317 | 1.0 | 10.00 | 9.653 | 86.6 | 75 | 125 | | | | |
| Manganese | 96.028 | 0.50 | 100.0 | 5.084 | 90.9 | 75 | 125 | | | | |
| Molybdenum | 26.811 | 0.50 | 10.00 | 16.15 | 107 | 75 | 125 | | | | |

**Qualifiers:**

| | | | | | |
|---|---|---|---|---|---|
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| ND | Not Detected at the Reporting Limit | R | RPD outside accepted recovery limits | S | Spike/Surrogate outside of limits due to matrix interference |
| DO | Surrogate Diluted Out | | Calculations are based on raw values | | |

**CLIENT:** CH2M HILL
**Work Order:** N028968
**Project:** PG&E Topock, 680375.03.IM.OP.00

# ANALYTICAL QC SUMMARY REPORT

**TestCode: 200.8_W**

| Sample ID | N028966-001D-MSD | SampType: | MSD | TestCode: | 200.8_W | Units: | µg/L | Prep Date: | 3/9/2018 | RunNo: | 122662 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Client ID: | ZZZZZZ | Batch ID: | 67105 | TestNo: | EPA 200.8 | | | Analysis Date: | 3/13/2018 | SeqNo: | 2956677 |

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Antimony | 9.853 | 0.50 | 10.00 | 0 | 98.5 | 75 | 125 | 10.01 | 1.61 | 20 | |
| Arsenic | 12.929 | 0.10 | 10.00 | 2.055 | 109 | 75 | 125 | 12.84 | 0.680 | 20 | |
| Copper | 18.336 | 1.0 | 10.00 | 9.653 | 86.8 | 75 | 125 | 18.32 | 0.102 | 20 | |
| Manganese | 96.582 | 0.50 | 100.0 | 5.084 | 91.5 | 75 | 125 | 96.03 | 0.575 | 20 | |
| Molybdenum | 26.777 | 0.50 | 10.00 | 16.15 | 106 | 75 | 125 | 26.81 | 0.125 | 20 | |

| Sample ID | MB-67105 | SampType: | MBLK | TestCode: | 200.8_W | Units: | µg/L | Prep Date: | 3/9/2018 | RunNo: | 122701 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Client ID: | PBW | Batch ID: | 67105 | TestNo: | EPA 200.8 | | | Analysis Date: | 3/14/2018 | SeqNo: | 2957767 |

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Barium | ND | 1.0 | | | | | | | | | |
| Lead | ND | 1.0 | | | | | | | | | |
| Nickel | ND | 1.0 | | | | | | | | | |
| Zinc | ND | 10 | | | | | | | | | |

| Sample ID | LCS-67105 | SampType: | LCS | TestCode: | 200.8_W | Units: | µg/L | Prep Date: | 3/9/2018 | RunNo: | 122701 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Client ID: | LCSW | Batch ID: | 67105 | TestNo: | EPA 200.8 | | | Analysis Date: | 3/14/2018 | SeqNo: | 2957768 |

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Barium | 10.155 | 1.0 | 10.00 | 0 | 102 | 85 | 115 | | | | |
| Lead | 10.112 | 1.0 | 10.00 | 0 | 101 | 85 | 115 | | | | |
| Nickel | 10.342 | 1.0 | 10.00 | 0 | 103 | 85 | 115 | | | | |
| Zinc | 99.116 | 10 | 100.0 | 0 | 99.1 | 85 | 115 | | | | |

| Sample ID | N028966-001D-MS | SampType: | MS | TestCode: | 200.8_W | Units: | µg/L | Prep Date: | 3/9/2018 | RunNo: | 122701 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Client ID: | ZZZZZZ | Batch ID: | 67105 | TestNo: | EPA 200.8 | | | Analysis Date: | 3/14/2018 | SeqNo: | 2957773 |

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Barium | 41.319 | 1.0 | 10.00 | 32.75 | 85.7 | 75 | 125 | | | | |

**Qualifiers:**

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

**CLIENT:** CH2M HILL
**Work Order:** N028968
**Project:** PG&E Topock, 680375.03.IM.OP.00

# ANALYTICAL QC SUMMARY REPORT

**TestCode: 200.8_W**

| Sample ID | N028966-001D-MS | SampType: | MS | TestCode: | 200.8_W | Units: | µg/L | Prep Date: | 3/9/2018 | RunNo: | 122701 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Client ID: | ZZZZZZ | Batch ID: | 67105 | TestNo: | EPA 200.8 | | | Analysis Date: | 3/14/2018 | SeqNo: | 2957773 |

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Lead | 10.248 | 1.0 | 10.00 | 0 | 102 | 75 | 125 | | | | |
| Nickel | 11.053 | 1.0 | 10.00 | 1.309 | 97.4 | 75 | 125 | | | | |
| Zinc | 114.432 | 10 | 100.0 | 3.651 | 111 | 75 | 125 | | | | |

| Sample ID | N028966-001D-MSD | SampType: | MSD | TestCode: | 200.8_W | Units: | µg/L | Prep Date: | 3/9/2018 | RunNo: | 122701 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Client ID: | ZZZZZZ | Batch ID: | 67105 | TestNo: | EPA 200.8 | | | Analysis Date: | 3/14/2018 | SeqNo: | 2957774 |

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Barium | 41.436 | 1.0 | 10.00 | 32.75 | 86.9 | 75 | 125 | 41.32 | 0.282 | 20 | |
| Lead | 10.242 | 1.0 | 10.00 | 0 | 102 | 75 | 125 | 10.25 | 0.0512 | 20 | |
| Nickel | 11.336 | 1.0 | 10.00 | 1.309 | 100 | 75 | 125 | 11.05 | 2.53 | 20 | |
| Zinc | 113.430 | 10 | 100.0 | 3.651 | 110 | 75 | 125 | 114.4 | 0.879 | 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
**Lab Order:** N028968
**Project:** PG&E Topock, 680375.03.IM.OP.00
**Lab ID:** N028968-001

**Client Sample ID:** SC-100B-WDR-570
**Collection Date:** 3/7/2018 1:35:00 PM
**Matrix:** WATER

| Analyses | Result | MDL | PQL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|---|
| **HEXAVALENT CHROMIUM BY IC** | | | | | | | |
| | | | **EPA 218.6** | | | | |
| RunID: **NV00922-IC7_180308A** QC Batch: **R122570** | | | | PrepDate | | | Analyst: **RAB** |
| Hexavalent Chromium | 520 | 3.3 | 20 | | µg/L | 100 | 3/8/2018 02:10 PM |
| **TOTAL METALS BY ICPMS** | | | | | | | |
| | | | **EPA 200.8** | | | | |
| RunID: **NV00922-ICP7_180313E** QC Batch: **67105** | | | | PrepDate | **3/9/2018** | | Analyst: **CEI** |
| Chromium | 550 | 0.65 | 5.0 | | µg/L | 5 | 3/13/2018 08:50 PM |

**Qualifiers:**

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

| | | | |
|---|---|---|---|
| **CLIENT:** | CH2M HILL | **Client Sample ID:** | SC-700B-WDR-570 |
| **Lab Order:** | N028968 | **Collection Date:** | 3/7/2018 1:25:00 PM |
| **Project:** | PG&E Topock, 680375.03.IM.OP.00 | **Matrix:** | WATER |
| **Lab ID:** | N028968-002 | | |

| Analyses | Result | MDL | PQL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|---|
| **HEXAVALENT CHROMIUM BY IC** | | | | | | | |
| | | | **EPA 218.6** | | | | |
| RunID: **NV00922-IC7_180308A** | QC Batch: **R122570** | | | PrepDate | | | Analyst: **RAB** |
| Hexavalent Chromium | ND | 0.033 | 0.20 | | µg/L | 1 | 3/8/2018 12:36 PM |
| **TOTAL METALS BY ICPMS** | | | | | | | |
| | | | **EPA 200.8** | | | | |
| RunID: **NV00922-ICP7_180313E** | QC Batch: **67105** | | | PrepDate | **3/9/2018** | | Analyst: **CEI** |
| Chromium | ND | 0.13 | 1.0 | | µg/L | 1 | 3/13/2018 08:55 PM |

**Qualifiers:**

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

**CLIENT:** CH2M HILL
**Work Order:** N028968
**Project:** PG&E Topock, 680375.03.IM.OP.00

# ANALYTICAL QC SUMMARY REPORT

**TestCode: 200.8_W_CRPGE**

| Sample ID | MB-67105 | SampType: | MBLK | TestCode: | 200.8_W_CR | Units: | µg/L | Prep Date: | 3/9/2018 | RunNo: | 122662 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Client ID: | PBW | Batch ID: | 67105 | TestNo: | EPA 200.8 | | | Analysis Date: | 3/13/2018 | SeqNo: | 2956542 |

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

| Sample ID | LCS-67105 | SampType: | LCS | TestCode: | 200.8_W_CR | Units: | µg/L | Prep Date: | 3/9/2018 | RunNo: | 122662 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Client ID: | LCSW | Batch ID: | 67105 | TestNo: | EPA 200.8 | | | Analysis Date: | 3/13/2018 | SeqNo: | 2956543 |

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Chromium | 10.010 | 1.0 | 10.00 | 0 | 100 | 85 | 115 | | | | |

| Sample ID | N028966-001D-MS | SampType: | MS | TestCode: | 200.8_W_CR | Units: | µg/L | Prep Date: | 3/9/2018 | RunNo: | 122662 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Client ID: | ZZZZZZ | Batch ID: | 67105 | TestNo: | EPA 200.8 | | | Analysis Date: | 3/13/2018 | SeqNo: | 2956549 |

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Chromium | 11.226 | 1.0 | 10.00 | 1.964 | 92.6 | 75 | 125 | | | | |

| Sample ID | N028966-001D-MSD | SampType: | MSD | TestCode: | 200.8_W_CR | Units: | µg/L | Prep Date: | 3/9/2018 | RunNo: | 122662 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Client ID: | ZZZZZZ | Batch ID: | 67105 | TestNo: | EPA 200.8 | | | Analysis Date: | 3/13/2018 | SeqNo: | 2956551 |

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Chromium | 11.429 | 1.0 | 10.00 | 1.964 | 94.7 | 75 | 125 | 11.23 | 1.79 | 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:** N028968
**Project:** PG&E Topock, 680375.03.IM.OP.00

# ANALYTICAL QC SUMMARY REPORT

**TestCode: 218.6_WU_PGE**

| Sample ID **MB-R122570** | SampType: **MBLK** | TestCode: **218.6_WU_P** | Units: **µg/L** | Prep Date: | | | | RunNo: **122570** | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Client ID: **PBW** | Batch ID: **R122570** | TestNo: **EPA 218.6** | | Analysis Date: **3/8/2018** | | | | SeqNo: **2951956** | | |
| 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-R122570** | SampType: **LCS** | TestCode: **218.6_WU_P** | Units: **µg/L** | Prep Date: | | | | RunNo: **122570** | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Client ID: **LCSW** | Batch ID: **R122570** | TestNo: **EPA 218.6** | | Analysis Date: **3/8/2018** | | | | SeqNo: **2951957** | | |
| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
| Hexavalent Chromium | 5.065 | 0.20 | 5.000 | 0 | 101 | 90 | 110 | | | | |

| Sample ID **N028968-002AMS** | SampType: **MS** | TestCode: **218.6_WU_P** | Units: **µg/L** | Prep Date: | | | | RunNo: **122570** | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Client ID: **ZZZZZZ** | Batch ID: **R122570** | TestNo: **EPA 218.6** | | Analysis Date: **3/8/2018** | | | | SeqNo: **2951971** | | |
| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
| Hexavalent Chromium | 0.950 | 0.20 | 1.000 | 0 | 95.0 | 90 | 110 | | | | |

| Sample ID **N028966-002AMS** | SampType: **MS** | TestCode: **218.6_WU_P** | Units: **µg/L** | Prep Date: | | | | RunNo: **122570** | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Client ID: **ZZZZZZ** | Batch ID: **R122570** | TestNo: **EPA 218.6** | | Analysis Date: **3/8/2018** | | | | SeqNo: **2951973** | | |
| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
| Hexavalent Chromium | 1038.470 | 20 | 500.0 | 534.0 | 101 | 90 | 110 | | | | |

| Sample ID **N028966-002AMSD** | SampType: **MSD** | TestCode: **218.6_WU_P** | Units: **µg/L** | Prep Date: | | | | RunNo: **122570** | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Client ID: **ZZZZZZ** | Batch ID: **R122570** | TestNo: **EPA 218.6** | | Analysis Date: **3/8/2018** | | | | SeqNo: **2951974** | | |
| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
| Hexavalent Chromium | 1037.260 | 20 | 500.0 | 534.0 | 101 | 90 | 110 | 1038 | 0.117 | 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:** N028968
**Project:** PG&E Topock, 680375.03.IM.OP.00

# ANALYTICAL QC SUMMARY REPORT

**TestCode: 218.6_WU_PGE**

| Sample ID | N028970-001ADUP | SampType: | DUP | TestCode: | 218.6_WU_P | Units: | µg/L | Prep Date: | | RunNo: | 122570 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Client ID: | ZZZZZZ | Batch ID: | R122570 | TestNo: | EPA 218.6 | | | Analysis Date: | 3/8/2018 | SeqNo: | 2951975 |

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Hexavalent Chromium | 0.870 | 0.20 | | | | | | 0.8838 | 1.53 | 20 | |

| Sample ID | N028968-001AMS | SampType: | MS | TestCode: | 218.6_WU_P | Units: | µg/L | Prep Date: | | RunNo: | 122570 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Client ID: | ZZZZZZ | Batch ID: | R122570 | TestNo: | EPA 218.6 | | | Analysis Date: | 3/8/2018 | SeqNo: | 2951981 |

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Hexavalent Chromium | 1033.170 | 20 | 500.0 | 518.7 | 103 | 90 | 110 | | | | |

**Qualifiers:**

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

| | | | |
|---|---|---|---|
| **CLIENT:** | CH2M HILL | **Client Sample ID:** | SC-100B-WDR-570 |
| **Lab Order:** | N028968 | **Collection Date:** | 3/7/2018 1:35:00 PM |
| **Project:** | PG&E Topock, 680375.03.IM.OP.00 | **Matrix:** | WATER |
| **Lab ID:** | N028968-001 | | |

| Analyses | Result | MDL | PQL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|---|
| **TURBIDITY** | | | | | | | |
| | | | **SM 2130B** | | | | |
| RunID: **NV00922-WC_180308C** | QC Batch: **R122536** | | | PrepDate | | | Analyst: **LR** |
| Turbidity | 0.26 | 0.10 | 0.10 | | NTU | 1 | 3/8/2018 10:20 AM |

**Qualifiers:**

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

| | | | |
|---|---|---|---|
| **CLIENT:** | CH2M HILL | **Client Sample ID:** | SC-700B-WDR-570 |
| **Lab Order:** | N028968 | **Collection Date:** | 3/7/2018 1:25:00 PM |
| **Project:** | PG&E Topock, 680375.03.IM.OP.00 | **Matrix:** | WATER |
| **Lab ID:** | N028968-002 | | |

| Analyses | Result | MDL | PQL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|---|
| **TURBIDITY** | | | | | | | |
| | | | **SM 2130B** | | | | |
| RunID: **NV00922-WC_180308C** | QC Batch: **R122536** | | | PrepDate | | | Analyst: **LR** |
| Turbidity | 0.27 | 0.10 | 0.10 | | NTU | 1 | 3/8/2018 10:20 AM |

**Qualifiers:**

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

**CLIENT:** CH2M HILL
**Work Order:** N028968
**Project:** PG&E Topock, 680375.03.IM.OP.00

# ANALYTICAL QC SUMMARY REPORT

**TestCode: 2130_W**

| Sample ID | MB-R122536 | SampType: | MBLK | TestCode: | 2130_W | Units: | NTU | Prep Date: | | RunNo: | 122536 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Client ID: | PBW | Batch ID: | R122536 | TestNo: | SM 2130B | | | Analysis Date: | 3/8/2018 | SeqNo: | 2950672 |

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

| Sample ID | N028968-001BDUP | SampType: | DUP | TestCode: | 2130_W | Units: | NTU | Prep Date: | | RunNo: | 122536 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Client ID: | ZZZZZZ | Batch ID: | R122536 | TestNo: | SM 2130B | | | Analysis Date: | 3/8/2018 | SeqNo: | 2950674 |

| 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 | |

| Sample ID | N028968-002BDUP | SampType: | DUP | TestCode: | 2130_W | Units: | NTU | Prep Date: | | RunNo: | 122536 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Client ID: | ZZZZZZ | Batch ID: | R122536 | TestNo: | SM 2130B | | | Analysis Date: | 3/8/2018 | SeqNo: | 2950676 |

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Turbidity | 0.250 | 0.10 | | | | | | 0.2700 | 7.69 | 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 | | |

**CLIENT:** CH2M HILL
**Lab Order:** N028968
**Project:** PG&E Topock, 680375.03.IM.OP.00
**Lab ID:** N028968-002

**Client Sample ID:** SC-700B-WDR-570
**Collection Date:** 3/7/2018 1:25:00 PM
**Matrix:** WATER

| Analyses | Result | MDL | PQL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|---|
| **ANIONS BY ION CHROMATOGRAPHY** | | | | | | | |
| | | | **EPA 300.0** | | | | |
| RunID: **NV00922-IC8_180308A** QC Batch: **R122553** | | | | PrepDate | | | Analyst: **RAB** |
| Fluoride | 2.3 | 0.032 | 0.50 | | mg/L | 5 | 3/8/2018 11:36 AM |
| **ANIONS BY ION CHROMATOGRAPHY** | | | | | | | |
| | | | **EPA 300.0** | | | | |
| RunID: **NV00922-IC8_180308A** QC Batch: **R122553** | | | | PrepDate | | | Analyst: **RAB** |
| Sulfate | 480 | 1.1 | 25 | | mg/L | 50 | 3/8/2018 01:28 PM |

**Qualifiers:**

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

**CLIENT:** CH2M HILL
**Work Order:** N028968
**Project:** PG&E Topock, 680375.03.IM.OP.00

# ANALYTICAL QC SUMMARY REPORT

**TestCode: 300_W_FPGE**

| Sample ID | MB-R122553_F | SampType: | MBLK | TestCode: | 300_W_FPG | Units: | mg/L | Prep Date: | | RunNo: | 122553 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Client ID: | PBW | Batch ID: | R122553 | TestNo: | EPA 300.0 | | | Analysis Date: | 3/8/2018 | SeqNo: | 2951232 |

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

| Sample ID | LCS-R122553_F | SampType: | LCS | TestCode: | 300_W_FPG | Units: | mg/L | Prep Date: | | RunNo: | 122553 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Client ID: | LCSW | Batch ID: | R122553 | TestNo: | EPA 300.0 | | | Analysis Date: | 3/8/2018 | SeqNo: | 2951233 |

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Fluoride | 1.281 | 0.10 | 1.250 | 0 | 102 | 90 | 110 | | | | |

| Sample ID | N028968-002BDUP | SampType: | DUP | TestCode: | 300_W_FPG | Units: | mg/L | Prep Date: | | RunNo: | 122553 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Client ID: | ZZZZZZ | Batch ID: | R122553 | TestNo: | EPA 300.0 | | | Analysis Date: | 3/8/2018 | SeqNo: | 2951235 |

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Fluoride | 2.358 | 0.50 | | | | | | 2.266 | 3.98 | 20 | |

| Sample ID | N028968-002BMS | SampType: | MS | TestCode: | 300_W_FPG | Units: | mg/L | Prep Date: | | RunNo: | 122553 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Client ID: | ZZZZZZ | Batch ID: | R122553 | TestNo: | EPA 300.0 | | | Analysis Date: | 3/8/2018 | SeqNo: | 2951236 |

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Fluoride | 8.344 | 0.50 | 6.250 | 2.266 | 97.2 | 80 | 120 | | | | |

| Sample ID | N028968-002BMSD | SampType: | MSD | TestCode: | 300_W_FPG | Units: | mg/L | Prep Date: | | RunNo: | 122553 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Client ID: | ZZZZZZ | Batch ID: | R122553 | TestNo: | EPA 300.0 | | | Analysis Date: | 3/8/2018 | SeqNo: | 2951237 |

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Fluoride | 8.443 | 0.50 | 6.250 | 2.266 | 98.8 | 80 | 120 | 8.344 | 1.19 | 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:** N028968
**Project:** PG&E Topock, 680375.03.IM.OP.00

# ANALYTICAL QC SUMMARY REPORT

**TestCode: 300_W_SO4PGE**

| Sample ID | MB-R122553_SO4 | SampType: | MBLK | TestCode: | 300_W_SO4P | Units: | mg/L | Prep Date: | | RunNo: | 122553 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Client ID: | PBW | Batch ID: | R122553 | TestNo: | EPA 300.0 | | | Analysis Date: | 3/8/2018 | SeqNo: | 2951265 |

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

| Sample ID | LCS-R122553_SO4 | SampType: | LCS | TestCode: | 300_W_SO4P | Units: | mg/L | Prep Date: | | RunNo: | 122553 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Client ID: | LCSW | Batch ID: | R122553 | TestNo: | EPA 300.0 | | | Analysis Date: | 3/8/2018 | SeqNo: | 2951266 |

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Sulfate | 3.946 | 0.50 | 4.000 | 0 | 98.7 | 90 | 110 | | | | |

| Sample ID | N028966-001BMS | SampType: | MS | TestCode: | 300_W_SO4P | Units: | mg/L | Prep Date: | | RunNo: | 122553 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Client ID: | ZZZZZZ | Batch ID: | R122553 | TestNo: | EPA 300.0 | | | Analysis Date: | 3/8/2018 | SeqNo: | 2951272 |

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Sulfate | 579.130 | 25 | 200.0 | 377.3 | 101 | 80 | 120 | | | | |

| Sample ID | N028966-001BMSD | SampType: | MSD | TestCode: | 300_W_SO4P | Units: | mg/L | Prep Date: | | RunNo: | 122553 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Client ID: | ZZZZZZ | Batch ID: | R122553 | TestNo: | EPA 300.0 | | | Analysis Date: | 3/8/2018 | SeqNo: | 2951273 |

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Sulfate | 574.995 | 25 | 200.0 | 377.3 | 98.8 | 80 | 120 | 579.1 | 0.717 | 20 | |

| Sample ID | N028966-001BDUP | SampType: | DUP | TestCode: | 300_W_SO4P | Units: | mg/L | Prep Date: | | RunNo: | 122553 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Client ID: | ZZZZZZ | Batch ID: | R122553 | TestNo: | EPA 300.0 | | | Analysis Date: | 3/8/2018 | SeqNo: | 2951276 |

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Sulfate | 380.730 | 25 | | | | | | 377.3 | 0.897 | 20 | |

**Qualifiers:**

- B Analyte detected in the associated Method Blank
- ND Not Detected at the Reporting Limit
- DO Surrogate Diluted Out
- E Value above quantitation range
- R RPD outside accepted recovery limits

Calculations are based on raw values

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

**ASSET Laboratories**

# ANALYTICAL RESULTS

**Print Date:** *21-Mar-18*

| | | | |
|---|---|---|---|
| **CLIENT:** | CH2M HILL | **Client Sample ID:** | SC-700B-WDR-570 |
| **Lab Order:** | N028968 | **Collection Date:** | 3/7/2018 1:25:00 PM |
| **Project:** | PG&E Topock, 680375.03.IM.OP.00 | **Matrix:** | WATER |
| **Lab ID:** | N028968-002 | | |

| Analyses | Result | MDL | PQL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|---|
| **NITRATE/NITRITE-N BY CADMIUM REDUCTION** | | | | | | | |
| | | | **SM4500-NO3F** | | | | |
| RunID: **NV00922-WC_180309D** | QC Batch: **R122576** | | PrepDate | | | | Analyst: **QBM** |
| Nitrate/Nitrite as N | 2.9 | 0.16 | 0.25 | | mg/L | 5 | 3/9/2018 |

**Qualifiers:**

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

**CLIENT:** CH2M HILL
**Work Order:** N028968
**Project:** PG&E Topock, 680375.03.IM.OP.00

# ANALYTICAL QC SUMMARY REPORT

**TestCode: 4500N03F_W**

| Sample ID | MB-R122576 | SampType: | MBLK | TestCode: | 4500N03F_W | Units: | mg/L | Prep Date: | | RunNo: | 122576 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Client ID: | PBW | Batch ID: | R122576 | TestNo: | SM4500-NO3 | | | Analysis Date: | 3/9/2018 | SeqNo: | 2952065 |

| 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-R122576 | SampType: | LCS | TestCode: | 4500N03F_W | Units: | mg/L | Prep Date: | | RunNo: | 122576 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Client ID: | LCSW | Batch ID: | R122576 | TestNo: | SM4500-NO3 | | | Analysis Date: | 3/9/2018 | SeqNo: | 2952066 |

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Nitrate/Nitrite as N | 0.461 | 0.050 | 0.5000 | 0 | 92.2 | 85 | 115 | | | | |

| Sample ID | N028800-001CDUP | SampType: | DUP | TestCode: | 4500N03F_W | Units: | mg/L | Prep Date: | | RunNo: | 122576 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Client ID: | ZZZZZZ | Batch ID: | R122576 | TestNo: | SM4500-NO3 | | | Analysis Date: | 3/9/2018 | SeqNo: | 2952068 |

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Nitrate/Nitrite as N | 2.725 | 0.25 | | | | | | 3.049 | 11.2 | 20 | |

| Sample ID | N028800-003CMS | SampType: | MS | TestCode: | 4500N03F_W | Units: | mg/L | Prep Date: | | RunNo: | 122576 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Client ID: | ZZZZZZ | Batch ID: | R122576 | TestNo: | SM4500-NO3 | | | Analysis Date: | 3/9/2018 | SeqNo: | 2952070 |

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Nitrate/Nitrite as N | 6.237 | 0.25 | 2.500 | 3.292 | 118 | 75 | 125 | | | | |

| Sample ID | N028800-003CMSD | SampType: | MSD | TestCode: | 4500N03F_W | Units: | mg/L | Prep Date: | | RunNo: | 122576 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Client ID: | ZZZZZZ | Batch ID: | R122576 | TestNo: | SM4500-NO3 | | | Analysis Date: | 3/9/2018 | SeqNo: | 2952071 |

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Nitrate/Nitrite as N | 5.818 | 0.25 | 2.500 | 3.292 | 101 | 75 | 125 | 6.236 | 6.94 | 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

# 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-WDR-569 | 02-06-18 | 15:20 | 02-06-18 | 1523 | HQ440D | 02-06-18 | 00:30 | -56.56 | G. GLORIA | 7.20 |
| Notes: | | | | | | | | | | | |
| 2 | SC-100B-WDR569 | 02-06-18 | 15:20 | 02-06-18 | 1524 | HQ440D | 02-06-18 | 00:30 | -56.56 | G GLORIA | 7.04 |
| Notes: | | | | | | | | | | | |
| 3 | SC-100B-WDR570 | 3-6-18 | 1300 | 3-6-18 | 1304 | HQ440D | 3-6-18 | 0030 | -56.33 | | 7.27 |
| Notes: | | | | | | | | | | | |
| 4 | SC-700B-WDR570 | 3-6-18 | 1300 | 3-6-18 | 1306 | HQ440D | 3-6-18 | 0030 | -56.33 | | 7.10 |
| Notes: | | | | | | | | | | | |
| 5 | SC-100B-WDR-570 | 3-7-18 | 1335 | 3-7-18 | 1338 | HQ440D | 3-7-18 | 0030 | -56.62 | | 7.23 |
| Notes: | | | | | | | | | | | |
| 6 | SC-700C-WDR-570 | 3-7-18 | 1325 | 3-7-18 | 1342 | HQ440D | 3-7-18 | 0030 | -56.62 | | 7.17 |
| Notes: | | | | | | | | | | | |
| 7 | SC-100B-WDR-571 | 4-2-18 | 09:30 | 4-2-18 | 09:45 | HQ440D | 4-2-18 | 0430 | -56.21 | C Stone | 7.17 |
| Notes: | | | | | | | | | | | |

**Reminder: WDR Required pH Range for the Effluent (SC-700B) is: 6.5 - 8.4**