



**Pacific Gas and
Electric Company®**

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October 15, 2018

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Colorado River Basin Region
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**Subject: Topock IM-3 Third Quarter 2018 Monitoring Report
PG&E Topock Compressor Station, Needles, California
Interim Measure No. 3 Groundwater Treatment System
(Document ID: PGE20181015A)**

Dear Ms. Innis and Mr. Stormo:

Enclosed is the Third 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 875,573,176 gallons of water and removed approximately 7,500 pounds of total chromium from August 1, 2005 through September 30, 2018.

Pamela S. Innis
Scot Stormo
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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,

A handwritten signature in blue ink, appearing to read "Curt Russell", is positioned above the printed name.

Curt Russell
Topock Site Manager

Enclosures:

Topock IM-3 Third Quarter 2018 Monitoring Report

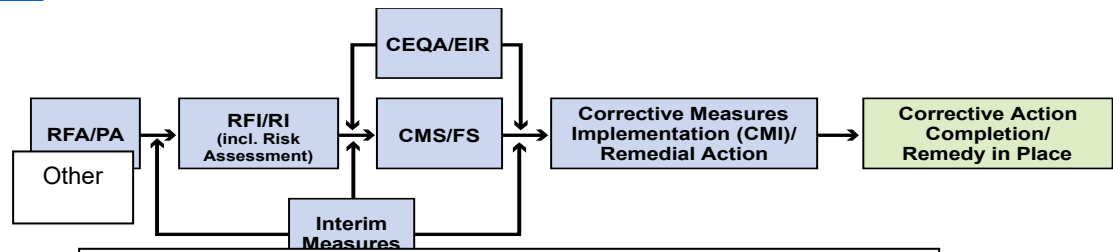
cc: Aaron Yue, California Department of Toxic Substances Control

Topock Project Executive Abstract

<p>Document Title:</p> <p>Topock IM-3 Third Quarter 2018 Monitoring Report</p> <p>Submitting Agency/Author: U.S. Department of the Interior and Regional Water Quality Control Board</p> <p>Final Document? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No</p>	<p>Date of Document: October 15, 2018</p> <p>Who Created this Document?: (i.e. PG&E, DTSC, DOI, Other)</p> <p>PG&E</p> <p>Document ID Number:</p> <p>PGE20181015A</p>
<p>Priority Status: <input type="checkbox"/> HIGH <input type="checkbox"/> MED <input checked="" type="checkbox"/> LOW</p> <p>Is this time critical? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No</p>	<p>Action Required:</p> <p><input checked="" type="checkbox"/> Information Only <input type="checkbox"/> Review & Comment</p> <p>Return to: _____</p> <p>By Date: _____</p> <p><input type="checkbox"/> Other / Explain:</p>
<p>Type of Document:</p> <p><input type="checkbox"/> Draft <input checked="" type="checkbox"/> Report <input type="checkbox"/> Letter <input type="checkbox"/> Memo</p> <p><input type="checkbox"/> Other / Explain:</p>	<p>What does this information pertain to?</p> <p><input type="checkbox"/> Resource Conservation and Recovery Act (RCRA) Facility Assessment (RFA)/Preliminary Assessment (PA)</p> <p><input type="checkbox"/> RCRA Facility Investigation (RFI)/Remedial Investigation (RI) (including Risk Assessment)</p> <p><input type="checkbox"/> Corrective Measures Study (CMS)/Feasibility Study (FS)</p> <p><input type="checkbox"/> Corrective Measures Implementation (CMI)/Remedial Action</p> <p><input type="checkbox"/> California Environmental Quality Act (CEQA)/Environmental Impact Report (EIR)</p> <p><input checked="" type="checkbox"/> Interim Measures</p> <p><input type="checkbox"/> Other / Explain:</p>
<p>What is the consequence of NOT doing this item? What is the consequence of DOING this item?</p> <p>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.</p>	<p>Is this a Regulatory Requirement?</p> <p><input checked="" type="checkbox"/> Yes</p> <p><input type="checkbox"/> No</p> <p>If no, why is the document needed?</p>
<p>Other Justification/s:</p> <p><input type="checkbox"/> Permit <input type="checkbox"/> Other / Explain:</p>	
<p>Brief Summary of attached document:</p> <p>This report covers the Interim Measures No. 3 (IM-3) groundwater treatment system monitoring activities during the Third 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.</p> <p>Written by: PG&E</p>	
<p>Recommendations:</p> <p>This report is for your information only.</p>	
<p>How is this information related to the Final Remedy or Regulatory Requirements?</p> <p>The Topock IM-3 Third 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.</p>	
<p>Other requirements of this information?</p> <p>None.</p>	

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

Version 9



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

**PG&E Topock Compressor Station
Needles, California**

Document ID: PGE20181015A

October 15, 2018

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



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

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October 15, 2018

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



Dennis Fink, P.E.
Project Engineer



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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
PLC	programmable logic controller
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

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 Third 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.

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.

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

During the Third Quarter 2018, extraction wells TW-3D operated at a target pumping rate of 135 gallons per minute (gpm), excluding periods of planned and unplanned downtime. Extraction well PE-01 was only operated to collect a sample, and extraction wells TW-2D and TW-2S were not operated during 3Q 2018. The recorded operational run time for the IM-3 groundwater extraction system (combined or individual pumping), by month, was approximately:

- 87.9 percent during July 2018
- 79.8 percent during August 2018
- 99.1 percent during September 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 Third Quarter 2018 are detailed in Section 4.

4. Groundwater Treatment System Flow Rates

The Third 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 15,926,867 gallons of extracted groundwater during the Third Quarter 2018. Two containers of solids (sludge) were transported offsite from the IM-3 facility during Third Quarter 2018.

Periods of planned and unplanned extraction system downtime (that together resulted in approximately 11.1 percent downtime during Third 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 July 2018

During July 2018, extraction well TW-3D operated at a target pump rate of 135 gpm excluding periods of planned and unplanned downtime. Extraction wells TW-2D and TW-2S were not operated during July 2018. Extraction well PE-01 was only operated to collect a sample. The operational run time for the IM-3 groundwater extraction system (combined or individual pumping) was 87.9 percent during the July 2018 reporting period.

The IM-3 facility treated approximately 5,314,668 gallons of extracted groundwater during July 2018. The IM-3 facility did not treat purge water during July 2018. No containers of solids from the IM-3 facility were transported offsite during July 2018.

Periods of planned and unplanned extraction system downtime (that together resulted in approximately 12.1 percent downtime during July 2018) are summarized below.

- **July 1 - 2, 2018 (unplanned):** The extraction well system was offline from 11:56 p.m. July 1, 2018 to 8:10 a.m. July 2, 2018 because the starter failed to the Raw Water Feed Pump (P-200). Extraction system downtime was 8 hours 14 minutes.
- **July 3, 2018 (unplanned):** The extraction well system was offline from 10:38 a.m. to 12:02 p.m. to change out the microfilter modules in the east bank. Extraction system downtime was 1 hour 24 minutes.
- **July 5, 2018 (unplanned):** The extraction well system was offline from 12:16 p.m. to 1:06 p.m. to lower levels at Iron Oxidation Reactor #3 (T-301C) and Raw Water Storage Tank (T-100). Extraction system downtime was 50 minutes.
- **July 9, 2018 (unplanned):** The extraction well system was offline from 9:12 p.m. to 9:20 p.m. The plant operator switched from Needles Power to the generator power because there was a thunderstorm. Extraction system downtime was 8 minutes.
- **July 10, 2018 (unplanned):** The extraction well system was offline from 2:42 p.m. to 2:48 p.m. The plant operator switched back to Needles Power from generator power because the thunderstorm ended. Extraction system downtime was 6 minutes.
- **July 11, 2018 (planned):** The extraction well system was offline from 9:38 a.m. to 11:36 a.m. due to testing of the pipeline critical alarms and leak detection system. Extraction system downtime was 1 hour 58 minutes.

- **July 13, 2018 (unplanned):** The extraction well system was offline from 7:30 a.m. to 8:22 a.m. to maintain appropriate water levels in T-100. There was a high level in T-100 because of the heavy rinse needed to clean the extremely dirty modules. The rinse water went from Process Drain Tank (T-900), which is the normal process. Extraction system downtime was 52 minutes.
- **July 14, 2018 (unplanned):** The extraction well system was offline from 4:56 a.m. to 7:24 a.m. to change out the microfilter modules. Extraction system downtime was 2 hours 28 minutes.
- **July 16, 2018 (unplanned):** The extraction well system was offline from 5:40 a.m. to 7:42 a.m. to maintain appropriate water levels in T-100. Extraction system downtime was 2 hours 2 minutes.
- **July 16-17, 2018 (unplanned):** The extraction well system was offline from 12:32 p.m. July 16, 2018 to 6:46 p.m. July 17, 2018 because one of the airline ports on the header of the microfilter cracked. The microfilter cannot run without the airline functioning properly so the operators had to drive to Riverside, California for the repair. Extraction system downtime was 1 day 6 hours 14 minutes.
- **July 18, 2018 (planned):** The extraction well system was offline from 6:56 a.m. to 1:10 p.m. to replace the pre-treated Water Transfer Pump (P-500) and valve #5 (valve that controls flow on the microfilter). Extraction system downtime was 6 hours 14 minutes.
- **July 19, 2018 (unplanned):** The extraction well system was offline from 11:22 a.m. to 2:50 p.m. to clean the hand operated valve on the discharge of P-500. Extraction system downtime was 3 hours 28 minutes.
- **July 20-21, 2018 (unplanned):** The extraction well system was offline from 7:04 a.m. to 8:32 a.m. on July 20, 2018, and from 5:24 a.m. to 7:06 a.m. and from 6:12 p.m. to 7:46 p.m. on July 21, 2018 to maintain appropriate water levels in T-100. Extraction system downtime was 4 hours 44 minutes.
- **July 21, 2018 (unplanned):** The extraction well system was offline from 8:18 a.m. to 8:30 a.m., from 9:02 a.m. 9:10 a.m., and from 2:12 p.m. to 2:30 p.m. due to Needles Power loss, switching to generator power, and switching back to Needles Power. Extraction system downtime was 38 minutes.
- **July 22-23, 2018 (unplanned):** The extraction well system was offline from 3:30 p.m. to 4:22 p.m. on July 22, 2018 and from 4:28 a.m. to 5:30 a.m. on July 23, 2018 to maintain appropriate water levels in T-100. Extraction system downtime was 1 hour 54 minutes.
- **July 23, 2018 (unplanned):** The extraction well system was offline from 9:50 a.m. to 11:18 a.m. to change out the microfilter modules. Extraction system downtime was 1 hour 28 minutes.
- **July 24, 2018 (unplanned):** The extraction well system was offline from 3:18 a.m. to 3:36 a.m. due to a programmable logic controller (PLC) and human machine interface (HMI) connectivity issue. Extraction system downtime was 18 minutes.
- **July 24, 2018 (unplanned):** The extraction well system was offline from 4:24 a.m. to 5:56 a.m. to maintain appropriate water levels in T-100. Extraction system downtime was 1 hour 32 minutes.
- **July 25, 2018 (unplanned):** The extraction well system was offline from 11:30 a.m. to 12:52 p.m. due to a pipe blockage at the top of the chemical loop. Plant was shut down to clean the blockage. Extraction system downtime was 1 hour 22 minutes.
- **July 25, 2018 (unplanned):** The extraction well system was offline from 4:06 p.m. to 5:26 p.m. due to a blockage in the pipeline on the discharge of P-500, which feeds the microfilter. This was causing flow problems throughout the plant. Operators had to drain Pretreated Water Tank (T-500), which filled Process Drain Tank (T-900) and T-100. Plant was shut down to clean the blockage. Extraction system downtime was 1 hour 20 minutes.
- **July 26, 2018 (unplanned):** The extraction well system was offline from 10:36 p.m. to 10:54 p.m. due to extraction well TW-3D shutting off automatically because of high levels at T-100. Extraction system downtime was 18 minutes.
- **July 27, 2018 (unplanned):** The extraction well system was offline from 4:48 a.m. to 5:08 a.m. and from 10:20 a.m. to 10:46 a.m. due to a PLC and HMI connectivity issue. Extraction system downtime was 46 minutes.

- **July 27-28, 2018 (unplanned):** The extraction well system was offline from 10:48 a.m. to 11:50 a.m. on July 27, 2018 and from 4:58 a.m. to 5:54 a.m. on July 28, 2018 to maintain appropriate water levels in T-100. Extraction system downtime was 1 hour 58 minutes.
- **July 28-29, 2018 (unplanned):** The extraction well system was offline from 9:26 p.m. to 9:38 p.m. on July 28, 2018 and from 0:16 a.m. to 0:30 a.m. on July 29, 2018 due to a PLC and HMI connectivity issue. Extraction system downtime was 26 minutes.
- **July 29, 2018 (unplanned):** The extraction well system was offline from 5:58 a.m. to 9:12 a.m., from 9:50 a.m. to 10:14 a.m., and from 10:20 a.m. to 10:46 a.m. due a microfilter air valve not working. An air controller on the microfilter faulted and need to be reset and reprogrammed. Extraction system downtime was 4 hour 4 minutes.
- **July 29-31, 2018 (unplanned):** The extraction well system was offline from 1:14 a.m. to 2:38 a.m. and from 7:44 p.m. to 9:34 p.m. on July 29, 2018, and from 1:48 a.m. to 2:58 a.m. on July 31, 2018 to maintain appropriate water levels in T-100. Extraction system downtime was 4 hours 24 minutes.
- **July 31, 2018 (unplanned):** The extraction well system was offline from 8:08 a.m. to 9:50 a.m. and from 10:02 a.m. to 3:04 p.m. due to the Clarifier Feed Pump (P-400) shutting down which caused high levels in all the oxidation tanks at the front of the plant. Extraction system downtime was 6 hours 44 minutes.

4.2 August 2018

During August 2018, extraction well TW-3D operated at a target pump rate of 135 gpm excluding periods of planned and unplanned downtime. Extraction wells TW-2D and TW-2S were not operated during August 2018. Extraction well PE-01 was only operated to collect a sample. The operational run time for the IM-3 groundwater extraction system (combined or individual pumping) was 79.8 percent during the August 2018 reporting period.

The IM-3 facility treated approximately 4,840,351 gallons of extracted groundwater during August 2018. The IM-3 facility did not treat purge water during August 2018. Two containers of solids from the IM-3 facility were transported offsite during August 2018.

Periods of planned and unplanned extraction system downtime (that together resulted an approximately 20.2 percent downtime during August 2018) are summarized below

- **August 1 - 2, 2018 (unplanned):** The extraction well system was offline from 12:08 p.m. to 1:02 p.m. and from 7:46 p.m. to 9:06 p.m. on August 1, 2018, and from 11:30 a.m. to 12:16 p.m. on August 2, 2018 to maintain appropriate water levels in Raw Water Storage Tank (T-100). There was a blockage in the microfilters that caused the water levels to be high in T-100. Plant was shut down to clean the blockage. Extraction system downtime was 3 hours.
- **August 3 - 4, 2018 (unplanned):** The extraction well system was offline from 3:26 a.m. to 5:46 a.m. on August 3, 2018, and from 1:26 a.m. to 2:24 a.m. and from 2:40 a.m. to 5:30 a.m. on August 4, 2018 to maintain appropriate water levels in T-100. A high level in Raw Water Storage Tank (T-500) caused the Clarifier Feed Pump (P-400) to shut down, which caused the high level in T-100. Extraction system downtime was 6 hours 8 minutes.
- **August 4, 2018 (unplanned):** The extraction well system was offline from 11:38 p.m. to 11:50 p.m. due to a PLC and HMI connectivity issue. Extraction system downtime was 12 minutes.
- **August 5, 2018 (unplanned):** The extraction well system was offline from 4:58 a.m. to 6:30 a.m. to maintain appropriate water levels in Raw Water Storage Tank (T-100). There was a blockage in the microfilters that cause the water levels to be high in T-100. The plant was shut down to clean the blockage. Extraction system downtime was 1 hour 32 minutes.
- **August 5, 2018 (unplanned):** The extraction well system was offline from 2:44 p.m. to 3:58 p.m. because the air compressor overheated and shut down due to extreme weather temperatures. Extraction system downtime was 1 hour 14 minutes.

- **August 6, 2018 (planned):** The extraction well system was offline from 2:54 a.m. to 4:06 a.m. to lower the level in T-100 in preparation for the semiannual scheduled maintenance. Extraction system downtime was 1 hour 12 minutes.
- **August 6-10, 2018 (planned):** The extraction well system was offline from 6:18 a.m. August 6, 2018 to 6:52 a.m. August 10, 2018 for the semiannual scheduled maintenance. Extraction system downtime was 4 days 34 minutes.
- **August 10, 2018 (planned):** The extraction well system was offline from 9:32 a.m. to 11:26 a.m., from 12:04 p.m. to 4:18 p.m., from 4:40 p.m. to 5:48 p.m., from 6:06 p.m. to 10:32 p.m., and from 10:44 p.m. to 11:52 p.m. as part of the semiannual scheduled maintenance. Plant operators were filling tanks and testing the water before moving on to the next step. Extraction system downtime was 12 hours 50 minutes.
- **August 11 - 13, 2018 (unplanned):** The extraction well system was offline from 11:32 p.m. August 11, 2018 to 1:18 a.m. August 12, 2018 and from 10:54 p.m. August 12, 2018 to 12:26 a.m. August 13, 2018 to maintain appropriate water levels in T-100. There was a blockage in the microfilters that caused the water levels to be high in T-100. The plant was shut down to clean the blockage. Extraction system downtime was 3 hours 18 minutes.
- **August 14, 2018 (unplanned):** The extraction well system was offline from 12:02 p.m. to 1:04 p.m. to change out the microfilter modules. Extraction system downtime was 1 hour 2 minutes.
- **August 14, 2018 (unplanned):** The extraction well system was offline from 5:48 p.m. to 6:10 p.m. due to a PLC and HMI connectivity issue. Extraction system downtime was 22 minutes.
- **August 14, 2018 (unplanned):** The extraction well system was offline from 7:00 p.m. to 8:20 p.m. to maintain appropriate water levels in T-100. There was a blockage in the microfilters that caused the water levels to be high in T-100. Plant was shut down to clean the blockage. Extraction system downtime was 1 hour 20 minutes.
- **August 15, 2018 (unplanned):** The extraction well system was offline from 12:06 a.m. to 3:24 a.m. because the plant was put in recirculation. Extraction system downtime was 3 hours 18 minutes.
- **August 16, 2018 (unplanned):** The extraction well system was offline from 5:42 p.m. to 6:00 p.m. to maintain appropriate water levels in T-100. There was a blockage in the microfilters that caused the water levels to be high in T-100. Plant was shut down to clean the blockage. Extraction system downtime was 18 minutes.
- **August 17, 2018 (unplanned):** The extraction well system was offline from 12:08 a.m. to 12:20 a.m. and from 5:06 a.m. to 6:08 a.m. to maintain appropriate water levels in T-100. There was a blockage in the microfilters that caused the water levels to be high in T-100. The plant was shut down to clean the blockage. Extraction system downtime was 1 hour 14 minutes.
- **August 18, 2018 (unplanned):** The extraction well system was offline from 8:16 a.m. to 9:00 a.m. to maintain appropriate water levels in T-100. There was a blockage in the microfilters that caused the water levels to be high in T-100. Plant was shut down to clean the blockage. Extraction system downtime was 44 minutes.
- **August 19, 2018 (unplanned):** The extraction well system was offline from 12:02 a.m. to 12:22 a.m. and from 4:56 a.m. to 6:16 a.m. to maintain appropriate water levels in T-100. There was a blockage in the microfilters that caused the water levels to be high in T-100. Plant was shut down to clean the blockage. Extraction system downtime was 1 hour 40 minutes.
- **August 20, 2018 (unplanned):** The extraction well system was offline from 12:08 p.m. to 1:38 p.m. because the pH probes in Iron Oxidation Reactor No. 2 (T-301B) were not reading properly. The plant was shut down to repair the probes. Extraction system downtime was 1 hour 30 minutes.
- **August 21 - 22, 2018 (unplanned):** The extraction well system was offline from 4:06 p.m. August 21, 2018 to 5:34 p.m. August 21, 2018 and from 10:02 p.m. August 22, 2018 to 11:32 p.m. August 22, 2018 to maintain appropriate water levels in T-100. There was a blockage in the microfilters that

caused the water levels to be high in T-100. Plant was shut down to clean the blockage. Extraction system downtime was 2 hours 58 minutes.

- **August 23, 2018 (unplanned):** The extraction well system was offline from 8:48 p.m. to 9:24 p.m. to maintain appropriate water levels in T-100. The Raw Water Feed Pump (P-200) shut down for an unknown reason and caused a high level in T-100. Extraction system downtime was 36 minutes.
- **August 23, 2018 (unplanned):** The extraction well system was offline from 10:42 p.m. to 10:54 p.m. due to a PLC and HMI connectivity issue. Extraction system downtime was 12 minutes.
- **August 24, 2018 (unplanned):** The extraction well system was offline from 10:12 a.m. to 12:00 p.m. to maintain appropriate water levels in T-100. There was a blockage in the microfilters that caused the water levels to be high in T-100. Plant was shut down to clean the blockage. Extraction system downtime was 1 hour 48 minutes.
- **August 31, 2018 (unplanned):** The extraction well system was offline from 5:26 a.m. to 12:20 p.m. because the air blower failed and needed to be replaced. Extraction system downtime was 6 hours 54 minutes.

4.3 September 2018

During September 2018, extraction well TW-3D operated at a target pump rate of 135 gpm excluding periods of planned and unplanned downtime. Extraction wells TW-2D and TW-2S were not operated during September 2018. Extraction well PE-01 was only operated to collect a sample. The operational run time for the IM-3 groundwater extraction system (combined or individual pumping) was 99.1 percent during the September 2018 reporting period.

The IM-3 facility treated approximately 5,771,849 gallons of extracted groundwater during September 2018. The IM-3 facility did not treat purge water during September 2018. No containers of solids from the IM-3 facility were transported offsite during September 2018.

Periods of planned and unplanned extraction system downtime (that together resulted an approximately 0.9 percent downtime during September 2018) are summarized below.

- **September 6, 2018 (unplanned):** The extraction well system was offline from 6:56 a.m. to 6:58 a.m., from 9:46 a.m. to 10:16 a.m., and from 10:20 a.m. to 10:22 a.m. due to a PLC and HMI connectivity issue. Extraction system downtime was 2 minutes.
- **September 15, 2018 (unplanned):** The extraction well system was offline from 8:40 a.m. to 10:04 a.m. to change out the microfilter modules. Extraction system downtime was 1 hour 24 minutes.
- **September 22, 2018 (unplanned):** The extraction well system was offline from 5:40 a.m. to 7:50 a.m. because the supplier ran out of hydrochloric acid, which caused a late acid delivery. The plant was shut down while the acid was in transit. Extraction system downtime was 2 hours 10 minutes.
- **September 23, 2018 (unplanned):** The extraction well system was offline from 3:20 p.m. to 4:24 p.m. to change out the microfilter modules. Extraction system downtime was 1 hour 4 minutes.
- **September 29, 2018 (unplanned):** The extraction well system was offline from 5:26 a.m. to 6:24 a.m. to change out the microfilter modules. Extraction system downtime was 58 minutes.

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 Third 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.

6. Analytical Results

Laboratory reports for samples collected in the Third 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

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.

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: October 15, 2018

Tables

Table 1. Sampling Station Descriptions*Third 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*Third 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)
July 2018 Average Monthly Flowrate	5,314,668	5,250,583	19,253
August 2018 Average Monthly Flowrate	4,840,351	4,861,644	30,452
September 2018 Average Monthly Flowrate	5,771,849	5,771,849	28,521

Notes:

gpm: gallons per minute

^a Extraction well TW-3D was operated during the Third Quarter 2018. PE-01 was only operated to collect a sample. Extraction wells TW-2D and TW2S were not operated during Third Quarter 2018.

^b The difference between influent flow rate and the sum of the effluent and reverse osmosis concentrate flow rates during the Third Quarter 2018 is approximately 0.9 percent.

Table 3. Sample Collection Dates*Third Quarter 2018 Monitoring Report for Interim Measure No. 3 Groundwater Treatment System*

Parameter	Sample Collection Dates	Results
Influent	July 3, 2018 August 1, 2018	See Table 4
	September 4, 2018	
Effluent	July 3, 2018 August 1, 2018 August 10, 2018 September 4, 2018	See Table 5
Reverse Osmosis Concentrate	July 3, 2018	See Table 6
Sludge ^a	July 3, 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
Third Quarter 2018 Monitoring Report for Interim Measure No.3 Groundwater Treatment System

Sampling Frequency		Monthly						Quarterly																		
Sample ID	Date	Analytes Units ^b	MDL	TDS	Turbidity	Specific Conductance	Field ^c pH	Chromium	Hexavalent Chromium	Aluminium	Ammonia (as N)	Antimony	Arsenic	Barium	Boron	Copper	Fluoride	Lead	Manganese	Molybdenum	Nickel	Nitrate/Nitrite (as N)	Sulfate	Iron	Zinc	
				mg/L	NTU	µmhos/cm	pH units	µg/L	µg/L	µg/L	mg/L	µg/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
				50.0	0.100	0.100	---	0.650	3.30	40.0	0.0780	0.160	0.0810	0.150	0.0740	0.550	0.0320	0.130	0.260	0.210	0.260	0.160	1.10	18.0	2.30	
SC-100B-WDR-575	7/3/2018			4200	0.350	7000	7.4	480	490	ND (50.0)	ND (0.200)	ND (0.500)	3.10	28.0	1.00	ND (1.00)	2.70	ND (1.00)	6.90	21.0	ND (1.00)	2.80	500	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-576	8/1/2018			4300	0.260	7100	7.4	490	480	---	---	---	---	---	---	---	---	---	11.0	---	---	---	---	---	---	
RL				50.0	0.100	0.100	---	5.00	20.0	---	---	---	---	---	---	---	---	---	0.500	---	---	---	---	---	---	
SC-100B-WDR-578	9/4/2018			4300	0.240	6800	7.5	530	490	---	---	---	---	---	---	---	---	---	7.50	---	---	---	---	---	---	
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
Third 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 Units ^c MDL ^d	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
		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
		50.0	0.100	0.100	---	0.130	0.170	40.0	0.0500	0.160	0.0810	0.150	0.0740	0.550	0.0130	0.130	0.260	0.210	0.260	0.160	1.10	18.0	2.30
Sample ID	Date																						
SC-700B-WDR-575	7/3/2018	4200	0.280	7000	7.0	ND (1.00)	ND (1.00)	ND (50.0)	0.440	ND (0.500)	0.120	15.0	1.00	ND (1.00)	2.40	ND (1.00)	5.80	22.0	ND (1.00)	2.90	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-576	8/1/2018	4200	0.220	7000	7.5	ND (1.00)	ND (1.00)	ND (50.0)	ND (0.200)	ND (0.500)	0.170	14.0	0.970	ND (1.00)J	2.30	ND (1.00)	3.50	21.0	ND (1.00)	2.60	470	23.0	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	0.500	1.00	0.500	0.500	1.00	0.250	25.0	20.0	10.0
SC-700B-WDR-577	8/10/2018	4200	0.460 J	7300	7.7	ND (1.00)	ND (1.00)	ND (50.0)	ND (0.200)	ND (0.500)	0.120	15.0	0.970	ND (1.00)	2.50	ND (1.00)	14.0	26.0	ND (1.00)	2.60	470	33.0	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	0.500	1.00	0.500	0.500	1.00	0.250	25.0	20.0	10.0
SC-700B-WDR-578	9/4/2018	4000	0.220	6800	7.3	ND (1.00)	ND (1.00)	ND (50.0)	ND (0.200)	ND (0.500)	ND (0.100)	19.0	1.10 J	ND (1.00)J	2.30	ND (1.00)	5.50	22.0	3.10	2.70	460	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	0.500	1.00	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
Third Quarter 2018 Monitoring Report for Interim Measure No.3 Groundwater Treatment System

Sampling Frequency		Quarterly																						
<div>Sample ID</div>	<div>Date</div>	<div>Analytes</div>	TDS	Specific Conductance	Field ^c pH	Chromium	Hexavalent Chromium	Antimony	Arsenic	Barium	Beryllium	Cadmium	Cobalt	Copper	Fluoride	Lead	Molybdenum	Mercury	Nickel	Selenium	Silver	Thallium	Vanadium	Zinc
		<div>Units^b</div>	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
		<div>MDL</div>	500	0.100	---	0.00065	0.00083	0.00078	0.00041	0.00075	0.0011	0.00026	0.00021	0.0027	0.130	0.0032	0.0054	0.00013	0.0013	0.0018	0.0012	0.0048	0.0014	0.0110
SC-701-WDR-575	7/3/2018		44000	52000	8.1	0.00890	ND (0.0050)	ND (0.0025)	0.00220	0.180	ND (0.0120)	ND (0.0025)	ND (0.0025)	ND (0.0050)	26.0	ND (0.0250)	0.250	ND (0.00020)	JND (0.0050)	0.0480	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	0.0120	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
Third Quarter 2018 Monitoring Report for Interim Measure No.3 Groundwater Treatment System

Sampling Frequency		Quarterly																			Annually
<div> </div>	Analytes	Chromium	Hexavalent Chromium	Antimony	Arsenic	Barium	Beryllium	Cadmium	Cobalt	Copper	Fluoride	Lead	Molybdenum	Mercury	Nickel	Selenium	Silver	Thallium	Vanadium	Zinc	Bioassay
	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	% Survival
	MDL	0.790	0.710	0.800	1.30	0.760	0.530	0.650	0.700	2.20	0.340	0.720	0.730	0.0660	0.830	1.50	1.50	0.860	0.540	0.730	at 750 mg/L ^c
Sample ID	Date																				
																					100
Phase Separator-575-Sludge	7/3/2018	2900 J	90.0	20.0	16.0	53.0 J	ND (2.40)	3.30 J	3.30	110	43.0	ND (2.40)J	3.40	ND (0.240)	23.0 J	ND (2.40)J	ND (2.40)J	6.10	31.0 J	48.0 J	100
RL		2.40	2.40	4.90	2.40	2.40	2.40	2.40	2.40	4.90	4.90	2.40	2.40	0.240	2.40	2.40	2.40	4.90	2.40	2.40	100

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

Third 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-575	Ryan Phelps	7/3/2018	9:51:00 AM	ASSET	EPA 120.1	SC	7/5/2018	Lilia Ramit
					ASSET	EPA 200.7	AL	7/16/2018	Claire Ignacio
					ASSET	EPA 200.7	B	7/16/2018	Claire Ignacio
					ASSET	EPA 200.7	FE	7/16/2018	Claire Ignacio
					ASSET	EPA 200.8	AS	7/12/2018	Claire Ignacio
					ASSET	EPA 200.8	BA	7/12/2018	Claire Ignacio
					ASSET	EPA 200.8	CR	7/12/2018	Claire Ignacio
					ASSET	EPA 200.8	CU	7/20/2018	Claire Ignacio
					ASSET	EPA 200.8	MN	7/12/2018	Claire Ignacio
					ASSET	EPA 200.8	MO	7/12/2018	Claire Ignacio
					ASSET	EPA 200.8	NI	7/20/2018	Claire Ignacio
					ASSET	EPA 200.8	PB	7/12/2018	Claire Ignacio
					ASSET	EPA 200.8	SB	7/12/2018	Claire Ignacio
					ASSET	EPA 200.8	ZN	7/12/2018	Claire Ignacio
					ASSET	EPA 218.6	CR6	7/5/2018	Ria Abes
					ASSET	EPA 300.0	FL	7/5/2018	Ria Abes
					ASSET	EPA 300.0	SO4	7/5/2018	Ria Abes
					Field	HACH	PH	7/3/2018	Ryan Phelps
					ASSET	SM 2540C	TDS	7/5/2018	Lilia Ramit
					ASSET	SM 4500-NO3F	NO3NO2N	7/6/2018	Quennie Manimtim
					ASSET	SM2130B	TRB	7/5/2018	Lilia Ramit
					BCLabs	SM4500NH3G	NH3N	7/10/2018	Quennie Manimtim
SC-100B	SC-100B-WDR-576	Ron Phelps	8/1/2018	12:30:00 PM	ASSET	EPA 120.1	SC	8/2/2018	Lilia Ramit
					ASSET	EPA 200.8	CR	8/8/2018	Claire Ignacio
					ASSET	EPA 200.8	MN	8/8/2018	Claire Ignacio
					ASSET	EPA 218.6	CR6	8/3/2018	Ria Abes
		Ryan Phelps			Field	HACH	PH	8/1/2018	Ryan Phelps
		Ron Phelps			ASSET	SM 2540C	TDS	8/2/2018	Lilia Ramit
					ASSET	SM2130B	TRB	8/2/2018	Lilia Ramit
SC-100B	SC-100B-WDR-578	Ron Phelps	9/4/2018	10:00:00 AM	Field	HACH	PH	9/4/2018	Ron Phelps
				10:10:00 AM	ASSET	EPA 120.1	SC	9/5/2018	Lilia Ramit
					ASSET	EPA 200.8	CR	9/6/2018	Claire Ignacio
					ASSET	EPA 200.8	MN	9/10/2018	Claire Ignacio
					ASSET	EPA 218.6	CR6	9/6/2018	Ria Abes
					ASSET	SM 2540C	TDS	9/5/2018	Lilia Ramit

TABLE 8

Topock IM-3 Waste Discharge Applicable or Relevant and Appropriate Requirements (ARARs)

Monitoring Information

Third 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-578	Ron Phelps	9/4/2018	10:10:00 AM	ASSET	SM2130B	TRB	9/5/2018	Lilia Ramit
SC-700B	SC-700B-WDR-575	Ryan Phelps	7/3/2018	9:44:00 AM	ASSET	EPA 120.1	SC	7/5/2018	Lilia Ramit
					ASSET	EPA 200.7	AL	7/16/2018	Claire Ignacio
					ASSET	EPA 200.7	B	7/16/2018	Claire Ignacio
					ASSET	EPA 200.7	FE	7/16/2018	Claire Ignacio
					ASSET	EPA 200.8	AS	7/12/2018	Claire Ignacio
					ASSET	EPA 200.8	BA	7/12/2018	Claire Ignacio
					ASSET	EPA 200.8	CR	7/12/2018	Claire Ignacio
					ASSET	EPA 200.8	CU	7/20/2018	Claire Ignacio
					ASSET	EPA 200.8	MN	7/12/2018	Claire Ignacio
					ASSET	EPA 200.8	MO	7/12/2018	Claire Ignacio
					ASSET	EPA 200.8	NI	7/20/2018	Claire Ignacio
					ASSET	EPA 200.8	PB	7/12/2018	Claire Ignacio
					ASSET	EPA 200.8	SB	7/12/2018	Claire Ignacio
					ASSET	EPA 200.8	ZN	7/12/2018	Claire Ignacio
					ASSET	EPA 218.6	CR6	7/5/2018	Ria Abes
					ASSET	EPA 300.0	FL	7/5/2018	Ria Abes
					ASSET	EPA 300.0	SO4	7/5/2018	Ria Abes
					Field	HACH	PH	7/3/2018	Ryan Phelps
					ASSET	SM 2540C	TDS	7/5/2018	Lilia Ramit
					ASSET	SM 4500-NO3F	NO3NO2N	7/6/2018	Quennie Manimtim
SC-700B	SC-700B-WDR-576	Ron Phelps	8/1/2018	12:40:00 PM	ASSET	SM2130B	TRB	7/5/2018	Lilia Ramit
					BCLabs	SM4500NH3G	NH3N	7/10/2018	Quennie Manimtim
					ASSET	EPA 120.1	SC	8/2/2018	Lilia Ramit
					ASSET	EPA 200.7	AL	8/14/2018	Claire Ignacio
					ASSET	EPA 200.7	B	8/15/2018	Claire Ignacio
					ASSET	EPA 200.7	FE	8/14/2018	Claire Ignacio
					ASSET	EPA 200.8	AS	8/13/2018	Claire Ignacio
					ASSET	EPA 200.8	BA	8/8/2018	Claire Ignacio
					ASSET	EPA 200.8	CR	8/8/2018	Claire Ignacio
					ASSET	EPA 200.8	CU	8/13/2018	Claire Ignacio
					ASSET	EPA 200.8	MN	8/8/2018	Claire Ignacio
					ASSET	EPA 200.8	MO	8/8/2018	Claire Ignacio
					ASSET	EPA 200.8	NI	8/8/2018	Claire Ignacio
					ASSET	EPA 200.8	PB	8/8/2018	Claire Ignacio

TABLE 8

Topock IM-3 Waste Discharge Applicable or Relevant and Appropriate Requirements (ARARs)

Monitoring Information

Third 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-576	Ron Phelps	8/1/2018	12:40:00 PM	ASSET	EPA 200.8	SB	8/8/2018	Claire Ignacio
					ASSET	EPA 200.8	ZN	8/8/2018	Claire Ignacio
					ASSET	EPA 218.6	CR6	8/3/2018	Ria Abes
					ASSET	EPA 300.0	FL	8/2/2018	Ria Abes
					ASSET	EPA 300.0	SO4	8/2/2018	Ria Abes
		Ryan Phelps			Field	HACH	PH	8/1/2018	Ryan Phelps
		Ron Phelps			ASSET	SM 2540C	TDS	8/2/2018	Lilia Ramit
					ASSET	SM 4500-NO3F	NO3NO2N	8/15/2018	Quennie Manimtim
					ASSET	SM2130B	TRB	8/2/2018	Lilia Ramit
					BCLabs	SM4500NH3G	NH3N	8/15/2018	Quennie Manimtim
SC-700B	SC-700B-WDR-577	Ryan Phelps	8/10/2018	11:50:00 PM	ASSET	EPA 120.1	SC	8/14/2018	Lilia Ramit
					ASSET	EPA 200.7	AL	8/20/2018	Claire Ignacio
					ASSET	EPA 200.7	B	8/20/2018	Claire Ignacio
					ASSET	EPA 200.7	FE	8/20/2018	Claire Ignacio
					ASSET	EPA 200.8	AS	8/20/2018	Claire Ignacio
					ASSET	EPA 200.8	BA	8/20/2018	Claire Ignacio
					ASSET	EPA 200.8	CR	8/20/2018	Claire Ignacio
					ASSET	EPA 200.8	CU	8/21/2018	Claire Ignacio
					ASSET	EPA 200.8	MN	8/20/2018	Claire Ignacio
					ASSET	EPA 200.8	MO	8/20/2018	Claire Ignacio
					ASSET	EPA 200.8	NI	8/20/2018	Claire Ignacio
					ASSET	EPA 200.8	PB	8/20/2018	Claire Ignacio
					ASSET	EPA 200.8	SB	8/20/2018	Claire Ignacio
					ASSET	EPA 200.8	ZN	8/20/2018	Claire Ignacio
					ASSET	EPA 218.6	CR6	8/14/2018	Ria Abes
					ASSET	EPA 300.0	FL	8/14/2018	Ria Abes
					ASSET	EPA 300.0	SO4	8/14/2018	Ria Abes
		Brian Terhune			Field	HACH	PH	8/10/2018	Brian Terhune
		Ryan Phelps			ASSET	SM 2540C	TDS	8/14/2018	Lilia Ramit
					ASSET	SM 4500-NO3F	NO3NO2N	8/17/2018	Quennie Manimtim
					ASSET	SM2130B	TRB	8/14/2018	Lilia Ramit
					BCLabs	SM4500NH3G	NH3N	8/21/2018	Quennie Manimtim
SC-700B	SC-700B-WDR-578	Ron Phelps	9/4/2018	10:05:00 AM	ASSET	EPA 120.1	SC	9/5/2018	Lilia Ramit
		ASSET			EPA 200.7	AL	9/19/2018	Claire Ignacio	
		ASSET			EPA 200.7	B	9/19/2018	Claire Ignacio	

TABLE 8

Topock IM-3 Waste Discharge Applicable or Relevant and Appropriate Requirements (ARARs)

Monitoring Information

Third 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-578	Ron Phelps	9/4/2018	10:05:00 AM	ASSET	EPA 200.7	FE	9/19/2018	Claire Ignacio
					ASSET	EPA 200.8	AS	9/6/2018	Claire Ignacio
					ASSET	EPA 200.8	BA	9/6/2018	Claire Ignacio
					ASSET	EPA 200.8	CR	9/6/2018	Claire Ignacio
					ASSET	EPA 200.8	CU	9/6/2018	Claire Ignacio
					ASSET	EPA 200.8	MN	9/10/2018	Claire Ignacio
					ASSET	EPA 200.8	MO	9/6/2018	Claire Ignacio
					ASSET	EPA 200.8	NI	9/6/2018	Claire Ignacio
					ASSET	EPA 200.8	PB	9/6/2018	Claire Ignacio
					ASSET	EPA 200.8	SB	9/6/2018	Claire Ignacio
					ASSET	EPA 200.8	ZN	9/6/2018	Claire Ignacio
					ASSET	EPA 218.6	CR6	9/6/2018	Ria Abes
					ASSET	EPA 300.0	FL	9/5/2018	Ria Abes
					ASSET	EPA 300.0	SO4	9/6/2018	Ria Abes
					Field	HACH	PH	9/4/2018	Ron Phelps
					ASSET	SM 2540C	TDS	9/5/2018	Lilia Ramit
					ASSET	SM 4500-NO3F	NO3NO2N	9/12/2018	Quennie Manimtim
					ASSET	SM2130B	TRB	9/5/2018	Lilia Ramit
					BCLabs	SM4500NH3G	NH3N	9/13/2018	Quennie Manimtim
SC-701	SC-701-WDR-575	Ryan Phelps	7/3/2018	9:35:00 AM	ASSET	EPA 120.1	SC	7/5/2018	Lilia Ramit
					ASSET	EPA 200.8	AG	7/12/2018	Claire Ignacio
					ASSET	EPA 200.8	AS	7/12/2018	Claire Ignacio
					ASSET	EPA 200.8	BA	7/12/2018	Claire Ignacio
					ASSET	EPA 200.8	BE	7/17/2018	Claire Ignacio
					ASSET	EPA 200.8	CD	7/12/2018	Claire Ignacio
					ASSET	EPA 200.8	CO	7/12/2018	Claire Ignacio
					ASSET	EPA 200.8	CR	7/12/2018	Claire Ignacio
					ASSET	EPA 200.8	CU	7/20/2018	Claire Ignacio
					ASSET	EPA 200.8	MN	7/12/2018	Claire Ignacio
					ASSET	EPA 200.8	MO	7/12/2018	Claire Ignacio
					ASSET	EPA 200.8	NI	7/20/2018	Claire Ignacio
					ASSET	EPA 200.8	PB	7/12/2018	Claire Ignacio
					ASSET	EPA 200.8	SB	7/12/2018	Claire Ignacio
					ASSET	EPA 200.8	SE	7/17/2018	Claire Ignacio
					ASSET	EPA 200.8	TL	7/12/2018	Claire Ignacio
					ASSET	EPA 200.8	V	7/20/2018	Claire Ignacio

TABLE 8

Topock IM-3 Waste Discharge Applicable or Relevant and Appropriate Requirements (ARARs)

Monitoring Information

Third 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-575	Ryan Phelps	7/3/2018	9:35:00 AM	ASSET	EPA 200.8	ZN	7/12/2018	Claire Ignacio
					ASSET	EPA 218.6	CR6	7/5/2018	Ria Abes
					ASSET	EPA 245.1	HG	7/10/2018	Claire Ignacio
					ASSET	EPA 300.0	FL	7/5/2018	Ria Abes
					Field	HACH	PH	7/3/2018	Ryan Phelps
					ASSET	SM 2540C	TDS	7/5/2018	Lilia Ramit
Phase Separator	Phase Separator-575-Sludge	George Gloria	7/3/2018	10:30:00 AM	ASSET	EPA 300.0	FL	7/6/2018	Ria Abes
					ASSET	EPA 6010B	AG	7/9/2018	Claire Ignacio
					ASSET	EPA 6010B	AS	7/9/2018	Claire Ignacio
					ASSET	EPA 6010B	BA	7/9/2018	Claire Ignacio
					ASSET	EPA 6010B	BE	7/9/2018	Claire Ignacio
					ASSET	EPA 6010B	CD	7/9/2018	Claire Ignacio
					ASSET	EPA 6010B	CO	7/9/2018	Claire Ignacio
					ASSET	EPA 6010B	CR	7/9/2018	Claire Ignacio
					ASSET	EPA 6010B	CU	7/9/2018	Claire Ignacio
					ASSET	EPA 6010B	MN	7/9/2018	Claire Ignacio
					ASSET	EPA 6010B	MO	7/9/2018	Claire Ignacio
					ASSET	EPA 6010B	NI	7/9/2018	Claire Ignacio
					ASSET	EPA 6010B	PB	7/9/2018	Claire Ignacio
					ASSET	EPA 6010B	SB	7/9/2018	Claire Ignacio
					ASSET	EPA 6010B	SE	7/9/2018	Claire Ignacio
					ASSET	EPA 6010B	TL	7/9/2018	Claire Ignacio
					ASSET	EPA 6010B	V	7/9/2018	Claire Ignacio
					ASSET	EPA 6010B	ZN	7/9/2018	Claire Ignacio
					ASSET	EPA 7471A	HG	7/6/2018	Claire Ignacio
					ASSET	SW 7199	CR6	7/9/2018	Ria Abes

TABLE 8

Topock IM-3 Waste Discharge Applicable or Relevant and Appropriate Requirements (ARARs)

Monitoring Information

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

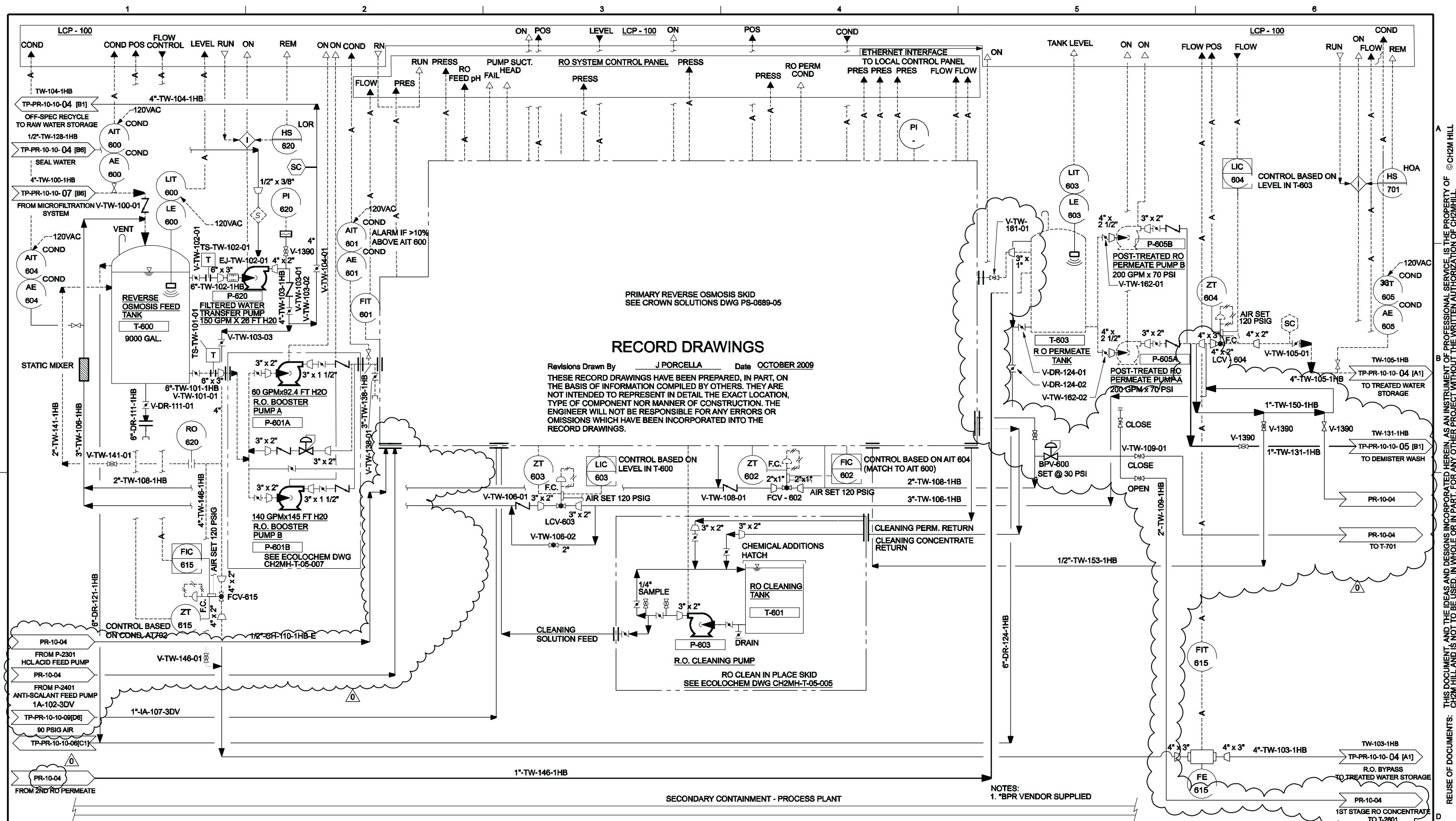
SC-100B = Sampling location for all influent samples is tap on pipe from extraction wells into tank T-100 (see attached P&ID TP-PR-10-10-04).

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.

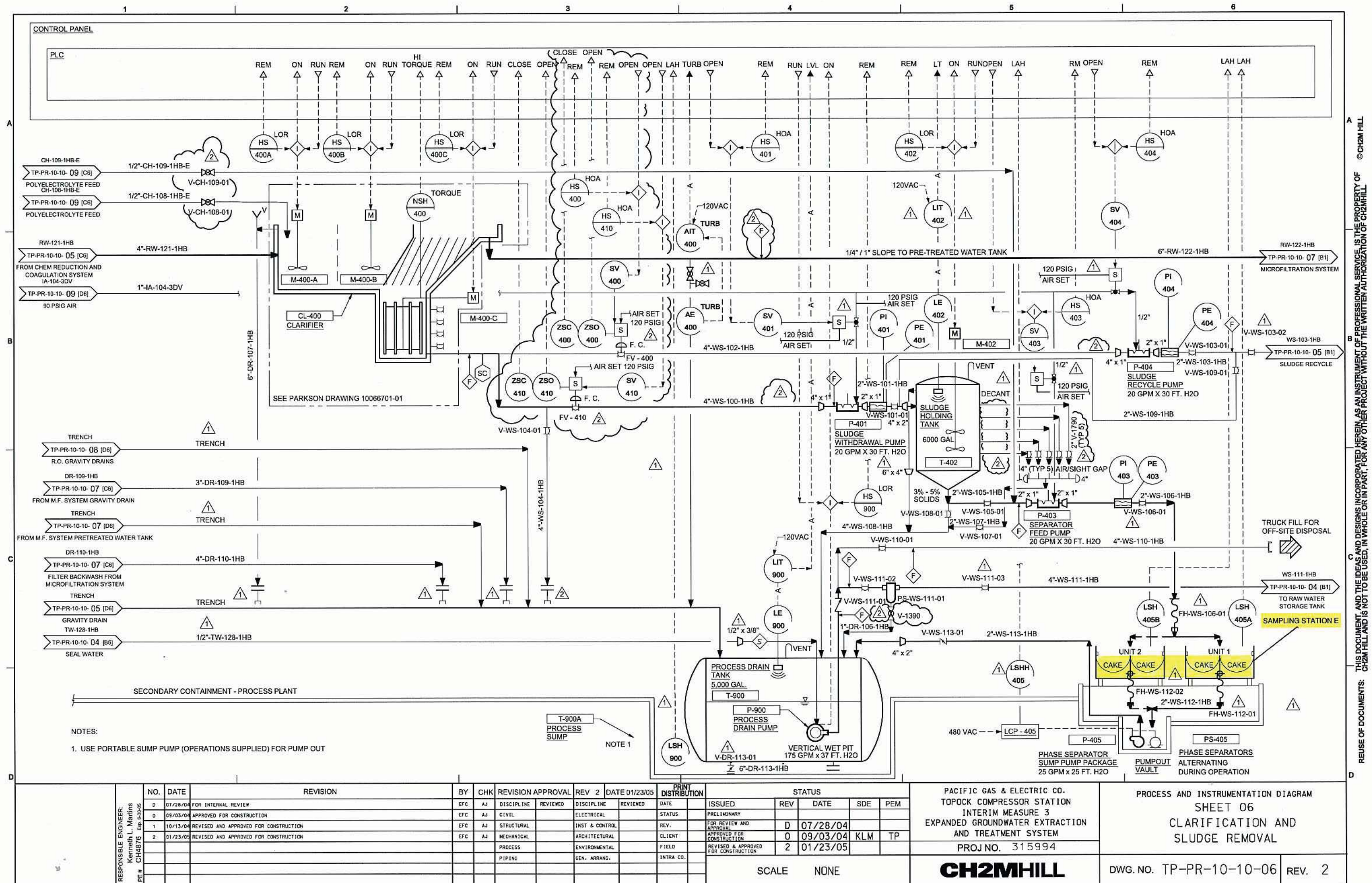
ALKB =	alkalinity, bicarb as CaCO ₃	MO =	molybdenum
ALKC =	alkalinity, carb as CaCO ₃	MOIST =	moisture
AL =	aluminum	NH ₃ N =	ammonia (as N)
Ag =	silver	NI =	nickel
AS =	arsenic	NO ₃ NO ₂ N =	nitrate/nitrite (as N)
B =	boron	PB =	lead
BA =	barium	PH =	pH
BE =	beryllium	SB =	antimony
CD =	cadmium	SC =	specific conductance
CO =	cobalt	SE =	selenium
CR =	chromium	SO ₄ =	sulfate
CR ₆ =	hexavalent chromium	TDS =	total dissolved solids
CU =	copper	TL =	thallium
FE =	iron	TLI =	Truesdail Laboratories, Inc.
FETD =	iron, dissolved	TRB =	turbidity
FL =	fluoride	V =	vanadium
HG =	mercury	ZN =	zinc
MN =	manganese		
MND =	manganese, dissolved		

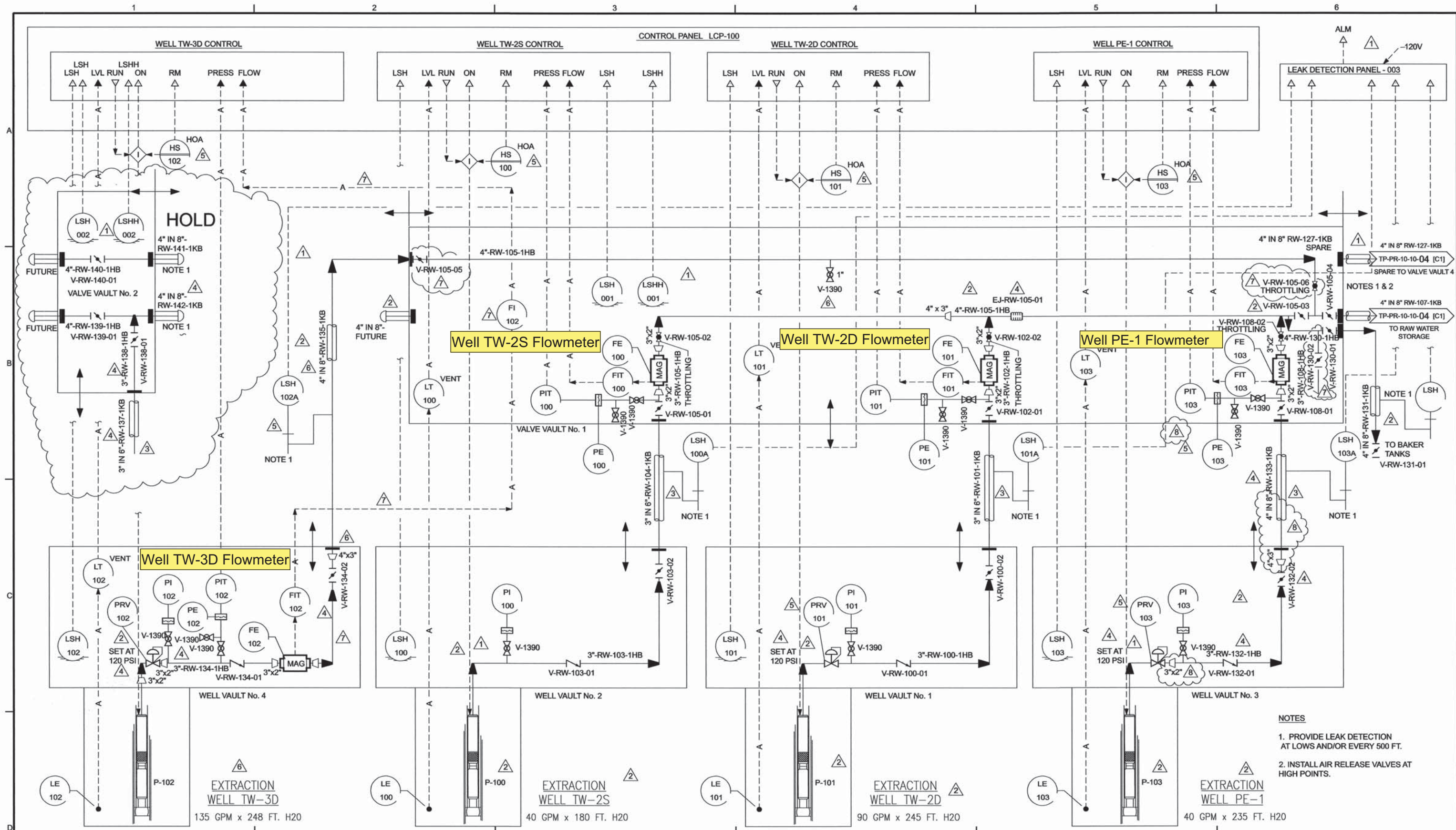
Figures



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** ORIGINALLY STAMPED AND SIGNED BY: JOHN PORCELLA CALIFORNIA PE NO. C70145 ON 04-01-2009 **	RESPONSIBLE ENGINEER John Porcella C70145 PE #	NO.	DATE	REVISION	BY	CHK	REVISION APPROVAL	REV 0	DATE 10/02/09	PRINT DISTRIBUTION	STATUS				PACIFIC GAS & ELECTRIC CO. TOPOCK COMPRESSOR STATION INTERIM MEASURE 3 PLANT PERFORMANCE IMPROVEMENTS	PROCESS AND INSTRUMENTATION DIAGRAM REVERSE OSMOSIS SYSTEM SHEET ONE OF TWO	CH2MHILL	DWG. NO. PR-10-03	REV. 0		
		A	2/12/09	INTERNAL REVIEW			DISCIPLINE	REVIEWED	DISCIPLINE	REVIEWED	DATE	ISSUED	REV	DATE						SDE	PEM
		B	2/12/09	CLIENT REVIEW			CIVIL	SJ	ELECTRICAL	FH	STATUS	PRELIMINARY	A	2/12/09						JP	JP
		C	4/01/09	FOR REVIEW AND APPROVAL	JR	JP	STRUCTURAL		INST & CONTROL	JG	REV.	FOR REVIEW AND APPROVAL	C	4/01/09						JP	JP
		D	11/17/09	FINAL RECORD ISSUE	JR	JP	MECHANICAL	SJ	ARCHITECTURAL		CLIENT	APPROVED FOR CONSTRUCTION									
							PROCESS	DF	ENVIRONMENTAL		FIELD	REVISED & APPROVED FOR CONSTRUCTION	0	10/02/09						JP	JP
							PIPING	SJ	GEN. ARRANG.	SJ	INTRA CO.										
											SCALE NONE				PROJ NO. 362032						





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

NO.	DATE	REVISION	BY	CHK	REVISION APPROVAL	REV 8	DATE 12/06/05	PRINT DISTRIBUTION	STATUS
8	12/07/05	REMOVED PE-1 HOLDS	JBW	SDH	DISCIPLINE	REVIEWED	DISCIPLINE	REVIEWED	DATE
1	10/13/04	REVISED AND APPROVED FOR CONSTRUCTION	EFC	AJ	CIVIL	—	ELECTRICAL	—	STATUS
2	01/23/05	REVISED AND APPROVED FOR CONSTRUCTION	EFC	AJ	STRUCTURAL	—	INST. & CONTROL	—	REV.
3	03/16/05	DELETED NOTES, APPROVED FOR CONSTRUCTION	EFC	AJ	MECHANICAL	—	ARCHITECTURAL	—	CLIENT
4	07/20/05	RELIEF VALVE SETTINGS, WELL PE-1 LINE TAGS, HOLDS REMOVED, APPROVED FOR CONSTRUCTION	EFC	AJ	PROCESS	—	ENVIRONMENTAL	—	FIELD
5	09/27/05	FINAL RECORD ISSUE	EFC	AJ	PIPING	—	GEN. ARRANG.	—	INTRA CO.
6	10/06/05	REVISED FINAL RECORD - ADDED TW-3D	EFC	AJ	—	—	—	—	—
7	10/19/05	REVISED AS NOTED	EFC	AJ	—	—	—	—	—

SCALE NONE

PACIFIC GAS & ELECTRIC CO.
TOPOCK COMPRESSOR STATION
INTERIM MEASURE 3
EXPANDED GROUNDWATER EXTRACTION
AND TREATMENT SYSTEM
PROJ. NO. 315994

CH2MHILL

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

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

FILENAME: tpr101003.dwg

PLOT DATE: 19-OCT-2005

PLOT TIME:

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Appendix A
Third Quarter 2018 Laboratory Analytical
Reports

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 574	06-05-18	1444	06-05-18	1450	HQ4400	06-05-18	11:30	-56.37	G. GLORIA	7.36
Notes:										
2 SC-700B-WDR-574	06-05-18	1500	06-05-18	1504	HQ4400	06-05-18	11:30	-56.37	G. GLORIA	7.17
Notes:										
3 SC-100B-WDR-575	7-3-18	9:51	7-3-18	10:04	HQ4400	7-3-18	00:15	-55.15	Ryan Phelps	7.47
Notes:										
4 SC-700B-WDR-575	7-3-18	9:44	7-3-18	10:03	HQ4400	7-3-18	00:15	-55.15	Ryan Phelps	7.00
Notes:										
5 SC-701-WDR-575	7-3-18	9:35	7-3-18	10:01	HQ4400	7-3-18	00:15	-55.15	Ryan Phelps	8.11
Notes:										
6 SC-100B-576	8-1-18	12:30	8-1-18	12:48	HQ4400	8-1-18	0015	-53.69	Ryan Phelps	7.42
Notes:										
7 SC-700B-576	8-1-18	12:40	8-1-18	12:50	HQ4400	8-1-18	0015	-53.69	Ryan Phelps	7.55
Notes:										

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

Analytical Bench Log Book

WDR pH Results

If the on site laboratory pH result for T-700 tank is less than pH 6.6 or greater than pH 8.3 the Injection well should be shut down until the problem is fixed.

Sample Name	Date of sampling	Time of sampling	Date of analysis	Time of analysis	pH Meter #1, #2, or #3 etc. See cover Sheet for Serial Number	Date pH meter Calibrated	Time pH meter Calibrated	Slope of the Curve	Analyst Name (for the pH result)	pH Result
1 SC-700B-577	8-10-18	23:50	8-10-18	23:58	H6440D	8-10-18	22:06	-53.49	Brian Terhune	7.76

Notes:

2										
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Notes:

3										
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Notes:

4										
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Notes:

5										
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Notes:

6										
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Notes:

7										
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Notes:

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

Analytical Bench Log Book

WDR pH Results

If the on site laboratory pH result for T-700 tank is less than pH 6.6 or greater than pH 8.3 the Injection well should be shut down until the problem is fixed.

Sample Name	Date of sampling	Time of sampling	Date of analysis	Time of analysis	pH Meter #1, #2, or #3 etc. See cover Sheet for Serial Number	Date pH meter Calibrated	Time pH meter Calibrated	Slope of the Curve	Analyst Name (for the pH result)	pH Result
1 SC-100B WDR 574	06-05-18	1444	06-05-18	1450	HQ4400	06-05-18	11:30	-56.37	G. GLORIA	7.36
Notes:										
2 SC-700B-WDR-574	06-05-18	1500	06-05-18	1504	HQ4400	06-05-18	11:30	-56.37	G. GLORIA	7.17
Notes:										
3 SC-100B-WDR-575	7-3-18	9:51	7-3-18	10:04	HQ4400	7-3-18	00:15	-55.15	Ryan Phelps	7.47
Notes:										
4 SC-700B-WDR-575	7-3-18	9:44	7-3-18	10:03	HQ4400	7-3-18	00:15	-55.15	Ryan Phelps	7.00
Notes:										
5 SC-701-WDR-575	7-3-18	9:35	7-3-18	10:01	HQ4400	7-3-18	00:15	-55.15	Ryan Phelps	8.11
Notes:										
6 SC-100B-576	8-1-18	12:30	8-1-18	12:48	HQ4400	8-1-18	0015	-53.69	Ryan Phelps	7.42
Notes:										
7 SC-700B-576	8-1-18	12:40	8-1-18	12:50	HQ4400	8-1-18	0015	-53.69	Ryan Phelps	7.55
Notes:										

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

July 18, 2018

Mr. Marlon Cartin
Asset Laboratories
3151 W Post Rd.
Las Vegas, NV 89118

Dear Mr. Cartin:

We are pleased to present the enclosed acute bioassay report. The test was conducted under the guidelines prescribed in "Static Acute Bioassay Procedures for Hazardous Waste Samples" California Department of Fish and Game, 1988. The results were as follows:


CLIENT:	Asset Laboratories
SAMPLE I.D.:	N031079-001D
DATE RECEIVED:	07/06/18
ABC LAB. NO.:	AST0718.028

DOHS (TITLE 22) HAZARDOUS WASTE BIOASSAY USING FATHEAD MINNOWS

96 HOUR LC50 = >750 mg/l

STATUS = Pass

Respectfully yours,


Scott Johnson
Laboratory Director

AQUATIC BIOASSAY AND CONSULTING LABORATORIES, INC.
29 North Olive Street
Ventura, CA 93001
(805) 643-5621

DOHS Bioassay for Hazardous Waste (Title 22)

SAMPLE INFORMATION

CLIENT:	Asset Laboratories	Date:	07/06/18
SAMPLE I.D.:	N031079-001D	LAB #	AST0718.028

WATER QUALITY

DILUTION WATER: Reconst. Fresh	AERATION: Single Bubble Air
CONTROL HARDNESS	CONTROL ALKALINITY
Beg: 43 mg/l End: 46 mg/l	Beg: 31 mg/l End: 33 mg/l
SAMPLE HARDNESS	SAMPLE ALKALINITY
Beg: 43 mg/l End: 79 mg/l	Beg: 30 mg/l End: 62 mg/l

ORGANISM INFORMATION

SPECIES:	Pimephales promelas	DATE REC'D:	07/10/18
COMMON NAME:	Fathead Minnow	AVERAGE LNTH:	39 mm
SOURCE:	Thomas Fish Co.	AVERAGE WT:	0.80 gm
CARRIER:	California Overnight	NO. FISH / TANK:	10

TEST DATA

	INITIAL				24 HOURS				48 HOURS				72 HOURS				96 HOURS			
TIME:	07/13/18 1453				07/14/18 1510				07/15/18 1420				07/16/18 1450				07/17/18 1310			
CONC.	Dis. Oxy.	Temp. dg.C	pH		Dis. Oxy.	Temp. dg.C	pH	#Fish Dead	Dis. Oxy.	Temp. dg.C	pH	#Fish Dead	Dis. Oxy.	Temp. dg.C	pH	#Fish Dead	Dis. Oxy.	Temp. dg.C	pH	#Fish Dead
0 (Con.)	8.9	19.8	7.6		8.1	18.9	7.5	0	8.0	19.0	7.4	0	7.3	18.8	7.0	0	7.6	18.1	7.3	0
400 mg/l	8.8	20.0	7.6		8.2	18.4	7.2	0	7.7	18.8	6.9	0	7.2	18.7	7.1	0	7.8	18.6	7.2	0
400 mg/l	8.8	20.0	7.6		8.1	18.4	7.1	0	7.7	18.8	6.9	0	7.6	18.5	7.2	1	7.9	18.5	7.2	0
750 mg/l	8.8	20.0	7.6		8.0	18.5	7.1	0	7.8	18.7	6.9	0	7.5	18.5	7.2	0	8.1	18.5	7.2	0
750 mg/l	8.8	20.0	7.5		8.0	18.5	7.1	0	7.9	18.8	7.0	0	7.5	18.4	7.2	0	7.8	18.5	7.2	0

FINAL DATA

TOTAL MORTALITIES	
0 (Con.)	0
400 mg/l	0
400 mg/l	1
750 mg/l	0
750 mg/l	0

FINAL RESULTS

96 HOUR LC50 =	>750 mg/l
STATUS =	Pass
CALCULATION METHOD =	Binomial Test

Joe Freas, Senior Toxicologist

Date

7/18/18

**ASSET Laboratories**

3151-3153 W Post Rd., Las Vegas, NV 89118

www.atl-labs.com

TEL: 7023072659

FAX: 7023072691

CHAIN-OF-CUSTODY RECORD

Page 1 of 1

QC Level: Level IV**Subcontractor:**Aquatic Bioassay & Consulting
29 N Olive
Ventura, CA 93001

TEL: (805) 643-5621

FAX:

Acct #:

Field Sampler: SIGNED

05-Jul-18

Sample ID	Matrix	Date Collected	Bottle Type	Requested Tests		
				Bioassay		
N031079-001D / Phase Separator-575-Sludge	Soil	7/3/2018 10:30:00 AM	4OZG	1		

028

Temp = 5.8 °C

Please cc report to Lucille Golosinda at lucille.golosinda@assetlaboratories.com

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

Please use PO#: N31079A 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 Bioassay, 96 hr Acute. EDD Requirement Labspec7 edata.

GSO #:

	Date/Time			Date/Time
Relinquished by: <u>YGT</u>	7/5/2018 17:00	Received by: <u>Elvira</u>		7-6-18/2018
Relinquished by: _____	_____	Received by: _____		_____

July 18, 2018

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

TEL: (970) 731-0636

FAX: (510) 622-9129

Workorder No.: N031079

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

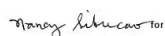
Attention: Doug Scott

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

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

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

Sincerely,



Quennie Manimtim
Laboratory Director

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



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ELAP Cert 2921

NEVADA | P: 702.307.2659 F: 702.307.269
3151 W. Post Rd., Las Vegas, NV 89118
ELAP Cert 2676 | NV Cert NVG 922

CLIENT: CH2M HILL
Project: PG&E Topock, 680375.03.IM.OP.00
Lab Order: N031079

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:

Bioassay was subcontracted to Aquatic Bioassay and Consulting- Ventura, CA.

Analytical Comments for EPA 6010B:

Matrix Spike (MS) and Matrix Spike Duplicate (MSD) are outside recovery criteria for some analytes in QC samples N031079-001B-MS and N031079-001B-MSD possibly due to matrix interference. The associated Laboratory Control Sample (LCS) recovery was acceptable.

Matrix Spike (MS) and Matrix Spike Duplicate (MSD) are outside recovery criteria for Chromium in QC samples N031079-001B-MS and N031079-001B-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 7199:

Matrix Spike (MS) and Matrix Spike Duplicate (MSD) are outside recovery criteria in QC samples N031079-001C-MS and N031079-001C-MSD possibly due to matrix interference. Post Spike and Matrix Spike Insoluble met acceptance criteria. The associated Laboratory Control Sample (LCS) recovery was also acceptable.



ASSET Laboratories

Date: 18-Jul-18

CLIENT: CH2M HILL
Project: PG&E Topock, 680375.03.IM.OP.00
Lab Order: N031079
Contract No: IM3PLANT-AR

Work Order Sample Summary

Lab Sample ID	Client Sample ID	Matrix	Collection Date	Date Received	Date Reported
N031079-001A	Phase Separator-575-Sludge	Soil	7/3/2018 10:30:00 AM	7/3/2018	7/18/2018
N031079-001B	Phase Separator-575-Sludge	Soil	7/3/2018 10:30:00 AM	7/3/2018	7/18/2018
N031079-001C	Phase Separator-575-Sludge	Soil	7/3/2018 10:30:00 AM	7/3/2018	7/18/2018
N031079-001D	Phase Separator-575-Sludge	Soil	7/3/2018 10:30:00 AM	7/3/2018	7/18/2018



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ASSET Laboratories

ANALYTICAL RESULTS

Print Date: 18-Jul-18

CLIENT: CH2M HILL
Lab Order: N031079
Project: PG&E Topock, 680375.03.IM.OP.00
Lab ID: N031079-001

Client Sample ID: Phase Separator-575-Sludge
Collection Date: 7/3/2018 10:30:00 AM
Matrix: SOIL

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

EPA 300.0

RunID: NV00922-IC8_180706A	QC Batch: R126085	PrepDate	Analyst: RAB
Fluoride	43 0.34 4.9	mg/Kg-dry	2 7/6/2018 12:00 PM

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



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CLIENT: CH2M HILL
 Work Order: N031079
 Project: PG&E Topock, 680375.03.IM.OP.00

ANALYTICAL QC SUMMARY REPORT

TestCode: 300_S

Sample ID	MB-R126085_F	SampType:	MBLK	TestCode:	300_S	Units:	mg/Kg	Prep Date:		RunNo:	126085	
Client ID:	PBS	Batch ID:	R126085	TestNo:	EPA 300.0			Analysis Date:	7/6/2018	SeqNo:	3073609	
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Fluoride		ND	1.0									

Sample ID	LCS-R126085_F	SampType:	LCS	TestCode:	300_S	Units:	mg/Kg	Prep Date:		RunNo:	126085	
Client ID:	LCSS	Batch ID:	R126085	TestNo:	EPA 300.0			Analysis Date:	7/6/2018	SeqNo:	3073610	
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Fluoride		12.686	1.0	12.50	0	101	90	110				

Sample ID	N031079-001ADUP	SampType:	DUP	TestCode:	300_S	Units:	mg/Kg-dry	Prep Date:		RunNo:	126085	
Client ID:	ZZZZZZ	Batch ID:	R126085	TestNo:	EPA 300.0			Analysis Date:	7/6/2018	SeqNo:	3073612	
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Fluoride		43.117	4.9						42.54	1.36	20	

Sample ID	N031079-001AMS	SampType:	MS	TestCode:	300_S	Units:	mg/Kg-dry	Prep Date:		RunNo:	126085	
Client ID:	ZZZZZZ	Batch ID:	R126085	TestNo:	EPA 300.0			Analysis Date:	7/6/2018	SeqNo:	3073613	
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Fluoride		67.445	4.9	30.52	42.54	81.6	80	120				

Sample ID	N031079-001AMSD	SampType:	MSD	TestCode:	300_S	Units:	mg/Kg-dry	Prep Date:		RunNo:	126085	
Client ID:	ZZZZZZ	Batch ID:	R126085	TestNo:	EPA 300.0			Analysis Date:	7/6/2018	SeqNo:	3073614	
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Fluoride		67.543	4.9	30.52	42.54	81.9	80	120	67.44	0.145	20	

Qualifiers:

B Analyte detected in the associated Method Blank
 ND Not Detected at the Reporting Limit
 Calculations are based on raw values

E Value above quantitation range
 R RPD outside accepted recovery limits

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

ASSET Laboratories

ANALYTICAL RESULTS

Print Date: 18-Jul-18

CLIENT: CH2M HILL
Lab Order: N031079
Project: PG&E Topock, 680375.03.IM.OP.00
Lab ID: N031079-001

Client Sample ID: Phase Separator-575-Sludge
Collection Date: 7/3/2018 10:30:00 AM
Matrix: SOIL

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

EPA 3050B

EPA 6010B

RunID: NV00922-ICP2_180709C	QC Batch: 68719	PrepDate	7/6/2018	Analyst: CEI
Antimony	20	0.80	4.9	mg/Kg-dry 1 7/9/2018 09:45 AM
Arsenic	16	1.3	2.4	mg/Kg-dry 1 7/9/2018 02:37 PM
Barium	53	0.76	2.4	mg/Kg-dry 1 7/9/2018 09:45 AM
Beryllium	ND	0.53	2.4	mg/Kg-dry 1 7/9/2018 09:45 AM
Cadmium	3.3	0.65	2.4	mg/Kg-dry 1 7/9/2018 09:45 AM
Chromium	2900	0.79	2.4	mg/Kg-dry 1 7/9/2018 09:45 AM
Cobalt	3.3	0.70	2.4	mg/Kg-dry 1 7/9/2018 09:45 AM
Copper	110	2.2	4.9	mg/Kg-dry 1 7/9/2018 09:45 AM
Lead	ND	0.72	2.4	mg/Kg-dry 1 7/9/2018 09:45 AM
Manganese	300	1.2	2.4	mg/Kg-dry 1 7/9/2018 09:45 AM
Molybdenum	3.4	0.73	2.4	mg/Kg-dry 1 7/9/2018 09:45 AM
Nickel	23	0.83	2.4	mg/Kg-dry 1 7/9/2018 09:45 AM
Selenium	ND	1.5	2.4	mg/Kg-dry 1 7/9/2018 09:45 AM
Silver	ND	1.5	2.4	mg/Kg-dry 1 7/9/2018 09:45 AM
Thallium	6.1	0.86	4.9	mg/Kg-dry 1 7/9/2018 02:37 PM
Vanadium	31	0.54	2.4	mg/Kg-dry 1 7/9/2018 09:45 AM
Zinc	48	0.73	2.4	mg/Kg-dry 1 7/9/2018 09:45 AM

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



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CLIENT: CH2M HILL
 Work Order: N031079
 Project: PG&E Topock, 680375.03.IM.OP.00

ANALYTICAL QC SUMMARY REPORT

TestCode: 6010_SPGE

Sample ID	MB-68719	SampType:	MBLK	TestCode:	6010_SPGE	Units:	mg/Kg	Prep Date:	7/6/2018	RunNo:	126094	
Client ID:	PBS	Batch ID:	68719	TestNo:	EPA 6010B	EPA 3050B		Analysis Date:	7/9/2018	SeqNo:	3073813	
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Antimony		ND	2.0									
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		ND	1.0									
Silver		ND	1.0									
Vanadium		ND	1.0									
Zinc		ND	1.0									

Sample ID	LCS-68719	SampType: LCS	TestCode: 6010_SPGE	Units: mg/Kg	Prep Date: 7/6/2018	RunNo: 126094					
Client ID:	LCSS	Batch ID: 68719	TestNo: EPA 6010B	EPA 3050B	Analysis Date: 7/9/2018	SeqNo: 3073814					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Antimony	26.946	2.0	25.00	0	108	85	115				
Barium	26.411	1.0	25.00	0	106	85	115				
Beryllium	26.403	1.0	25.00	0	106	85	115				
Cadmium	25.533	1.0	25.00	0	102	85	115				
Chromium	26.081	1.0	25.00	0	104	85	115				
Cobalt	25.753	1.0	25.00	0	103	85	115				
Copper	26.491	2.0	25.00	0	106	85	115				
Lead	26.272	1.0	25.00	0	105	85	115				

Qualifiers:

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

Calculations are based on raw values

CLIENT: CH2M HILL
Work Order: N031079
Project: PG&E Topock, 680375.03.IM.OP.00

ANALYTICAL QC SUMMARY REPORT

TestCode: 6010_SPGE

Sample ID	LCS-68719	SampType:	LCS	TestCode:	6010_SPGE	Units:	mg/Kg	Prep Date:	7/6/2018	RunNo:	126094
Client ID:	LCSS	Batch ID:	68719	TestNo:	EPA 6010B	EPA 3050B		Analysis Date:	7/9/2018	SeqNo:	3073814
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Manganese	51.636	1.0	50.00	0	103	85	115				
Molybdenum	25.977	1.0	25.00	0	104	85	115				
Nickel	26.099	1.0	25.00	0	104	85	115				
Selenium	26.327	1.0	25.00	0	105	85	115				
Silver	25.825	1.0	25.00	0	103	85	115				
Vanadium	24.702	1.0	25.00	0	98.8	85	115				
Zinc	25.877	1.0	25.00	0	104	85	115				

Sample ID	N031079-001B-MS	SampType:	MS	TestCode:	6010_SPGE	Units:	mg/Kg-dry	Prep Date:	7/6/2018	RunNo:	126094
Client ID:	ZZZZZZ	Batch ID:	68719	TestNo:	EPA 6010B	EPA 3050B		Analysis Date:	7/9/2018	SeqNo:	3073818
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Antimony	86.071	4.9	60.95	20.44	108	75	125				
Barium	97.442	2.4	60.95	53.30	72.4	75	125				S
Beryllium	57.292	2.4	60.95	0	94.0	75	125				
Cadmium	50.542	2.4	60.95	3.275	77.6	75	125				
Chromium	2668.258	2.4	60.95	2895	-372	75	125				S
Cobalt	54.293	2.4	60.95	3.272	83.7	75	125				
Copper	169.481	4.9	60.95	114.6	90.0	75	125				
Lead	45.936	2.4	60.95	0	75.4	75	125				
Manganese	388.190	2.4	121.9	303.4	69.6	75	125				S
Molybdenum	58.305	2.4	60.95	3.359	90.2	75	125				
Nickel	71.069	2.4	60.95	23.23	78.5	75	125				
Selenium	36.703	2.4	60.95	0	60.2	75	125				S
Silver	42.023	2.4	60.95	0	68.9	75	125				S
Vanadium	76.893	2.4	60.95	30.77	75.7	75	125				
Zinc	84.734	2.4	60.95	48.02	60.2	75	125				S

Qualifiers:

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

CLIENT: CH2M HILL
Work Order: N031079
Project: PG&E Topock, 680375.03.IM.OP.00

ANALYTICAL QC SUMMARY REPORT

TestCode: 6010_SPGE

Sample ID	N031079-001B-MSD	SampType:	MSD	TestCode:	6010_SPGE	Units:	mg/Kg-dry	Prep Date:	7/6/2018	RunNo:	126094
Client ID:	ZZZZZZ	Batch ID:	68719	TestNo:	EPA 6010B EPA 3050B			Analysis Date:	7/9/2018	SeqNo:	3073819
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Antimony	85.844	4.9	61.01	20.44	107	75	125	86.07	0.264	20	
Barium	96.935	2.4	61.01	53.30	71.5	75	125	97.44	0.522	20	S
Beryllium	56.855	2.4	61.01	0	93.2	75	125	57.29	0.766	20	
Cadmium	49.846	2.4	61.01	3.275	76.3	75	125	50.54	1.39	20	
Chromium	2651.677	2.4	61.01	2895	-399	75	125	2668	0.623	20	S
Cobalt	53.693	2.4	61.01	3.272	82.6	75	125	54.29	1.11	20	
Copper	170.555	4.9	61.01	114.6	91.7	75	125	169.5	0.632	20	
Lead	45.313	2.4	61.01	0	74.3	75	125	45.94	1.37	20	S
Manganese	385.538	2.4	122.0	303.4	67.3	75	125	388.2	0.686	20	S
Molybdenum	57.823	2.4	61.01	3.359	89.3	75	125	58.31	0.831	20	
Nickel	70.335	2.4	61.01	23.23	77.2	75	125	71.07	1.04	20	
Selenium	36.313	2.4	61.01	0	59.5	75	125	36.70	1.07	20	S
Silver	42.162	2.4	61.01	0	69.1	75	125	42.02	0.331	20	S
Vanadium	76.713	2.4	61.01	30.77	75.3	75	125	76.89	0.234	20	
Zinc	83.410	2.4	61.01	48.02	58.0	75	125	84.73	1.58	20	S

Sample ID	MB-68719	SampType:	MBLK	TestCode:	6010_SPGE	Units:	mg/Kg	Prep Date:	7/6/2018	RunNo:	126100
Client ID:	PBS	Batch ID:	68719	TestNo:	EPA 6010B EPA 3050B			Analysis Date:	7/9/2018	SeqNo:	3074195
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	ND	1.0									
Thallium	ND	2.0									

Sample ID	N031079-001B-MS	SampType:	MS	TestCode:	6010_SPGE	Units:	mg/Kg-dry	Prep Date:	7/6/2018	RunNo:	126100
Client ID:	ZZZZZZ	Batch ID:	68719	TestNo:	EPA 6010B EPA 3050B			Analysis Date:	7/9/2018	SeqNo:	3074200
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	67.812	2.4	60.95	16.09	84.9	75	125				
Thallium	51.740	4.9	60.95	6.055	75.0	75	125				S

Qualifiers:

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

Calculations are based on raw values

CLIENT: CH2M HILL
Work Order: N031079
Project: PG&E Topock, 680375.03.IM.OP.00

ANALYTICAL QC SUMMARY REPORT

TestCode: 6010_SPGE

Sample ID	N031079-001B-MSD	SampType: MSD	TestCode: 6010_SPGE	Units: mg/Kg-dry	Prep Date: 7/6/2018	RunNo: 126100					
Client ID: ZZZZZZ	Batch ID: 68719	TestNo: EPA 6010B	EPA 3050B	Analysis Date: 7/9/2018	SeqNo: 3074201						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Arsenic	67.287	2.4	61.01	16.09	83.9	75	125	67.81	0.776	20	
Thallium	52.552	4.9	61.01	6.055	76.2	75	125	51.74	1.56	20	

Sample ID	LCS-68719	SampType: LCS	TestCode: 6010_SPGE	Units: mg/Kg	Prep Date: 7/6/2018	RunNo: 126100					
Client ID: LCSS	Batch ID: 68719	TestNo: EPA 6010B	EPA 3050B	Analysis Date: 7/9/2018	SeqNo: 3074211						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Arsenic	25.375	1.0	25.00	0	101	85	115				
Thallium	25.688	2.0	25.00	0	103	85	115				

Qualifiers:

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

Calculations are based on raw values



CALIFORNIA | P: 562.219.7435 F: 562.219.7436
11110 Artesia Blvd., Ste B, Cerritos, CA 90703
E: info@assetlabs.com

NEVADA | P: 702.307.2659 F: 702.307.2691
3151 W. Post Rd., Las Vegas, NV 89118
E: info@assetlabs.com

ASSET Laboratories

ANALYTICAL RESULTS

Print Date: 18-Jul-18

CLIENT: CH2M HILL
Lab Order: N031079
Project: PG&E Topock, 680375.03.IM.OP.00
Lab ID: N031079-001

Client Sample ID: Phase Separator-575-Sludge
Collection Date: 7/3/2018 10:30:00 AM
Matrix: SOIL

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
HEXAVALENT CHROMIUM BY IC							
EPA 3060A				EPA 7199			
RunID: NV00922-IC6_180709A	QC Batch: 68742			PrepDate	7/9/2018	Analyst: RAB	
Hexavalent Chromium	90	0.71	2.4		mg/Kg-dry	5	7/9/2018 04:02 PM

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



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3151 W. Post Rd., Las Vegas, NV 89118
ELAP Cert 2676 | NV Cert No. 922

CLIENT: CH2M HILL
 Work Order: N031079
 Project: PG&E Topock, 680375.03.IM.OP.00

ANALYTICAL QC SUMMARY REPORT

TestCode: 7199_S_PGE

Sample ID	LCS-68742	SampType:	LCS	TestCode:	7199_S_PGE	Units:	mg/Kg	Prep Date:	7/9/2018	RunNo:	126114
Client ID:	LCSS	Batch ID:	68742	TestNo:	EPA 7199	EPA 3060A		Analysis Date:	7/9/2018	SeqNo:	3074154
Analyte		Result		PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD RPDLimit Qual
Hexavalent Chromium		3.831		0.20	4.000	0	95.8	80	120		

Sample ID	MB-68742	SampType:	MBLK	TestCode:	7199_S_PGE	Units:	mg/Kg	Prep Date:	7/9/2018	RunNo:	126114
Client ID:	PBS	Batch ID:	68742	TestNo:	EPA 7199	EPA 3060A		Analysis Date:	7/9/2018	SeqNo:	3074155
Analyte		Result		PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD RPDLimit Qual
Hexavalent Chromium		ND		0.20							

Sample ID	N031079-001C-REP	SampType:	DUP	TestCode:	7199_S_PGE	Units:	mg/Kg-dry	Prep Date:	7/9/2018	RunNo:	126114
Client ID:	ZZZZZZ	Batch ID:	68742	TestNo:	EPA 7199	EPA 3060A		Analysis Date:	7/9/2018	SeqNo:	3074157
Analyte		Result		PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD RPDLimit Qual
Hexavalent Chromium		90.062		2.4						89.52	0.605 20

Sample ID	N031079-001C-DUP	SampType:	DUP	TestCode:	7199_S_PGE	Units:	mg/Kg-dry	Prep Date:	7/9/2018	RunNo:	126114
Client ID:	ZZZZZZ	Batch ID:	68742	TestNo:	EPA 7199	EPA 3060A		Analysis Date:	7/9/2018	SeqNo:	3074158
Analyte		Result		PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD RPDLimit Qual
Hexavalent Chromium		92.760		2.4						89.52	3.56 20

Sample ID	N031079-001C-MS	SampType:	MS	TestCode:	7199_S_PGE	Units:	mg/Kg-dry	Prep Date:	7/9/2018	RunNo:	126114
Client ID:	ZZZZZZ	Batch ID:	68742	TestNo:	EPA 7199	EPA 3060A		Analysis Date:	7/9/2018	SeqNo:	3074159
Analyte		Result		PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD RPDLimit Qual
Hexavalent Chromium		90.967		2.4	9.743	89.52	14.9	75	125		S

Qualifiers:

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

Calculations are based on raw values

CLIENT: CH2M HILL
Work Order: N031079
Project: PG&E Topock, 680375.03.IM.OP.00

ANALYTICAL QC SUMMARY REPORT

TestCode: 7199_S_PGE

Sample ID	N031079-001C-MSD	SampType: MSD	TestCode: 7199_S_PGE	Units: mg/Kg-dry	Prep Date: 7/9/2018	RunNo: 126114					
Client ID:	ZZZZZZ	Batch ID: 68742	TestNo: EPA 7199	EPA 3060A	Analysis Date: 7/9/2018	SeqNo: 3074160					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	101.968	2.4	9.758	89.52	128	75	125	90.97	11.4	20	S

Sample ID	N031079-001C-MS I	SampType: MS	TestCode: 7199_S_PGE	Units: mg/Kg-dry	Prep Date: 7/9/2018	RunNo: 126114					
Client ID: ZZZZZZ	Batch ID: 68742	TestNo: EPA 7199	EPA 3060A	Analysis Date: 7/9/2018	SeqNo: 3074161						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	1461.698	24	1581	89.52	86.8	75	125				

Sample ID	N031079-001C-PS	SampType: MS	TestCode: 7199_S_PGE	Units: mg/Kg-dry	Prep Date:	RunNo: 126114					
Client ID:	ZZZZZZ	Batch ID: 68742	TestNo: EPA 7199	EPA 3060A	Analysis Date: 7/9/2018	SeqNo: 3074162					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	138.192	2.4	48.69	89.52	100	75	125				

Qualifiers:

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

Calculations are based on raw values

ASSET Laboratories

ANALYTICAL RESULTS

Print Date: 18-Jul-18

CLIENT: CH2M HILL
Lab Order: N031079
Project: PG&E Topock, 680375.03.IM.OP.00
Lab ID: N031079-001

Client Sample ID: Phase Separator-575-Sludge
Collection Date: 7/3/2018 10:30:00 AM
Matrix: SOIL

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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TOTAL MERCURY BY COLD VAPOR TECHNIQUE

EPA 7471A

RunID: NV00922-AA1_180706A	QC Batch: 68720	PrepDate	7/6/2018	Analyst: CEI		
Mercury	ND	0.066	0.24	mg/Kg-dry	1	7/6/2018 09:51 AM

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



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ELAP Cert 2676 | NV Cert N100922

CLIENT: CH2M HILL
 Work Order: N031079
 Project: PG&E Topock, 680375.03.IM.OP.00

ANALYTICAL QC SUMMARY REPORT

TestCode: 7471_S_PGE

Sample ID MB-68720	SampType: MBLK	TestCode: 7471_S_PGE	Units: mg/Kg	Prep Date: 7/6/2018	RunNo: 126058
Client ID: PBS	Batch ID: 68720	TestNo: EPA 7471A		Analysis Date: 7/6/2018	SeqNo: 3072732
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Mercury	ND	0.10			

Sample ID LCS-68720	SampType: LCS	TestCode: 7471_S_PGE	Units: mg/Kg	Prep Date: 7/6/2018	RunNo: 126058
Client ID: LCSS	Batch ID: 68720	TestNo: EPA 7471A		Analysis Date: 7/6/2018	SeqNo: 3072733
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Mercury	0.405	0.10	0.4167	0	97.1 75 125

Sample ID N031079-001B-MS	SampType: MS	TestCode: 7471_S_PGE	Units: mg/Kg-dry	Prep Date: 7/6/2018	RunNo: 126058
Client ID: ZZZZZZ	Batch ID: 68720	TestNo: EPA 7471A		Analysis Date: 7/6/2018	SeqNo: 3072734
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Mercury	1.128	0.24	1.017	0.1381	97.3 75 125

Sample ID N031079-001B-MSD	SampType: MSD	TestCode: 7471_S_PGE	Units: mg/Kg-dry	Prep Date: 7/6/2018	RunNo: 126058
Client ID: ZZZZZZ	Batch ID: 68720	TestNo: EPA 7471A		Analysis Date: 7/6/2018	SeqNo: 3072735
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Mercury	1.123	0.24	1.016	0.1381	97.0 75 125 1.128 0.418 20

Qualifiers:

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

Calculations are based on raw values

ASSET Laboratories

ANALYTICAL RESULTS

Print Date: 18-Jul-18

CLIENT: CH2M HILL
Lab Order: N031079
Project: PG&E Topock, 680375.03.IM.OP.00
Lab ID: N031079-001

Client Sample ID: Phase Separator-575-Sludge
Collection Date: 7/3/2018 10:30:00 AM
Matrix: SOIL

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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PERCENT MOISTURE

D2216

RunID: NV00922-WC_180705F	QC Batch: R126037	PrepDate	Analyst: LR
Percent Moisture	59.04 0.1000 0.1000	wt%	1 7/5/2018 11:50 AM

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



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ELAP Cert 2676 | NV Cert NUC922

CLIENT: CH2M HILL
 Work Order: N031079
 Project: PG&E Topock, 680375.03.IM.OP.00

ANALYTICAL QC SUMMARY REPORT

TestCode: PMOIST

Sample ID	MB-R126037	SampType:	MBLK	TestCode:	PMOIST	Units:	wt%	Prep Date:		RunNo:	126037		
Client ID:	PBS	Batch ID:	R126037	TestNo:	D2216			Analysis Date:	7/5/2018	SeqNo:	3072039		
Analyte		Result		PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Percent Moisture		ND		0.1000									

Sample ID	N031079-001BDUP	SampType:	DUP	TestCode:	PMOIST	Units:	wt%	Prep Date:		RunNo:	126037		
Client ID:	ZZZZZZ	Batch ID:	R126037	TestNo:	D2216			Analysis Date:	7/5/2018	SeqNo:	3072041		
Analyte		Result		PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Percent Moisture		58.814		0.1000						59.04	0.387	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

Calculations are based on raw values

21

ASSET Laboratories

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

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

Cooler Received/Opened On: 7/3/2018 Workorder: N031079
 Rep sample Temp (Deg C): 1.8 IR Gun ID: 2
 Temp Blank: ☒ Yes ☐ No
 Carrier name: ASSET
 Last 4 digits of Tracking No.: NA Packing Material Used: None
 Cooling process: ☒ Ice ☐ Ice Pack ☐ Dry Ice ☐ Other ☐ None

Sample Receipt Checklist

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

Comments:

For:



Checklist Completed By: MBC 7/5/2018

Reviewed By:  LG 071618

**ASSET Laboratories**

3151-3153 W Post Rd., Las Vegas, NV 89118

www.atl-labs.com

TEL: 7023072659

FAX: 7023072691

CHAIN-OF-CUSTODY RECORD

Page 1 of 1

QC Level: Level IV**Subcontractor:**Aquatic Bioassay & Consulting
29 N Olive
Ventura, CA 93001TEL: (805) 643-5621
FAX:
Acct #:

Field Sampler: SIGNED

05-Jul-18

Sample ID	Matrix	Date Collected	Bottle Type	Requested Tests		
				Bioassay		
N031079-001D / Phase Separator-575-Sludge	Soil	7/3/2018 10:30:00 AM	4OZG	1		


Please cc report to Lucille Golosinda at lucille.golosinda@assetlaboratories.com

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

Please use PO#:N31079A 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 Bioassay, 96 hr Acute. EDD Requirement Labspec7 edata.

GSO #: 541201303

		Date/Time		Date/Time
Relinquished by: 	7/5/2018	17:00	Received by: _____	
Relinquished by: _____			Received by: _____	

List of Analysts

ASSET Laboratories Work Order: N031079

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



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P: 702.307.2659 F: 702.307.2691

"Serving Clients with Passion and Professionalism"

July 18, 2018

Mr. Marlon Cartin
Asset Laboratories
3151 W Post Rd.
Las Vegas, NV 89118

Dear Mr. Cartin:

We are pleased to present the enclosed acute bioassay report. The test was conducted under the guidelines prescribed in "Static Acute Bioassay Procedures for Hazardous Waste Samples" California Department of Fish and Game, 1988. The results were as follows:


CLIENT:	Asset Laboratories
SAMPLE I.D.:	N031079-001D
DATE RECEIVED:	07/06/18
ABC LAB. NO.:	AST0718.028

DOHS (TITLE 22) HAZARDOUS WASTE BIOASSAY USING FATHEAD MINNOWS

96 HOUR LC50 = >750 mg/l

STATUS = Pass

Respectfully yours,


Scott Johnson
Laboratory Director

AQUATIC BIOASSAY AND CONSULTING LABORATORIES, INC.
29 North Olive Street
Ventura, CA 93001
(805) 643-5621

DOHS Bioassay for Hazardous Waste (Title 22)

SAMPLE INFORMATION

CLIENT:	Asset Laboratories	Date:	07/06/18
SAMPLE I.D.:	N031079-001D	LAB #	AST0718.028

WATER QUALITY

DILUTION WATER: Reconst. Fresh	AERATION: Single Bubble Air
CONTROL HARDNESS	CONTROL ALKALINITY
Beg: 43 mg/l End: 46 mg/l	Beg: 31 mg/l End: 33 mg/l
SAMPLE HARDNESS	SAMPLE ALKALINITY
Beg: 43 mg/l End: 79 mg/l	Beg: 30 mg/l End: 62 mg/l

ORGANISM INFORMATION

SPECIES:	Pimephales promelas	DATE REC'D:	07/10/18
COMMON NAME:	Fathead Minnow	AVERAGE LNTH:	39 mm
SOURCE:	Thomas Fish Co.	AVERAGE WT:	0.80 gm
CARRIER:	California Overnight	NO. FISH / TANK:	10

TEST DATA

	INITIAL				24 HOURS				48 HOURS				72 HOURS				96 HOURS			
TIME:	07/13/18 1453				07/14/18 1510				07/15/18 1420				07/16/18 1450				07/17/18 1310			
CONC.	Dis. Oxy.	Temp. dg.C	pH		Dis. Oxy.	Temp. dg.C	pH	#Fish Dead	Dis. Oxy.	Temp. dg.C	pH	#Fish Dead	Dis. Oxy.	Temp. dg.C	pH	#Fish Dead	Dis. Oxy.	Temp. dg.C	pH	#Fish Dead
0 (Con.)	8.9	19.8	7.6		8.1	18.9	7.5	0	8.0	19.0	7.4	0	7.3	18.8	7.0	0	7.6	18.1	7.3	0
400 mg/l	8.8	20.0	7.6		8.2	18.4	7.2	0	7.7	18.8	6.9	0	7.2	18.7	7.1	0	7.8	18.6	7.2	0
400 mg/l	8.8	20.0	7.6		8.1	18.4	7.1	0	7.7	18.8	6.9	0	7.6	18.5	7.2	1	7.9	18.5	7.2	0
750 mg/l	8.8	20.0	7.6		8.0	18.5	7.1	0	7.8	18.7	6.9	0	7.5	18.5	7.2	0	8.1	18.5	7.2	0
750 mg/l	8.8	20.0	7.5		8.0	18.5	7.1	0	7.9	18.8	7.0	0	7.5	18.4	7.2	0	7.8	18.5	7.2	0

FINAL DATA

TOTAL MORTALITIES	
0 (Con.)	0
400 mg/l	0
400 mg/l	1
750 mg/l	0
750 mg/l	0

FINAL RESULTS

96 HOUR LC50 =	>750 mg/l
STATUS =	Pass
CALCULATION METHOD =	Binomial Test

Joe Freas, Senior Toxicologist

Date

7/18/18



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

CHAIN-OF-CUSTODY RECORD

Page 1 of 1

QC Level: Level IV

Subcontractor:

Aquatic Bioassay & Consulting
29 N Olive
Ventura, CA 93001

TEL: (805) 643-5621
FAX:
Acct #:

Field Sampler: SIGNED

05-Jul-18

Sample ID	Matrix	Date Collected	Bottle Type	Bioassay	Requested Tests
N031079-001D / Phase Separator-575-Sludge	Soil	7/3/2018 10:30:00 AM	4OZG	1	

028

Please cc report to Lucille Golosinda at Lucille.golosinda@assetlaboratories.com

Time = 5.8°C

General Comments:

Please email sample receipt acknowledgement to the PM.

Please use PO# N31079A. Please email Invoices and Account Receivable Statements to elvirra@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 Bioassay, 96 hr Acute. EDD Requirement Labspec7 edata.

GSO #:

Date/Time

Date/Time

Relinquished by:

[Signature]

7/5/2018 17:00

Received by:

[Signature]

7-6-18/0800

Relinquished by:

Received by:



Laboratories, Inc.

Environmental Testing Laboratory Since 1949



Date of Report: 07/11/2018

Marlon Cartin

ASSET Laboratories

3151-3153 W. Post Rd
Las Vegas, NV 89118

Client Project: N031080

BCL Project: Level IV

BCL Work Order: 1820954

Invoice ID: B309374

Enclosed are the results of analyses for samples received by the laboratory on 7/6/2018. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Contact Person: Vanessa Sandoval
Client Service Rep

Stuart Buttram
Technical Director

Certifications: CA ELAP #1186; NV #CA00014; OR ELAP #4032-001; AK UST101

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

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Laboratories, Inc.

Environmental Testing Laboratory Since 1949

Chain of Custody and Cooler Receipt Form for 1820954 Page 1 of 2

Page 1 of 1

CHAIN-OF-CUSTODY RECORD



18-20954

QC Level: Level IV

Field Sampler: SIGNED

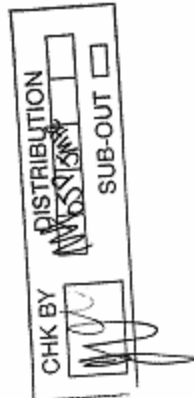
Subcontractor:

BC Labs
4100 Atlas Court
Bakersfield, CA 93308

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

05-Jul-18

Sample ID	Matrix	Date Collected	Bottle Type	Requested Tests
N031080-001A / SC-1008-WDR-575	Water	7/3/2018 9:51:00 AM	16OZP	SM4500-NH3D
N031080-002A / SC-7008-WDR-575	Water	7/3/2018 9:44:00 AM	16OZP	1



Please cc report to Lucille Golosinda at lucille.golosinda@assetlaboratories.com

General Comments:

Please email sample receipt acknowledgement to the PM.

Please use PO#N31080A Please email invoices and Account Receivable Statements to elmra@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 Labspec 7 edata.

GSO #: 541202428

Relinquished by:	Date/Time	Relinquished by:	Date/Time
	7/5/2018 17:00		7-6-18 08:40
Relinquished by:		Received by:	
		Received by:	

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Laboratories, Inc.

Environmental Testing Laboratory Since 1949

Chain of Custody and Cooler Receipt Form for 1820954 Page 2 of 2

BC LABORATORIES INC.		COOLER RECEIPT FORM		Page 1 of 1							
Submission #: <u>18-20954</u>											
SHIPPING INFORMATION			SHIPPING CONTAINER		FREE LIQUID						
Fed Ex <input type="checkbox"/>	UPS <input type="checkbox"/>	Ontrac <input type="checkbox"/> Hand Delivery <input type="checkbox"/>	Ice Chest <input checked="" type="checkbox"/>	None <input type="checkbox"/> Box <input type="checkbox"/>	YES <input type="checkbox"/> NO <input type="checkbox"/>						
BC Lab Field Service <input type="checkbox"/> Other <input type="checkbox"/> (Specify) <u>GSO</u>			Other <input type="checkbox"/> (Specify) _____		W / S						
Refrigerant: Ice <input checked="" type="checkbox"/> Blue Ice <input type="checkbox"/> None <input type="checkbox"/> Other <input type="checkbox"/> Comments: _____											
Custody Seals <input checked="" type="checkbox"/> None <input type="checkbox"/> Comments: _____											
All samples received? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> All samples containers intact? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Description(s) match COC? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>											
COC Received <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO		Emissivity: <u>0.7</u>	Container: <u>50L</u>	Thermometer ID: <u>208</u>	Date/Time: <u>7-6-18</u>						
		Temperature: (A) <u>2.0</u> °C / (C) <u>2.1</u> °C		Analyst Initials: <u>JP</u> 08:40							
SAMPLE CONTAINERS		SAMPLE NUMBERS									
		1	2	3	4	5	6	7	8	9	10
QT PE UNPRES											
4oz / 8oz / 16oz PE UNPRES											
2oz Cr ⁴⁺											
QT INORGANIC CHEMICAL METALS											
INORGANIC CHEMICAL METALS 4oz / 8oz / 16oz											
PT CYANIDE											
PT NITROGEN FORMS											
PT TOTAL SULFIDE											
2oz. NITRATE / NITRITE											
PT TOTAL ORGANIC CARBON											
PT CHEMICAL OXYGEN DEMAND											
PTA PHENOLICS											
40ml VOA VIAL TRAVEL BLANK											
40ml VOA VIAL											
QT EPA 1664											
PT ODOR											
RADIOLOGICAL											
BACTERIOLOGICAL											
40 ml VOA VIAL- 504											
QT EPA 505/608/8080											
QT EPA 515.1/8150											
QT EPA 525											
QT EPA 525 TRAVEL BLANK											
40ml EPA 547											
40ml EPA 531.1											
8oz EPA 548											
QT EPA 549											
QT EPA 8015M											
QT EPA 8270											
8oz / 16oz / 32oz AMBER											
8oz / 16oz / 32oz JAR											
SOIL SLEEVE											
PCB VIAL											
PLASTIC BAG											
TEDLAR BAG											
FERROUS IRON											
ENCORE											
TART KIT											
MA CANISTER											

118:

Numbering Completed By: ENR

1 / C = Corrected

Date/Time: 7-6-18

1031

Rev 21 05/23/2016

(S:\WPDoc\WordPerfect\LAB\9009\FORMS\15AMR2Crev 201

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ASSET Laboratories
3151-3153 W. Post Rd
Las Vegas, NV 89118

Reported: 07/11/2018 10:57
Project: Level IV
Project Number: N031080
Project Manager: Marlon Cartin

Laboratory / Client Sample Cross Reference

Laboratory	Client Sample Information			
1820954-01	COC Number:	---	Receive Date:	07/06/2018 08:40
	Project Number:	---	Sampling Date:	07/03/2018 09:51
	Sampling Location:	---	Sample Depth:	---
	Sampling Point:	N031080-001A / SC-100B-WDR-575	Lab Matrix:	Water
	Sampled By:	---	Sample Type:	Water
1820954-02	COC Number:	---	Receive Date:	07/06/2018 08:40
	Project Number:	---	Sampling Date:	07/03/2018 09:44
	Sampling Location:	---	Sample Depth:	---
	Sampling Point:	N031080-002A / SC-700B-WDR-575	Lab Matrix:	Water
	Sampled By:	---	Sample Type:	Water

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Laboratories, Inc.

Environmental Testing Laboratory Since 1949



ASSET Laboratories
3151-3153 W. Post Rd
Las Vegas, NV 89118

Reported: 07/11/2018 10:57
Project: Level IV
Project Number: N031080
Project Manager: Marlon Cartin

Water Analysis (General Chemistry)

BCL Sample ID:	1820954-01	Client Sample Name:	N031080-001A / SC-100B-WDR-575, 7/3/2018 9:51:00AM					
Constituent	Result	Units	PQL	MDL	Method	MB Bias	Lab Quals	Run #
Ammonia as N (Distilled)	ND	mg/L	0.20		SM-4500-NH3G	ND		1

Run #	Method	Prep Date	Run Date/Time	Analyst	Instrument	Dilution	QC Batch ID
1	SM-4500-NH3G	07/09/18 09:03	07/10/18 13:24	JMH	SC-1	1	B018398

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Laboratories, Inc.

Environmental Testing Laboratory Since 1949



ASSET Laboratories
3151-3153 W. Post Rd
Las Vegas, NV 89118

Reported: 07/11/2018 10:57
Project: Level IV
Project Number: N031080
Project Manager: Marlon Cartin

Water Analysis (General Chemistry)

BCL Sample ID:	1820954-02	Client Sample Name:	N031080-002A / SC-700B-WDR-575, 7/3/2018 9:44:00AM					
Constituent	Result	Units	PQL	MDL	Method	MB Bias	Lab Quals	Run #
Ammonia as N (Distilled)	0.44	mg/L	0.20		SM-4500-NH3G	ND		1

Run #	Method	Prep Date	Run Date/Time	Analyst	Instrument	Dilution	QC Batch ID
1	SM-4500-NH3G	07/09/18 09:03	07/10/18 13:36	JMH	SC-1	1	B018398

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Laboratories, Inc.

Environmental Testing Laboratory Since 1949



ASSET Laboratories
3151-3153 W. Post Rd
Las Vegas, NV 89118

Reported: 07/11/2018 10:57
Project: Level IV
Project Number: N031080
Project Manager: Marlon Cartin

Water Analysis (General Chemistry)

Quality Control Report - Method Blank Analysis

Constituent	QC Sample ID	MB Result	Units	PQL	MDL	Lab Quals
QC Batch ID: B018398						
Ammonia as N (Distilled)	B018398-BLK1	ND	mg/L	0.20		

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Laboratories, Inc.

Environmental Testing Laboratory Since 1949



ASSET Laboratories
3151-3153 W. Post Rd
Las Vegas, NV 89118

Reported: 07/11/2018 10:57
Project: Level IV
Project Number: N031080
Project Manager: Marlon Cartin

Water Analysis (General Chemistry)

Quality Control Report - Laboratory Control Sample

								<u>Control Limits</u>		
Constituent	QC Sample ID	Type	Result	Spike Level	Units	Percent Recovery	RPD	Percent Recovery	RPD	Lab
Quals										
QC Batch ID: B018398										
	Ammonia as N (Distilled)	B018398-BS1	LCS	0.98150	1.0000	mg/L	98.2	85 - 115		

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ASSET Laboratories
3151-3153 W. Post Rd
Las Vegas, NV 89118

Reported: 07/11/2018 10:57
Project: Level IV
Project Number: N031080
Project Manager: Marlon Cartin

Water Analysis (General Chemistry)

Quality Control Report - Precision & Accuracy

										Control Limits	
Constituent	Type	Source Sample ID	Source Result	Result	Spike Added	Units	RPD	Percent Recovery	RPD	Percent Recovery	Lab Quals
QC Batch ID: B018398		Used client sample: Y - Description: N031080-001A / SC-100B-WDR-575, 07/03/2018 09:51									
Ammonia as N (Distilled)	DUP	1820954-01	0.12250	ND		mg/L			20		
	MS	1820954-01	0.12250	1.0889	1.0000	mg/L		96.6		80 - 120	
	MSD	1820954-01	0.12250	1.1382	1.0000	mg/L	4.4	102	20	80 - 120	



ASSET Laboratories
3151-3153 W. Post Rd
Las Vegas, NV 89118

Reported: 07/11/2018 10:57
Project: Level IV
Project Number: N031080
Project Manager: Marlon Cartin

Notes And Definitions

MDL Method Detection Limit
ND Analyte Not Detected
PQL Practical Quantitation Limit

July 20, 2018

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

TEL: (970) 731-0636

FAX: (510) 622-9129

Workorder No.: N031080

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

Attention: Doug Scott

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

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

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

Sincerely,



Quennie Manimtim
Laboratory Director

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



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

CLIENT: CH2M HILL
Project: PG&E Topock, 680375.03.IM.OP.00
Lab Order: N031080

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 for sample N031080-003 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 Beryllium in QC samples N031080-001E-MS and N031080-001E-MSD possibly due to matrix interference. The associated Laboratory Control Sample (LCS) recovery was acceptable.

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

Analytical Comments for EPA 218.6:

Dilution was necessary for samples N031080-002 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.



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ASSET Laboratories

Date: 20-Jul-18

CLIENT: CH2M HILL
Project: PG&E Topock, 680375.03.IM.OP.00
Lab Order: N031080
Contract No: IM3PLANT-AR

Work Order Sample Summary

Lab Sample ID	Client Sample ID	Matrix	Collection Date	Date Received	Date Reported
N031080-001A	SC-100B-WDR-575	Water	7/3/2018 9:51:00 AM	7/3/2018	7/20/2018
N031080-001B	SC-100B-WDR-575	Water	7/3/2018 9:51:00 AM	7/3/2018	7/20/2018
N031080-001C	SC-100B-WDR-575	Water	7/3/2018 9:51:00 AM	7/3/2018	7/20/2018
N031080-001D	SC-100B-WDR-575	Water	7/3/2018 9:51:00 AM	7/3/2018	7/20/2018
N031080-001E	SC-100B-WDR-575	Water	7/3/2018 9:51:00 AM	7/3/2018	7/20/2018
N031080-001F	SC-100B-WDR-575	Water	7/3/2018 9:51:00 AM	7/3/2018	7/20/2018
N031080-002A	SC-700B-WDR-575	Water	7/3/2018 9:44:00 AM	7/3/2018	7/20/2018
N031080-002B	SC-700B-WDR-575	Water	7/3/2018 9:44:00 AM	7/3/2018	7/20/2018
N031080-002C	SC-700B-WDR-575	Water	7/3/2018 9:44:00 AM	7/3/2018	7/20/2018
N031080-002D	SC-700B-WDR-575	Water	7/3/2018 9:44:00 AM	7/3/2018	7/20/2018
N031080-002E	SC-700B-WDR-575	Water	7/3/2018 9:44:00 AM	7/3/2018	7/20/2018
N031080-002F	SC-700B-WDR-575	Water	7/3/2018 9:44:00 AM	7/3/2018	7/20/2018
N031080-003A	SC-701-WDR-575	Water	7/3/2018 9:35:00 AM	7/3/2018	7/20/2018
N031080-003B	SC-701-WDR-575	Water	7/3/2018 9:35:00 AM	7/3/2018	7/20/2018
N031080-003C	SC-701-WDR-575	Water	7/3/2018 9:35:00 AM	7/3/2018	7/20/2018
N031080-003D	SC-701-WDR-575	Water	7/3/2018 9:35:00 AM	7/3/2018	7/20/2018



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ASSET Laboratories

ANALYTICAL RESULTS

Print Date: 20-Jul-18

CLIENT: CH2M HILL
 Lab Order: N031080
 Project: PG&E Topock, 680375.03.IM.OP.00
 Lab ID: N031080-001

Client Sample ID: SC-100B-WDR-575
 Collection Date: 7/3/2018 9:51:00 AM
 Matrix: WATER

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

SPECIFIC CONDUCTANCE

EPA 120.1

RunID: NV00922-WC_180705A	QC Batch: R126032			PrepDate		Analyst: LR
Specific Conductance	7000	0.10	0.10	umhos/cm	1	7/5/2018 11:00 AM

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



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ASSET Laboratories
ANALYTICAL RESULTS
Print Date: 20-Jul-18

CLIENT: CH2M HILL
Lab Order: N031080
Project: PG&E Topock, 680375.03.IM.OP.00
Lab ID: N031080-002

Client Sample ID: SC-700B-WDR-575
Collection Date: 7/3/2018 9:44:00 AM
Matrix: WATER

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

SPECIFIC CONDUCTANCE
EPA 120.1

RunID: NV00922-WC_180705A	QC Batch: R126032			PrepDate		Analyst: LR
Specific Conductance	7000	0.10	0.10	umhos/cm	1	7/5/2018 11:00 AM

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



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ASSET Laboratories
ANALYTICAL RESULTS
Print Date: 20-Jul-18

CLIENT: CH2M HILL
Lab Order: N031080
Project: PG&E Topock, 680375.03.IM.OP.00
Lab ID: N031080-003

Client Sample ID: SC-701-WDR-575
Collection Date: 7/3/2018 9:35:00 AM
Matrix: WATER

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

SPECIFIC CONDUCTANCE
EPA 120.1

RunID: NV00922-WC_180705A	QC Batch: R126032			PrepDate		Analyst: LR
Specific Conductance	52000	0.10	0.10	umhos/cm	1	7/5/2018 11:00 AM

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



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CLIENT: CH2M HILL
Work Order: N031080
Project: PG&E Topock, 680375.03.IM.OP.00

ANALYTICAL QC SUMMARY REPORT**TestCode: 120.1_WPGE**

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

Qualifiers:

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

Calculations are based on raw values

**ASSET LABORATORIES**

ANALYTICAL SERVICES IN CALIFORNIA, NEVADA, AND ARIZONA

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ASSET Laboratories
ANALYTICAL RESULTS
Print Date: 20-Jul-18

CLIENT: CH2M HILL
Lab Order: N031080
Project: PG&E Topock, 680375.03.IM.OP.00
Lab ID: N031080-001

Client Sample ID: SC-100B-WDR-575
Collection Date: 7/3/2018 9:51:00 AM
Matrix: WATER

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

TOTAL FILTERABLE RESIDUE
SM2540C

RunID: NV00922-WC_180705G	QC Batch: 68710			PrepDate	7/5/2018	Analyst: LR
Total Dissolved Solids (Residue, Filterable)	4200	50	50	mg/L	1	7/5/2018 01:15 PM

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



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ASSET Laboratories
ANALYTICAL RESULTS
Print Date: 20-Jul-18

CLIENT: CH2M HILL
Lab Order: N031080
Project: PG&E Topock, 680375.03.IM.OP.00
Lab ID: N031080-002

Client Sample ID: SC-700B-WDR-575
Collection Date: 7/3/2018 9:44:00 AM
Matrix: WATER

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

TOTAL FILTERABLE RESIDUE
SM2540C

RunID: NV00922-WC_180705G	QC Batch: 68710			PrepDate	7/5/2018	Analyst: LR
Total Dissolved Solids (Residue, Filterable)	4200	50	50	mg/L	1	7/5/2018 01:15 PM

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



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ASSET Laboratories
ANALYTICAL RESULTS
Print Date: 20-Jul-18

CLIENT: CH2M HILL
Lab Order: N031080
Project: PG&E Topock, 680375.03.IM.OP.00
Lab ID: N031080-003

Client Sample ID: SC-701-WDR-575
Collection Date: 7/3/2018 9:35:00 AM
Matrix: WATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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TOTAL FILTERABLE RESIDUE
SM2540C

RunID: NV00922-WC_180705G	QC Batch: 68710			PrepDate	7/5/2018	Analyst: LR
Total Dissolved Solids (Residue, Filterable)	44000	500	500	mg/L	1	7/5/2018 01:15 PM

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



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CLIENT: CH2M HILL
Work Order: N031080
Project: PG&E Topock, 680375.03.IM.OP.00

ANALYTICAL QC SUMMARY REPORT**TestCode: 160.1_2540C_W**

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

Sample ID	MB-68710	SampType:	MBLK	TestCode:	160.1_2540C	Units:	mg/L	Prep Date:	7/5/2018	RunNo:	126038			
Client ID:	PBW	Batch ID:	68710	TestNo:	SM2540C			Analysis Date:	7/5/2018	SeqNo:	3072691			
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	N031080-003ADUP	SampType:	DUP	TestCode:	160.1_2540C	Units:	mg/L	Prep Date:	7/5/2018	RunNo:	126038			
Client ID:	ZZZZZZ	Batch ID:	68710	TestNo:	SM2540C			Analysis Date:	7/5/2018	SeqNo:	3072697			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera		45750.000		500							43900	4.13	5	

Qualifiers:

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

Calculations are based on raw values

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ASSET Laboratories
ANALYTICAL RESULTS
Print Date: 20-Jul-18

CLIENT: CH2M HILL
Lab Order: N031080
Project: PG&E Topock, 680375.03.IM.OP.00
Lab ID: N031080-001

Client Sample ID: SC-100B-WDR-575
Collection Date: 7/3/2018 9:51:00 AM
Matrix: WATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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TOTAL METALS BY ICP
EPA 200.7

RunID: NV00922-ICP2_180716D	QC Batch: 68721	PrepDate	7/6/2018	Analyst: CEI
Aluminum	ND 40	50	µg/L	1 7/16/2018 04:41 PM
Boron	1000 74	100	µg/L	1 7/16/2018 04:41 PM
Iron	ND 18	20	µg/L	1 7/16/2018 04:41 PM

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



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ASSET Laboratories
ANALYTICAL RESULTS
Print Date: 20-Jul-18

CLIENT: CH2M HILL
Lab Order: N031080
Project: PG&E Topock, 680375.03.IM.OP.00
Lab ID: N031080-002

Client Sample ID: SC-700B-WDR-575
Collection Date: 7/3/2018 9:44:00 AM
Matrix: WATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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TOTAL METALS BY ICP
EPA 200.7

RunID: NV00922-ICP2_180716D	QC Batch: 68721	PrepDate	7/6/2018	Analyst: CEI
Aluminum	ND 40	50	µg/L	1 7/16/2018 05:25 PM
Boron	1000 74	100	µg/L	1 7/16/2018 05:25 PM
Iron	ND 18	20	µg/L	1 7/16/2018 05:25 PM

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



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CLIENT: CH2M HILL
Work Order: N031080
Project: PG&E Topock, 680375.03.IM.OP.00

ANALYTICAL QC SUMMARY REPORT**TestCode: 200.7_WPGEPBP**

Sample ID MB-68721	SampType: MBLK	TestCode: 200.7_WPGE	Units: µg/L	Prep Date: 7/6/2018	RunNo: 126268
Client ID: PBW	Batch ID: 68721	TestNo: EPA 200.7		Analysis Date: 7/16/2018	SeqNo: 3080745
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 LCS1-68721	SampType: LCS	TestCode: 200.7_WPGE	Units: µg/L	Prep Date: 7/6/2018	RunNo: 126268
Client ID: LCSW	Batch ID: 68721	TestNo: EPA 200.7		Analysis Date: 7/16/2018	SeqNo: 3080746
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

Aluminum	10376.092	50	10000	0	104 85 115
Boron	4941.542	100	5000	0	98.8 85 115
Iron	108.225	20	100.0	0	108 85 115

Sample ID N031080-001E-MS1	SampType: MS	TestCode: 200.7_WPGE	Units: µg/L	Prep Date: 7/6/2018	RunNo: 126268
Client ID: ZZZZZZ	Batch ID: 68721	TestNo: EPA 200.7		Analysis Date: 7/16/2018	SeqNo: 3080750
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

Aluminum	10381.889	50	10000	0	104 75 125
Boron	5912.513	100	5000	1019	97.9 75 125
Iron	103.423	20	100.0	0	103 75 125

Sample ID N031080-001E-MSD	SampType: MSD	TestCode: 200.7_WPGE	Units: µg/L	Prep Date: 7/6/2018	RunNo: 126268
Client ID: ZZZZZZ	Batch ID: 68721	TestNo: EPA 200.7		Analysis Date: 7/16/2018	SeqNo: 3080751
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

Aluminum	10403.421	50	10000	0	104 75 125 10380 0.207 20
Boron	5911.356	100	5000	1019	97.9 75 125 5913 0.0196 20
Iron	108.761	20	100.0	0	109 75 125 103.4 5.03 20

Qualifiers:

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

Calculations are based on raw values



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ASSET Laboratories
ANALYTICAL RESULTS
Print Date: 20-Jul-18

CLIENT: CH2M HILL
Lab Order: N031080
Project: PG&E Topock, 680375.03.IM.OP.00
Lab ID: N031080-001

Client Sample ID: SC-100B-WDR-575
Collection Date: 7/3/2018 9:51:00 AM
Matrix: WATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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TOTAL METALS BY ICPMS
EPA 200.8

RunID: NV00922-ICP7_180712C	QC Batch: 68723	PrepDate	7/6/2018	Analyst: CEI		
Antimony	ND	0.16	0.50	µg/L	1	7/12/2018 12:50 PM
Arsenic	3.1	0.081	0.10	µg/L	1	7/12/2018 12:50 PM
Barium	28	0.15	1.0	µg/L	1	7/12/2018 12:50 PM
Copper	ND	0.55	1.0	µg/L	1	7/20/2018 11:45 AM
Lead	ND	0.13	1.0	µg/L	1	7/12/2018 12:50 PM
Manganese	6.9	0.26	0.50	µg/L	1	7/12/2018 12:50 PM
Molybdenum	21	0.21	0.50	µg/L	1	7/12/2018 12:50 PM
Nickel	ND	0.26	1.0	µg/L	1	7/20/2018 11:45 AM
Zinc	ND	2.3	10	µg/L	1	7/12/2018 12:50 PM

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



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ASSET Laboratories
ANALYTICAL RESULTS
Print Date: 20-Jul-18

CLIENT: CH2M HILL
Lab Order: N031080
Project: PG&E Topock, 680375.03.IM.OP.00
Lab ID: N031080-002

Client Sample ID: SC-700B-WDR-575
Collection Date: 7/3/2018 9:44:00 AM
Matrix: WATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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TOTAL METALS BY ICPMS
EPA 200.8

RunID: NV00922-ICP7_180712C	QC Batch: 68723	PrepDate	7/6/2018	Analyst: CEI		
Antimony	ND	0.16	0.50	µg/L	1	7/12/2018 02:32 PM
Arsenic	0.12	0.081	0.10	µg/L	1	7/12/2018 02:32 PM
Barium	15	0.15	1.0	µg/L	1	7/12/2018 02:32 PM
Copper	ND	0.55	1.0	µg/L	1	7/20/2018 12:13 PM
Lead	ND	0.13	1.0	µg/L	1	7/12/2018 02:32 PM
Manganese	5.8	0.26	0.50	µg/L	1	7/12/2018 02:32 PM
Molybdenum	22	0.21	0.50	µg/L	1	7/12/2018 02:32 PM
Nickel	ND	0.26	1.0	µg/L	1	7/20/2018 12:13 PM
Zinc	ND	2.3	10	µg/L	1	7/12/2018 02:32 PM

Qualifiers: B Analyte detected in the associated Method Blank
 H Holding times for preparation or analysis exceeded
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ASSET Laboratories
ANALYTICAL RESULTS

Print Date: 20-Jul-18

CLIENT: CH2M HILL
Lab Order: N031080
Project: PG&E Topock, 680375.03.IM.OP.00
Lab ID: N031080-003

Client Sample ID: SC-701-WDR-575
Collection Date: 7/3/2018 9:35:00 AM
Matrix: WATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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TOTAL METALS BY ICPMS
EPA 200.8

RunID: NV00922-ICP7_180712C	QC Batch: 68723	PrepDate	7/6/2018	Analyst: CEI		
Antimony	ND	0.78	2.5	µg/L	5	7/12/2018 02:44 PM
Arsenic	2.2	0.41	0.50	µg/L	5	7/12/2018 02:44 PM
Barium	180	0.75	5.0	µg/L	5	7/12/2018 02:44 PM
Beryllium	ND	1.1	12	µg/L	25	7/17/2018 03:59 PM
Cadmium	ND	0.26	2.5	µg/L	5	7/12/2018 02:44 PM
Cobalt	ND	0.21	2.5	µg/L	5	7/12/2018 02:44 PM
Copper	ND	2.7	5.0	µg/L	5	7/20/2018 12:19 PM
Lead	ND	3.2	25	µg/L	25	7/12/2018 02:49 PM
Manganese	130	1.3	2.5	µg/L	5	7/12/2018 02:44 PM
Molybdenum	250	5.4	12	µg/L	25	7/12/2018 02:49 PM
Nickel	ND	1.3	5.0	µg/L	5	7/20/2018 12:19 PM
Selenium	48	1.8	2.5	µg/L	5	7/17/2018 05:11 PM
Silver	ND	1.2	2.5	µg/L	5	7/12/2018 02:44 PM
Thallium	ND	4.8	12	µg/L	25	7/12/2018 02:49 PM
Vanadium	ND	1.4	5.0	µg/L	5	7/20/2018 12:19 PM
Zinc	ND	11	50	µg/L	5	7/12/2018 02:44 PM

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



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CLIENT: CH2M HILL
Work Order: N031080
Project: PG&E Topock, 680375.03.IM.OP.00

ANALYTICAL QC SUMMARY REPORT**TestCode: 200.8_W**

Sample ID	MB-68723	SampType:	MBLK	TestCode:	200.8_W	Units:	µg/L	Prep Date:	7/6/2018	RunNo:	126185		
Client ID:	PBW	Batch ID:	68723	TestNo:	EPA 200.8			Analysis Date:	7/12/2018	SeqNo:	3077142		
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									
Cadmium	ND	0.50									
Cobalt	ND	0.50									
Lead	ND	1.0									
Manganese	ND	0.50									
Molybdenum	ND	0.50									
Silver	ND	0.50									
Thallium	ND	0.50									
Zinc	ND	10									

Sample ID	LCS-68723	SampType:	LCS	TestCode:	200.8_W	Units:	µg/L	Prep Date:	7/6/2018	RunNo:	126185		
Client ID:	LCSW	Batch ID:	68723	TestNo:	EPA 200.8			Analysis Date:	7/12/2018	SeqNo:	3077143		
Analyte		Result		PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Antimony	10.073	0.50	10.00	0	101	85	115				
Arsenic	10.501	0.10	10.00	0	105	85	115				
Barium	10.615	1.0	10.00	0	106	85	115				
Cadmium	10.714	0.50	10.00	0	107	85	115				
Cobalt	10.087	0.50	10.00	0	101	85	115				
Lead	10.314	1.0	10.00	0	103	85	115				
Manganese	104.811	0.50	100.0	0	105	85	115				
Molybdenum	10.418	0.50	10.00	0	104	85	115				
Silver	10.343	0.50	10.00	0	103	85	115				
Thallium	9.139	0.50	10.00	0	91.4	85	115				
Zinc	87.850	10	100.0	0	87.8	85	115				

Qualifiers:

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

Calculations are based on raw values



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"Serving Clients with Passion and Professionalism"

CLIENT: CH2M HILL
Work Order: N031080
Project: PG&E Topock, 680375.03.IM.OP.00

ANALYTICAL QC SUMMARY REPORT

TestCode: 200.8_W

Sample ID	N031080-001E-MS	SampType:	MS	TestCode:	200.8_W	Units:	µg/L	Prep Date:	7/6/2018	RunNo:	126185
Client ID:	ZZZZZZ	Batch ID:	68723	TestNo:	EPA 200.8			Analysis Date:	7/12/2018	SeqNo:	3077152
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Antimony	10.122	0.50	10.00	0.1758	99.5	75	125				
Arsenic	13.582	0.10	10.00	3.075	105	75	125				
Barium	37.763	1.0	10.00	28.35	94.1	75	125				
Cadmium	10.066	0.50	10.00	0	101	75	125				
Cobalt	8.790	0.50	10.00	0	87.9	75	125				
Lead	10.242	1.0	10.00	0	102	75	125				
Manganese	105.329	0.50	100.0	6.871	98.5	75	125				
Molybdenum	32.112	0.50	10.00	21.43	107	75	125				
Silver	9.577	0.50	10.00	0	95.8	75	125				
Thallium	9.751	0.50	10.00	0	97.5	75	125				
Zinc	114.777	10	100.0	0	115	75	125				

Sample ID	N031080-001E-MSD	SampType:	MSD	TestCode:	200.8_W	Units:	µg/L	Prep Date:	7/6/2018	RunNo:	126185
Client ID:	ZZZZZZ	Batch ID:	68723	TestNo:	EPA 200.8			Analysis Date:	7/12/2018	SeqNo:	3077154
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Antimony	10.186	0.50	10.00	0.1758	100	75	125	10.12	0.637	20	
Arsenic	13.403	0.10	10.00	3.075	103	75	125	13.58	1.32	20	
Barium	37.773	1.0	10.00	28.35	94.2	75	125	37.76	0.0268	20	
Cadmium	10.043	0.50	10.00	0	100	75	125	10.07	0.227	20	
Cobalt	8.779	0.50	10.00	0	87.8	75	125	8.790	0.126	20	
Lead	10.132	1.0	10.00	0	101	75	125	10.24	1.08	20	
Manganese	105.608	0.50	100.0	6.871	98.7	75	125	105.3	0.265	20	
Molybdenum	31.624	0.50	10.00	21.43	102	75	125	32.11	1.53	20	
Silver	9.449	0.50	10.00	0	94.5	75	125	9.577	1.35	20	
Thallium	9.552	0.50	10.00	0	95.5	75	125	9.751	2.06	20	
Zinc	113.570	10	100.0	0	114	75	125	114.8	1.06	20	

Qualifiers:

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

Calculations are based on raw values



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CLIENT: CH2M HILL
Work Order: N031080
Project: PG&E Topock, 680375.03.IM.OP.00

ANALYTICAL QC SUMMARY REPORT

TestCode: 200.8_W

Sample ID	MB-68723	SampType:	MBLK	TestCode:	200.8_W	Units:	µg/L	Prep Date:	7/6/2018	RunNo:	126341			
Client ID:	PBW	Batch ID:	68723	TestNo:	EPA 200.8			Analysis Date:	7/17/2018	SeqNo:	3083759			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Beryllium	ND	0.50
Selenium	ND	0.50

Sample ID	LCS-68723	SampType:	LCS	TestCode:	200.8_W	Units:	µg/L	Prep Date:	7/6/2018	RunNo:	126341			
Client ID:	LCSW	Batch ID:	68723	TestNo:	EPA 200.8			Analysis Date:	7/17/2018	SeqNo:	3083760			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Beryllium	10.253	0.50	10.00	0	103	85	115
Selenium	9.827	0.50	10.00	0	98.3	85	115

Sample ID	N031080-001E-MS	SampType:	MS	TestCode:	200.8_W	Units:	µg/L	Prep Date:	7/6/2018	RunNo:	126341			
Client ID:	ZZZZZZ	Batch ID:	68723	TestNo:	EPA 200.8			Analysis Date:	7/17/2018	SeqNo:	3083774			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Beryllium	12.560	0.50	10.00	0	126	75	125							S
Selenium	13.967	0.50	10.00	3.855	101	75	125							

Sample ID	N031080-001E-MSD	SampType: MSD	TestCode: 200.8_W	Units: µg/L	Prep Date: 7/6/2018	RunNo: 126341					
Client ID: ZZZZZZ	Batch ID: 68723	TestNo: EPA 200.8	Analysis Date: 7/17/2018	SeqNo: 3083776							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Beryllium	12.581	0.50	10.00	0	126	75	125	12.56	0.164	20	S
Selenium	13.426	0.50	10.00	3.855	95.7	75	125	13.97	3.95	20	

Sample ID	MB-68723	SampType:	MBLK	TestCode:	200.8_W	Units:	µg/L	Prep Date:	7/6/2018	RunNo:	126393			
Client ID:	PBW	Batch ID:	68723	TestNo:	EPA 200.8			Analysis Date:	7/20/2018	SeqNo:	3085719			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Copper	ND	1.0
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Qualifiers:

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

Calculations are based on raw values



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CLIENT: CH2M HILL
Work Order: N031080
Project: PG&E Topock, 680375.03.IM.OP.00

ANALYTICAL QC SUMMARY REPORT

TestCode: 200.8_W

Sample ID	MB-68723	SampType:	MBLK	TestCode:	200.8_W	Units:	µg/L	Prep Date:	7/6/2018	RunNo:	126393			
Client ID:	PBW	Batch ID:	68723	TestNo:	EPA 200.8			Analysis Date:	7/20/2018	SeqNo:	3085719			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Nickel	ND	1.0
Vanadium	ND	1.0

Sample ID	LCS-68723	SampType:	LCS	TestCode:	200.8_W	Units:	µg/L	Prep Date:	7/6/2018	RunNo:	126393			
Client ID:	LCSW	Batch ID:	68723	TestNo:	EPA 200.8			Analysis Date:	7/20/2018	SeqNo:	3085720			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Copper	10.474	1.0	10.00	0	105	85	115
Nickel	9.859	1.0	10.00	0	98.6	85	115
Vanadium	10.268	1.0	10.00	0	103	85	115

Sample ID	N031080-001E-MS	SampType:	MS	TestCode:	200.8_W	Units:	µg/L	Prep Date:	7/6/2018	RunNo:	126393			
Client ID:	ZZZZZZ	Batch ID:	68723	TestNo:	EPA 200.8			Analysis Date:	7/20/2018	SeqNo:	3085724			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Copper	9.655	1.0	10.00	0	96.6	75	125
Nickel	10.613	1.0	10.00	0	106	75	125
Vanadium	18.252	1.0	10.00	6.947	113	75	125

Sample ID	N031080-001E-MSD	SampType:	MSD	TestCode:	200.8_W	Units:	µg/L	Prep Date:	7/6/2018	RunNo:	126393			
Client ID:	ZZZZZZ	Batch ID:	68723	TestNo:	EPA 200.8			Analysis Date:	7/20/2018	SeqNo:	3085725			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Copper	9.558	1.0	10.00	0	95.6	75	125	9.655	1.01	20
Nickel	10.754	1.0	10.00	0	108	75	125	10.61	1.32	20
Vanadium	17.922	1.0	10.00	6.947	110	75	125	18.25	1.83	20

Qualifiers:

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

Calculations are based on raw values



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ASSET Laboratories
ANALYTICAL RESULTS
Print Date: 20-Jul-18

CLIENT: CH2M HILL
Lab Order: N031080
Project: PG&E Topock, 680375.03.IM.OP.00
Lab ID: N031080-001

Client Sample ID: SC-100B-WDR-575
Collection Date: 7/3/2018 9:51:00 AM
Matrix: WATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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HEXAVALENT CHROMIUM BY IC
EPA 218.6

RunID: NV00922-IC7_180705A	QC Batch: R126039				PrepDate		Analyst: RAB
Hexavalent Chromium	490	3.3	20		µg/L	100	7/5/2018 10:51 AM

TOTAL METALS BY ICPMS
EPA 200.8

RunID: NV00922-ICP7_180712C	QC Batch: 68723				PrepDate	7/6/2018	Analyst: CEI
Chromium	480	0.65	5.0		µg/L	5	7/12/2018 12:56 PM

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



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ASSET Laboratories
ANALYTICAL RESULTS
Print Date: 20-Jul-18

CLIENT: CH2M HILL
Lab Order: N031080
Project: PG&E Topock, 680375.03.IM.OP.00
Lab ID: N031080-002

Client Sample ID: SC-700B-WDR-575
Collection Date: 7/3/2018 9:44:00 AM
Matrix: WATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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HEXAVALENT CHROMIUM BY IC
EPA 218.6

RunID: NV00922-IC7_180705A	QC Batch: R126039				PrepDate		Analyst: RAB
Hexavalent Chromium	ND	0.17	1.0		µg/L	5	7/5/2018 01:05 PM

TOTAL METALS BY ICPMS
EPA 200.8

RunID: NV00922-ICP7_180712C	QC Batch: 68723				PrepDate	7/6/2018	Analyst: CEI
Chromium	ND	0.13	1.0		µg/L	1	7/12/2018 02:32 PM

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



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ASSET Laboratories
ANALYTICAL RESULTS
Print Date: 20-Jul-18

CLIENT: CH2M HILL
Lab Order: N031080
Project: PG&E Topock, 680375.03.IM.OP.00
Lab ID: N031080-003

Client Sample ID: SC-701-WDR-575
Collection Date: 7/3/2018 9:35:00 AM
Matrix: WATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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HEXAVALENT CHROMIUM BY IC
EPA 218.6

RunID: NV00922-IC7_180705A	QC Batch: R126039				PrepDate		Analyst: RAB
Hexavalent Chromium	ND	0.83	5.0		µg/L	25	7/5/2018 01:24 PM

TOTAL METALS BY ICPMS
EPA 200.8

RunID: NV00922-ICP7_180712C	QC Batch: 68723				PrepDate	7/6/2018	Analyst: CEI
Chromium	8.9	0.65	5.0		µg/L	5	7/12/2018 02:44 PM

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



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CLIENT: CH2M HILL
Work Order: N031080
Project: PG&E Topock, 680375.03.IM.OP.00

ANALYTICAL QC SUMMARY REPORT**TestCode: 200.8_W_CRPGE**

Sample ID	MB-68723	SampType:	MBLK	TestCode:	200.8_W_CR	Units:	µg/L	Prep Date:	7/6/2018	RunNo:	126185		
Client ID:	PBW	Batch ID:	68723	TestNo:	EPA 200.8			Analysis Date:	7/12/2018	SeqNo:	3077989		
Analyte		Result		PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium		ND		1.0									

Sample ID	LCS-68723	SampType:	LCS	TestCode:	200.8_W_CR	Units:	µg/L	Prep Date:	7/6/2018	RunNo:	126185		
Client ID:	LCSW	Batch ID:	68723	TestNo:	EPA 200.8			Analysis Date:	7/12/2018	SeqNo:	3077990		
Analyte		Result		PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium		10.817		1.0	10.00	0	108	85	115				

Sample ID	N031080-001E-MS	SampType:	MS	TestCode:	200.8_W_CR	Units:	µg/L	Prep Date:	7/6/2018	RunNo:	126185		
Client ID:	ZZZZZZ	Batch ID:	68723	TestNo:	EPA 200.8			Analysis Date:	7/12/2018	SeqNo:	3078000		
Analyte		Result		PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium		464.643		5.0	10.00	475.5	-108	75	125				S

Sample ID	N031080-001E-MSD	SampType:	MSD	TestCode:	200.8_W_CR	Units:	µg/L	Prep Date:	7/6/2018	RunNo:	126185		
Client ID:	ZZZZZZ	Batch ID:	68723	TestNo:	EPA 200.8			Analysis Date:	7/12/2018	SeqNo:	3078002		
Analyte		Result		PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium		470.367		5.0	10.00	475.5	-51.2	75	125	464.6	1.22	20	S

Qualifiers:

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

Calculations are based on raw values

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CLIENT: CH2M HILL
Work Order: N031080
Project: PG&E Topock, 680375.03.IM.OP.00

ANALYTICAL QC SUMMARY REPORT

TestCode: 218.6_WU_PGE

Sample ID	MB-R126039	SampType:	MBLK	TestCode:	218.6_WU_P	Units:	µg/L	Prep Date:		RunNo:	126039			
Client ID:	PBW	Batch ID:	R126039	TestNo:	EPA 218.6			Analysis Date:	7/5/2018	SeqNo:	3071995			
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-R126039	SampType:	LCS	TestCode:	218.6_WU_P	Units:	µg/L	Prep Date:		RunNo:	126039			
Client ID:	LCSW	Batch ID:	R126039	TestNo:	EPA 218.6			Analysis Date:	7/5/2018	SeqNo:	3071996			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Hexavalent Chromium 4.963 0.20 5.000 0 99.3 90 110

Sample ID	N031080-001CMS	SampType:	MS	TestCode:	218.6_WU_P	Units:	µg/L	Prep Date:		RunNo:	126039			
Client ID:	ZZZZZZ	Batch ID:	R126039	TestNo:	EPA 218.6			Analysis Date:	7/5/2018	SeqNo:	3071999			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Hexavalent Chromium 981.140 20 500.0 488.3 98.6 90 110

Sample ID	N031080-001CMSD	SampType:	MSD	TestCode:	218.6_WU_P	Units:	µg/L	Prep Date:		RunNo:	126039			
Client ID:	ZZZZZZ	Batch ID:	R126039	TestNo:	EPA 218.6			Analysis Date:	7/5/2018	SeqNo:	3072000			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

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

Sample ID	N031081-002ADUP	SampType:	DUP	TestCode:	218.6_WU_P	Units:	µg/L	Prep Date:		RunNo:	126039			
Client ID:	ZZZZZZ	Batch ID:	R126039	TestNo:	EPA 218.6			Analysis Date:	7/5/2018	SeqNo:	3072006			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Hexavalent Chromium 485.110 20 484.3 0.175 20

Qualifiers:

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

Calculations are based on raw values



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CLIENT: CH2M HILL
Work Order: N031080
Project: PG&E Topock, 680375.03.IM.OP.00

ANALYTICAL QC SUMMARY REPORT

TestCode: 218.6_WU_PGE

Sample ID	N031080-002CMS	SampType:	MS	TestCode:	218.6_WU_P	Units:	µg/L	Prep Date:		RunNo:	126039
Client ID:	ZZZZZZ	Batch ID:	R126039	TestNo:	EPA 218.6			Analysis Date:	7/5/2018	SeqNo:	3072009
Analyte		Result		PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD RPDLimit Qual

Hexavalent Chromium	4.852	1.0	5.000	0	97.0	90	110
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Sample ID	N031080-003BMS	SampType:	MS	TestCode:	218.6_WU_P	Units:	µg/L	Prep Date:		RunNo:	126039
Client ID:	ZZZZZZ	Batch ID:	R126039	TestNo:	EPA 218.6			Analysis Date:	7/5/2018	SeqNo:	3072011
Analyte		Result		PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD RPDLimit Qual

Hexavalent Chromium	29.993	5.0	25.00	4.572	102	90	110
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Qualifiers:

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

Calculations are based on raw values



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ASSET Laboratories
ANALYTICAL RESULTS
Print Date: 20-Jul-18

CLIENT: CH2M HILL
Lab Order: N031080
Project: PG&E Topock, 680375.03.IM.OP.00
Lab ID: N031080-001

Client Sample ID: SC-100B-WDR-575
Collection Date: 7/3/2018 9:51:00 AM
Matrix: WATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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TURBIDITY
SM 2130B

RunID: NV00922-WC_180705C	QC Batch: R126034			PrepDate		Analyst: LR
Turbidity	0.35	0.10	0.10	NTU	1	7/5/2018 09:00 AM

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



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ASSET Laboratories
ANALYTICAL RESULTS
Print Date: 20-Jul-18

CLIENT: CH2M HILL
Lab Order: N031080
Project: PG&E Topock, 680375.03.IM.OP.00
Lab ID: N031080-002

Client Sample ID: SC-700B-WDR-575
Collection Date: 7/3/2018 9:44:00 AM
Matrix: WATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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TURBIDITY
SM 2130B

RunID: NV00922-WC_180705C	QC Batch: R126034	PrepDate	Analyst: LR
Turbidity	0.28 0.10 0.10	NTU	1 7/5/2018 09:00 AM

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



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"Serving Clients with Passion and Professionalism"

CLIENT: CH2M HILL
Work Order: N031080
Project: PG&E Topock, 680375.03.IM.OP.00

ANALYTICAL QC SUMMARY REPORT**TestCode: 2130_W**

Sample ID	MB-R126034	SampType:	MBLK	TestCode:	2130_W	Units:	NTU	Prep Date:		RunNo:	126034		
Client ID:	PBW	Batch ID:	R126034	TestNo:	SM 2130B			Analysis Date:	7/5/2018	SeqNo:	3071942		
Analyte		Result		PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Turbidity ND 0.10

Sample ID	N031080-001BDUP	SampType:	DUP	TestCode:	2130_W	Units:	NTU	Prep Date:		RunNo:	126034		
Client ID:	ZZZZZZ	Batch ID:	R126034	TestNo:	SM 2130B			Analysis Date:	7/5/2018	SeqNo:	3071944		
Analyte		Result		PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Turbidity 0.340 0.10 0.3500 2.90 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

Calculations are based on raw values



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ASSET Laboratories
ANALYTICAL RESULTS
Print Date: 20-Jul-18

CLIENT: CH2M HILL
Lab Order: N031080
Project: PG&E Topock, 680375.03.IM.OP.00
Lab ID: N031080-003

Client Sample ID: SC-701-WDR-575
Collection Date: 7/3/2018 9:35:00 AM
Matrix: WATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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TOTAL MERCURY BY COLD VAPOR TECHNIQUE
EPA 245.1

RunID: NV00922-AA1_180710B	QC Batch: 68754			PrepDate	7/10/2018	Analyst: CEI
Mercury	ND	0.13	0.20	µg/L	1	7/10/2018 12:15 PM

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



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CLIENT: CH2M HILL
Work Order: N031080
Project: PG&E Topock, 680375.03.IM.OP.00

ANALYTICAL QC SUMMARY REPORT**TestCode: 245.1_W**

Sample ID MB-68754	SampType: MBLK	TestCode: 245.1_W	Units: µg/L	Prep Date: 7/10/2018	RunNo: 126116
Client ID: PBW	Batch ID: 68754	TestNo: EPA 245.1		Analysis Date: 7/10/2018	SeqNo: 3074218
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Mercury	ND	0.20			

Sample ID LCS-68754	SampType: LCS	TestCode: 245.1_W	Units: µg/L	Prep Date: 7/10/2018	RunNo: 126116
Client ID: LCSW	Batch ID: 68754	TestNo: EPA 245.1		Analysis Date: 7/10/2018	SeqNo: 3074220
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Mercury	4.697	0.20	5.000	0	93.9 85 115

Sample ID N031080-003C-MS	SampType: MS	TestCode: 245.1_W	Units: µg/L	Prep Date: 7/10/2018	RunNo: 126116
Client ID: ZZZZZZ	Batch ID: 68754	TestNo: EPA 245.1		Analysis Date: 7/10/2018	SeqNo: 3074221
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Mercury	4.551	0.20	5.000	0	91.0 75 125

Sample ID N031080-003C-MSD	SampType: MSD	TestCode: 245.1_W	Units: µg/L	Prep Date: 7/10/2018	RunNo: 126116
Client ID: ZZZZZZ	Batch ID: 68754	TestNo: EPA 245.1		Analysis Date: 7/10/2018	SeqNo: 3074222
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Mercury	4.489	0.20	5.000	0	89.8 75 125 4.551 1.38 20

Qualifiers:

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

Calculations are based on raw values

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ASSET Laboratories
ANALYTICAL RESULTS
Print Date: 20-Jul-18

CLIENT: CH2M HILL
Lab Order: N031080
Project: PG&E Topock, 680375.03.IM.OP.00
Lab ID: N031080-001

Client Sample ID: SC-100B-WDR-575
Collection Date: 7/3/2018 9:51:00 AM
Matrix: WATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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ANIONS BY ION CHROMATOGRAPHY
EPA 300.0

RunID: NV00922-IC8_180705A	QC Batch: R126053				PrepDate		Analyst: RAB
Fluoride	2.7	0.032	0.50		mg/L	5	7/5/2018 11:04 AM

ANIONS BY ION CHROMATOGRAPHY
EPA 300.0

RunID: NV00922-IC8_180705A	QC Batch: R126053				PrepDate		Analyst: RAB
Sulfate	500	1.1	25		mg/L	50	7/5/2018 12:36 PM

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



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ASSET Laboratories
ANALYTICAL RESULTS
Print Date: 20-Jul-18

CLIENT: CH2M HILL
Lab Order: N031080
Project: PG&E Topock, 680375.03.IM.OP.00
Lab ID: N031080-002

Client Sample ID: SC-700B-WDR-575
Collection Date: 7/3/2018 9:44:00 AM
Matrix: WATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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ANIONS BY ION CHROMATOGRAPHY
EPA 300.0

RunID: NV00922-IC8_180705A	QC Batch: R126053				PrepDate		Analyst: RAB
Fluoride	2.4	0.013	0.20		mg/L	2	7/5/2018 11:20 AM

ANIONS BY ION CHROMATOGRAPHY
EPA 300.0

RunID: NV00922-IC8_180705A	QC Batch: R126053				PrepDate		Analyst: RAB
Sulfate	490	1.1	25		mg/L	50	7/5/2018 12:51 PM

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



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ASSET Laboratories
ANALYTICAL RESULTS
Print Date: 20-Jul-18

CLIENT: CH2M HILL
Lab Order: N031080
Project: PG&E Topock, 680375.03.IM.OP.00
Lab ID: N031080-003

Client Sample ID: SC-701-WDR-575
Collection Date: 7/3/2018 9:35:00 AM
Matrix: WATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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ANIONS BY ION CHROMATOGRAPHY
EPA 300.0

RunID: NV00922-IC8_180705A	QC Batch: R126053	PrepDate	Analyst: RAB
Fluoride	26 0.13	2.0 mg/L	20 7/5/2018 11:35 AM

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



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CLIENT: CH2M HILL
Work Order: N031080
Project: PG&E Topock, 680375.03.IM.OP.00

ANALYTICAL QC SUMMARY REPORT**TestCode: 300_W_FPG**

Sample ID MB-R126053_F	SampType: MBLK	TestCode: 300_W_FPG	Units: mg/L	Prep Date:	RunNo: 126053
Client ID: PBW	Batch ID: R126053	TestNo: EPA 300.0		Analysis Date: 7/5/2018	SeqNo: 3072469
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

Fluoride ND 0.10

Sample ID LCS-R126053_F	SampType: LCS	TestCode: 300_W_FPG	Units: mg/L	Prep Date:	RunNo: 126053
Client ID: LCSW	Batch ID: R126053	TestNo: EPA 300.0		Analysis Date: 7/5/2018	SeqNo: 3072470
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

Fluoride 1.261 0.10 1.250 0 101 90 110

Sample ID N031080-001BMS	SampType: MS	TestCode: 300_W_FPG	Units: mg/L	Prep Date:	RunNo: 126053
Client ID: ZZZZZ	Batch ID: R126053	TestNo: EPA 300.0		Analysis Date: 7/5/2018	SeqNo: 3072474
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

Fluoride 8.889 0.50 6.250 2.716 98.8 80 120

Sample ID N031080-001BMSD	SampType: MSD	TestCode: 300_W_FPG	Units: mg/L	Prep Date:	RunNo: 126053
Client ID: ZZZZZ	Batch ID: R126053	TestNo: EPA 300.0		Analysis Date: 7/5/2018	SeqNo: 3072475
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

Fluoride 8.937 0.50 6.250 2.716 99.5 80 120 8.889 0.539 20

Sample ID N031080-003ADUP	SampType: DUP	TestCode: 300_W_FPG	Units: mg/L	Prep Date:	RunNo: 126053
Client ID: ZZZZZ	Batch ID: R126053	TestNo: EPA 300.0		Analysis Date: 7/5/2018	SeqNo: 3072476
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

Fluoride 25.644 2.0 25.77 0.475 20

Qualifiers:

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

Calculations are based on raw values



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CLIENT: CH2M HILL
Work Order: N031080
Project: PG&E Topock, 680375.03.IM.OP.00

ANALYTICAL QC SUMMARY REPORT

TestCode: 300_W_SO4PGE

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

Sulfate ND 0.50

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

Sulfate 3.961 0.50 4.000 0 99.0 90 110

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

Sulfate 293.070 25 289.3 1.28 20

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

Sulfate 490.120 25 200.0 289.3 100 80 120

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

Sulfate 486.265 25 200.0 289.3 98.5 80 120 490.1 0.790 20

Qualifiers:

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



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ASSET Laboratories
ANALYTICAL RESULTS
Print Date: 20-Jul-18

CLIENT: CH2M HILL
Lab Order: N031080
Project: PG&E Topock, 680375.03.IM.OP.00
Lab ID: N031080-001

Client Sample ID: SC-100B-WDR-575
Collection Date: 7/3/2018 9:51:00 AM
Matrix: WATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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NITRATE/NITRITE-N BY CADMIUM REDUCTION
SM4500-NO3F

RunID: NV00922-WC_180706B	QC Batch: R126072			PrepDate			Analyst: QBM
Nitrate/Nitrite as N	2.8	0.16	0.25	mg/L	5		7/6/2018

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



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ASSET Laboratories
ANALYTICAL RESULTS
Print Date: 20-Jul-18

CLIENT: CH2M HILL
Lab Order: N031080
Project: PG&E Topock, 680375.03.IM.OP.00
Lab ID: N031080-002

Client Sample ID: SC-700B-WDR-575
Collection Date: 7/3/2018 9:44:00 AM
Matrix: WATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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NITRATE/NITRITE-N BY CADMIUM REDUCTION
SM4500-NO3F

RunID: NV00922-WC_180706B	QC Batch: R126072			PrepDate		Analyst: QBM
Nitrate/Nitrite as N	2.9	0.16	0.25	mg/L	5	7/6/2018

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



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CLIENT: CH2M HILL
Work Order: N031080
Project: PG&E Topock, 680375.03.IM.OP.00

ANALYTICAL QC SUMMARY REPORT**TestCode: 4500N03F_W**

Sample ID MB-R126072	SampType: MBLK	TestCode: 4500N03F_W	Units: mg/L	Prep Date:	RunNo: 126072
Client ID: PBW	Batch ID: R126072	TestNo: SM4500-NO3		Analysis Date: 7/6/2018	SeqNo: 3073149
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-R126072	SampType: LCS	TestCode: 4500N03F_W	Units: mg/L	Prep Date:	RunNo: 126072
Client ID: LCSW	Batch ID: R126072	TestNo: SM4500-NO3		Analysis Date: 7/6/2018	SeqNo: 3073150
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

Nitrate/Nitrite as N 0.534 0.050 0.5000 0 107 85 115

Sample ID N031080-001DDUP	SampType: DUP	TestCode: 4500N03F_W	Units: mg/L	Prep Date:	RunNo: 126072
Client ID: ZZZZZZ	Batch ID: R126072	TestNo: SM4500-NO3		Analysis Date: 7/6/2018	SeqNo: 3073153
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

Nitrate/Nitrite as N 2.423 0.25 2.756 12.8 20

Sample ID N031080-002DMS	SampType: MS	TestCode: 4500N03F_W	Units: mg/L	Prep Date:	RunNo: 126072
Client ID: ZZZZZZ	Batch ID: R126072	TestNo: SM4500-NO3		Analysis Date: 7/6/2018	SeqNo: 3073155
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

Nitrate/Nitrite as N 4.853 0.25 2.500 2.935 76.7 75 125

Sample ID N031080-002DMSD	SampType: MSD	TestCode: 4500N03F_W	Units: mg/L	Prep Date:	RunNo: 126072
Client ID: ZZZZZZ	Batch ID: R126072	TestNo: SM4500-NO3		Analysis Date: 7/6/2018	SeqNo: 3073156
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

Nitrate/Nitrite as N 5.317 0.25 2.500 2.935 95.3 75 125 4.853 9.12 20

Qualifiers:

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

Calculations are based on raw values



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Signatures Approved by  Sampled by  Relinquished by  Received by  Relinquished by  Received by 		Date/Time 7-3-18 7:00 7-3-18 9:30 7-3-18 15:44 7/3/18 @ 1544 7/3/18 @ 1845		Shipping Details Method of Shipment: FedEx On Ice: <u>yes</u> no <i>KE 12#2</i> Airbill No: <i>1.80C</i> Lab Name: ASSET Laboratories Lab Phone: (702) 307-2659		Special Instructions: ATTN: The SC-100B & SC-700B Total metals List: Cr,Al,Sb,As,Ba,B,Cu,Pb,Mn,Mo,Ni,Fe,Zn Sample Custody and Marlon Cartin Report Copy to Doug Scott (970) 731-0636	
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ASSET Laboratories

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

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

Cooler Received/Opened On: 7/3/2018 Workorder: N031080
 Rep sample Temp (Deg C): 1.8 IR Gun ID: 2
 Temp Blank: ☒ Yes ☐ No
 Carrier name: ASSET
 Last 4 digits of Tracking No.: NA Packing Material Used: None
 Cooling process: ☒ Ice ☐ Ice Pack ☐ Dry Ice ☐ Other ☐ None

Sample Receipt Checklist

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

Comments: Samples for Hex Cr were lab filtered and preserved with Ammonium buffer.
 Samples for T. Metals were preserved with HNO3 and for Ammonia/Nitrate/Nitrite with H2SO4.

For:

Checklist Completed By: MBC  7/5/2018

Reviewed By:



LG 070518

**ASSET Laboratories**

3151-3153 W Post Rd., Las Vegas, NV 89118

www.atl-labs.com

TEL: 7023072659

FAX: 7023072691

CHAIN-OF-CUSTODY RECORD

Page 1 of 1

QC Level: Level IV**Subcontractor:**BC Labs
4100 Atlas Court
Bakersfield, CA 93308TEL: (661) 327-4911
FAX: (661) 327-1918
Acct #:

Field Sampler: SIGNED

05-Jul-18

Sample ID	Matrix	Date Collected	Bottle Type	Requested Tests		
				SM4500-NH3D		
N031080-001A / SC-100B-WDR-575	Water	7/3/2018 9:51:00 AM	16OZP	1		
N031080-002A / SC-700B-WDR-575	Water	7/3/2018 9:44:00 AM	16OZP	1		


Please cc report to Lucille Golosinda at lucille.golosinda@assetlaboratories.com

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

Please use PO#:N31080A 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 Labspec 7 edata.

GSO #: 541202428

		Date/Time		Date/Time
Relinquished by: _____		7/5/2018 17:00	Received by: _____	
Relinquished by: _____			Received by: _____	

List of Analysts

ASSET Laboratories Work Order: N031080

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



ASSET LABORATORIES
ANALYTICAL SUPPORT SERVICES FOR ENVIRONMENTAL TECHNOLOGIES

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

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

"Serving Clients with Passion and Professionalism"



Laboratories, Inc.

Environmental Testing Laboratory Since 1949



Date of Report: 07/11/2018

Marlon Cartin

ASSET Laboratories

3151-3153 W. Post Rd
Las Vegas, NV 89118

Client Project: N031080

BCL Project: Level IV

BCL Work Order: 1820954

Invoice ID: B309374

Enclosed are the results of analyses for samples received by the laboratory on 7/6/2018. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Contact Person: Vanessa Sandoval
Client Service Rep

Stuart Buttram
Technical Director

Certifications: CA ELAP #1186; NV #CA00014; OR ELAP #4032-001; AK UST101

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Laboratories, Inc.

Environmental Testing Laboratory Since 1949

Chain of Custody and Cooler Receipt Form for 1820954 Page 1 of 2

Page 1 of 1

CHAIN-OF-CUSTODY RECORD



3151-3153 W Post Rd., Las Vegas, NV 89118
www.assetlabs.com
TEL: 7023072659 FAX: 7023072691

Subcontractor:

BC Labs
4100 Atlas Court
Bakersfield, CA 93308

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

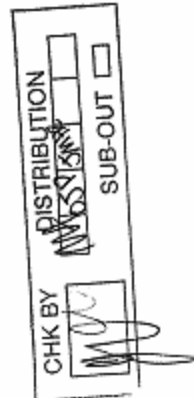
QC Level: Level IV

Field Sampler: SIGNED

18-20954

05-Jul-18

Sample ID	Matrix	Date Collected	Bottle Type	Requested Tests
N031080-001A / SC-1008-WDR-575	Water	7/3/2018 9:51:00 AM	16OZP	SM4500-NH3D
N031080-002A / SC-7008-WDR-575	Water	7/3/2018 9:44:00 AM	16OZP	1



Please cc report to Lucille Golosinda at lucille.golosinda@assetlaboratories.com

General Comments:

Please email sample receipt acknowledgement to the PM.

Please use PO#N31080A Please email invoices and Account Receivable Statements to elmra@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 Labspec 7 edata.

GSO #: 541202428

Relinquished by:		Date/Time	7/5/2018 17:00
Relinquished by:		Date/Time	7-6-18 08:40

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Laboratories, Inc.

Environmental Testing Laboratory Since 1949

Chain of Custody and Cooler Receipt Form for 1820954 Page 2 of 2

BC LABORATORIES INC.		COOLER RECEIPT FORM		Page 1 of 1							
Submission #: <u>18-20954</u>											
SHIPPING INFORMATION			SHIPPING CONTAINER		FREE LIQUID						
Fed Ex <input type="checkbox"/>	UPS <input type="checkbox"/>	Ontrac <input type="checkbox"/>	Hand Delivery <input type="checkbox"/>	Ice Chest <input checked="" type="checkbox"/>	YES <input type="checkbox"/> NO <input type="checkbox"/>						
BC Lab Field Service <input type="checkbox"/>	Other (Specify) <u>GSO</u>		None <input type="checkbox"/> Box <input type="checkbox"/>		W / S						
Refrigerant: Ice <input checked="" type="checkbox"/> Blue Ice <input type="checkbox"/> None <input type="checkbox"/> Other <input type="checkbox"/> Comments:											
Custody Seals <input checked="" type="checkbox"/> None <input type="checkbox"/> Comments:											
All samples received? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> All samples containers intact? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Description(s) match COC? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>											
COC Received YES <input checked="" type="checkbox"/> NO <input type="checkbox"/>		Emissivity: <u>0.7</u> Container: <u>Styro</u> Thermometer ID: <u>208</u>		Date/Time: <u>7-6-18</u>							
		Temperature: (A) <u>2.0</u> °C / (C) <u>2.1</u> °C		Analyst Initials: <u>JP</u>							
SAMPLE CONTAINERS		SAMPLE NUMBERS									
		1	2	3	4	5	6	7	8	9	10
QT PE UNPRES											
4oz / 8oz / 16oz PE UNPRES											
2oz Cr ⁴⁺											
QT INORGANIC CHEMICAL METALS											
INORGANIC CHEMICAL METALS 4oz / 8oz / 16oz											
PT CYANIDE											
PT NITROGEN FORMS											
PT TOTAL SULFIDE											
2oz. NITRATE / NITRITE											
PT TOTAL ORGANIC CARBON											
PT CHEMICAL OXYGEN DEMAND											
PTA PHENOLICS											
40ml VOA VIAL TRAVEL BLANK											
40ml VOA VIAL											
QT EPA 1664											
PT ODOR											
RADIOLOGICAL											
BACTERIOLOGICAL											
40 ml VOA VIAL- 504											
QT EPA 505/608/8080											
QT EPA 515.1/8150											
QT EPA 525											
QT EPA 525 TRAVEL BLANK											
40ml EPA 547											
40ml EPA 531.1											
8oz EPA 548											
QT EPA 549											
QT EPA 8015M											
QT EPA 8270											
8oz / 16oz / 32oz AMBER											
8oz / 16oz / 32oz JAR											
SOIL SLEEVE											
PCB VIAL											
PLASTIC BAG											
TEDLAR BAG											
FERROUS IRON											
ENCORE											
TART KIT											
MA CANISTER											

118:

Numbering Completed By: ENR

1 / C = Corrected

Date/Time: 7-6-18

1031

Rev 21 05/23/2016

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ASSET Laboratories
3151-3153 W. Post Rd
Las Vegas, NV 89118

Reported: 07/11/2018 10:57
Project: Level IV
Project Number: N031080
Project Manager: Marlon Cartin

Laboratory / Client Sample Cross Reference

Laboratory	Client Sample Information			
1820954-01	COC Number:	---	Receive Date:	07/06/2018 08:40
	Project Number:	---	Sampling Date:	07/03/2018 09:51
	Sampling Location:	---	Sample Depth:	---
	Sampling Point:	N031080-001A / SC-100B-WDR-575	Lab Matrix:	Water
	Sampled By:	---	Sample Type:	Water
1820954-02	COC Number:	---	Receive Date:	07/06/2018 08:40
	Project Number:	---	Sampling Date:	07/03/2018 09:44
	Sampling Location:	---	Sample Depth:	---
	Sampling Point:	N031080-002A / SC-700B-WDR-575	Lab Matrix:	Water
	Sampled By:	---	Sample Type:	Water

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ASSET Laboratories
3151-3153 W. Post Rd
Las Vegas, NV 89118

Reported: 07/11/2018 10:57
Project: Level IV
Project Number: N031080
Project Manager: Marlon Cartin

Water Analysis (General Chemistry)

BCL Sample ID:	1820954-01	Client Sample Name:	N031080-001A / SC-100B-WDR-575, 7/3/2018 9:51:00AM					
Constituent	Result	Units	PQL	MDL	Method	MB Bias	Lab Quals	Run #
Ammonia as N (Distilled)	ND	mg/L	0.20		SM-4500-NH3G	ND		1

Run #	Method	Prep Date	Run Date/Time	Analyst	Instrument	Dilution	QC Batch ID
1	SM-4500-NH3G	07/09/18 09:03	07/10/18 13:24	JMH	SC-1	1	B018398

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Laboratories, Inc.

Environmental Testing Laboratory Since 1949



ASSET Laboratories
3151-3153 W. Post Rd
Las Vegas, NV 89118

Reported: 07/11/2018 10:57
Project: Level IV
Project Number: N031080
Project Manager: Marlon Cartin

Water Analysis (General Chemistry)

BCL Sample ID:	1820954-02	Client Sample Name:	N031080-002A / SC-700B-WDR-575, 7/3/2018 9:44:00AM					
Constituent	Result	Units	PQL	MDL	Method	MB Bias	Lab Quals	Run #
Ammonia as N (Distilled)	0.44	mg/L	0.20		SM-4500-NH3G	ND		1

Run #	Method	Prep Date	Run Date/Time	Analyst	Instrument	Dilution	QC Batch ID
1	SM-4500-NH3G	07/09/18 09:03	07/10/18 13:36	JMH	SC-1	1	B018398

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Environmental Testing Laboratory Since 1949



ASSET Laboratories
3151-3153 W. Post Rd
Las Vegas, NV 89118

Reported: 07/11/2018 10:57
Project: Level IV
Project Number: N031080
Project Manager: Marlon Cartin

Water Analysis (General Chemistry)

Quality Control Report - Method Blank Analysis

Constituent	QC Sample ID	MB Result	Units	PQL	MDL	Lab Quals
QC Batch ID: B018398						
Ammonia as N (Distilled)	B018398-BLK1	ND	mg/L	0.20		

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Laboratories, Inc.

Environmental Testing Laboratory Since 1949



ASSET Laboratories
3151-3153 W. Post Rd
Las Vegas, NV 89118

Reported: 07/11/2018 10:57
Project: Level IV
Project Number: N031080
Project Manager: Marlon Cartin

Water Analysis (General Chemistry)

Quality Control Report - Laboratory Control Sample

								<u>Control Limits</u>		
Constituent	QC Sample ID	Type	Result	Spike Level	Units	Percent Recovery	RPD	Percent	RPD	Lab
								Recovery		Quals
QC Batch ID: B018398										
Ammonia as N (Distilled)	B018398-BS1	LCS	0.98150	1.0000	mg/L	98.2		85 - 115		

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ASSET Laboratories
3151-3153 W. Post Rd
Las Vegas, NV 89118

Reported: 07/11/2018 10:57
Project: Level IV
Project Number: N031080
Project Manager: Marlon Cartin

Water Analysis (General Chemistry)

Quality Control Report - Precision & Accuracy

										Control Limits	
Constituent	Type	Source Sample ID	Source Result	Result	Spike Added	Units	RPD	Percent Recovery	RPD	Percent Recovery	Lab Quals
QC Batch ID: B018398		Used client sample: Y - Description: N031080-001A / SC-100B-WDR-575, 07/03/2018 09:51									
Ammonia as N (Distilled)	DUP	1820954-01	0.12250	ND		mg/L			20		
	MS	1820954-01	0.12250	1.0889	1.0000	mg/L		96.6		80 - 120	
	MSD	1820954-01	0.12250	1.1382	1.0000	mg/L	4.4	102	20	80 - 120	



ASSET Laboratories
3151-3153 W. Post Rd
Las Vegas, NV 89118

Reported: 07/11/2018 10:57
Project: Level IV
Project Number: N031080
Project Manager: Marlon Cartin

Notes And Definitions

MDL Method Detection Limit
ND Analyte Not Detected
PQL Practical Quantitation Limit



Laboratories, Inc.

Environmental Testing Laboratory Since 1949



Date of Report: 08/21/2018

Marlon Cartin

ASSET Laboratories- Las Vegas

3151-3153 W. Post Rd

Las Vegas, NV 89118

Client Project: N031502

BCL Project: Level IV

BCL Work Order: 1824026

Invoice ID: B312917

Enclosed are the results of analyses for samples received by the laboratory on 8/3/2018. If you have any questions concerning this report, please feel free to contact me.

Revised Report: This report supercedes Report ID 1000780808

Sincerely,

Contact Person: Vanessa Sandoval
Client Service Rep

Stuart Buttram
Technical Director

Certifications: CA ELAP #1186; NV #CA00014; OR ELAP #4032-001; AK UST101

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Laboratories, Inc.

Environmental Testing Laboratory Since 1949

Chain of Custody and Cooler Receipt Form for 1824026 Page 1 of 2

Page 1 of 1

CHAIN-OF-CUSTODY RECORD



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

Subcontractor:

BC Labs
4100 Atlas Court
Bakersfield, CA 93308

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

QC Level: Level IV

Field Sampler: SIGNED

18-24026

18-24026

02-Aug-18

Sample ID	Matrix	Date Collected	Bottle Type	Requested Tests
N031502-002A / SC-700B-WDR-576	Water	8/1/2018 12:30:00 PM	32QZP	SM4500-NH3D 1



Please CC Report to Lucille Golosinda at lucille.golosinda@assetlaboratories.com

General Comments:

Please email sample receipt acknowledgement to the PM.

Please use PO# N31502A. Please email invoices and Account Receivable Statements to evira@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. EDO Requirement Labspec7 edata.

GSO #: 541545914

Relinquished by:	8/2/2018 17:00	Date/Time
Relinquished by:	8/3/18 08:30	Date/Time



Laboratories, Inc.

Environmental Testing Laboratory Since 1949

Chain of Custody and Cooler Receipt Form for 1824026 Page 2 of 2

BC LABORATORIES INC.		COOLER RECEIPT FORM		Page 1 of 1							
Submission #: 18-24026											
SHIPPING INFORMATION		SHIPPING CONTAINER		FREE LIQUID							
Fed Ex <input type="checkbox"/> UPS <input type="checkbox"/> Ontrac <input type="checkbox"/> Hand Delivery <input type="checkbox"/>		Ice Chest <input checked="" type="checkbox"/> None <input type="checkbox"/> Box <input type="checkbox"/>		YES <input type="checkbox"/> NO <input type="checkbox"/>							
BC Lab Field Service <input type="checkbox"/> Other (Specify) GSO		Other (Specify)		W / S							
Refrigerant: Ice <input checked="" type="checkbox"/> Blue Ice <input type="checkbox"/> None <input type="checkbox"/> Other <input type="checkbox"/> Comments:											
Custody Seals: Ice Chest <input checked="" type="checkbox"/> Containers <input type="checkbox"/> None <input checked="" type="checkbox"/> Comments:											
All samples received? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> All samples containers intact? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Description(s) match COC? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>											
COC Received <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO		Emissivity: 0.97 Container: Ape Thermometer ID: 274		Date/Time 8-3-18							
		Temperature: (A) 3.0 °C / (C) 3.0 °C		Analyst Init. [Signature] 08-30							
SAMPLE CONTAINERS		SAMPLE NUMBERS									
		1	2	3	4	5	6	7	8	9	10
QT PE UNPRES											
4oz / 8oz / 16oz PE UNPRES											
2oz Cr ⁶⁺											
QT INORGANIC CHEMICAL METALS 8-3											
INORGANIC CHEMICAL METALS 4oz / 8oz / 16oz											
PT CYANIDE											
PT NITROGEN FORMS											
PT TOTAL SULFIDE											
2oz. NITRATE / NITRITE											
PT TOTAL ORGANIC CARBON											
PT CHEMICAL OXYGEN DEMAND											
PIA PHENOLICS											
40ml VOA VIAL TRAVEL BLANK											
40ml VOA VIAL											
QT EPA 1664											
PT ODOR											
RADIOLOGICAL											
BACTERIOLOGICAL											
40 ml VOA VIAL- 504											
QT EPA 508/608/808											
QT EPA 515.1/E150											
QT EPA 525											
QT EPA 525 TRAVEL BLANK											
40ml EPA 547											
40ml EPA 531.1											
8oz EPA 548											
QT EPA 549											
QT EPA 8015M											
QT EPA 8270											
8oz / 16oz / 32oz AMBER											
8oz / 16oz / 32oz JAR											
SOIL SLEEVE											
PCB VIAL											
PLASTIC BAG											
TEDLAR BAG											
FERROUS IRON											
ENCORE											
SMART KIT											
SUMMA CANISTER											
Comments: JKO		8-3-18 900									
Sample Numbering Completed By: JKO		Date/Time: 8-3-18 900									
= Actual / C = Corrected		Rev 21 05/23/2016									
		[S:\WFD\Doc\Work\Perfor\LAB_DOC\FORMS\S\SANRECrev 20]									

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ASSET Laboratories- Las Vegas
3151-3153 W. Post Rd
Las Vegas, NV 89118

Reported: 08/21/2018 8:29
Project: Level IV
Project Number: N031502
Project Manager: Marlon Cartin

Laboratory / Client Sample Cross Reference

Laboratory	Client Sample Information			
1824026-01	COC Number:	---	Receive Date:	08/03/2018 08:30
	Project Number:	---	Sampling Date:	08/01/2018 12:30
	Sampling Location:	---	Sample Depth:	---
	Sampling Point:	N031502-002A / SC-700B-WDR-576	Lab Matrix:	Water
	Sampled By:	Client	Sample Type:	Water



ASSET Laboratories- Las Vegas
3151-3153 W. Post Rd
Las Vegas, NV 89118

Reported: 08/21/2018 8:29
Project: Level IV
Project Number: N031502
Project Manager: Marlon Cartin

Water Analysis (General Chemistry)

BCL Sample ID:	1824026-01	Client Sample Name:	N031502-002A / SC-700B-WDR-576, 8/1/2018 12:30:00PM, Client					
Constituent	Result	Units	PQL	MDL	Method	MB Bias	Lab Quals	Run #
Ammonia as N (Distilled)	ND	mg/L	0.20		SM-4500-NH3G	ND		1

Run #	Method	Prep Date	Run Date/Time	Analyst	Instrument	Dilution	QC Batch ID
1	SM-4500-NH3G	08/14/18 12:56	08/15/18 13:56	JMH	SC-1	1	B021541

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Laboratories, Inc.

Environmental Testing Laboratory Since 1949



ASSET Laboratories- Las Vegas
3151-3153 W. Post Rd
Las Vegas, NV 89118

Reported: 08/21/2018 8:29
Project: Level IV
Project Number: N031502
Project Manager: Marlon Cartin

Water Analysis (General Chemistry)

Quality Control Report - Method Blank Analysis

Constituent	QC Sample ID	MB Result	Units	PQL	MDL	Lab Quals
QC Batch ID: B021541						
Ammonia as N (Distilled)	B021541-BLK1	ND	mg/L	0.20		

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

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Laboratories, Inc.

Environmental Testing Laboratory Since 1949



ASSET Laboratories- Las Vegas
3151-3153 W. Post Rd
Las Vegas, NV 89118

Reported: 08/21/2018 8:29
Project: Level IV
Project Number: N031502
Project Manager: Marlon Cartin

Water Analysis (General Chemistry)

Quality Control Report - Laboratory Control Sample

								<u>Control Limits</u>		
Constituent	QC Sample ID	Type	Result	Spike Level	Units	Percent Recovery	RPD	Percent Recovery	RPD	Lab
Quals										
QC Batch ID: B021541										
	Ammonia as N (Distilled)	B021541-BS1	LCS	0.94210	1.0000	mg/L	94.2		85 - 115	

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

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ASSET Laboratories- Las Vegas
3151-3153 W. Post Rd
Las Vegas, NV 89118

Reported: 08/21/2018 8:29
Project: Level IV
Project Number: N031502
Project Manager: Marlon Cartin

Water Analysis (General Chemistry)

Quality Control Report - Precision & Accuracy

									Control Limits		
Constituent	Type	Source Sample ID	Source Result	Result	Spike Added	Units	RPD	Percent Recovery	RPD	Percent Recovery	Lab Quals
QC Batch ID: B021541		Used client sample: Y - Description: N031502-002A / SC-700B-WDR-576, 08/01/2018 12:30									
Ammonia as N (Distilled)	DUP	1824026-01	0.099300	ND		mg/L			20		
	MS	1824026-01	0.099300	1.0933	1.1111	mg/L		89.5		80 - 120	
	MSD	1824026-01	0.099300	1.1030	1.1111	mg/L	0.9	90.3	20	80 - 120	



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Environmental Testing Laboratory Since 1949



ASSET Laboratories- Las Vegas
3151-3153 W. Post Rd
Las Vegas, NV 89118

Reported: 08/21/2018 8:29
Project: Level IV
Project Number: N031502
Project Manager: Marlon Cartin

Notes And Definitions

MDL Method Detection Limit
ND Analyte Not Detected
PQL Practical Quantitation Limit

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

All results listed in this report are for the exclusive use of the submitting party. BC Laboratories, Inc. assumes no responsibility for report alteration, separation, detachment or third party interpretation.

August 16, 2018

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

Workorder No.: N031502

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

Attention: Doug Scott

Enclosed are the results for sample(s) received on August 01, 2018 by ASSET Laboratories. The sample(s) are tested for the parameters as indicated in the enclosed chain of custody in accordance with the applicable laboratory certifications.

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

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

Sincerely,

Nancy Manimtim

Quennie Manimtim
Laboratory Director

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CLIENT: CH2M HILL
Project: PG&E Topock, 680375.03.IM.OP.00
Lab Order: N031502

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:

Matrix Spike (MS) and Matrix Spike Duplicate (MSD) are outside recovery criteria for Copper in QC samples N031512-001H-MS and N031512-001H-MSD possibly due to matrix interference. The associated Laboratory Control Sample (LCS) recovery was acceptable.

Analytical Comments for EPA 218.6:

Dilution was necessary for sample N031502-002 due to matrix interference. Sample was analyzed at lower dilution however matrix spike recovery and retention time criteria were not met indicating possible matrix interference. Sample was reported at dilution that meet matrix spike recovery limit and the detected peak within retention time window.

Analytical Comments for EPA 300.0:

Dilution was necessary for sample N031502-002 due to precipitation upon the addition of eluent.

Analytical Comments for SM 4500-NO3F:

Matrix Spike Duplicate (MSD) is outside recovery criteria in QC sample N031503-002CMSD possibly



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CLIENT: CH2M HILL

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

Lab Order: N031502

CASE NARRATIVE

due to matrix interference. The associated Laboratory Control Sample (LCS) recovery was acceptable.



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ASSET Laboratories

Date: 16-Aug-18

CLIENT: CH2M HILL
Project: PG&E Topock, 680375.03.IM.OP.00
Lab Order: N031502
Contract No: IM3PLANT-AR

Work Order Sample Summary

Lab Sample ID	Client Sample ID	Matrix	Collection Date	Date Received	Date Reported
N031502-001A	SC-100B-WDR-576	Water	8/1/2018 12:40:00 PM	8/1/2018	8/16/2018
N031502-001B	SC-100B-WDR-576	Water	8/1/2018 12:40:00 PM	8/1/2018	8/16/2018
N031502-001C	SC-100B-WDR-576	Water	8/1/2018 12:40:00 PM	8/1/2018	8/16/2018
N031502-001D	SC-100B-WDR-576	Water	8/1/2018 12:40:00 PM	8/1/2018	8/16/2018
N031502-002A	SC-700B-WDR-576	Water	8/1/2018 12:30:00 PM	8/1/2018	8/16/2018
N031502-002B	SC-700B-WDR-576	Water	8/1/2018 12:30:00 PM	8/1/2018	8/16/2018
N031502-002C	SC-700B-WDR-576	Water	8/1/2018 12:30:00 PM	8/1/2018	8/16/2018
N031502-002D	SC-700B-WDR-576	Water	8/1/2018 12:30:00 PM	8/1/2018	8/16/2018
N031502-002E	SC-700B-WDR-576	Water	8/1/2018 12:30:00 PM	8/1/2018	8/16/2018
N031502-002F	SC-700B-WDR-576	Water	8/1/2018 12:30:00 PM	8/1/2018	8/16/2018



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ASSET Laboratories
ANALYTICAL RESULTS
Print Date: 16-Aug-18

CLIENT:	CH2M HILL	Client Sample ID:	SC-100B-WDR-576
Lab Order:	N031502	Collection Date:	8/1/2018 12:40:00 PM
Project:	PG&E Topock, 680375.03.IM.OP.00	Matrix:	WATER
Lab ID:	N031502-001		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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SPECIFIC CONDUCTANCE
EPA 120.1

RunID: NV00922-WC_180802B	QC Batch: R126660	PrepDate	Analyst: LR
Specific Conductance	7100	0.10	0.10
		umhos/cm	1
			8/2/2018 10:35 AM

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


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ANALYTICAL RESULTS

Print Date: 16-Aug-18

CLIENT:	CH2M HILL	Client Sample ID:	SC-700B-WDR-576
Lab Order:	N031502	Collection Date:	8/1/2018 12:30:00 PM
Project:	PG&E Topock, 680375.03.IM.OP.00	Matrix:	WATER
Lab ID:	N031502-002		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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SPECIFIC CONDUCTANCE

EPA 120.1

RunID: NV00922-WC_180802B	QC Batch: R126660	PrepDate	Analyst: LR
Specific Conductance	7000	0.10	0.10
		umhos/cm	1
			8/2/2018 10:35 AM

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



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CLIENT: CH2M HILL
Work Order: N031502
Project: PG&E Topock, 680375.03.IM.OP.00

ANALYTICAL QC SUMMARY REPORT**TestCode: 120.1_WPGE**

Sample ID	N031502-001ADUP	SampType:	DUP	TestCode:	120.1_WPGE	Units:	umhos/cm	Prep Date:		RunNo:	126660		
Client ID:	ZZZZZZ	Batch ID:	R126660	TestNo:	EPA 120.1			Analysis Date:	8/2/2018	SeqNo:	3097774		
Analyte		Result		PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Specific Conductance		7090.000		0.10						7120	0.422	2	

Qualifiers:

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

Calculations are based on raw values

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ANALYTICAL RESULTS
Print Date: 16-Aug-18

CLIENT:	CH2M HILL	Client Sample ID:	SC-100B-WDR-576
Lab Order:	N031502	Collection Date:	8/1/2018 12:40:00 PM
Project:	PG&E Topock, 680375.03.IM.OP.00	Matrix:	WATER
Lab ID:	N031502-001		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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TOTAL FILTERABLE RESIDUE
SM2540C

RunID: NV00922-WC_180802G	QC Batch: 70088	PrepDate	8/2/2018	Analyst: LR
Total Dissolved Solids (Residue, Filterable)	4300	50	50	mg/L
			1	8/2/2018 12:51 PM

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


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ANALYTICAL RESULTS
Print Date: 16-Aug-18

CLIENT:	CH2M HILL	Client Sample ID:	SC-700B-WDR-576
Lab Order:	N031502	Collection Date:	8/1/2018 12:30:00 PM
Project:	PG&E Topock, 680375.03.IM.OP.00	Matrix:	WATER
Lab ID:	N031502-002		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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TOTAL FILTERABLE RESIDUE
SM2540C

RunID: NV00922-WC_180802G	QC Batch: 70088	PrepDate	8/2/2018	Analyst: LR
Total Dissolved Solids (Residue, Filterable)	4200	50	50	mg/L
			1	8/2/2018 12:51 PM

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


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CLIENT: CH2M HILL
Work Order: N031502
Project: PG&E Topock, 680375.03.IM.OP.00

ANALYTICAL QC SUMMARY REPORT**TestCode: 160.1_2540C_W**

Sample ID	LCS-70088	SampType:	LCS	TestCode:	160.1_2540C	Units:	mg/L	Prep Date:	8/2/2018	RunNo:	126702			
Client ID:	LCSW	Batch ID:	70088	TestNo:	SM2540C			Analysis Date:	8/2/2018	SeqNo:	3099339			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera		974.000		10	1000	0		97.4	80	120				

Sample ID	MB-70088	SampType:	MBLK	TestCode:	160.1_2540C	Units:	mg/L	Prep Date:	8/2/2018	RunNo:	126702			
Client ID:	PBW	Batch ID:	70088	TestNo:	SM2540C			Analysis Date:	8/2/2018	SeqNo:	3099340			
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	N031503-002BDUP	SampType:	DUP	TestCode:	160.1_2540C	Units:	mg/L	Prep Date:	8/2/2018	RunNo:	126702			
Client ID:	ZZZZZZ	Batch ID:	70088	TestNo:	SM2540C			Analysis Date:	8/2/2018	SeqNo:	3099348			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera		4430.000		50							4285	3.33	5	

Qualifiers:

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

Calculations are based on raw values



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ANALYTICAL RESULTS
Print Date: 16-Aug-18

CLIENT:	CH2M HILL	Client Sample ID:	SC-700B-WDR-576
Lab Order:	N031502	Collection Date:	8/1/2018 12:30:00 PM
Project:	PG&E Topock, 680375.03.IM.OP.00	Matrix:	WATER
Lab ID:	N031502-002		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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TOTAL METALS BY ICP
EPA 200.7

RunID: NV00922-ICP2_180814B	QC Batch: 70171	PrepDate	8/9/2018	Analyst: CEI
Aluminum	ND	40	50	µg/L
Boron	970	74	100	µg/L
Iron	23	18	20	µg/L

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


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CLIENT: CH2M HILL
Work Order: N031502
Project: PG&E Topock, 680375.03.IM.OP.00

ANALYTICAL QC SUMMARY REPORT**TestCode: 200.7_WPGEPB**

Sample ID MB-70171	SampType: MBLK	TestCode: 200.7_WPGE	Units: µg/L	Prep Date: 8/9/2018	RunNo: 126913
Client ID: PBW	Batch ID: 70171	TestNo: EPA 200.7		Analysis Date: 8/14/2018	SeqNo: 3108018
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 LCS1-70171	SampType: LCS	TestCode: 200.7_WPGE	Units: µg/L	Prep Date: 8/9/2018	RunNo: 126913
Client ID: LCSW	Batch ID: 70171	TestNo: EPA 200.7		Analysis Date: 8/14/2018	SeqNo: 3108019
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

Aluminum	5037.240	50	5000	0	101 85 115
Iron	107.917	20	100.0	0	108 85 115

Sample ID N031502-002E-MS1	SampType: MS	TestCode: 200.7_WPGE	Units: µg/L	Prep Date: 8/9/2018	RunNo: 126913
Client ID: ZZZZZZ	Batch ID: 70171	TestNo: EPA 200.7		Analysis Date: 8/14/2018	SeqNo: 3108023
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

Aluminum	5242.967	50	5000	0	105 75 125
Iron	119.627	20	100.0	22.59	97.0 75 125

Sample ID N031502-002E-MSD	SampType: MSD	TestCode: 200.7_WPGE	Units: µg/L	Prep Date: 8/9/2018	RunNo: 126913
Client ID: ZZZZZZ	Batch ID: 70171	TestNo: EPA 200.7		Analysis Date: 8/14/2018	SeqNo: 3108024
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

Aluminum	5231.627	50	5000	0	105 75 125 5243 0.217 20
Iron	119.131	20	100.0	22.59	96.5 75 125 119.6 0.415 20

Qualifiers:

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

Calculations are based on raw values

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CLIENT: CH2M HILL
Work Order: N031502
Project: PG&E Topock, 680375.03.IM.OP.00

ANALYTICAL QC SUMMARY REPORT

TestCode: 200.7_WPGEPBB

Sample ID	MB-70228	SampType:	MBLK	TestCode:	200.7_WPGE	Units:	µg/L	Prep Date:	8/14/2018	RunNo:	126943			
Client ID:	PBW	Batch ID:	70228	TestNo:	EPA 200.7			Analysis Date:	8/15/2018	SeqNo:	3109317			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Boron ND 100

Sample ID	LCS-70228	SampType:	LCS	TestCode:	200.7_WPGE	Units:	µg/L	Prep Date:	8/14/2018	RunNo:	126943			
Client ID:	LCSW	Batch ID:	70228	TestNo:	EPA 200.7			Analysis Date:	8/15/2018	SeqNo:	3109318			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Boron 1092.745 100 1000 0 109 85 115

Sample ID	N031502-002E-MS	SampType: MS	TestCode: 200.7_WPGE	Units: µg/L	Prep Date: 8/14/2018	RunNo: 126943					
Client ID:	ZZZZZZ	Batch ID: 70228	TestNo: EPA 200.7		Analysis Date: 8/15/2018	SeqNo: 3109322					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Boron 2013.879 100 1000 972.2 104 75 125

Sample ID	N031502-002E-MSD	SampType:	MSD	TestCode:	200.7_WPGE	Units:	µg/L	Prep Date:	8/14/2018	RunNo:	126943			
Client ID:	ZZZZZZ	Batch ID:	70228	TestNo:	EPA 200.7			Analysis Date:	8/15/2018	SeqNo:	3109323			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Boron 2062.453 100 1000 972.2 109 75 125 2014 2.38 20

Qualifiers:

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

Calculations are based on raw values



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ASSET Laboratories
ANALYTICAL RESULTS
Print Date: 16-Aug-18

CLIENT:	CH2M HILL	Client Sample ID:	SC-100B-WDR-576
Lab Order:	N031502	Collection Date:	8/1/2018 12:40:00 PM
Project:	PG&E Topock, 680375.03.IM.OP.00	Matrix:	WATER
Lab ID:	N031502-001		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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TOTAL METALS BY ICPMS
EPA 200.8

RunID: NV00922-ICP7_180807H	QC Batch: 70123	PrepDate	8/6/2018	Analyst: CEI
Manganese	11	0.26	0.50	µg/L
			1	8/8/2018 12:23 AM

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


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"Serving Clients with Passion and Professionalism"

ASSET Laboratories
ANALYTICAL RESULTS
Print Date: 16-Aug-18

CLIENT: CH2M HILL
Lab Order: N031502
Project: PG&E Topock, 680375.03.IM.OP.00
Lab ID: N031502-002

Client Sample ID: SC-700B-WDR-576
Collection Date: 8/1/2018 12:30:00 PM
Matrix: WATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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TOTAL METALS BY ICPMS
EPA 200.8

RunID: NV00922-ICP7_180807H	QC Batch: 70123	PrepDate	8/6/2018	Analyst: CEI		
Antimony	ND	0.16	0.50	µg/L	1	8/8/2018 12:40 AM
Arsenic	0.17	0.081	0.10	µg/L	1	8/13/2018 12:45 PM
Barium	14	0.15	1.0	µg/L	1	8/8/2018 12:40 AM
Copper	ND	0.55	1.0	µg/L	1	8/13/2018 12:45 PM
Lead	ND	0.13	1.0	µg/L	1	8/8/2018 12:40 AM
Manganese	3.5	0.26	0.50	µg/L	1	8/8/2018 12:40 AM
Molybdenum	21	0.21	0.50	µg/L	1	8/8/2018 12:40 AM
Nickel	ND	0.26	1.0	µg/L	1	8/8/2018 12:40 AM
Zinc	ND	2.3	10	µg/L	1	8/8/2018 12:40 AM

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



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"Serving Clients with Passion and Professionalism"

CLIENT: CH2M HILL
Work Order: N031502
Project: PG&E Topock, 680375.03.IM.OP.00

ANALYTICAL QC SUMMARY REPORT**TestCode: 200.8_W**

Sample ID	MB-70123	SampType:	MBLK	TestCode:	200.8_W	Units:	µg/L	Prep Date:	8/6/2018	RunNo:	126791	
Client ID:	PBW	Batch ID:	70123	TestNo:	EPA 200.8			Analysis Date:	8/8/2018	SeqNo:	3104078	
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Antimony		ND	0.50									
Barium		ND	1.0									
Lead		ND	1.0									
Manganese		ND	0.50									
Molybdenum		ND	0.50									
Nickel		ND	1.0									
Zinc		ND	10									

Sample ID	LCS-70123	SampType:	LCS	TestCode:	200.8_W	Units:	µg/L	Prep Date:	8/6/2018	RunNo:	126791	
Client ID:	LCSW	Batch ID:	70123	TestNo:	EPA 200.8			Analysis Date:	8/8/2018	SeqNo:	3104079	
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Antimony		9.548	0.50	10.00	0	95.5	85	115				
Barium		10.312	1.0	10.00	0	103	85	115				
Lead		9.684	1.0	10.00	0	96.8	85	115				
Manganese		98.643	0.50	100.0	0	98.6	85	115				
Molybdenum		10.249	0.50	10.00	0	102	85	115				
Nickel		9.743	1.0	10.00	0	97.4	85	115				
Zinc		196.590	10	200.0	0	98.3	85	115				

Sample ID	N031512-001H-MS	SampType:	MS	TestCode:	200.8_W	Units:	µg/L	Prep Date:	8/6/2018	RunNo:	126791	
Client ID:	ZZZZZZ	Batch ID:	70123	TestNo:	EPA 200.8			Analysis Date:	8/8/2018	SeqNo:	3104097	
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Antimony		10.059	0.50	10.00	0.3206	97.4	75	125				
Barium		17.721	1.0	10.00	7.321	104	75	125				
Lead		9.383	1.0	10.00	0	93.8	75	125				
Manganese		160.872	0.50	100.0	66.37	94.5	75	125				

Qualifiers:

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

Calculations are based on raw values



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CLIENT: CH2M HILL
Work Order: N031502
Project: PG&E Topock, 680375.03.IM.OP.00

ANALYTICAL QC SUMMARY REPORT

TestCode: 200.8_W

Sample ID	N031512-001H-MS	SampType:	MS	TestCode:	200.8_W	Units:	µg/L	Prep Date:	8/6/2018	RunNo:	126791
Client ID:	ZZZZZZ	Batch ID:	70123	TestNo:	EPA 200.8			Analysis Date:	8/8/2018	SeqNo:	3104097
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Molybdenum	17.696	0.50	10.00	6.116	116	75	125				
Nickel	9.697	1.0	10.00	0.5254	91.7	75	125				
Zinc	168.814	10	200.0	0	84.4	75	125				

Sample ID	N031512-001H-MSD	SampType:	MSD	TestCode:	200.8_W	Units:	µg/L	Prep Date:	8/6/2018	RunNo:	126791
Client ID:	ZZZZZZ	Batch ID:	70123	TestNo:	EPA 200.8			Analysis Date:	8/8/2018	SeqNo:	3104099
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Antimony	10.151	0.50	10.00	0.3206	98.3	75	125	10.06	0.915	20	
Barium	17.704	1.0	10.00	7.321	104	75	125	17.72	0.0948	20	
Lead	9.363	1.0	10.00	0	93.6	75	125	9.383	0.212	20	
Manganese	156.659	0.50	100.0	66.37	90.3	75	125	160.9	2.65	20	
Molybdenum	17.791	0.50	10.00	6.116	117	75	125	17.70	0.533	20	
Nickel	9.710	1.0	10.00	0.5254	91.8	75	125	9.697	0.131	20	
Zinc	169.917	10	200.0	0	85.0	75	125	168.8	0.651	20	

Sample ID	MB-70123	SampType:	MBLK	TestCode:	200.8_W	Units:	µg/L	Prep Date:	8/6/2018	RunNo:	126895
Client ID:	PBW	Batch ID:	70123	TestNo:	EPA 200.8			Analysis Date:	8/13/2018	SeqNo:	3107364
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	ND	0.10									
Copper	ND	1.0									

Sample ID	LCS-70123	SampType:	LCS	TestCode:	200.8_W	Units:	µg/L	Prep Date:	8/6/2018	RunNo:	126895
Client ID:	LCSW	Batch ID:	70123	TestNo:	EPA 200.8			Analysis Date:	8/13/2018	SeqNo:	3107365
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	9.915	0.10	10.00	0	99.1	85	115				
Copper	9.655	1.0	10.00	0	96.5	85	115				

Qualifiers:

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

Calculations are based on raw values



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"Serving Clients with Passion and Professionalism"

CLIENT: CH2M HILL
Work Order: N031502
Project: PG&E Topock, 680375.03.IM.OP.00

ANALYTICAL QC SUMMARY REPORT

TestCode: 200.8_W

Sample ID	N031512-001H-MS	SampType: MS	TestCode: 200.8_W	Units: µg/L	Prep Date: 8/6/2018	RunNo: 126895					
Client ID: ZZZZZZ	Batch ID: 70123	TestNo: EPA 200.8	Analysis Date: 8/13/2018	SeqNo: 3107371							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	20.413	0.10	10.00	10.41	100	75	125				
Copper	4.808	1.0	10.00	0	48.1	75	125				S

Sample ID	N031512-001H-MSD	SampType:	MSD	TestCode:	200.8_W	Units:	µg/L	Prep Date:	8/6/2018	RunNo:	126895		
Client ID:	ZZZZZZ	Batch ID:	70123	TestNo:	EPA 200.8			Analysis Date:	8/13/2018	SeqNo:	3107372		
Analyte		Result		PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic		20.308		0.10	10.00	10.41	99.0	75	125	20.41	0.516	20	
Copper		4.883		1.0	10.00	0	48.8	75	125	4.808	1.56	20	S

Qualifiers:

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

Calculations are based on raw values



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ASSET Laboratories
ANALYTICAL RESULTS
Print Date: 16-Aug-18

CLIENT: CH2M HILL
Lab Order: N031502
Project: PG&E Topock, 680375.03.IM.OP.00
Lab ID: N031502-001

Client Sample ID: SC-100B-WDR-576
Collection Date: 8/1/2018 12:40:00 PM
Matrix: WATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
HEXAVALENT CHROMIUM BY IC							
EPA 218.6							
RunID: NV00922-IC7_180803A	QC Batch: R126742			PrepDate			Analyst: RAB
Hexavalent Chromium	480	3.3	20		µg/L	100	8/3/2018 10:43 AM
TOTAL METALS BY ICPMS							
EPA 200.8							
RunID: NV00922-ICP7_180807H	QC Batch: 70123			PrepDate	8/6/2018		Analyst: CEI
Chromium	490	0.65	5.0		µg/L	5	8/8/2018 12:29 AM

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



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ASSET Laboratories
ANALYTICAL RESULTS
Print Date: 16-Aug-18

CLIENT: CH2M HILL
Lab Order: N031502
Project: PG&E Topock, 680375.03.IM.OP.00
Lab ID: N031502-002

Client Sample ID: SC-700B-WDR-576
Collection Date: 8/1/2018 12:30:00 PM
Matrix: WATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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HEXAVALENT CHROMIUM BY IC
EPA 218.6

RunID: NV00922-IC7_180803A	QC Batch: R126742				PrepDate		Analyst: RAB
Hexavalent Chromium	ND	0.17	1.0		µg/L	5	8/3/2018 12:38 PM

TOTAL METALS BY ICPMS
EPA 200.8

RunID: NV00922-ICP7_180807H	QC Batch: 70123				PrepDate	8/6/2018	Analyst: CEI
Chromium	ND	0.13	1.0		µg/L	1	8/8/2018 12:40 AM

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



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CLIENT: CH2M HILL
Work Order: N031502
Project: PG&E Topock, 680375.03.IM.OP.00

ANALYTICAL QC SUMMARY REPORT**TestCode: 200.8_W_CRPGE**

Sample ID	MB-70123	SampType:	MBLK	TestCode:	200.8_W_CR	Units:	µg/L	Prep Date:	8/6/2018	RunNo:	126791		
Client ID:	PBW	Batch ID:	70123	TestNo:	EPA 200.8			Analysis Date:	8/8/2018	SeqNo:	3104031		
Analyte		Result		PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium		ND		1.0									

Sample ID	LCS-70123	SampType:	LCS	TestCode:	200.8_W_CR	Units:	µg/L	Prep Date:	8/6/2018	RunNo:	126791		
Client ID:	LCSW	Batch ID:	70123	TestNo:	EPA 200.8			Analysis Date:	8/8/2018	SeqNo:	3104032		
Analyte		Result		PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium		9.712		1.0	10.00	0	97.1	85	115				

Sample ID	N031512-001H-MS	SampType:	MS	TestCode:	200.8_W_CR	Units:	µg/L	Prep Date:	8/6/2018	RunNo:	126791		
Client ID:	ZZZZZZ	Batch ID:	70123	TestNo:	EPA 200.8			Analysis Date:	8/8/2018	SeqNo:	3104050		
Analyte		Result		PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium		9.966		1.0	10.00	0.5677	94.0	75	125				

Sample ID	N031512-001H-MSD	SampType:	MSD	TestCode:	200.8_W_CR	Units:	µg/L	Prep Date:	8/6/2018	RunNo:	126791		
Client ID:	ZZZZZZ	Batch ID:	70123	TestNo:	EPA 200.8			Analysis Date:	8/8/2018	SeqNo:	3104052		
Analyte		Result		PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium		10.086		1.0	10.00	0.5677	95.2	75	125	9.966	1.20	20	

Qualifiers:

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

Calculations are based on raw values

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"Serving Clients with Passion and Professionalism"

CLIENT: CH2M HILL
Work Order: N031502
Project: PG&E Topock, 680375.03.IM.OP.00

ANALYTICAL QC SUMMARY REPORT

TestCode: 218.6_WU_PGE

Sample ID	MB-R126742	SampType:	MBLK	TestCode:	218.6_WU_P	Units:	µg/L	Prep Date:		RunNo:	126742			
Client ID:	PBW	Batch ID:	R126742	TestNo:	EPA 218.6			Analysis Date:	8/3/2018	SeqNo:	3101420			
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-R126742	SampType:	LCS	TestCode:	218.6_WU_P	Units:	µg/L	Prep Date:		RunNo:	126742			
Client ID:	LCSW	Batch ID:	R126742	TestNo:	EPA 218.6			Analysis Date:	8/3/2018	SeqNo:	3101421			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Hexavalent Chromium 5.129 0.20 5.000 0 103 90 110

Sample ID	N031502-001BMS	SampType:	MS	TestCode:	218.6_WU_P	Units:	µg/L	Prep Date:		RunNo:	126742			
Client ID:	ZZZZZZ	Batch ID:	R126742	TestNo:	EPA 218.6			Analysis Date:	8/3/2018	SeqNo:	3101423			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Hexavalent Chromium 965.770 20 500.0 480.1 97.1 90 110

Sample ID	N031502-001BMSD	SampType: MSD	TestCode: 218.6_WU_P	Units: µg/L	Prep Date:	RunNo: 126742					
Client ID:	ZZZZZZ	Batch ID: R126742	TestNo: EPA 218.6	Analysis Date: 8/3/2018	SeqNo: 3101424						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Hexavalent Chromium 978.020 20 500.0 480.1 99.6 90 110 965.8 1.26 20

Sample ID	N031503-002ADUP	SampType:	DUP	TestCode:	218.6_WU_P	Units:	µg/L	Prep Date:		RunNo:	126742			
Client ID:	ZZZZZZ	Batch ID:	R126742	TestNo:	EPA 218.6			Analysis Date:	8/3/2018	SeqNo:	3101431			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Hexavalent Chromium 483.490 20 476.2 1.53 20

Qualifiers:

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

Calculations are based on raw values



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"Serving Clients with Passion and Professionalism"

CLIENT: CH2M HILL
Work Order: N031502
Project: PG&E Topock, 680375.03.IM.OP.00

ANALYTICAL QC SUMMARY REPORT

TestCode: 218.6_WU_PGE

Sample ID	N031502-002CMS	SampType:	MS	TestCode:	218.6_WU_P	Units:	µg/L	Prep Date:		RunNo:	126742	
Client ID:	ZZZZZZ	Batch ID:	R126742	TestNo:	EPA 218.6			Analysis Date:	8/3/2018	SeqNo:	3101433	
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium		4.934	1.0	5.000	0	98.7	90	110				

Qualifiers:

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

Calculations are based on raw values



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ANALYTICAL RESULTS

Print Date: 16-Aug-18

CLIENT:	CH2M HILL	Client Sample ID:	SC-100B-WDR-576
Lab Order:	N031502	Collection Date:	8/1/2018 12:40:00 PM
Project:	PG&E Topock, 680375.03.IM.OP.00	Matrix:	WATER
Lab ID:	N031502-001		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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TURBIDITY

SM 2130B

RunID: NV00922-WC_180802E	QC Batch: R126663	PrepDate	Analyst: LR
Turbidity	0.26 0.10 0.10	NTU	1 8/2/2018 10:55 AM

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



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ASSET Laboratories
ANALYTICAL RESULTS
Print Date: 16-Aug-18

CLIENT:	CH2M HILL	Client Sample ID:	SC-700B-WDR-576
Lab Order:	N031502	Collection Date:	8/1/2018 12:30:00 PM
Project:	PG&E Topock, 680375.03.IM.OP.00	Matrix:	WATER
Lab ID:	N031502-002		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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TURBIDITY
SM 2130B

RunID: NV00922-WC_180802E	QC Batch: R126663	PrepDate	Analyst: LR
Turbidity	0.22 0.10 0.10	NTU	1 8/2/2018 10:55 AM

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


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CLIENT: CH2M HILL
Work Order: N031502
Project: PG&E Topock, 680375.03.IM.OP.00

ANALYTICAL QC SUMMARY REPORT**TestCode: 2130_W**

Sample ID	MB-R126663	SampType:	MBLK	TestCode:	2130_W	Units:	NTU	Prep Date:		RunNo:	126663		
Client ID:	PBW	Batch ID:	R126663	TestNo:	SM 2130B			Analysis Date:	8/2/2018	SeqNo:	3097785		
Analyte		Result		PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Turbidity ND 0.10

Sample ID	N031502-001ADUP	SampType:	DUP	TestCode:	2130_W	Units:	NTU	Prep Date:		RunNo:	126663		
Client ID:	ZZZZZZ	Batch ID:	R126663	TestNo:	SM 2130B			Analysis Date:	8/2/2018	SeqNo:	3097787		
Analyte		Result		PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Turbidity 0.250 0.10 0.2600 3.92 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

Calculations are based on raw values



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ASSET Laboratories
ANALYTICAL RESULTS
Print Date: 16-Aug-18

CLIENT:	CH2M HILL	Client Sample ID:	SC-700B-WDR-576
Lab Order:	N031502	Collection Date:	8/1/2018 12:30:00 PM
Project:	PG&E Topock, 680375.03.IM.OP.00	Matrix:	WATER
Lab ID:	N031502-002		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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ANIONS BY ION CHROMATOGRAPHY
EPA 300.0

RunID: NV00922-IC8_180802A	QC Batch: R126714	PrepDate	Analyst: RAB
Fluoride	2.3 0.032	0.50	mg/L
			5 8/2/2018 10:35 AM

ANIONS BY ION CHROMATOGRAPHY
EPA 300.0

RunID: NV00922-IC8_180802B	QC Batch: R126715	PrepDate	Analyst: RAB
Sulfate	470 1.1	25	mg/L
			50 8/2/2018 10:10 PM

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


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CLIENT: CH2M HILL
Work Order: N031502
Project: PG&E Topock, 680375.03.IM.OP.00

ANALYTICAL QC SUMMARY REPORT**TestCode: 300_W_FPG**

Sample ID MB-R126714_F	SampType: MBLK	TestCode: 300_W_FPG	Units: mg/L	Prep Date:	RunNo: 126714
Client ID: PBW	Batch ID: R126714	TestNo: EPA 300.0		Analysis Date: 8/2/2018	SeqNo: 3100224
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

Fluoride ND 0.10

Sample ID LCS-R126714_F	SampType: LCS	TestCode: 300_W_FPG	Units: mg/L	Prep Date:	RunNo: 126714
Client ID: LCSW	Batch ID: R126714	TestNo: EPA 300.0		Analysis Date: 8/2/2018	SeqNo: 3100225
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

Fluoride 1.238 0.10 1.250 0 99.1 90 110

Sample ID N031406-011ADUP	SampType: DUP	TestCode: 300_W_FPG	Units: mg/L	Prep Date:	RunNo: 126714
Client ID: ZZZZZZ	Batch ID: R126714	TestNo: EPA 300.0		Analysis Date: 8/2/2018	SeqNo: 3100235
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

Fluoride 7.196 2.0 7.206 0.139 20

Sample ID N031406-014AMS	SampType: MS	TestCode: 300_W_FPG	Units: mg/L	Prep Date:	RunNo: 126714
Client ID: ZZZZZZ	Batch ID: R126714	TestNo: EPA 300.0		Analysis Date: 8/2/2018	SeqNo: 3100241
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

Fluoride 7.051 0.50 6.250 1.083 95.5 80 120

Sample ID N031406-014AMSD	SampType: MSD	TestCode: 300_W_FPG	Units: mg/L	Prep Date:	RunNo: 126714
Client ID: ZZZZZZ	Batch ID: R126714	TestNo: EPA 300.0		Analysis Date: 8/2/2018	SeqNo: 3100242
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

Fluoride 6.959 0.50 6.250 1.083 94.0 80 120 7.050 1.31 20

Qualifiers:

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

Calculations are based on raw values



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"Serving Clients with Passion and Professionalism"

CLIENT: CH2M HILL
Work Order: N031502
Project: PG&E Topock, 680375.03.IM.OP.00

ANALYTICAL QC SUMMARY REPORT

TestCode: 300_W_FPGE

Sample ID	N031502-002BMS	SampType: MS	TestCode: 300_W_FPG	Units: mg/L	Prep Date:	RunNo: 126714					
Client ID: ZZZZZZ	Batch ID: R126714	TestNo: EPA 300.0	Analysis Date: 8/2/2018	SeqNo: 3100245							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Fluoride	8.390	0.50	6.250	2.262	98.0	80	120				

Qualifiers:

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

Calculations are based on raw values



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CLIENT: CH2M HILL
Work Order: N031502
Project: PG&E Topock, 680375.03.IM.OP.00

ANALYTICAL QC SUMMARY REPORT

TestCode: 300_W_SO4PGE

Sample ID	LCS-R126715_SO4	SampType: LCS	TestCode: 300_W_SO4P	Units: mg/L	Prep Date:	RunNo: 126715					
Client ID:	LCSW	Batch ID: R126715	TestNo: EPA 300.0	Analysis Date: 8/2/2018	SeqNo: 3100269						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Sulfate 3.894 0.50 4.000 0 97.3 90 110

Sample ID	MB-R126715_SO4	SampType: MBLK	TestCode: 300_W_SO4P	Units: mg/L	Prep Date:	RunNo: 126715					
Client ID:	PBW	Batch ID: R126715	TestNo: EPA 300.0	Analysis Date: 8/2/2018	SeqNo: 3100270						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Sulfate ND 0.50

Sample ID	N031433-009CMS	SampType: MS	TestCode: 300_W_SO4P	Units: mg/L	Prep Date:	RunNo: 126715					
Client ID:	ZZZZZZ	Batch ID: R126715	TestNo: EPA 300.0	Analysis Date: 8/2/2018	SeqNo: 3100274						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Sulfate 127.944 5.0 40.00 87.36 101 80 120

Sample ID	N031433-009CMSD	SampType: MSD	TestCode: 300_W_SO4P	Units: mg/L	Prep Date:	RunNo: 126715					
Client ID:	ZZZZZZ	Batch ID: R126715	TestNo: EPA 300.0	Analysis Date: 8/2/2018	SeqNo: 3100275						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Sulfate 127.364 5.0 40.00 87.36 100 80 120 127.9 0.454 20

Sample ID	N031444-005CMS	SampType: MS	TestCode: 300_W_SO4P	Units: mg/L	Prep Date:	RunNo: 126715					
Client ID:	ZZZZZZ	Batch ID: R126715	TestNo: EPA 300.0	Analysis Date: 8/2/2018	SeqNo: 3100276						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Sulfate 68.735 2.5 20.00 48.54 101 80 120

Qualifiers:

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



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"Serving Clients with Passion and Professionalism"

CLIENT: CH2M HILL
Work Order: N031502
Project: PG&E Topock, 680375.03.IM.OP.00

ANALYTICAL QC SUMMARY REPORT

TestCode: 300_W_SO4PGE

Sample ID	N031433-002CDUP	SampType:	DUP	TestCode:	300_W_SO4P	Units:	mg/L	Prep Date:		RunNo:	126715		
Client ID:	ZZZZZZ	Batch ID:	R126715	TestNo:	EPA 300.0			Analysis Date:	8/2/2018	SeqNo:	3100277		
Analyte		Result		PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Sulfate		64.067		2.5						64.19	0.194	20	

Qualifiers:

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



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ASSET Laboratories
ANALYTICAL RESULTS
Print Date: 16-Aug-18

CLIENT:	CH2M HILL	Client Sample ID:	SC-700B-WDR-576
Lab Order:	N031502	Collection Date:	8/1/2018 12:30:00 PM
Project:	PG&E Topock, 680375.03.IM.OP.00	Matrix:	WATER
Lab ID:	N031502-002		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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NITRATE/NITRITE-N BY CADMIUM REDUCTION
SM4500-NO3F

RunID: NV00922-WC_180815A	QC Batch: R126959	PrepDate	Analyst: QBM
Nitrate/Nitrite as N	2.6 0.16	0.25 mg/L	5 8/15/2018

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


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CLIENT: CH2M HILL
Work Order: N031502
Project: PG&E Topock, 680375.03.IM.OP.00

ANALYTICAL QC SUMMARY REPORT**TestCode: 4500N03F_W**

Sample ID	MB-R126959	SampType:	MBLK	TestCode:	4500N03F_W	Units:	mg/L	Prep Date:		RunNo:	126959		
Client ID:	PBW	Batch ID:	R126959	TestNo:	SM4500-NO3			Analysis Date:	8/15/2018	SeqNo:	3109937		
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-R126959	SampType:	LCS	TestCode:	4500N03F_W	Units:	mg/L	Prep Date:		RunNo:	126959		
Client ID:	LCSW	Batch ID:	R126959	TestNo:	SM4500-NO3			Analysis Date:	8/15/2018	SeqNo:	3109938		
Analyte		Result		PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrate/Nitrite as N		0.523		0.050	0.5000	0	105	85	115				

Sample ID	N031502-002DDUP	SampType:	DUP	TestCode:	4500N03F_W	Units:	mg/L	Prep Date:		RunNo:	126959		
Client ID:	ZZZZZZ	Batch ID:	R126959	TestNo:	SM4500-NO3			Analysis Date:	8/15/2018	SeqNo:	3109942		
Analyte		Result		PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrate/Nitrite as N		2.905		0.25						2.624	10.2	20	

Sample ID	N031503-002CMS	SampType:	MS	TestCode:	4500N03F_W	Units:	mg/L	Prep Date:		RunNo:	126959		
Client ID:	ZZZZZZ	Batch ID:	R126959	TestNo:	SM4500-NO3			Analysis Date:	8/15/2018	SeqNo:	3109944		
Analyte		Result		PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrate/Nitrite as N		4.829		0.25	2.500	2.702	85.1	75	125				

Sample ID	N031503-002CMSD	SampType:	MSD	TestCode:	4500N03F_W	Units:	mg/L	Prep Date:		RunNo:	126959		
Client ID:	ZZZZZZ	Batch ID:	R126959	TestNo:	SM4500-NO3			Analysis Date:	8/15/2018	SeqNo:	3109945		
Analyte		Result		PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrate/Nitrite as N		5.900		0.25	2.500	2.702	128	75	125	4.829	20.0	20	S

Qualifiers:

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

Calculations are based on raw values



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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-576 Turnaround Time 10 Days Shipping Date: COC Number: 576			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			4°C
			Filtered:		NA	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) F ⁻ , SO ₄ ²⁻		CONDUCTIVITY (E120.1)		E218.6 Lab Filtered		Nitrate/Nitrite (SM4500NO3-E)				TDS (SM2540C)
DATE TIME Matrix															Number of Containers	COMMENTS
SC-100B-WDR-576 8-1-18 12:30 Water					X	X		X		X		X		N031502-01	3	
SC-700B-WDR-576 8-1-18 12:40 Water			X	X	X	X	X	X	X	X		X		-02	4	
TOTAL NUMBER OF CONTAINERS														7		

Approved by	Signatures	Date/Time	Shipping Details
Sampled by		8-1-18 12:30	Method of Shipment: FedEx
Relinquished by		8-1-18 12:30	On Ice: <input checked="" type="checkbox"/> yes / no <input type="checkbox"/>
Received by		8/1/18 12:40	Airbill No. 21642
Relinquished by		8/1/18 12:40	Lab Name: ASSET Laboratories
Received by		8/1/18 12:40	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: 8/1/2018 Workorder: N031502
 Rep sample Temp (Deg C): 2.9 IR Gun ID: 2
 Temp Blank: ☒ Yes ☐ No
 Carrier name: ASSET
 Last 4 digits of Tracking No.: NA Packing Material Used: None
 Cooling process: ☒ Ice ☐ Ice Pack ☐ Dry Ice ☐ Other ☐ None

Sample Receipt Checklist

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

Comments: See Correspondence.
 Samples for Hex Cr were lab filtered and preserved with Ammonium buffer.
 Samples for T. Metals were preserved with HNO3 and for Ammonia/Nitrate/Nitrite with H2SO4.

Checklist Completed By: YR  8/2/2018

Reviewed By:



LG 080718

Subject: RE: [EXTERNAL] PG&E Topock, 680375.03.IM.OP.00 (Asset Labs No. N031502)
From: "Scott, Doug/DEN" <Doug.Scott@jacobs.com>
Date: 8/2/2018 11:32 AM
To: Yoandra Rodriguez <yoandra@assetlaboratories.com>
CC: "maryann.balilu@assetlaboratoriesph.com" <maryann.balilu@assetlaboratoriesph.com>, "Andreafe. Gallardo" <andrea.gallardo@assetlaboratories.com>, "Sonny. Lorenzo" <sonny.lorenzo@assetlaboratories.com>

Hi Yoandra, I would suggest using the times on the labels.

Thanks
Doug

Doug Scott
Project Chemist
Jacobs
D 1 970 731 0636
M 1 720 445 2278
Doug.scott@Jacobs.com
59 Lilac Ct.
Pagosa Springs, Co 81147
www.jacobs.com

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

From: Yoandra Rodriguez <yoandra@assetlaboratories.com>
Sent: Thursday, August 02, 2018 12:23 PM
To: Scott, Doug/DEN <Doug.Scott@CH2M.com>
Cc: maryann.balilu@assetlaboratoriesph.com; 'Andreafe. Gallardo' <andrea.gallardo@assetlaboratories.com>; 'Sonny. Lorenzo' <sonny.lorenzo@assetlaboratories.com>
Subject: [EXTERNAL] PG&E Topock, 680375.03.IM.OP.00 (Asset Labs No. N031502)

Hello Doug,

Please kindly advise on the following discrepancies for the attached COC:

- Sample 1 (SC-100B-WDR-576): Collection time is 12:30 on COC and 12:40 on sample labels.
- Sample 2 (SC-700B-WDR-576): Collection time is 12:40 on COC and 12:30 on sample labels.

Thanks,

--
Yoandra Rodriguez
Sample Control Officer
Asset Laboratories

NOTICE - This communication may contain confidential and privileged information that is for the sole use of the intended recipient. Any viewing, copying or distribution of, or reliance on this message by unintended recipients is strictly prohibited. If you have received this message in error, please notify us immediately by replying to the message and deleting it from your computer.



ASSET Laboratories

3151-3153 W Post Rd., Las Vegas, NV 89118

www.atl-labs.com

TEL: 7023072659

FAX: 7023072691

CHAIN-OF-CUSTODY RECORD

Page 1 of 1

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

02-Aug-18

Sample ID	Matrix	Date Collected	Bottle Type	Requested Tests		
				SM4500-NH3D		
N031502-002A / SC-700B-WDR-576	Water	8/1/2018 12:30:00 PM	32OZP	1		


Please CC Report to Lucille Golosinda at lucille.golosinda@assetlaboratories.com

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

Please use PO#:N31502A 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 #: 541545914

	Date/Time		Date/Time
Relinquished by: 	8/2/2018 17:00	Received by: _____	
Relinquished by: _____		Received by: _____	

List of Analysts

ASSET Laboratories Work Order: N031502

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



ASSET LABORATORIES
ANALYTICAL SUPPORT SERVICES FOR ENVIRONMENTAL TECHNOLOGIES

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

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

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Laboratories, Inc.

Environmental Testing Laboratory Since 1949



Date of Report: 08/21/2018

Marlon Cartin

ASSET Laboratories- Las Vegas

3151-3153 W. Post Rd
Las Vegas, NV 89118

Client Project: N031502

BCL Project: Level IV

BCL Work Order: 1824026

Invoice ID: B312917

Enclosed are the results of analyses for samples received by the laboratory on 8/3/2018. If you have any questions concerning this report, please feel free to contact me.

Revised Report: This report supercedes Report ID 1000780808

Sincerely,

Contact Person: Vanessa Sandoval
Client Service Rep

Stuart Buttram
Technical Director

Certifications: CA ELAP #1186; NV #CA00014; OR ELAP #4032-001; AK UST101

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Chain of Custody and Cooler Receipt Form for 1824026 Page 1 of 2

Page 1 of 1

CHAIN-OF-CUSTODY RECORD



ASSET Laboratories

3151-3153 W Post Rd., Las Vegas, NV 89118

www.asset-labs.com

TEL: 7023072659 FAX: 7023072691

Subcontractor:

BC Labs

4100 Atlas Court

Bakersfield, CA 93308

TEL: (661) 327-4911

FAX: (661) 327-1918

Acct #:

18-24024

QC Level: Level IV

Field Sampler: SIGNED

02-Aug-18

Sample ID	Matrix	Date Collected	Bottle Type	Requested Tests
N031502-002A / SC-700B-WDR-576	Water	8/1/2018 12:30:00 PM	32QZP	SM4500-NH3D 1



Please CC Report to Lucille Golosinda at lucille.golosinda@assetlaboratories.com

General Comments:

Please email sample receipt acknowledgement to the PM.

Please use PO# N31502A. Please email invoices and Account Receivable Statements to evira@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. EDO Requirement Labspec7 edata.

GSO #: 541545914

Relinquished by:	8/2/2018 17:00	Date/Time
Relinquished by:	8/3/18 08:30	Date/Time



Laboratories, Inc.

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Chain of Custody and Cooler Receipt Form for 1824026 Page 2 of 2

BC LABORATORIES INC.		COOLER RECEIPT FORM		Page 1 of 1							
Submission #: 18-24026											
SHIPPING INFORMATION		SHIPPING CONTAINER		FREE LIQUID							
Fed Ex <input type="checkbox"/> UPS <input type="checkbox"/> Ontrac <input type="checkbox"/> Hand Delivery <input type="checkbox"/>		Ice Chest <input checked="" type="checkbox"/> None <input type="checkbox"/> Box <input type="checkbox"/>		YES <input type="checkbox"/> NO <input type="checkbox"/>							
BC Lab Field Service <input type="checkbox"/> Other (Specify) GSO		Other (Specify)		W / S							
Refrigerant: Ice <input checked="" type="checkbox"/> Blue Ice <input type="checkbox"/> None <input type="checkbox"/> Other <input type="checkbox"/> Comments:											
Custody Seals: Ice Chest <input checked="" type="checkbox"/> Containers <input type="checkbox"/> None <input checked="" type="checkbox"/> Comments:											
All samples received? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> All samples containers intact? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Description(s) match COC? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>											
COC Received		Emissivity: 0.97		Thermometer ID: 274							
<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO		Temperature: (A) 3.0 °C / (C) 3.0 °C		Date/Time: 8-3-18							
				Analyst Init: [Signature] 08-30							
SAMPLE CONTAINERS		SAMPLE NUMBERS									
		1	2	3	4	5	6	7	8	9	10
QT PE UNPRES											
4oz / 8oz / 16oz PE UNPRES											
2oz Cr ⁶⁺											
QT INORGANIC CHEMICAL METALS 8-3											
INORGANIC CHEMICAL METALS 4oz / 8oz / 16oz											
PT CYANIDE											
PT NITROGEN FORMS											
PT TOTAL SULFIDE											
2oz. NITRATE/NITRITE											
PT TOTAL ORGANIC CARBON											
PT CHEMICAL OXYGEN DEMAND											
PIA PHENOLICS											
40ml VOA VIAL TRAVEL BLANK											
40ml VOA VIAL											
QT EPA 1664											
PT ODOR											
RADIOLOGICAL											
BACTERIOLOGICAL											
40 ml VOA VIAL- 504											
QT EPA 508/608/8080											
QT EPA 515.1/E150											
QT EPA 525											
QT EPA 525 TRAVEL BLANK											
40ml EPA 547											
40ml EPA 531.1											
8oz EPA 548											
QT EPA 549											
QT EPA 8015M											
QT EPA 8270											
8oz / 16oz / 32oz AMBER											
8oz / 16oz / 32oz JAR											
SOIL SLEEVE											
PCB VIAL											
PLASTIC BAG											
TEDLAR BAG											
FERROUS IRON											
ENCORE											
SMART KIT											
SUMMA CANISTER											
Comments: JKO		Date/Time: 8-3-18 900									
Sample Numbering Completed By: JKO		Rev 21 05/23/2016									
= Actual / C = Corrected		[S:\WFD\Doc\Work\Perfor\LAB_DOC\FORMS\S\SANRECrev 20]									

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ASSET Laboratories- Las Vegas
3151-3153 W. Post Rd
Las Vegas, NV 89118

Reported: 08/21/2018 8:29
Project: Level IV
Project Number: N031502
Project Manager: Marlon Cartin

Laboratory / Client Sample Cross Reference

Laboratory	Client Sample Information			
1824026-01	COC Number:	---	Receive Date:	08/03/2018 08:30
	Project Number:	---	Sampling Date:	08/01/2018 12:30
	Sampling Location:	---	Sample Depth:	---
	Sampling Point:	N031502-002A / SC-700B-WDR-576	Lab Matrix:	Water
	Sampled By:	Client	Sample Type:	Water



ASSET Laboratories- Las Vegas
3151-3153 W. Post Rd
Las Vegas, NV 89118

Reported: 08/21/2018 8:29
Project: Level IV
Project Number: N031502
Project Manager: Marlon Cartin

Water Analysis (General Chemistry)

BCL Sample ID:	1824026-01	Client Sample Name:	N031502-002A / SC-700B-WDR-576, 8/1/2018 12:30:00PM, Client					
Constituent	Result	Units	PQL	MDL	Method	MB Bias	Lab Quals	Run #
Ammonia as N (Distilled)	ND	mg/L	0.20		SM-4500-NH3G	ND		1

Run #	Method	Prep Date	Run Date/Time	Analyst	Instrument	Dilution	QC Batch ID
1	SM-4500-NH3G	08/14/18 12:56	08/15/18 13:56	JMH	SC-1	1	B021541

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ASSET Laboratories- Las Vegas
3151-3153 W. Post Rd
Las Vegas, NV 89118

Reported: 08/21/2018 8:29
Project: Level IV
Project Number: N031502
Project Manager: Marlon Cartin

Water Analysis (General Chemistry)

Quality Control Report - Method Blank Analysis

Constituent	QC Sample ID	MB Result	Units	PQL	MDL	Lab Quals
QC Batch ID: B021541						
Ammonia as N (Distilled)	B021541-BLK1	ND	mg/L	0.20		

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

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ASSET Laboratories- Las Vegas
3151-3153 W. Post Rd
Las Vegas, NV 89118

Reported: 08/21/2018 8:29
Project: Level IV
Project Number: N031502
Project Manager: Marlon Cartin

Water Analysis (General Chemistry)

Quality Control Report - Laboratory Control Sample

								<u>Control Limits</u>		
Constituent	QC Sample ID	Type	Result	Spike Level	Units	Percent Recovery	RPD	Percent Recovery	RPD	Lab
Quals										
QC Batch ID: B021541										
	Ammonia as N (Distilled)	B021541-BS1	LCS	0.94210	1.0000	mg/L	94.2		85 - 115	

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ASSET Laboratories- Las Vegas
3151-3153 W. Post Rd
Las Vegas, NV 89118

Reported: 08/21/2018 8:29
Project: Level IV
Project Number: N031502
Project Manager: Marlon Cartin

Water Analysis (General Chemistry)

Quality Control Report - Precision & Accuracy

									Control Limits		
Constituent	Type	Source Sample ID	Source Result	Result	Spike Added	Units	RPD	Percent Recovery	RPD	Percent Recovery	Lab Quals
QC Batch ID: B021541		Used client sample: Y - Description: N031502-002A / SC-700B-WDR-576, 08/01/2018 12:30									
Ammonia as N (Distilled)	DUP	1824026-01	0.099300	ND		mg/L			20		
	MS	1824026-01	0.099300	1.0933	1.1111	mg/L		89.5		80 - 120	
	MSD	1824026-01	0.099300	1.1030	1.1111	mg/L	0.9	90.3	20	80 - 120	



ASSET Laboratories- Las Vegas
3151-3153 W. Post Rd
Las Vegas, NV 89118

Reported: 08/21/2018 8:29
Project: Level IV
Project Number: N031502
Project Manager: Marlon Cartin

Notes And Definitions

MDL Method Detection Limit
ND Analyte Not Detected
PQL Practical Quantitation Limit



Laboratories, Inc.

Environmental Testing Laboratory Since 1949



Date of Report: 08/23/2018

Marlon Cartin

ASSET Laboratories- Las Vegas

3151-3153 W. Post Rd
Las Vegas, NV 89118

Client Project: N031652

BCL Project: Level IV

BCL Work Order: 1825194

Invoice ID: B313716

Enclosed are the results of analyses for samples received by the laboratory on 8/14/2018. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Contact Person: Vanessa Sandoval
Client Service Rep

Stuart Buttram
Technical Director

Certifications: CA ELAP #1186; NV #CA00014; OR ELAP #4032-001; AK UST101

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Chain of Custody and Cooler Receipt Form for 1825194 Page 1 of 2

Page 1 of 1

CHAIN-OF-CUSTODY RECORD



QC Level: Level IV

Field Sampler: SIGNED

Subcontractor:

BC Labs

4100 Atlas Court

Bakersfield, CA 93308

TEL: (661) 327-4911

FAX: (661) 327-1918

Acct #:

18-25194

13-Aug-18

Sample ID	Matrix	Date Collected	Bottle Type	Requested Tests
N031652-001A	Water	8/10/2018 11:50:00 PM	16OZP	SM4500-NH3D 1



RUSH!

General Comments:

Please email sample receipt acknowledgement to the PM.

Please use PCW-N31652A 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: 5 Day TAT

Please analyze for NH3 by SM 4500NH3C.

Relinquished by:	Date/Time	Relinquished by:	Date/Time
<i>[Signature]</i>	8/13/18 @ 1700	<i>[Signature]</i>	8.14.18 08:38
Relinquished by:		Received by:	
		Received by:	

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Laboratories, Inc.

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Chain of Custody and Cooler Receipt Form for 1825194 Page 2 of 2

BC LABORATORIES INC.		COOLER RECEIPT FORM		Page 1 of 1							
Submission #: <u>18-25194</u>											
SHIPPING INFORMATION		SHIPPING CONTAINER		FREE LIQUID							
Fed Ex <input type="checkbox"/> UPS <input type="checkbox"/> Ontrac <input type="checkbox"/> Hand Delivery <input type="checkbox"/>		Ice Chest <input checked="" type="checkbox"/> None <input type="checkbox"/> Box <input type="checkbox"/>		YES <input type="checkbox"/> NO <input type="checkbox"/>							
BC Lab Field Service <input type="checkbox"/> Other <input checked="" type="checkbox"/> (Specify) <u>GSD</u>		Other <input type="checkbox"/> (Specify) _____		W / S							
Refrigerant: Ice <input checked="" type="checkbox"/> Blue Ice <input type="checkbox"/> None <input type="checkbox"/> Other <input type="checkbox"/> Comments: _____											
Custody Seals: Ice Chest <input type="checkbox"/> Containers <input type="checkbox"/> None <input checked="" type="checkbox"/> Comments: _____											
All samples received? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> All samples containers intact? Yes <input type="checkbox"/> No <input type="checkbox"/> Description(s) match COC? Yes <input type="checkbox"/> No <input type="checkbox"/>											
COC Received <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO		Emissivity: <u>0.7</u> Container: <u>HP</u> Thermometer ID: <u>774</u>		Date/Time: <u>8-14-18</u>							
		Temperature: (A) <u>5.4</u> °C / (C) <u>5.4</u> °C		Analyst Init: <u>AD08138</u>							
SAMPLE CONTAINERS		SAMPLE NUMBERS									
		1	2	3	4	5	6	7	8	9	10
QT PE UNPRES											
4oz / 8oz / 16oz PE UNPRES											
2oz Cr ⁶⁺											
QT INORGANIC CHEMICAL METALS											
INORGANIC CHEMICAL METALS 4oz / 8oz / 16oz											
PT CYANIDE											
PT NITROGEN FORMS											
PT TOTAL SULFIDE											
2oz NITRATE / NITRITE											
PT TOTAL ORGANIC CARBON											
PT CHEMICAL OXYGEN DEMAND											
P/A PHENOLICS											
40ml VOA VIAL TRAVEL BLANK											
40ml VOA VIAL											
QT EPA 1664											
PT ODOR											
RADIOLOGICAL											
BACTERIOLOGICAL											
40 ml VOA VIAL- 504											
QT EPA 508/608/8080											
QT EPA 515.18150											
QT EPA 525											
QT EPA 525 TRAVEL BLANK											
40ml EPA 547											
40ml EPA 531.1											
8oz EPA 548											
QT EPA 549											
QT EPA 8015M											
QT EPA 8270											
8oz / 16oz / 32oz AMBER											
8oz / 16oz / 32oz JAR											
SOIL SLREVE											
PCB VIAL											
PLASTIC BAG											
TEDLAR BAG											
FERROUS IRON											
KNCORE											
SMART KIT											
SUMMA CANISTER											

Comments:

Sample Numbering Completed By: JA

Date/Time: 8-14-18

0906

Rev 21 06/23/2016

A = Actual / C = Corrected

\\B\WP\B\WordPerfect\LAB\002\FORMS\SAMREC rev 201

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ASSET Laboratories- Las Vegas
3151-3153 W. Post Rd
Las Vegas, NV 89118

Reported: 08/23/2018 17:18
Project: Level IV
Project Number: N031652
Project Manager: Marlon Cartin

Laboratory / Client Sample Cross Reference

Laboratory	Client Sample Information			
1825194-01	COC Number:	---	Receive Date:	08/14/2018 08:38
	Project Number:	---	Sampling Date:	08/10/2018 11:50
	Sampling Location:	---	Sample Depth:	---
	Sampling Point:	N031652-001A / SC-700B-WDR-577	Lab Matrix:	Water
	Sampled By:	---	Sample Type:	Water



ASSET Laboratories- Las Vegas
3151-3153 W. Post Rd
Las Vegas, NV 89118

Reported: 08/23/2018 17:18
Project: Level IV
Project Number: N031652
Project Manager: Marlon Cartin

Water Analysis (General Chemistry)

BCL Sample ID:	1825194-01	Client Sample Name:	N031652-001A / SC-700B-WDR-577, 8/10/2018 11:50:00AM					
Constituent	Result	Units	PQL	MDL	Method	MB Bias	Lab Quals	Run #
Ammonia as N (Distilled)	ND	mg/L	0.20		SM-4500-NH3G	ND		1

Run #	Method	Prep Date	Run Date/Time	Analyst	Instrument	Dilution	QC Batch ID
1	SM-4500-NH3G	08/20/18 17:01	08/21/18 10:46	JMH	SC-1	1	B022537

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Laboratories, Inc.

Environmental Testing Laboratory Since 1949



ASSET Laboratories- Las Vegas
3151-3153 W. Post Rd
Las Vegas, NV 89118

Reported: 08/23/2018 17:18
Project: Level IV
Project Number: N031652
Project Manager: Marlon Cartin

Water Analysis (General Chemistry)

Quality Control Report - Method Blank Analysis

Constituent	QC Sample ID	MB Result	Units	PQL	MDL	Lab Quals
QC Batch ID: B022537						
Ammonia as N (Distilled)	B022537-BLK1	ND	mg/L	0.20		

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

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Laboratories, Inc.

Environmental Testing Laboratory Since 1949



ASSET Laboratories- Las Vegas
3151-3153 W. Post Rd
Las Vegas, NV 89118

Reported: 08/23/2018 17:18
Project: Level IV
Project Number: N031652
Project Manager: Marlon Cartin

Water Analysis (General Chemistry)

Quality Control Report - Laboratory Control Sample

								Control Limits		
Constituent	QC Sample ID	Type	Result	Spike Level	Units	Percent Recovery	RPD	Percent Recovery	RPD	Lab
Quals										
QC Batch ID: B022537										
Ammonia as N (Distilled)	B022537-BS1	LCS	1.0237	1.0000	mg/L	102		85 - 115		

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

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ASSET Laboratories- Las Vegas
3151-3153 W. Post Rd
Las Vegas, NV 89118

Reported: 08/23/2018 17:18
Project: Level IV
Project Number: N031652
Project Manager: Marlon Cartin

Water Analysis (General Chemistry)

Quality Control Report - Precision & Accuracy

									Control Limits		
Constituent	Type	Source Sample ID	Source Result	Result	Spike Added	Units	RPD	Percent Recovery	RPD	Percent Recovery	Lab Quals
QC Batch ID: B022537		Used client sample: N									
Ammonia as N (Distilled)	DUP	1824694-05	0.10590	ND		mg/L			20		
	MS	1824694-05	0.10590	1.1644	1.1111	mg/L		95.3		80 - 120	
	MSD	1824694-05	0.10590	1.1906	1.1111	mg/L	2.2	97.6	20	80 - 120	



Laboratories, Inc.

Environmental Testing Laboratory Since 1949



ASSET Laboratories- Las Vegas
3151-3153 W. Post Rd
Las Vegas, NV 89118

Reported: 08/23/2018 17:18
Project: Level IV
Project Number: N031652
Project Manager: Marlon Cartin

Notes And Definitions

MDL Method Detection Limit
ND Analyte Not Detected
PQL Practical Quantitation Limit

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

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August 22, 2018

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

Workorder No.: N031652

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

Attention: Doug Scott

Enclosed are the results for sample(s) received on August 13, 2018 by ASSET Laboratories. The sample(s) are tested for the parameters as indicated in the enclosed chain of custody in accordance with the applicable laboratory certifications.

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

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

Sincerely,



Quennie Manimtim
Laboratory Director

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



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ANALYTICAL SUPPORT SERVICES FOR ENVIRONMENTAL TECHNOLOGIES

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11110 Artesia Blvd., Ste B, Cerritos, CA 90703
ELAP Cert 2921
EPA ID CA01638

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CLIENT: CH2M HILL
Project: PG&E Topock, 680375.03.IM.OP.00
Lab Order: N031652

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

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

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

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

Samples were analyzed within method holding time except for Turbidity as it was received past holding time.

Subcontracted Analyses:

Ammonia was subcontracted to BC Labs- Bakersfield,CA.

Analytical Comments for EPA 218.6:

Dilution was necessary due to matrix interference. Sample was analyzed at lower dilution however matrix spike recovery was not met indicating possible matrix interference. Sample was reported at dilution that meet matrix spike recovery limit and the detected peak within retention time window.



ASSET Laboratories

Date: 22-Aug-18

CLIENT: CH2M HILL
Project: PG&E Topock, 680375.03.IM.OP.00
Lab Order: N031652
Contract No: IM3PLANT-AR

Work Order Sample Summary

Lab Sample ID	Client Sample ID	Matrix	Collection Date	Date Received	Date Reported
N031652-001A	SC-700B-WDR-577	Water	8/10/2018 11:50:00 PM	8/13/2018	8/22/2018
N031652-001B	SC-700B-WDR-577	Water	8/10/2018 11:50:00 PM	8/13/2018	8/22/2018
N031652-001C	SC-700B-WDR-577	Water	8/10/2018 11:50:00 PM	8/13/2018	8/22/2018
N031652-001D	SC-700B-WDR-577	Water	8/10/2018 11:50:00 PM	8/13/2018	8/22/2018
N031652-001E	SC-700B-WDR-577	Water	8/10/2018 11:50:00 PM	8/13/2018	8/22/2018



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ASSET Laboratories**ANALYTICAL RESULTS**

Print Date: 22-Aug-18

CLIENT:	CH2M HILL	Client Sample ID:	SC-700B-WDR-577
Lab Order:	N031652	Collection Date:	8/10/2018 11:50:00 PM
Project:	PG&E Topock, 680375.03.IM.OP.00	Matrix:	WATER
Lab ID:	N031652-001		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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SPECIFIC CONDUCTANCE**EPA 120.1**

RunID: NV00922-WC_180814B	QC Batch: R126939	PrepDate	Analyst: LR			
Specific Conductance	7300	0.10	0.10	umhos/cm	1	8/14/2018 11:25 AM

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

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CLIENT: CH2M HILL
Work Order: N031652
Project: PG&E Topock, 680375.03.IM.OP.00

ANALYTICAL QC SUMMARY REPORT**TestCode: 120.1_WPGE**

Sample ID	N031662-001BDUP	SampType:	DUP	TestCode:	120.1_WPGE	Units:	umhos/cm	Prep Date:		RunNo:	126939		
Client ID:	ZZZZZZ	Batch ID:	R126939	TestNo:	EPA 120.1			Analysis Date:	8/14/2018	SeqNo:	3109258		
Analyte		Result		PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Specific Conductance		1.490		0.10						1.520	1.99	2	

Qualifiers:

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

Calculations are based on raw values

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ASSET Laboratories
ANALYTICAL RESULTS
Print Date: 22-Aug-18

CLIENT:	CH2M HILL	Client Sample ID:	SC-700B-WDR-577
Lab Order:	N031652	Collection Date:	8/10/2018 11:50:00 PM
Project:	PG&E Topock, 680375.03.IM.OP.00	Matrix:	WATER
Lab ID:	N031652-001		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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TOTAL FILTERABLE RESIDUE
SM2540C

RunID: NV00922-WC_180814H	QC Batch: 70243	PrepDate	8/14/2018	Analyst: LR
Total Dissolved Solids (Residue, Filterable)	4200	50	50	mg/L
			1	8/14/2018 01:33 PM

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


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CLIENT: CH2M HILL
Work Order: N031652
Project: PG&E Topock, 680375.03.IM.OP.00

ANALYTICAL QC SUMMARY REPORT**TestCode: 160.1_2540C_W**

Sample ID LCS-70243	SampType: LCS	TestCode: 160.1_2540C	Units: mg/L	Prep Date: 8/14/2018	RunNo: 126994
Client ID: LCSW	Batch ID: 70243	TestNo: SM2540C		Analysis Date: 8/14/2018	SeqNo: 3111583
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Total Dissolved Solids (Residue, Filtera	991.000	10	1000	0	99.1 80 120

Sample ID MB-70243	SampType: MBLK	TestCode: 160.1_2540C	Units: mg/L	Prep Date: 8/14/2018	RunNo: 126994
Client ID: PBW	Batch ID: 70243	TestNo: SM2540C		Analysis Date: 8/14/2018	SeqNo: 3111584
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 N031664-001BDUP	SampType: DUP	TestCode: 160.1_2540C	Units: mg/L	Prep Date: 8/14/2018	RunNo: 126994
Client ID: ZZZZZZ	Batch ID: 70243	TestNo: SM2540C		Analysis Date: 8/14/2018	SeqNo: 3111587
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Total Dissolved Solids (Residue, Filtera	235700.000	1000			227900 3.36 5

Qualifiers:

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

Calculations are based on raw values

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ASSET Laboratories
ANALYTICAL RESULTS
Print Date: 22-Aug-18

CLIENT:	CH2M HILL	Client Sample ID:	SC-700B-WDR-577
Lab Order:	N031652	Collection Date:	8/10/2018 11:50:00 PM
Project:	PG&E Topock, 680375.03.IM.OP.00	Matrix:	WATER
Lab ID:	N031652-001		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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TOTAL METALS BY ICP
EPA 200.7

RunID: NV00922-ICP2_180820A	QC Batch: 70270	PrepDate	8/16/2018	Analyst: CEI
Aluminum	ND 40	50	µg/L	1 8/20/2018 11:18 AM
Boron	970 74	100	µg/L	1 8/20/2018 11:18 AM
Iron	33 18	20	µg/L	1 8/20/2018 11:18 AM

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


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CLIENT: CH2M HILL
Work Order: N031652
Project: PG&E Topock, 680375.03.IM.OP.00

ANALYTICAL QC SUMMARY REPORT**TestCode: 200.7_WPGEPB**

Sample ID MB-70270	SampType: MBLK	TestCode: 200.7_WPGE	Units: µg/L	Prep Date: 8/16/2018	RunNo: 127048
Client ID: PBW	Batch ID: 70270	TestNo: EPA 200.7		Analysis Date: 8/20/2018	SeqNo: 3114500
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 N031652-001E-MS1	SampType: MS	TestCode: 200.7_WPGE	Units: µg/L	Prep Date: 8/16/2018	RunNo: 127048
Client ID: ZZZZZZ	Batch ID: 70270	TestNo: EPA 200.7		Analysis Date: 8/20/2018	SeqNo: 3114505
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

Aluminum	4665.504	50	5000	0	93.3	75	125			
Boron	2197.722	100	1000	974.3	122	75	125			
Iron	119.531	20	100.0	33.20	86.3	75	125			

Sample ID N031652-001E-MSD	SampType: MSD	TestCode: 200.7_WPGE	Units: µg/L	Prep Date: 8/16/2018	RunNo: 127048
Client ID: ZZZZZZ	Batch ID: 70270	TestNo: EPA 200.7		Analysis Date: 8/20/2018	SeqNo: 3114506
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

Aluminum	4711.220	50	5000	0	94.2	75	125	4666	0.975	20
Boron	2223.126	100	1000	974.3	125	75	125	2198	1.15	20
Iron	119.466	20	100.0	33.20	86.3	75	125	119.5	0.0538	20

Sample ID LCS1-70270	SampType: LCS	TestCode: 200.7_WPGE	Units: µg/L	Prep Date: 8/16/2018	RunNo: 127048
Client ID: LCSW	Batch ID: 70270	TestNo: EPA 200.7		Analysis Date: 8/20/2018	SeqNo: 3114508
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

Aluminum	5325.206	50	5000	0	107	85	115			
Boron	1123.280	100	1000	0	112	85	115			
Iron	103.371	20	100.0	0	103	85	115			

Qualifiers:

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

Calculations are based on raw values


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ANALYTICAL RESULTS
Print Date: 22-Aug-18

CLIENT:	CH2M HILL	Client Sample ID:	SC-700B-WDR-577
Lab Order:	N031652	Collection Date:	8/10/2018 11:50:00 PM
Project:	PG&E Topock, 680375.03.IM.OP.00	Matrix:	WATER
Lab ID:	N031652-001		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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TOTAL METALS BY ICPMS
EPA 200.8

RunID: NV00922-ICP7_180820A	QC Batch: 70276	PrepDate	8/16/2018	Analyst: CEI
Antimony	ND	0.16	0.50	µg/L
Arsenic	0.12	0.081	0.10	µg/L
Barium	15	0.15	1.0	µg/L
Copper	ND	0.55	1.0	µg/L
Lead	ND	0.13	1.0	µg/L
Manganese	14	0.26	0.50	µg/L
Molybdenum	26	0.21	0.50	µg/L
Nickel	ND	0.26	1.0	µg/L
Zinc	ND	2.3	10	µg/L

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


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CLIENT: CH2M HILL
Work Order: N031652
Project: PG&E Topock, 680375.03.IM.OP.00

ANALYTICAL QC SUMMARY REPORT**TestCode: 200.8_W**

Sample ID MB-70276	SampType: MBLK	TestCode: 200.8_W	Units: µg/L	Prep Date: 8/16/2018	RunNo: 127066
Client ID: PBW	Batch ID: 70276	TestNo: EPA 200.8		Analysis Date: 8/20/2018	SeqNo: 3115208
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									
Lead	ND	1.0									
Manganese	ND	0.50									
Molybdenum	ND	0.50									
Nickel	ND	1.0									
Zinc	ND	10									

Sample ID LCS-70276	SampType: LCS	TestCode: 200.8_W	Units: µg/L	Prep Date: 8/16/2018	RunNo: 127066
Client ID: LCSW	Batch ID: 70276	TestNo: EPA 200.8		Analysis Date: 8/20/2018	SeqNo: 3115209
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

Antimony	10.711	0.50	10.00	0	107	85	115				
Arsenic	10.859	0.10	10.00	0	109	85	115				
Barium	10.887	1.0	10.00	0	109	85	115				
Lead	10.740	1.0	10.00	0	107	85	115				
Manganese	112.758	0.50	100.0	0	113	85	115				
Molybdenum	10.475	0.50	10.00	0	105	85	115				
Nickel	10.866	1.0	10.00	0	109	85	115				
Zinc	215.116	10	200.0	0	108	85	115				

Sample ID N031652-001E-MS	SampType: MS	TestCode: 200.8_W	Units: µg/L	Prep Date: 8/16/2018	RunNo: 127066
Client ID: ZZZZZZ	Batch ID: 70276	TestNo: EPA 200.8		Analysis Date: 8/20/2018	SeqNo: 3115215
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

Antimony	10.558	0.50	10.00	0	106	75	125				
Arsenic	10.558	0.10	10.00	0.1221	104	75	125				

Qualifiers:

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

Calculations are based on raw values



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CLIENT: CH2M HILL
Work Order: N031652
Project: PG&E Topock, 680375.03.IM.OP.00

ANALYTICAL QC SUMMARY REPORT

TestCode: 200.8_W

Sample ID	N031652-001E-MS	SampType:	MS	TestCode:	200.8_W	Units:	µg/L	Prep Date:	8/16/2018	RunNo:	127066
Client ID:	ZZZZZZ	Batch ID:	70276	TestNo:	EPA 200.8			Analysis Date:	8/20/2018	SeqNo:	3115215
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Barium	25.795	1.0	10.00	15.16	106	75	125				
Lead	10.466	1.0	10.00	0	105	75	125				
Manganese	113.578	0.50	100.0	13.90	99.7	75	125				
Molybdenum	37.723	0.50	10.00	25.80	119	75	125				
Nickel	9.986	1.0	10.00	0.4797	95.1	75	125				
Zinc	179.784	10	200.0	0	89.9	75	125				

Sample ID	N031652-001E-MSD	SampType:	MSD	TestCode:	200.8_W	Units:	µg/L	Prep Date:	8/16/2018	RunNo:	127066
Client ID:	ZZZZZZ	Batch ID:	70276	TestNo:	EPA 200.8			Analysis Date:	8/20/2018	SeqNo:	3115217
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Antimony	10.506	0.50	10.00	0	105	75	125	10.56	0.496	20	
Arsenic	10.660	0.10	10.00	0.1221	105	75	125	10.56	0.963	20	
Barium	25.775	1.0	10.00	15.16	106	75	125	25.79	0.0760	20	
Lead	10.426	1.0	10.00	0	104	75	125	10.47	0.387	20	
Manganese	113.103	0.50	100.0	13.90	99.2	75	125	113.6	0.419	20	
Molybdenum	38.018	0.50	10.00	25.80	122	75	125	37.72	0.780	20	
Nickel	9.950	1.0	10.00	0.4797	94.7	75	125	9.986	0.362	20	
Zinc	179.706	10	200.0	0	89.9	75	125	179.8	0.0435	20	

Sample ID	MB-70276	SampType:	MBLK	TestCode:	200.8_W	Units:	µg/L	Prep Date:	8/16/2018	RunNo:	127101
Client ID:	PBW	Batch ID:	70276	TestNo:	EPA 200.8			Analysis Date:	8/21/2018	SeqNo:	3117149
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Copper	ND	1.0									
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Qualifiers:

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

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CLIENT: CH2M HILL
Work Order: N031652
Project: PG&E Topock, 680375.03.IM.OP.00

ANALYTICAL QC SUMMARY REPORT

TestCode: 200.8_W

Sample ID	LCS-70276	SampType:	LCS	TestCode:	200.8_W	Units:	µg/L	Prep Date:	8/16/2018	RunNo:	127101
Client ID:	LCSW	Batch ID:	70276	TestNo:	EPA 200.8			Analysis Date:	8/21/2018	SeqNo:	3117150
Analyte		Result		PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD RPDLimit Qual

Copper	9.911	1.0	10.00	0	99.1	85	115
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Sample ID	N031652-001E-MS	SampType:	MS	TestCode:	200.8_W	Units:	µg/L	Prep Date:	8/16/2018	RunNo:	127101
Client ID:	ZZZZZZ	Batch ID:	70276	TestNo:	EPA 200.8			Analysis Date:	8/21/2018	SeqNo:	3117154
Analyte		Result		PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD RPDLimit Qual

Copper	10.898	1.0	10.00	0	109	75	125
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Sample ID	N031652-001E-MSD	SampType:	MSD	TestCode:	200.8_W	Units:	µg/L	Prep Date:	8/16/2018	RunNo:	127101
Client ID:	ZZZZZZ	Batch ID:	70276	TestNo:	EPA 200.8			Analysis Date:	8/21/2018	SeqNo:	3117155
Analyte		Result		PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD RPDLimit Qual

Copper	11.363	1.0	10.00	0	114	75	125	10.90	4.18	20
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Qualifiers:

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

Calculations are based on raw values



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"Serving Clients with Passion and Professionalism"

ASSET Laboratories
ANALYTICAL RESULTS
Print Date: 22-Aug-18

CLIENT:	CH2M HILL	Client Sample ID:	SC-700B-WDR-577
Lab Order:	N031652	Collection Date:	8/10/2018 11:50:00 PM
Project:	PG&E Topock, 680375.03.IM.OP.00	Matrix:	WATER
Lab ID:	N031652-001		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
HEXAVALENT CHROMIUM BY IC							
EPA 218.6							
RunID: NV00922-IC7_180814A	QC Batch: R127019			PrepDate		Analyst: RAB	
Hexavalent Chromium	ND	0.17	1.0	µg/L	5	8/14/2018 01:51 PM	
TOTAL METALS BY ICPMS							
EPA 200.8							
RunID: NV00922-ICP7_180820A	QC Batch: 70276			PrepDate	8/16/2018	Analyst: CEI	
Chromium	ND	0.13	1.0	µg/L	1	8/20/2018 04:10 PM	

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


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CLIENT: CH2M HILL
Work Order: N031652
Project: PG&E Topock, 680375.03.IM.OP.00

ANALYTICAL QC SUMMARY REPORT**TestCode: 200.8_W_CRPGE**

Sample ID MB-70276	SampType: MBLK	TestCode: 200.8_W_CR	Units: µg/L	Prep Date: 8/16/2018	RunNo: 127066
Client ID: PBW	Batch ID: 70276	TestNo: EPA 200.8		Analysis Date: 8/20/2018	SeqNo: 3115285
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Chromium	ND	1.0			

Sample ID LCS-70276	SampType: LCS	TestCode: 200.8_W_CR	Units: µg/L	Prep Date: 8/16/2018	RunNo: 127066
Client ID: LCSW	Batch ID: 70276	TestNo: EPA 200.8		Analysis Date: 8/20/2018	SeqNo: 3115286
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Chromium	10.737	1.0	10.00	0	107 85 115

Sample ID N031652-001E-MS	SampType: MS	TestCode: 200.8_W_CR	Units: µg/L	Prep Date: 8/16/2018	RunNo: 127066
Client ID: ZZZZZZ	Batch ID: 70276	TestNo: EPA 200.8		Analysis Date: 8/20/2018	SeqNo: 3115292
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Chromium	9.751	1.0	10.00	0	97.5 75 125

Sample ID N031652-001E-MSD	SampType: MSD	TestCode: 200.8_W_CR	Units: µg/L	Prep Date: 8/16/2018	RunNo: 127066
Client ID: ZZZZZZ	Batch ID: 70276	TestNo: EPA 200.8		Analysis Date: 8/20/2018	SeqNo: 3115294
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Chromium	9.856	1.0	10.00	0	98.6 75 125 9.751 1.06 20

Qualifiers:

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

Calculations are based on raw values

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CLIENT: CH2M HILL
Work Order: N031652
Project: PG&E Topock, 680375.03.IM.OP.00

ANALYTICAL QC SUMMARY REPORT

TestCode: 218.6_WPGE

Sample ID	MB-R127019	SampType:	MBLK	TestCode:	218.6_WPGE	Units:	µg/L	Prep Date:		RunNo:	127019			
Client ID:	PBW	Batch ID:	R127019	TestNo:	EPA 218.6			Analysis Date:	8/14/2018	SeqNo:	3113372			
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-R127019	SampType:	LCS	TestCode:	218.6_WPGE	Units:	µg/L	Prep Date:		RunNo:	127019			
Client ID:	LCSW	Batch ID:	R127019	TestNo:	EPA 218.6			Analysis Date:	8/14/2018	SeqNo:	3113373			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Hexavalent Chromium 5.182 0.20 5.000 0 104 90 110

Sample ID	N031652-001CMS	SampType:	MS	TestCode:	218.6_WPGE	Units:	µg/L	Prep Date:		RunNo:	127019			
Client ID:	ZZZZZZ	Batch ID:	R127019	TestNo:	EPA 218.6			Analysis Date:	8/14/2018	SeqNo:	3113375			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Hexavalent Chromium 4.972 1.0 5.000 0.3710 92.0 90 110

Sample ID	N031652-001CMSD	SampType: MSD	TestCode: 218.6_WPGE	Units: µg/L	Prep Date:	RunNo: 127019					
Client ID:	ZZZZZZ	Batch ID: R127019	TestNo: EPA 218.6	Analysis Date: 8/14/2018	SeqNo: 3113376						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Hexavalent Chromium 4.967 1.0 5.000 0.3710 91.9 90 110 4.972 0.0906 20

Sample ID	N031652-001CDUP	SampType:	DUP	TestCode:	218.6_WPGE	Units:	µg/L	Prep Date:		RunNo:	127019		
Client ID:	ZZZZZZ	Batch ID:	R127019	TestNo:	EPA 218.6			Analysis Date:	8/14/2018	SeqNo:	3113377		
Analyte		Result		PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Hexavalent Chromium 0.365 1.0 0.3710 0 20

Qualifiers:

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

Calculations are based on raw values



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ANALYTICAL RESULTS

Print Date: 22-Aug-18

CLIENT:	CH2M HILL	Client Sample ID:	SC-700B-WDR-577
Lab Order:	N031652	Collection Date:	8/10/2018 11:50:00 PM
Project:	PG&E Topock, 680375.03.IM.OP.00	Matrix:	WATER
Lab ID:	N031652-001		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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TURBIDITY

SM 2130B

RunID: NV00922-WC_180814C	QC Batch: R126940	PrepDate	Analyst: LR
Turbidity	0.46 0.10	0.10 H NTU	1 8/14/2018 11:15 AM

Qualifiers:	B	Analyte detected in the associated Method Blank	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
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	DO	Surrogate Diluted Out		



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CLIENT: CH2M HILL
Work Order: N031652
Project: PG&E Topock, 680375.03.IM.OP.00

ANALYTICAL QC SUMMARY REPORT**TestCode: 2130_W**

Sample ID	MB-R126940	SampType:	MBLK	TestCode:	2130_W	Units:	NTU	Prep Date:		RunNo:	126940		
Client ID:	PBW	Batch ID:	R126940	TestNo:	SM 2130B			Analysis Date:	8/14/2018	SeqNo:	3109279		
Analyte		Result		PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Turbidity ND 0.10

Sample ID	N031652-001BDUP	SampType:	DUP	TestCode:	2130_W	Units:	NTU	Prep Date:		RunNo:	126940		
Client ID:	ZZZZZZ	Batch ID:	R126940	TestNo:	SM 2130B			Analysis Date:	8/14/2018	SeqNo:	3109281		
Analyte		Result		PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Turbidity 0.430 0.10 0.4600 6.74 30 H

Qualifiers:

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

Calculations are based on raw values



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ANALYTICAL RESULTS
Print Date: 22-Aug-18

CLIENT:	CH2M HILL	Client Sample ID:	SC-700B-WDR-577
Lab Order:	N031652	Collection Date:	8/10/2018 11:50:00 PM
Project:	PG&E Topock, 680375.03.IM.OP.00	Matrix:	WATER
Lab ID:	N031652-001		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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ANIONS BY ION CHROMATOGRAPHY
EPA 300.0

RunID: NV00922-IC8_180814B	QC Batch: R126962	PrepDate	Analyst: RAB
Fluoride	2.5 0.032	0.50	mg/L 5 8/14/2018 03:03 PM

ANIONS BY ION CHROMATOGRAPHY
EPA 300.0

RunID: NV00922-IC8_180814B	QC Batch: R126962	PrepDate	Analyst: RAB
Sulfate	470 1.1	25	mg/L 50 8/14/2018 04:21 PM

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


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CLIENT: CH2M HILL
Work Order: N031652
Project: PG&E Topock, 680375.03.IM.OP.00

ANALYTICAL QC SUMMARY REPORT**TestCode: 300_W_FPG**

Sample ID	MB-R126962_F	SampType:	MBLK	TestCode:	300_W_FPG	Units:	mg/L	Prep Date:		RunNo:	126962			
Client ID:	PBW	Batch ID:	R126962	TestNo:	EPA 300.0			Analysis Date:	8/14/2018	SeqNo:	3114220			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Fluoride ND 0.10

Sample ID	LCS-R126962_F	SampType:	LCS	TestCode:	300_W_FPG	Units:	mg/L	Prep Date:		RunNo:	126962			
Client ID:	LCSW	Batch ID:	R126962	TestNo:	EPA 300.0			Analysis Date:	8/14/2018	SeqNo:	3114221			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Fluoride 1.243 0.10 1.250 0 99.5 90 110

Sample ID	N031652-001BDUP	SampType:	DUP	TestCode:	300_W_FPG	Units:	mg/L	Prep Date:		RunNo:	126962		
Client ID:	ZZZZZZ	Batch ID:	R126962	TestNo:	EPA 300.0			Analysis Date:	8/14/2018	SeqNo:	3114223		
Analyte		Result		PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Fluoride 2.457 0.50 2.505 1.93 20

Sample ID	N031652-001BMS	SampType:	MS	TestCode:	300_W_FPG	Units:	mg/L	Prep Date:		RunNo:	126962			
Client ID:	ZZZZZZ	Batch ID:	R126962	TestNo:	EPA 300.0			Analysis Date:	8/14/2018	SeqNo:	3114224			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Fluoride 8.455 0.50 6.250 2.505 95.2 80 120

Sample ID	N031652-001BMSD	SampType:	MSD	TestCode:	300_W_FPG	Units:	mg/L	Prep Date:		RunNo:	126962			
Client ID:	ZZZZZZ	Batch ID:	R126962	TestNo:	EPA 300.0			Analysis Date:	8/14/2018	SeqNo:	3114225			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Fluoride 8.497 0.50 6.250 2.505 95.9 80 120 8.454 0.496 20

Qualifiers:

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ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference

Calculations are based on raw values



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CLIENT: CH2M HILL
Work Order: N031652
Project: PG&E Topock, 680375.03.IM.OP.00

ANALYTICAL QC SUMMARY REPORT

TestCode: 300_W_SO4PGE

Sample ID	MB-R126962_SO4	SampType:	MBLK	TestCode:	300_W_SO4P	Units:	mg/L	Prep Date:		RunNo:	126962
Client ID:	PBW	Batch ID:	R126962	TestNo:	EPA 300.0			Analysis Date:	8/14/2018	SeqNo:	3114234
Analyte		Result		PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD RPDLimit Qual

Sulfate 0.204 0.50

Sample ID	LCS-R126962_SO4	SampType:	LCS	TestCode:	300_W_SO4P	Units:	mg/L	Prep Date:		RunNo:	126962
Client ID:	LCSW	Batch ID:	R126962	TestNo:	EPA 300.0			Analysis Date:	8/14/2018	SeqNo:	3114235
Analyte		Result		PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD RPDLimit Qual

Sulfate 4.056 0.50 4.000 0 101 90 110

Sample ID	N031652-001BDUP	SampType:	DUP	TestCode:	300_W_SO4P	Units:	mg/L	Prep Date:		RunNo:	126962
Client ID:	ZZZZZZ	Batch ID:	R126962	TestNo:	EPA 300.0			Analysis Date:	8/14/2018	SeqNo:	3114237
Analyte		Result		PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD RPDLimit Qual

Sulfate 461.645 25 469.4 1.66 20

Sample ID	N031652-001BMS	SampType:	MS	TestCode:	300_W_SO4P	Units:	mg/L	Prep Date:		RunNo:	126962
Client ID:	ZZZZZZ	Batch ID:	R126962	TestNo:	EPA 300.0			Analysis Date:	8/14/2018	SeqNo:	3114238
Analyte		Result		PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD RPDLimit Qual

Sulfate 666.685 25 200.0 469.4 98.7 80 120

Sample ID	N031652-001BMSD	SampType:	MSD	TestCode:	300_W_SO4P	Units:	mg/L	Prep Date:		RunNo:	126962
Client ID:	ZZZZZZ	Batch ID:	R126962	TestNo:	EPA 300.0			Analysis Date:	8/14/2018	SeqNo:	3114239
Analyte		Result		PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD RPDLimit Qual

Sulfate 671.920 25 200.0 469.4 101 80 120 666.7 0.782 20

Qualifiers:

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

Calculations are based on raw values



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ANALYTICAL RESULTS
Print Date: 22-Aug-18

CLIENT:	CH2M HILL	Client Sample ID:	SC-700B-WDR-577
Lab Order:	N031652	Collection Date:	8/10/2018 11:50:00 PM
Project:	PG&E Topock, 680375.03.IM.OP.00	Matrix:	WATER
Lab ID:	N031652-001		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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NITRATE/NITRITE-N BY CADMIUM REDUCTION
SM4500-NO3F

RunID: NV00922-WC_180817D	QC Batch: R127029	PrepDate	Analyst: QBM
Nitrate/Nitrite as N	2.6 0.16	0.25 mg/L	5 8/17/2018

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


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CLIENT: CH2M HILL
Work Order: N031652
Project: PG&E Topock, 680375.03.IM.OP.00

ANALYTICAL QC SUMMARY REPORT**TestCode: 4500N03F_W**

Sample ID	MB-R127029	SampType:	MBLK	TestCode:	4500N03F_W	Units:	mg/L	Prep Date:		RunNo:	127029		
Client ID:	PBW	Batch ID:	R127029	TestNo:	SM4500-NO3			Analysis Date:	8/17/2018	SeqNo:	3113832		
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-R127029	SampType:	LCS	TestCode:	4500N03F_W	Units:	mg/L	Prep Date:		RunNo:	127029		
Client ID:	LCSW	Batch ID:	R127029	TestNo:	SM4500-NO3			Analysis Date:	8/17/2018	SeqNo:	3113833		
Analyte		Result		PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrate/Nitrite as N		0.552		0.050	0.5000	0	110	85	115				

Sample ID	N031630-001DDUP	SampType:	DUP	TestCode:	4500N03F_W	Units:	mg/L	Prep Date:		RunNo:	127029		
Client ID:	ZZZZZZ	Batch ID:	R127029	TestNo:	SM4500-NO3			Analysis Date:	8/17/2018	SeqNo:	3113837		
Analyte		Result		PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrate/Nitrite as N		0.236		0.050						0.2355	0.297	20	

Sample ID	N031652-001DMS	SampType:	MS	TestCode:	4500N03F_W	Units:	mg/L	Prep Date:		RunNo:	127029		
Client ID:	ZZZZZZ	Batch ID:	R127029	TestNo:	SM4500-NO3			Analysis Date:	8/17/2018	SeqNo:	3113839		
Analyte		Result		PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrate/Nitrite as N		4.850		0.25	2.500	2.586	90.6	75	125				

Sample ID	N031652-001DMSD	SampType:	MSD	TestCode:	4500N03F_W	Units:	mg/L	Prep Date:		RunNo:	127029		
Client ID:	ZZZZZZ	Batch ID:	R127029	TestNo:	SM4500-NO3			Analysis Date:	8/17/2018	SeqNo:	3113840		
Analyte		Result		PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrate/Nitrite as N		5.398		0.25	2.500	2.586	112	75	125	4.850	10.7	20	

Qualifiers:

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

Calculations are based on raw values



ASSET LABORATORIES
ANALYTICAL SERVICES PROVIDED BY PROFESSIONAL TECHNOLOGISTS

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

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

"Serving Clients with Passion and Professionalism"

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-577 Turnaround Time 5 Days Shipping Date: COC Number: 577			Container: 1 Liter Poly Preservatives: 4°C Lab H2SO4 Filtered: NA Holding Time: 28	1 Liter Poly	1 Liter Poly	1 Liter Poly	250 ml Poly	1 Liter Poly	1 Liter Poly	500 ml Poly	1 Liter Poly	Number of Containers COMMENTS
		4°C	4°C	4°C	4°C	4°C	4°C	4°C	4°C			
		NA	NA	NA	NA	NA	NA	NA	NA			
		28	7	7	1	28	7	180	7			
			AMMONIA (SM4500NH3D)	Anions (E300.0) FI, SO4	CONDUCTIVITY (E120.1)	E218.6 Lab Filtered	Nitrate/Nitrite (SM4500NO3-E)	TDS (SM2540C)	Total Metals(E200.7 and E200.8) See list below	Turbidity (SM2130)		
DATE	TIME	MATRIX										
SC-700B-WDR-577	8-10-18	23:50	Water	X	X	X	X	X	X	X	N031652-01	
TOTAL NUMBER OF CONTAINERS											4	

 Approved by
 Sampled by

Relinquished by

Received by

Relinquished by

Received by

Signatures

Date/Time

Shipping Details

Method of Shipment: FedEx

On Ice: yes / no

Airbill No:

Lab Name: ASSET Laboratories

Lab Phone: (702) 307-2659

ATTN:

Sample Custody

and

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: 8/13/2018

Workorder: N031652

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

Comments: Turbidity is out of holding time upon receipt.

Checklist Completed By MBC  8/13/2018

Reviewed By:  LG 081718

Marlon B. Cartin

From: Marlon B. Cartin [marlon@assetlaboratories.com]
Sent: Monday, August 13, 2018 9:23 PM
To: 'Shawn Duffy'
Subject: IM3 Sample
Attachments: N031652_COC.pdf; image001.jpg

Hi Shawn,

FYI, the sample we got today from IM3 is past holding time for Turbidity. Please see attached COC.

Thanks,

Marlon Cartin

Project Manager

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

Nevada: 3151 W. Post Road, Las Vegas, NV 89118 | P: 702.307.2659 Ext. 410 | F: 702.307.2691 | M: 702.439.0421

www.assetlaboratories.com



ASSET LABORATORIES
ANALYTICAL SUPPORT SERVICES FOR ENVIRONMENTAL TECHNOLOGIES

ASSET LABORATORIES - Serving Clients with Passion and Professionalism

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ASSET Laboratories

3151-3153 W Post Rd., Las Vegas, NV 89118

www.atl-labs.com

TEL: 7023072659

FAX: 7023072691

CHAIN-OF-CUSTODY RECORD

Page 1 of 1

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

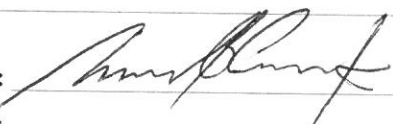
13-Aug-18

Sample ID	Matrix	Date Collected	Bottle Type	Requested Tests		
				SM4500-NH3D		
N031652-001A / SC-700B-WDR-577	Water	8/10/2018 11:50:00 PM	16OZP	1		

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

Please use PO#:N31652A 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: 5 Day TAT

Please analyze for NH3 by SM 4500NH3C.

Relinquished by: 	Date/Time: 8/13/18 @ 1700	GSO # 541671769	Date/Time:
Relinquished by: _____	Received by: _____	Received by: _____	Received by: _____

List of Analysts

ASSET Laboratories Work Order: N031652

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



ASSET LABORATORIES
ANALYTICAL SUPPORT SERVICES FOR ENVIRONMENTAL TECHNOLOGIES

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

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

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Laboratories, Inc.

Environmental Testing Laboratory Since 1949



Date of Report: 08/23/2018

Marlon Cartin

ASSET Laboratories- Las Vegas

3151-3153 W. Post Rd
Las Vegas, NV 89118

Client Project: N031652

BCL Project: Level IV

BCL Work Order: 1825194

Invoice ID: B313716

Enclosed are the results of analyses for samples received by the laboratory on 8/14/2018. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Contact Person: Vanessa Sandoval
Client Service Rep

Stuart Buttram
Technical Director

Certifications: CA ELAP #1186; NV #CA00014; OR ELAP #4032-001; AK UST101

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Chain of Custody and Cooler Receipt Form for 1825194 Page 1 of 2

Page 1 of 1

CHAIN-OF-CUSTODY RECORD



QC Level: Level IV

Field Sampler: SIGNED

Subcontractor:

BC Labs

4100 Atlas Court

Bakersfield, CA 93308

TEL: (661) 327-4911

FAX: (661) 327-1918

Acct #:

18-25194

13-Aug-18

Sample ID	Matrix	Date Collected	Bottle Type	Requested Tests
N031652-001A	Water	8/10/2018 11:50:00 PM	16OZP	SM4500-NH3D 1



RUSH!

General Comments:

Please email sample receipt acknowledgement to the PM.

Please use PCW-N31652A 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: 5 Day TAT

Please analyze for NH3 by SM 4500NH3C.

Relinquished by:	Date/Time	Relinquished by:	Date/Time
<i>[Signature]</i>	8/13/18 @ 1700	<i>[Signature]</i>	8.14.18 08:38
Relinquished by:		Received by:	
		Received by:	

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Chain of Custody and Cooler Receipt Form for 1825194 Page 2 of 2

BC LABORATORIES INC.		COOLER RECEIPT FORM		Page 1 of 1							
Submission #: <u>18-25194</u>											
SHIPPING INFORMATION		SHIPPING CONTAINER		FREE LIQUID							
Fed Ex <input type="checkbox"/> UPS <input type="checkbox"/> Ontrac <input type="checkbox"/> Hand Delivery <input type="checkbox"/>		Ice Chest <input checked="" type="checkbox"/> None <input type="checkbox"/> Box <input type="checkbox"/>		YES <input type="checkbox"/> NO <input type="checkbox"/>							
BC Lab Field Service <input type="checkbox"/> Other <input checked="" type="checkbox"/> (Specify) <u>GSD</u>		Other <input type="checkbox"/> (Specify) _____		W / S							
Refrigerant: Ice <input checked="" type="checkbox"/> Blue Ice <input type="checkbox"/> None <input type="checkbox"/> Other <input type="checkbox"/> Comments: _____											
Custody Seals: Ice Chest <input type="checkbox"/> Containers <input type="checkbox"/> None <input checked="" type="checkbox"/> Comments: _____											
All samples received? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> All samples containers intact? Yes <input type="checkbox"/> No <input type="checkbox"/> Description(s) match COC? Yes <input type="checkbox"/> No <input type="checkbox"/>											
COC Received <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO		Emissivity: <u>0.7</u> Container: <u>HP</u> Thermometer ID: <u>774</u>		Date/Time: <u>8-14-18</u>							
		Temperature: (A) <u>5.4</u> °C / (C) <u>5.4</u> °C		Analyst Init: <u>AD08138</u>							
SAMPLE CONTAINERS		SAMPLE NUMBERS									
		1	2	3	4	5	6	7	8	9	10
QT PE UNPRES											
4oz / 8oz / 16oz PE UNPRES											
2oz Cr ⁶⁺											
QT INORGANIC CHEMICAL METALS											
INORGANIC CHEMICAL METALS 4oz / 8oz / 16oz											
PT CYANIDE											
PT NITROGEN FORMS											
PT TOTAL SULFIDE											
2oz NITRATE / NITRITE											
PT TOTAL ORGANIC CARBON											
PT CHEMICAL OXYGEN DEMAND											
PFA PHENOLICS											
40ml VOA VIAL TRAVEL BLANK											
40ml VOA VIAL											
QT EPA 1664											
PT ODOR											
RADIOLOGICAL											
BACTERIOLOGICAL											
40 ml VOA VIAL- 504											
QT EPA 508/608/8080											
QT EPA 515.18150											
QT EPA 525											
QT EPA 525 TRAVEL BLANK											
40ml EPA 547											
40ml EPA 531.1											
8oz EPA 548											
QT EPA 549											
QT EPA 8015M											
QT EPA 8270											
8oz / 16oz / 32oz AMBER											
8oz / 16oz / 32oz JAR											
SOIL SLREVE											
PCB VIAL											
PLASTIC BAG											
TEDLAR BAG											
FERROUS IRON											
KNCORE											
SMART KIT											
SUMMA CANISTER											

Comments:

Sample Numbering Completed By: JA

Date/Time: 8-14-18

0906

Rev 21 06/23/2016

A = Actual / C = Corrected

\\B\WP\B\WordPerfect\LAB\002\FORMS\SAMREC rev 201

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ASSET Laboratories- Las Vegas
3151-3153 W. Post Rd
Las Vegas, NV 89118

Reported: 08/23/2018 17:18
Project: Level IV
Project Number: N031652
Project Manager: Marlon Cartin

Laboratory / Client Sample Cross Reference

Laboratory	Client Sample Information			
1825194-01	COC Number:	---	Receive Date:	08/14/2018 08:38
	Project Number:	---	Sampling Date:	08/10/2018 11:50
	Sampling Location:	---	Sample Depth:	---
	Sampling Point:	N031652-001A / SC-700B-WDR-577	Lab Matrix:	Water
	Sampled By:	---	Sample Type:	Water



ASSET Laboratories- Las Vegas
3151-3153 W. Post Rd
Las Vegas, NV 89118

Reported: 08/23/2018 17:18
Project: Level IV
Project Number: N031652
Project Manager: Marlon Cartin

Water Analysis (General Chemistry)

BCL Sample ID:	1825194-01	Client Sample Name:	N031652-001A / SC-700B-WDR-577, 8/10/2018 11:50:00AM					
Constituent	Result	Units	PQL	MDL	Method	MB Bias	Lab Quals	Run #
Ammonia as N (Distilled)	ND	mg/L	0.20		SM-4500-NH3G	ND		1

Run #	Method	Prep Date	Run Date/Time	Analyst	Instrument	Dilution	QC Batch ID
1	SM-4500-NH3G	08/20/18 17:01	08/21/18 10:46	JMH	SC-1	1	B022537

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Environmental Testing Laboratory Since 1949



ASSET Laboratories- Las Vegas
3151-3153 W. Post Rd
Las Vegas, NV 89118

Reported: 08/23/2018 17:18
Project: Level IV
Project Number: N031652
Project Manager: Marlon Cartin

Water Analysis (General Chemistry)

Quality Control Report - Method Blank Analysis

Constituent	QC Sample ID	MB Result	Units	PQL	MDL	Lab Quals
QC Batch ID: B022537						
Ammonia as N (Distilled)	B022537-BLK1	ND	mg/L	0.20		

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

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ASSET Laboratories- Las Vegas
3151-3153 W. Post Rd
Las Vegas, NV 89118

Reported: 08/23/2018 17:18
Project: Level IV
Project Number: N031652
Project Manager: Marlon Cartin

Water Analysis (General Chemistry)

Quality Control Report - Laboratory Control Sample

								<u>Control Limits</u>		
Constituent	QC Sample ID	Type	Result	Spike Level	Units	Percent Recovery	RPD	Percent Recovery	RPD	Lab
Quals										
QC Batch ID: B022537										
Ammonia as N (Distilled)	B022537-BS1	LCS	1.0237	1.0000	mg/L	102		85 - 115		

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

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ASSET Laboratories- Las Vegas
3151-3153 W. Post Rd
Las Vegas, NV 89118

Reported: 08/23/2018 17:18
Project: Level IV
Project Number: N031652
Project Manager: Marlon Cartin

Water Analysis (General Chemistry)

Quality Control Report - Precision & Accuracy

									Control Limits		
Constituent	Type	Source Sample ID	Source Result	Result	Spike Added	Units	RPD	Percent Recovery	RPD	Percent Recovery	Lab Quals
QC Batch ID: B022537		Used client sample: N									
Ammonia as N (Distilled)	DUP	1824694-05	0.10590	ND		mg/L			20		
	MS	1824694-05	0.10590	1.1644	1.1111	mg/L		95.3		80 - 120	
	MSD	1824694-05	0.10590	1.1906	1.1111	mg/L	2.2	97.6	20	80 - 120	



ASSET Laboratories- Las Vegas
3151-3153 W. Post Rd
Las Vegas, NV 89118

Reported: 08/23/2018 17:18
Project: Level IV
Project Number: N031652
Project Manager: Marlon Cartin

Notes And Definitions

MDL Method Detection Limit
ND Analyte Not Detected
PQL Practical Quantitation Limit

Work Order Number: 1827752

**Laboratory Documentation Requirements
For Data Validation of
Wet Chemistry Analysis**

**Prepared By
BC Laboratories**

For ASSET Laboratories- Las Vegas

N031947

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Case Narrative

Sample Receipt

Work Order: 1827752

COC Number:

Default Cooler was received at 2.7 °C

Samples were checked for preservation. Where applicable, sample preservation was adjusted in the laboratory.

Requested Analysis

<u>Method</u>	<u>Instrument</u>
SM-4500-NH3G	SC-1

Sample Qualifier Summary

There were no qualifiers for the samples.

Holding Times

All holding time requirements were met.

Method Blanks

There were no detections in the Method Blank(s).

Calibration

Initial calibration criteria for respective analysis were met. Frequency criteria for initial and continuing calibrations were met. Accuracy criteria for initial and continuing calibrations were met.

Matrix Spikes

Source Samples Used For QC

<u>Batch</u>	<u>Method</u>	<u>Source Lab Number</u>	<u>Client Sample Name</u>
B024377	SM-4500-NH3G	1827752-01	N031947-002A / SC-700B-WDR-578

Precision and accuracy requirements were within QC limits.

LCS

The LCS recoveries were within QC limits.



Laboratories, Inc.

Environmental Testing Laboratory Since 1949

Chain of Custody and Cooler Receipt Form for 1827752 Page 1 of 2

Page 1 of 1

CHAIN-OF-CUSTODY RECORD



18-27752

QC Level: Level IV

Field Sampler: SIGNED

05-Sep-18

Subcontractor:

BC Labs

4100 Atlas Court

Bakersfield, CA 93308

TEL: (661) 327-4911

FAX: (661) 327-1918

Acct #:

Sample ID	Matrix	Date Collected	Bottle Type	Requested Tests
N031947-002A / SC-700B-WDR-578	Water	9/4/2018 10:05:00 AM	32OZP	SM4500-NH3D 1



Please cc Report to Lucille Golosinda at lucille.golosinda@assetlaboratories.com

General Comments:

Please email sample receipt acknowledgement to the PM.

Please use PO#N31947A 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 LasSpec7 edata.

Relinquished by:	Date/Time	GSO #:	Date/Time	Received by:	Date/Time
	9/5/2018 17:00	541943272			9.5.18 0830
Relinquished by:				Received by:	



BC LABORATORIES INC.		COOLER RECEIPT FORM		Page 1 Of 1							
Submission #: <u>18-27752</u>											
SHIPPING INFORMATION			SHIPPING CONTAINER		FREE LIQUID						
Fed Ex <input type="checkbox"/> UPS <input type="checkbox"/> Ontrac <input type="checkbox"/> Hand Delivery <input type="checkbox"/>			Ice Chest <input checked="" type="checkbox"/> None <input type="checkbox"/> Box <input type="checkbox"/>		YES <input type="checkbox"/> NO <input type="checkbox"/>						
BC Lab Field Service <input type="checkbox"/> Other <input checked="" type="checkbox"/> (Specify) <u>GSO</u>			Other <input type="checkbox"/> (Specify) _____		W / S						
Refrigerant: Ice <input checked="" type="checkbox"/> Blue Ice <input type="checkbox"/> None <input type="checkbox"/> Other <input type="checkbox"/> Comments: _____											
Custody Seals Ice Chest <input type="checkbox"/> Containers <input type="checkbox"/> None <input checked="" type="checkbox"/> Comments: _____											
Intact? Yes <input type="checkbox"/> No <input type="checkbox"/> Intact? Yes <input type="checkbox"/> No <input type="checkbox"/>											
All samples received? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> All samples containers intact? Yes <input type="checkbox"/> No <input type="checkbox"/> Description(s) match COC? Yes <input type="checkbox"/> No <input type="checkbox"/>											
COC Received		Emissivity: <u>0.97</u>	Container: <u>PE</u>	Thermometer ID: <u>274</u>	Date/Time: <u>9-6-18 0830</u>						
<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO		Temperature: (A) <u>2.7</u> °C / (C) <u>2.7</u> °C	Analyst Init: <u>KJG</u>								
SAMPLE CONTAINERS		SAMPLE NUMBERS									
		1	2	3	4	5	6	7	8	9	10
QT PE UNPRES											
4oz / 8oz / 16oz PE UNPRES											
2oz Cr ⁴⁺											
QT INORGANIC CHEMICAL METALS											
INORGANIC CHEMICAL METALS 4oz / 8oz / 16oz											
PT CYANIDE											
PT NITROGEN FORMS											
PT TOTAL SULFIDE											
2oz. NITRATE / NITRITE											
PT TOTAL ORGANIC CARBON											
PT CHEMICAL OXYGEN DEMAND											
PIA PHENOLICS											
40ml VOA VIAL TRAVEL BLANK											
40ml VOA VIAL											
QT EPA 1664											
PT ODOR											
RADIOLOGICAL											
BACTERIOLOGICAL											
40 ml VOA VIAL- 504											
QT EPA 503/608/8080											
QT EPA 515.1/8150											
QT EPA 525											
QT EPA 525 TRAVEL BLANK											
40ml EPA 547											
40ml EPA 531.1											
8oz EPA 548											
QT EPA 549											
QT EPA 8015M											
QT EPA 8270											
8oz / 16oz / 32oz AMBER											
8oz / 16oz / 32oz JAR											
SOIL SLEEVE											
PCB VIAL											
PLASTIC BAG											
TEDLAR BAG											
FERROUS IRON											
ENCORE											
SMART KIT											
SUMMA CANISTER											

Comments:

Sample Numbering Completed By: ML

Date/Time: 9/6/18

1121

Rev 21 05/23/2016

A = Actual / C = Corrected

(S:\WPDoc\WordPerfect\LAB_DOC\FORMS\SAMRECrev 20)



Laboratories, Inc.

Environmental Testing Laboratory Since 1949

ASSET Laboratories- Las Vegas
3151-3153 W. Post Rd
Las Vegas, NV 89118

Reported: 9/19/2018 10:33:20AM
Project: Level IV
Project Number: N031947
Project Manager: Marlon Cartin

BC Laboratories
4100 Atlas Court
Bakersfield, CA 93308
Phone: 661-327-4911

SDG: 1827752
Class: WET
Method: SM-4500-NH3G



Laboratories, Inc.

Environmental Testing Laboratory Since 1949



ASSET Laboratories- Las Vegas
3151-3153 W. Post Rd
Las Vegas, NV 89118

Reported: 9/19/2018 10:33:20AM
Project: Level IV
Project Number: N031947
Project Manager: Marlon Cartin

ANALYSES DATA PACKAGE COVER PAGE
SM-4500-NH3G

Laboratory: BC Laboratories

SDG: 1827752

Client: ASSET Laboratories- Las Vegas \$ADNV

Project: Level IV

Client Sample Id:

N031947-002A / SC-700B-WDR-578

Lab Sample Id:

1827752-01

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hardcopy data package and in computer-readable data submitted on diskette has been authorized by the Laboratory Manager or the Manager's designee, as verified by the following signatures.

Signature:

Name:

Sara Guron

Date:

09-19-2018

Title:

QA/QC Manager



Laboratories, Inc.

Environmental Testing Laboratory Since 1949



ASSET Laboratories- Las Vegas
3151-3153 W. Post Rd
Las Vegas, NV 89118

Reported: 9/19/2018 10:33:20AM
Project: Level IV
Project Number: N031947
Project Manager: Marlon Cartin

METHOD DETECTION AND REPORTING LIMITS

SM-4500-NH3G

Laboratory: BC Laboratories

SDG: 1827752

Client: ASSET Laboratories- Las Vegas \$ADNV

Project: Level IV

Matrix: Water

Instrument: SC-1

Analyte	MDL	PQL	Units
Ammonia as N (Distilled)	0.05	0.2	mg/L



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Las Vegas, NV 89118

Reported: 9/19/2018 10:33:20AM
Project: Level IV
Project Number: N031947
Project Manager: Marlon Cartin

INORGANIC ANALYSIS DATA SHEET
SM-4500-NH3G

031947-002A / SC-700B-WDR-57

Laboratory: BC Laboratories

SDG: 1827752

Client: ASSET Laboratories- Las Vegas \$ADNV

Project: Level IV

Matrix: Water

Laboratory ID: 1827752-01

File ID: 20180913001-NH3-075

Sampled: 09/04/18 10:05

Prepared: 09/11/18 11:15

Analyzed: 09/13/18 10:06

Solids: 0.00

Preparation: No Prep

Initial/Final: 6 ml / 6 ml

Batch: B024377

Sequence: 1818510

Calibration: UNASSIGNED

Instrument: SC-1

CAS NO.	Analyte	Concentration (mg/L)	Dilution Factor	Q	Method
7664-41-7	Ammonia as N (Distilled)	0.085	1	J	SM-4500-NH3G



ASSET Laboratories- Las Vegas
3151-3153 W. Post Rd
Las Vegas, NV 89118

Reported: 9/19/2018 10:33:20AM
Project: Level IV
Project Number: N031947
Project Manager: Marlon Cartin

METHOD BLANK DATA SHEET
SM-4500-NH3G

Laboratory: BC Laboratories SDG: 1827752
Client: ASSET Laboratories- Las Vegas \$ADNV Project: Level IV
Matrix: Water Laboratory ID: B024377-BLK1 File ID: 20180913001-NH3-074
Prepared: 09/11/18 11:15 Preparation: No Prep Initial/Final: 6 ml / 6 ml
Analyzed: 09/13/18 10:04 Instrument: SC-1
Batch: B024377 Sequence: 1818510 Calibration: UNASSIGNED

CAS NO.	COMPOUND	CONC. (mg/L)	Q
7664-41-7	Ammonia as N (Distilled)	0.050	U



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Reported: 9/19/2018 10:33:20AM
Project: Level IV
Project Number: N031947
Project Manager: Marlon Cartin

DUPLICATES
SM-4500-NH3G

47-002A / SC-700B-WD

Laboratory: BC Laboratories

SDG: 1827752

Client: ASSET Laboratories- Las Vegas \$ADNV

Project: Level IV

Matrix: Water

Laboratory ID: B024377-DUP1

Batch: B024377

Lab Source ID: 1827752-01

Preparation: No Prep

Initial/Final: 6 ml / 6 ml

Source Sample Name: N031947-002A / SC-700B-WDR-578

% Solids:

ANALYTE	CONTROL LIMIT	SAMPLE CONCENTRATION (mg/L)	C	DUPLICATE CONCENTRATION (mg/L)	C	RPD %	Q	METHOD
Ammonia as N (Distilled)	20	0.085100		0.082600		2.98		SM-4500-NH3G

* Values outside of QC limits



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Reported: 9/19/2018 10:33:20AM
Project: Level IV
Project Number: N031947
Project Manager: Marlon Cartin

MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY
SM-4500-NH3G

031947-002A / SC-700B-WDR-57

Laboratory: BC Laboratories SDG: 1827752
Client: ASSET Laboratories- Las Vegas \$ADNV Project: Level IV
Matrix: Water
Batch: B024377 Laboratory ID: B024377-MS1
Preparation: No Prep Initial/Final: 5.4 ml / 6 ml
Source Sample Number: 1827752-01

COMPOUND	SPIKE ADDED (mg/L)	SAMPLE CONCENTRATION (mg/L)	MS CONCENTRATION (mg/L)	MS % REC. #	QC LIMITS REC.
Ammonia as N (Distilled)	1.1111	0.085100	1.2396	104	80 - 120

COMPOUND	SPIKE ADDED (mg/L)	MSD CONCENTRATION (mg/L)	MSD % REC. #	% RPD #	QC LIMITS	
					RPD	REC.
Ammonia as N (Distilled)	1.1111	1.2858	108	3.66	20	80 - 120

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits



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Reported: 9/19/2018 10:33:20AM
Project: Level IV
Project Number: N031947
Project Manager: Marlon Cartin

LCS RECOVERY
SM-4500-NH3G

Laboratory: BC Laboratories

SDG: 1827752

Client: ASSET Laboratories- Las Vegas \$ADNV

Project: Level IV

Matrix: Water

Batch: B024377

Laboratory ID: B024377-BS1

Preparation: No Prep

Initial/Final: 6 ml / 6 ml

COMPOUND	SPIKE ADDED (mg/L)	LCS CONCENTRATION (mg/L)	LCS % REC. #	QC LIMITS REC.
Ammonia as N (Distilled)	1.0000	0.98510	98.5	85 - 115

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits



ASSET Laboratories- Las Vegas
3151-3153 W. Post Rd
Las Vegas, NV 89118

Reported: 9/19/2018 10:33:20AM
Project: Level IV
Project Number: N031947
Project Manager: Marlon Cartin

HOLDING TIME SUMMARY

SM-4500-NH3G

Laboratory: BC Laboratories

SDG: 1827752

Client: ASSET Laboratories- Las Vegas \$ADNV

Project: Level IV

Sample Name	Date Collected	Date Received	Date Prepared	Days to Prep	Max Days to Prep	Date Analyzed	Days to Analysis	Max Days to Analysis	Q
N031947-002A / SC-700B-WDR-578	09/04/18 10:05	09/06/18 08:30	09/11/18 11:15	9.00	28.00	09/13/18 10:06	9.00	28.00	

* Holding time not met

Note: If Prep or Analysis are performed within the hour (if holding time is based on hours) or within the day (if holding time is based on days), then the sample is not flagged as outside holding times. Calculated number of days are based on date received or date prepared depending on the test.

September 20, 2018

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

Workorder No.: N031947

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

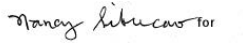
Attention: Doug Scott

Enclosed are the results for sample(s) received on September 04, 2018 by ASSET Laboratories .
The sample(s) are tested for the parameters as indicated in the enclosed chain of custody in
accordance with the applicable laboratory certifications.

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

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

Sincerely,



Quennie Manimtim
Laboratory Director

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CLIENT: CH2M HILL
Project: PG&E Topock, 680375.03.IM.OP.00
Lab Order: N031947

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 200.7:

Matrix Spike (MS) and Matrix Spike Duplicate (MSD) are outside recovery criteria for Boron in QC samples N031947-002E-MS1 and N031947-002E-MSD1 possibly due to matrix interference. The associated Laboratory Control Sample (LCS) recovery was acceptable.

Analytical Comments for EPA 200.8:

Matrix Spike (MS) and Matrix Spike Duplicate (MSD) are outside recovery criteria for Copper in QC samples N031947-001C-MS and N031947-001C-MSD possibly due to matrix interference. The associated Laboratory Control Sample (LCS) recovery was acceptable.

Matrix Spike (MS) and Matrix Spike Duplicate (MSD) are outside recovery criteria for Chromium in QC samples N031947-001C-MS and N031947-001C-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 sample N031947-002 due to matrix interference. Sample was analyzed at lower dilution however matrix spike recovery was not met indicating possible matrix interference.



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CLIENT: CH2M HILL

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

Lab Order: N031947

CASE NARRATIVE

Sample was reported at dilution that meet matrix spike recovery limit and the detected peak within retention time window.



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ASSET Laboratories

Date: 20-Sep-18

CLIENT: CH2M HILL
Project: PG&E Topock, 680375.03.IM.OP.00
Lab Order: N031947
Contract No: IM3PLANT-AR

Work Order Sample Summary

Lab Sample ID	Client Sample ID	Matrix	Collection Date	Date Received	Date Reported
N031947-001A	SC-100B-WDR-578	Water	9/4/2018 10:00:00 AM	9/4/2018	9/20/2018
N031947-001B	SC-100B-WDR-578	Water	9/4/2018 10:00:00 AM	9/4/2018	9/20/2018
N031947-001C	SC-100B-WDR-578	Water	9/4/2018 10:00:00 AM	9/4/2018	9/20/2018
N031947-001D	SC-100B-WDR-578	Water	9/4/2018 10:00:00 AM	9/4/2018	9/20/2018
N031947-002A	SC-700B-WDR-578	Water	9/4/2018 10:05:00 AM	9/4/2018	9/20/2018
N031947-002B	SC-700B-WDR-578	Water	9/4/2018 10:05:00 AM	9/4/2018	9/20/2018
N031947-002C	SC-700B-WDR-578	Water	9/4/2018 10:05:00 AM	9/4/2018	9/20/2018
N031947-002D	SC-700B-WDR-578	Water	9/4/2018 10:05:00 AM	9/4/2018	9/20/2018
N031947-002E	SC-700B-WDR-578	Water	9/4/2018 10:05:00 AM	9/4/2018	9/20/2018
N031947-002F	SC-700B-WDR-578	Water	9/4/2018 10:05:00 AM	9/4/2018	9/20/2018



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ANALYTICAL RESULTS

Print Date: 20-Sep-18

CLIENT:	CH2M HILL	Client Sample ID:	SC-100B-WDR-578
Lab Order:	N031947	Collection Date:	9/4/2018 10:00:00 AM
Project:	PG&E Topock, 680375.03.IM.OP.00	Matrix:	WATER
Lab ID:	N031947-001		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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SPECIFIC CONDUCTANCE

EPA 120.1

RunID: NV00922-WC_180905B	QC Batch: R127406	PrepDate	Analyst: LR
Specific Conductance	6800	0.10	0.10
		umhos/cm	1
			9/5/2018 09:00 AM

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



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ANALYTICAL RESULTS

Print Date: 20-Sep-18

CLIENT:	CH2M HILL	Client Sample ID:	SC-700B-WDR-578
Lab Order:	N031947	Collection Date:	9/4/2018 10:05:00 AM
Project:	PG&E Topock, 680375.03.IM.OP.00	Matrix:	WATER
Lab ID:	N031947-002		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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SPECIFIC CONDUCTANCE

EPA 120.1

RunID: NV00922-WC_180905B	QC Batch: R127406	PrepDate	Analyst: LR
Specific Conductance	6800	0.10	0.10
		umhos/cm	1
			9/5/2018 09:00 AM

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



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CLIENT: CH2M HILL
Work Order: N031947
Project: PG&E Topock, 680375.03.IM.OP.00

ANALYTICAL QC SUMMARY REPORT**TestCode: 120.1_WPGE**

Sample ID	N031947-001ADUP	SampType:	DUP	TestCode:	120.1_WPGE	Units:	umhos/cm	Prep Date:		RunNo:	127406		
Client ID:	ZZZZZZ	Batch ID:	R127406	TestNo:	EPA 120.1			Analysis Date:	9/5/2018	SeqNo:	3130200		
Analyte		Result		PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Specific Conductance		6850.000		0.10						6830	0.292	2	

Qualifiers:

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

Calculations are based on raw values

**ASSET LABORATORIES**

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ASSET Laboratories
ANALYTICAL RESULTS
Print Date: 20-Sep-18

CLIENT:	CH2M HILL	Client Sample ID:	SC-100B-WDR-578
Lab Order:	N031947	Collection Date:	9/4/2018 10:00:00 AM
Project:	PG&E Topock, 680375.03.IM.OP.00	Matrix:	WATER
Lab ID:	N031947-001		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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TOTAL FILTERABLE RESIDUE
SM2540C

RunID: NV00922-WC_180905H	QC Batch: 70515	PrepDate	9/5/2018	Analyst: LR
Total Dissolved Solids (Residue, Filterable)	4300	50	50	mg/L
			1	9/5/2018 01:14 PM

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


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ASSET Laboratories
ANALYTICAL RESULTS
Print Date: 20-Sep-18

CLIENT:	CH2M HILL	Client Sample ID:	SC-700B-WDR-578
Lab Order:	N031947	Collection Date:	9/4/2018 10:05:00 AM
Project:	PG&E Topock, 680375.03.IM.OP.00	Matrix:	WATER
Lab ID:	N031947-002		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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TOTAL FILTERABLE RESIDUE
SM2540C

RunID: NV00922-WC_180905H	QC Batch: 70515	PrepDate	9/5/2018	Analyst: LR
Total Dissolved Solids (Residue, Filterable)	4000	50	50	mg/L
			1	9/5/2018 01:14 PM

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


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CLIENT: CH2M HILL
Work Order: N031947
Project: PG&E Topock, 680375.03.IM.OP.00

ANALYTICAL QC SUMMARY REPORT**TestCode: 160.1_2540C_W**

Sample ID	LCS-70515	SampType:	LCS	TestCode:	160.1_2540C	Units:	mg/L	Prep Date:	9/5/2018	RunNo:	127442		
Client ID:	LCSW	Batch ID:	70515	TestNo:	SM2540C			Analysis Date:	9/5/2018	SeqNo:	3131565		
Analyte		Result		PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera		950.000		10	1000	0	95.0	80	120				

Sample ID	MB-70515	SampType:	MBLK	TestCode:	160.1_2540C	Units:	mg/L	Prep Date:	9/5/2018	RunNo:	127442		
Client ID:	PBW	Batch ID:	70515	TestNo:	SM2540C			Analysis Date:	9/5/2018	SeqNo:	3131566		
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	N031947-001ADUP	SampType:	DUP	TestCode:	160.1_2540C	Units:	mg/L	Prep Date:	9/5/2018	RunNo:	127442		
Client ID:	ZZZZZZ	Batch ID:	70515	TestNo:	SM2540C			Analysis Date:	9/5/2018	SeqNo:	3131568		
Analyte		Result		PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera		4205.000		50						4260	1.30	5	

Qualifiers:

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

Calculations are based on raw values

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ANALYTICAL RESULTS
Print Date: 20-Sep-18

CLIENT:	CH2M HILL	Client Sample ID:	SC-700B-WDR-578
Lab Order:	N031947	Collection Date:	9/4/2018 10:05:00 AM
Project:	PG&E Topock, 680375.03.IM.OP.00	Matrix:	WATER
Lab ID:	N031947-002		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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TOTAL METALS BY ICP
EPA 200.7

RunID: NV00922-ICP2_180918D	QC Batch: 70588	PrepDate	9/11/2018	Analyst: CEI
Aluminum	ND	40	50	µg/L
Boron	1100	74	100	µg/L
Iron	ND	18	20	µg/L

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


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CLIENT: CH2M HILL
Work Order: N031947
Project: PG&E Topock, 680375.03.IM.OP.00

ANALYTICAL QC SUMMARY REPORT**TestCode: 200.7_WPGEPB**

Sample ID	MB-70588	SampType:	MBLK	TestCode:	200.7_WPGE	Units:	µg/L	Prep Date:	9/11/2018	RunNo:	127688		
Client ID:	PBW	Batch ID:	70588	TestNo:	EPA 200.7			Analysis Date:	9/19/2018	SeqNo:	3142772		
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	N031947-002E-MS1	SampType:	MS	TestCode:	200.7_WPGE	Units:	µg/L	Prep Date:	9/11/2018	RunNo:	127688		
Client ID:	ZZZZZZ	Batch ID:	70588	TestNo:	EPA 200.7			Analysis Date:	9/19/2018	SeqNo:	3142779		
Analyte		Result		PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Aluminum	5321.024	50	5000	0	106	75	125				
Boron	2502.803	100	1000	1115	139	75	125				S

Sample ID	N031947-002E-MSD	SampType: MSD	TestCode: 200.7_WPGE	Units: µg/L	Prep Date: 9/11/2018	RunNo: 127688					
Client ID:	ZZZZZZ	Batch ID: 70588	TestNo: EPA 200.7		Analysis Date: 9/19/2018	SeqNo: 3142780					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Aluminum	5313.665	50	5000	0	106	75	125	5321	0.138	20	
Boron	2497.358	100	1000	1115	138	75	125	2503	0.218	20	S

Sample ID	LCS1-70588	SampType: LCS	TestCode: 200.7_WPGE	Units: µg/L	Prep Date: 9/11/2018	RunNo: 127688					
Client ID:	LCSW	Batch ID: 70588	TestNo: EPA 200.7		Analysis Date: 9/19/2018	SeqNo: 3142783					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Aluminum	5296.644	50	5000	0	106	85	115				
Boron	1071.239	100	1000	0	107	85	115				
Iron	95.867	20	100.0	0	95.9	85	115				

Qualifiers:

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

Calculations are based on raw values


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"Serving Clients with Passion and Professionalism"

CLIENT: CH2M HILL
Work Order: N031947
Project: PG&E Topock, 680375.03.IM.OP.00

ANALYTICAL QC SUMMARY REPORT

TestCode: 200.7_WPGEPBB

Sample ID	N031947-002E-MSD	SampType:	MSD	TestCode:	200.7_WPGE	Units:	µg/L	Prep Date:	9/11/2018	RunNo:	127688
Client ID:	ZZZZZZ	Batch ID:	70588	TestNo:	EPA 200.7			Analysis Date:	9/19/2018	SeqNo:	3143242
Analyte		Result		PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD RPDLimit Qual

Iron	114.951	20	100.0	0	115	75	125	112.3	2.31	20
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Sample ID	N031947-002E-MS1	SampType:	MS	TestCode:	200.7_WPGE	Units:	µg/L	Prep Date:	9/11/2018	RunNo:	127717
Client ID:	ZZZZZZ	Batch ID:	70588	TestNo:	EPA 200.7			Analysis Date:	9/19/2018	SeqNo:	3143757
Analyte		Result		PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD RPDLimit Qual

Iron	112.330	20	100.0	0	112	75	125
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Qualifiers:

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

Calculations are based on raw values



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"Serving Clients with Passion and Professionalism"

ASSET Laboratories
ANALYTICAL RESULTS
Print Date: 20-Sep-18

CLIENT:	CH2M HILL	Client Sample ID:	SC-100B-WDR-578
Lab Order:	N031947	Collection Date:	9/4/2018 10:00:00 AM
Project:	PG&E Topock, 680375.03.IM.OP.00	Matrix:	WATER
Lab ID:	N031947-001		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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TOTAL METALS BY ICPMS
EPA 200.8

RunID: NV00922-ICP7_180910C	QC Batch: 70528	PrepDate	9/6/2018	Analyst: CEI
Manganese	7.5	0.26	0.50	µg/L
			1	9/10/2018 07:09 PM

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


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"Serving Clients with Passion and Professionalism"

ASSET Laboratories
ANALYTICAL RESULTS
Print Date: 20-Sep-18

CLIENT: CH2M HILL
Lab Order: N031947
Project: PG&E Topock, 680375.03.IM.OP.00
Lab ID: N031947-002

Client Sample ID: SC-700B-WDR-578
Collection Date: 9/4/2018 10:05:00 AM
Matrix: WATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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TOTAL METALS BY ICPMS
EPA 200.8

RunID: NV00922-ICP7_180906B	QC Batch: 70528	PrepDate	9/6/2018	Analyst: CEI		
Antimony	ND	0.16	0.50	µg/L	1	9/6/2018 04:33 PM
Arsenic	ND	0.081	0.10	µg/L	1	9/6/2018 04:33 PM
Barium	19	0.15	1.0	µg/L	1	9/6/2018 04:33 PM
Copper	ND	0.55	1.0	µg/L	1	9/6/2018 04:33 PM
Lead	ND	0.13	1.0	µg/L	1	9/6/2018 04:33 PM
Manganese	5.5	0.26	0.50	µg/L	1	9/10/2018 07:37 PM
Molybdenum	22	0.21	0.50	µg/L	1	9/6/2018 04:33 PM
Nickel	3.1	0.26	1.0	µg/L	1	9/6/2018 04:33 PM
Zinc	ND	2.3	10	µg/L	1	9/6/2018 04:33 PM

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



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"Serving Clients with Passion and Professionalism"

CLIENT: CH2M HILL
Work Order: N031947
Project: PG&E Topock, 680375.03.IM.OP.00

ANALYTICAL QC SUMMARY REPORT**TestCode: 200.8_W**

Sample ID	MB-70528	SampType:	MBLK	TestCode:	200.8_W	Units:	µg/L	Prep Date:	9/6/2018	RunNo:	127490		
Client ID:	PBW	Batch ID:	70528	TestNo:	EPA 200.8			Analysis Date:	9/6/2018	SeqNo:	3134426		
Analyte		Result		PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Antimony
 Arsenic
 Barium
 Copper
 Lead
 Molybdenum
 Nickel
 Zinc

ND
 ND
 ND
 ND
 ND
 ND
 ND

0.50
 0.10
 1.0
 1.0
 1.0
 0.50
 1.0
 10

Sample ID	LCS-70528	SampType:	LCS	TestCode:	200.8_W	Units:	µg/L	Prep Date:	9/6/2018	RunNo:	127490		
Client ID:	LCSW	Batch ID:	70528	TestNo:	EPA 200.8			Analysis Date:	9/6/2018	SeqNo:	3134427		
Analyte		Result		PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Antimony
 Arsenic
 Barium
 Copper
 Lead
 Molybdenum
 Nickel
 Zinc

10.126
 10.041
 10.561
 9.603
 10.017
 10.091
 9.771
 194.970

0.50
 0.10
 1.0
 1.0
 1.0
 0.50
 1.0
 10

10.00
 10.00
 10.00
 10.00
 10.00
 10.00
 10.00
 200.0

0
 0
 0
 0
 0
 0
 0
 0

101
 100
 106
 96.0
 100
 101
 97.7
 97.5

85
 85
 85
 85
 85
 85
 85

115
 115
 115
 115
 115
 115
 115

Sample ID	N031947-001C-MSD	SampType:	MSD	TestCode:	200.8_W	Units:	µg/L	Prep Date:	9/6/2018	RunNo:	127490		
Client ID:	ZZZZZZ	Batch ID:	70528	TestNo:	EPA 200.8			Analysis Date:	9/6/2018	SeqNo:	3134441		
Analyte		Result		PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Antimony
 Arsenic

10.104
 13.138

0.50
 0.10

10.00
 10.00

0
 3.162

101
 99.8

75
 75

125
 125

10.10
 13.18

0.0647
 0.296

20
 20

Qualifiers:

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

Calculations are based on raw values



ASSET LABORATORIES
 ANALYTICAL SERVICES WITH PROVEN TECHNOLOGIES

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"Serving Clients with Passion and Professionalism"

CLIENT: CH2M HILL
Work Order: N031947
Project: PG&E Topock, 680375.03.IM.OP.00

ANALYTICAL QC SUMMARY REPORT

TestCode: 200.8_W

Sample ID	N031947-001C-MSD	SampType:	MSD	TestCode:	200.8_W	Units:	µg/L	Prep Date:	9/6/2018	RunNo:	127490
Client ID:	ZZZZZZ	Batch ID:	70528	TestNo:	EPA 200.8			Analysis Date:	9/6/2018	SeqNo:	3134441
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Barium	38.824	1.0	10.00	29.73	90.9	75	125	38.67	0.395	20	
Copper	2.657	1.0	10.00	0	26.6	75	125	2.714	2.12	20	S
Lead	9.655	1.0	10.00	0	96.6	75	125	9.736	0.835	20	
Molybdenum	31.947	0.50	10.00	21.63	103	75	125	32.02	0.242	20	
Nickel	9.273	1.0	10.00	0	92.7	75	125	8.920	3.88	20	
Zinc	171.539	10	200.0	0	85.8	75	125	172.3	0.470	20	

Sample ID	N031947-001C-MS	SampType:	MS	TestCode:	200.8_W	Units:	µg/L	Prep Date:	9/6/2018	RunNo:	127490
Client ID:	ZZZZZZ	Batch ID:	70528	TestNo:	EPA 200.8			Analysis Date:	9/6/2018	SeqNo:	3134449
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Antimony	10.097	0.50	10.00	0	101	75	125				
Arsenic	13.176	0.10	10.00	3.162	100	75	125				
Barium	38.671	1.0	10.00	29.73	89.4	75	125				
Copper	2.714	1.0	10.00	0	27.1	75	125				S
Lead	9.736	1.0	10.00	0	97.4	75	125				
Molybdenum	32.025	0.50	10.00	21.63	104	75	125				
Nickel	8.920	1.0	10.00	0	89.2	75	125				
Zinc	172.348	10	200.0	0	86.2	75	125				

Sample ID	MB-70528	SampType:	MBLK	TestCode:	200.8_W	Units:	µg/L	Prep Date:	9/6/2018	RunNo:	127522
Client ID:	PBW	Batch ID:	70528	TestNo:	EPA 200.8			Analysis Date:	9/10/2018	SeqNo:	3136054
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Manganese	ND	0.50									

Qualifiers:

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

Calculations are based on raw values



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CLIENT: CH2M HILL
Work Order: N031947
Project: PG&E Topock, 680375.03.IM.OP.00

ANALYTICAL QC SUMMARY REPORT

TestCode: 200.8_W

Sample ID	LCS-70528	SampType:	LCS	TestCode:	200.8_W	Units:	µg/L	Prep Date:	9/6/2018	RunNo:	127522			
Client ID:	LCSW	Batch ID:	70528	TestNo:	EPA 200.8			Analysis Date:	9/10/2018	SeqNo:	3136055			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Manganese	107.874	0.50	100.0	0	108	85	115
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Sample ID	N031947-001C-MS	SampType:	MS	TestCode:	200.8_W	Units:	µg/L	Prep Date:	9/6/2018	RunNo:	127522			
Client ID:	ZZZZZZ	Batch ID:	70528	TestNo:	EPA 200.8			Analysis Date:	9/10/2018	SeqNo:	3136062			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Manganese	104.659	0.50	100.0	7.451	97.2	75	125
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Sample ID	N031947-001C-MSD	SampType:	MSD	TestCode:	200.8_W	Units:	µg/L	Prep Date:	9/6/2018	RunNo:	127522			
Client ID:	ZZZZZZ	Batch ID:	70528	TestNo:	EPA 200.8			Analysis Date:	9/10/2018	SeqNo:	3136063			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Manganese	105.612	0.50	100.0	7.451	98.2	75	125	104.7	0.906	20
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Qualifiers:

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

Calculations are based on raw values



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ANALYTICAL SERVICES FOR THE CONSTRUCTION INDUSTRY

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ASSET Laboratories
ANALYTICAL RESULTS
Print Date: 20-Sep-18

CLIENT:	CH2M HILL	Client Sample ID:	SC-100B-WDR-578
Lab Order:	N031947	Collection Date:	9/4/2018 10:00:00 AM
Project:	PG&E Topock, 680375.03.IM.OP.00	Matrix:	WATER
Lab ID:	N031947-001		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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HEXAVALENT CHROMIUM BY IC
EPA 218.6

RunID: NV00922-IC7_180906A	QC Batch: R127471	PrepDate	Analyst: RAB
Hexavalent Chromium	490 3.3	20 µg/L	100 9/6/2018 12:55 PM

TOTAL METALS BY ICPMS
EPA 200.8

RunID: NV00922-ICP7_180906B	QC Batch: 70528	PrepDate	9/6/2018	Analyst: CEI
Chromium	530 0.65	5.0 µg/L	5	9/6/2018 05:02 PM

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


ASSET LABORATORIES
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ASSET Laboratories
ANALYTICAL RESULTS
Print Date: 20-Sep-18

CLIENT:	CH2M HILL	Client Sample ID:	SC-700B-WDR-578
Lab Order:	N031947	Collection Date:	9/4/2018 10:05:00 AM
Project:	PG&E Topock, 680375.03.IM.OP.00	Matrix:	WATER
Lab ID:	N031947-002		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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HEXAVALENT CHROMIUM BY IC
EPA 218.6

RunID: NV00922-IC7_180906A	QC Batch: R127471	PrepDate	Analyst: RAB
Hexavalent Chromium	ND 0.17	1.0	9/6/2018 01:14 PM
		µg/L	5

TOTAL METALS BY ICPMS
EPA 200.8

RunID: NV00922-ICP7_180906B	QC Batch: 70528	PrepDate	9/6/2018	Analyst: CEI
Chromium	ND 0.13	1.0	1	9/6/2018 04:33 PM
		µg/L		

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


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CLIENT: CH2M HILL
Work Order: N031947
Project: PG&E Topock, 680375.03.IM.OP.00

ANALYTICAL QC SUMMARY REPORT**TestCode: 200.8_W_CRPGE**

Sample ID	MB-70528	SampType:	MBLK	TestCode:	200.8_W_CR	Units:	µg/L	Prep Date:	9/6/2018	RunNo:	127490		
Client ID:	PBW	Batch ID:	70528	TestNo:	EPA 200.8			Analysis Date:	9/6/2018	SeqNo:	3134584		
Analyte		Result		PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium		ND		1.0									

Sample ID	LCS-70528	SampType:	LCS	TestCode:	200.8_W_CR	Units:	µg/L	Prep Date:	9/6/2018	RunNo:	127490		
Client ID:	LCSW	Batch ID:	70528	TestNo:	EPA 200.8			Analysis Date:	9/6/2018	SeqNo:	3134585		
Analyte		Result		PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium		10.303		1.0	10.00	0	103	85	115				

Sample ID	N031947-001C-MSD	SampType:	MSD	TestCode:	200.8_W_CR	Units:	µg/L	Prep Date:	9/6/2018	RunNo:	127490		
Client ID:	ZZZZZZ	Batch ID:	70528	TestNo:	EPA 200.8			Analysis Date:	9/6/2018	SeqNo:	3134600		
Analyte		Result		PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium		531.701		5.0	10.00	533.9	-22.3	75	125	537.2	1.02	20	S

Sample ID	N031947-001C-MS	SampType:	MS	TestCode:	200.8_W_CR	Units:	µg/L	Prep Date:	9/6/2018	RunNo:	127490		
Client ID:	ZZZZZZ	Batch ID:	70528	TestNo:	EPA 200.8			Analysis Date:	9/6/2018	SeqNo:	3134608		
Analyte		Result		PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium		537.164		5.0	10.00	533.9	32.4	75	125				S

Qualifiers:

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

Calculations are based on raw values

**ASSET LABORATORIES**

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CLIENT: CH2M HILL
Work Order: N031947
Project: PG&E Topock, 680375.03.IM.OP.00

ANALYTICAL QC SUMMARY REPORT

TestCode: 218.6_WU_PGE

Sample ID	MB-R127471	SampType:	MBLK	TestCode:	218.6_WU_P	Units:	µg/L	Prep Date:		RunNo:	127471			
Client ID:	PBW	Batch ID:	R127471	TestNo:	EPA 218.6			Analysis Date:	9/6/2018	SeqNo:	3133036			
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-R127471	SampType:	LCS	TestCode:	218.6_WU_P	Units:	µg/L	Prep Date:		RunNo:	127471			
Client ID:	LCSW	Batch ID:	R127471	TestNo:	EPA 218.6			Analysis Date:	9/6/2018	SeqNo:	3133037			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Hexavalent Chromium 5.227 0.20 5.000 0 105 90 110

Sample ID	N031957-001ADUP	SampType:	DUP	TestCode:	218.6_WU_P	Units:	µg/L	Prep Date:		RunNo:	127471			
Client ID:	ZZZZZZ	Batch ID:	R127471	TestNo:	EPA 218.6			Analysis Date:	9/6/2018	SeqNo:	3133041			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Hexavalent Chromium 5.818 0.20 5.802 0.277 20

Sample ID	N031947-001BMS	SampType:	MS	TestCode:	218.6_WU_P	Units:	µg/L	Prep Date:		RunNo:	127471			
Client ID:	ZZZZZZ	Batch ID:	R127471	TestNo:	EPA 218.6			Analysis Date:	9/6/2018	SeqNo:	3133045			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Hexavalent Chromium 1000.490 20 500.0 489.4 102 90 110

Sample ID	N031947-002CMS	SampType:	MS	TestCode:	218.6_WU_P	Units:	µg/L	Prep Date:		RunNo:	127471			
Client ID:	ZZZZZZ	Batch ID:	R127471	TestNo:	EPA 218.6			Analysis Date:	9/6/2018	SeqNo:	3133047			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Hexavalent Chromium 4.990 1.0 5.000 0.4010 91.8 90 110

Qualifiers:

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

Calculations are based on raw values



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"Serving Clients with Passion and Professionalism"

CLIENT: CH2M HILL
Work Order: N031947
Project: PG&E Topock, 680375.03.IM.OP.00

ANALYTICAL QC SUMMARY REPORT

TestCode: 218.6_WU_PGE

Sample ID	N031956-001AMS	SampType:	MS	TestCode:	218.6_WU_P	Units:	µg/L	Prep Date:		RunNo:	127471
Client ID:	ZZZZZZ	Batch ID:	R127471	TestNo:	EPA 218.6			Analysis Date:	9/6/2018	SeqNo:	3133048
Analyte		Result		PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD RPDLimit Qual

Hexavalent Chromium	3.405	0.20	1.000	2.380	103	90	110				
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Sample ID	N031956-001AMSD	SampType:	MSD	TestCode:	218.6_WU_P	Units:	µg/L	Prep Date:		RunNo:	127471
Client ID:	ZZZZZZ	Batch ID:	R127471	TestNo:	EPA 218.6			Analysis Date:	9/6/2018	SeqNo:	3133049
Analyte		Result		PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD RPDLimit Qual

Hexavalent Chromium	3.464	0.20	1.000	2.380	108	90	110	3.405	1.72	20	
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Qualifiers:

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

Calculations are based on raw values



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ANALYTICAL RESULTS
Print Date: 20-Sep-18

CLIENT:	CH2M HILL	Client Sample ID:	SC-100B-WDR-578
Lab Order:	N031947	Collection Date:	9/4/2018 10:00:00 AM
Project:	PG&E Topock, 680375.03.IM.OP.00	Matrix:	WATER
Lab ID:	N031947-001		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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TURBIDITY
SM 2130B

RunID: NV00922-WC_180905C	QC Batch: R127407	PrepDate	Analyst: LR
Turbidity	0.24 0.10 0.10	NTU	1 9/5/2018 08:40 AM

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


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ASSET Laboratories

ANALYTICAL RESULTS

Print Date: 20-Sep-18

CLIENT: CH2M HILL Client Sample ID: SC-700B-WDR-578
 Lab Order: N031947 Collection Date: 9/4/2018 10:05:00 AM
 Project: PG&E Topock, 680375.03.IM.OP.00 Matrix: WATER
 Lab ID: N031947-002

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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TURBIDITY

SM 2130B

RunID: NV00922-WC_180905C	QC Batch: R127407	PrepDate	Analyst: LR
Turbidity	0.22 0.10 0.10	NTU	1 9/5/2018 08:40 AM

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



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CLIENT: CH2M HILL
Work Order: N031947
Project: PG&E Topock, 680375.03.IM.OP.00

ANALYTICAL QC SUMMARY REPORT**TestCode: 2130_W**

Sample ID	MB-R127407	SampType:	MBLK	TestCode:	2130_W	Units:	NTU	Prep Date:		RunNo:	127407		
Client ID:	PBW	Batch ID:	R127407	TestNo:	SM 2130B			Analysis Date:	9/5/2018	SeqNo:	3130202		
Analyte		Result		PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Turbidity		ND		0.10									

Sample ID	N031947-001ADUP	SampType:	DUP	TestCode:	2130_W	Units:	NTU	Prep Date:		RunNo:	127407		
Client ID:	ZZZZZZ	Batch ID:	R127407	TestNo:	SM 2130B			Analysis Date:	9/5/2018	SeqNo:	3130204		
Analyte		Result		PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Turbidity		0.230		0.10						0.2400	4.26	30	

Qualifiers:

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

Calculations are based on raw values



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ASSET Laboratories
ANALYTICAL RESULTS
Print Date: 20-Sep-18

CLIENT:	CH2M HILL	Client Sample ID:	SC-700B-WDR-578
Lab Order:	N031947	Collection Date:	9/4/2018 10:05:00 AM
Project:	PG&E Topock, 680375.03.IM.OP.00	Matrix:	WATER
Lab ID:	N031947-002		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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ANIONS BY ION CHROMATOGRAPHY
EPA 300.0

RunID: NV00922-IC8_180905B	QC Batch: R127429	PrepDate	Analyst: RAB
Fluoride	2.3 0.032	0.50	mg/L
			5 9/5/2018 05:49 PM

ANIONS BY ION CHROMATOGRAPHY
EPA 300.0

RunID: NV00922-IC8_180906A	QC Batch: R127453	PrepDate	Analyst: RAB
Sulfate	460 1.1	25	mg/L
			50 9/6/2018 05:24 PM

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


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CLIENT: CH2M HILL
Work Order: N031947
Project: PG&E Topock, 680375.03.IM.OP.00

ANALYTICAL QC SUMMARY REPORT**TestCode: 300_W_FPG**

Sample ID MB-R127429_F	SampType: MBLK	TestCode: 300_W_FPG	Units: mg/L	Prep Date:	RunNo: 127429
Client ID: PBW	Batch ID: R127429	TestNo: EPA 300.0		Analysis Date: 9/5/2018	SeqNo: 3132012
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

Fluoride ND 0.10

Sample ID LCS-R127429_F	SampType: LCS	TestCode: 300_W_FPG	Units: mg/L	Prep Date:	RunNo: 127429
Client ID: LCSW	Batch ID: R127429	TestNo: EPA 300.0		Analysis Date: 9/5/2018	SeqNo: 3132013
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

Fluoride 1.227 0.10 1.250 0 98.1 90 110

Sample ID N031905-004BDUP	SampType: DUP	TestCode: 300_W_FPG	Units: mg/L	Prep Date:	RunNo: 127429
Client ID: ZZZZZZ	Batch ID: R127429	TestNo: EPA 300.0		Analysis Date: 9/5/2018	SeqNo: 3132025
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

Fluoride 7.391 1.0 7.550 2.13 20

Sample ID N031905-006BMS	SampType: MS	TestCode: 300_W_FPG	Units: mg/L	Prep Date:	RunNo: 127429
Client ID: ZZZZZZ	Batch ID: R127429	TestNo: EPA 300.0		Analysis Date: 9/5/2018	SeqNo: 3132026
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

Fluoride 27.080 2.0 25.00 4.248 91.3 80 120

Sample ID N031905-006BMSD	SampType: MSD	TestCode: 300_W_FPG	Units: mg/L	Prep Date:	RunNo: 127429
Client ID: ZZZZZZ	Batch ID: R127429	TestNo: EPA 300.0		Analysis Date: 9/5/2018	SeqNo: 3132027
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

Fluoride 26.992 2.0 25.00 4.248 91.0 80 120 27.08 0.325 20

Qualifiers:

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

Calculations are based on raw values



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"Serving Clients with Passion and Professionalism"

CLIENT: CH2M HILL
Work Order: N031947
Project: PG&E Topock, 680375.03.IM.OP.00

ANALYTICAL QC SUMMARY REPORT

TestCode: 300_W_FPGE

Sample ID	N031947-002BMS	SampType:	MS	TestCode:	300_W_FPG	Units:	mg/L	Prep Date:		RunNo:	127429	
Client ID:	ZZZZZZ	Batch ID:	R127429	TestNo:	EPA 300.0			Analysis Date:	9/5/2018	SeqNo:	3132031	
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Fluoride		8.250	0.50	6.250	2.268	95.7	80	120				

Qualifiers:

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

Calculations are based on raw values



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"Serving Clients with Passion and Professionalism"

CLIENT: CH2M HILL
Work Order: N031947
Project: PG&E Topock, 680375.03.IM.OP.00

ANALYTICAL QC SUMMARY REPORT

TestCode: 300_W_SO4PGE

Sample ID	MB-R127453_SO4	SampType:	MBLK	TestCode:	300_W_SO4P	Units:	mg/L	Prep Date:		RunNo:	127453
Client ID:	PBW	Batch ID:	R127453	TestNo:	EPA 300.0			Analysis Date:	9/6/2018	SeqNo:	3131912
Analyte		Result		PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD RPDLimit Qual

Sulfate 0.227 0.50

Sample ID	LCS-R127453_SO4	SampType:	LCS	TestCode:	300_W_SO4P	Units:	mg/L	Prep Date:		RunNo:	127453
Client ID:	LCSW	Batch ID:	R127453	TestNo:	EPA 300.0			Analysis Date:	9/6/2018	SeqNo:	3131913
Analyte		Result		PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD RPDLimit Qual

Sulfate 3.897 0.50 4.000 0 97.4 90 110

Sample ID	N031905-006BDUP	SampType:	DUP	TestCode:	300_W_SO4P	Units:	mg/L	Prep Date:		RunNo:	127453
Client ID:	ZZZZZZ	Batch ID:	R127453	TestNo:	EPA 300.0			Analysis Date:	9/6/2018	SeqNo:	3131928
Analyte		Result		PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD RPDLimit Qual

Sulfate 5706.900 500 5654 0.937 20

Sample ID	N031905-001BMS	SampType:	MS	TestCode:	300_W_SO4P	Units:	mg/L	Prep Date:		RunNo:	127453
Client ID:	ZZZZZZ	Batch ID:	R127453	TestNo:	EPA 300.0			Analysis Date:	9/6/2018	SeqNo:	3131929
Analyte		Result		PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD RPDLimit Qual

Sulfate 22206.600 1000 8000 14380 97.8 80 120

Sample ID	N031905-001BMSD	SampType:	MSD	TestCode:	300_W_SO4P	Units:	mg/L	Prep Date:		RunNo:	127453
Client ID:	ZZZZZZ	Batch ID:	R127453	TestNo:	EPA 300.0			Analysis Date:	9/6/2018	SeqNo:	3131930
Analyte		Result		PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD RPDLimit Qual

Sulfate 22319.200 1000 8000 14380 99.2 80 120 22210 0.506 20

Qualifiers:

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



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"Serving Clients with Passion and Professionalism"

CLIENT: CH2M HILL
Work Order: N031947
Project: PG&E Topock, 680375.03.IM.OP.00

ANALYTICAL QC SUMMARY REPORT

TestCode: 300_W_SO4PGE

Sample ID	N031947-002BMS	SampType:	MS	TestCode:	300_W_SO4P	Units:	mg/L	Prep Date:		RunNo:	127453	
Client ID:	ZZZZZZ	Batch ID:	R127453	TestNo:	EPA 300.0			Analysis Date:	9/6/2018	SeqNo:	3131932	
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Sulfate		665.865	25	200.0	462.8	102	80	120				

Qualifiers:

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



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ASSET Laboratories
ANALYTICAL RESULTS
Print Date: 20-Sep-18

CLIENT:	CH2M HILL	Client Sample ID:	SC-700B-WDR-578
Lab Order:	N031947	Collection Date:	9/4/2018 10:05:00 AM
Project:	PG&E Topock, 680375.03.IM.OP.00	Matrix:	WATER
Lab ID:	N031947-002		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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NITRATE/NITRITE-N BY CADMIUM REDUCTION
SM4500-NO3F

RunID: NV00922-WC_180912B	QC Batch: R127567	PrepDate	Analyst: QBM
Nitrate/Nitrite as N	2.7 0.16	0.25 mg/L	5 9/12/2018

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


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CLIENT: CH2M HILL
Work Order: N031947
Project: PG&E Topock, 680375.03.IM.OP.00

ANALYTICAL QC SUMMARY REPORT**TestCode: 4500N03F_W**

Sample ID MB-R127567	SampType: MBLK	TestCode: 4500N03F_W	Units: mg/L	Prep Date:	RunNo: 127567
Client ID: PBW	Batch ID: R127567	TestNo: SM4500-NO3		Analysis Date: 9/12/2018	SeqNo: 3138748
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-R127567	SampType: LCS	TestCode: 4500N03F_W	Units: mg/L	Prep Date:	RunNo: 127567
Client ID: LCSW	Batch ID: R127567	TestNo: SM4500-NO3		Analysis Date: 9/12/2018	SeqNo: 3138748
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

Nitrate/Nitrite as N 0.476 0.050 0.5000 0 95.2 85 115

Sample ID N031976-002CDUP	SampType: DUP	TestCode: 4500N03F_W	Units: mg/L	Prep Date:	RunNo: 127567
Client ID: ZZZZZZ	Batch ID: R127567	TestNo: SM4500-NO3		Analysis Date: 9/12/2018	SeqNo: 3138752
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

Nitrate/Nitrite as N 2.668 0.25 2.719 1.89 20

Sample ID N031947-002DMS	SampType: MS	TestCode: 4500N03F_W	Units: mg/L	Prep Date:	RunNo: 127567
Client ID: ZZZZZZ	Batch ID: R127567	TestNo: SM4500-NO3		Analysis Date: 9/12/2018	SeqNo: 3138754
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

Nitrate/Nitrite as N 4.851 0.25 2.500 2.705 85.8 75 125

Sample ID N031947-002DMSD	SampType: MSD	TestCode: 4500N03F_W	Units: mg/L	Prep Date:	RunNo: 127567
Client ID: ZZZZZZ	Batch ID: R127567	TestNo: SM4500-NO3		Analysis Date: 9/12/2018	SeqNo: 3138755
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

Nitrate/Nitrite as N 5.233 0.25 2.500 2.705 101 75 125 4.851 7.58 20

Qualifiers:

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

Calculations are based on raw values



ASSET LABORATORIES
ANALYTICAL SERVICES PROVIDED BY PROFESSIONAL, INDEPENDENT FIRMS

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

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






"Serving Clients with Passion and Professionalism"

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-578 Turnaround Time 10 Days Shipping Date: COC Number: 578			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) FI, 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)			
			DATE	TIME	Matrix											
SC-100B-WDR-578			9-4-18	10:00	Water			X	X		X		X	N031947-01	3	
SC-700B-WDR-578			9-4-18	10:05	Water	X	X	X	X	X	X		X	-02	4	
TOTAL NUMBER OF CONTAINERS														7		

Approved by	Signatures	Date/Time	Shipping Details
Sampled by		9-4-18 4:41	Method of Shipment: FedEx
Relinquished by		9-4-18 10:15	On Ice: <input checked="" type="checkbox"/> yes <input type="checkbox"/> no
Received by		9-4-18 15:10	Airbill No: 1CA 1242
Relinquished by		9-4-18 15:09	Lab Name: ASSET Laboratories
Received by		9-4-18 17:29	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: 9/4/2018 Workorder: N031947
 Rep sample Temp (Deg C): 4.8 IR Gun ID: 2
 Temp Blank: ☒ Yes ☐ No
 Carrier name: ASSET
 Last 4 digits of Tracking No.: NA Packing Material Used: None
 Cooling process: ☒ Ice ☐ Ice Pack ☐ Dry Ice ☐ Other ☐ None

Sample Receipt Checklist

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

Comments: Samples for Hex Cr were lab filtered and preserved with Ammonium buffer.
 Samples for T. Metals were preserved with HNO3 and for Ammonia/Nitrate/Nitrite with H2SO4.

For:

Checklist Completed By: MBC  9/5/2018

Reviewed By:  LG 091018



ASSET Laboratories

3151-3153 W Post Rd., Las Vegas, NV 89118

www.atl-labs.com

TEL: 7023072659

FAX: 7023072691

CHAIN-OF-CUSTODY RECORD

Page 1 of 1

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

05-Sep-18


Sample ID	Matrix	Date Collected	Bottle Type	Requested Tests		
				SM4500-NH3D		
N031947-002A / SC-700B-WDR-578	Water	9/4/2018 10:05:00 AM	32OZP	1		

Please cc Report to Lucille Golosinda at lucille.golosinda@assetlaboratories.com

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

Please use PO#:N31947A 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 Lasspec7 edata.

	Date/Time	GSO #: 541943272	Date/Time
Relinquished by: 	9/5/2018 17:00	Received by: _____	_____
Relinquished by: _____	_____	Received by: _____	_____

List of Analysts

ASSET Laboratories Work Order: N031947

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



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ANALYTICAL SUPPORT SERVICES FOR ENVIRONMENTAL TECHNOLOGIES

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NEVADA
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Month Sept 18

DownTime Log

[illegible]

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-577	8-10-18	23:50	8-10-18	23:58	HQ440D	8-10-18	22:06	-53.49	Brian Terhune	7.76

Notes:

2 SC-700B-778	9-4-18	10:00	9-4-18	10:08	HQ440D	9-4-18	00:15	-53.88	How Phelps	7.56
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Notes:

3 SC-700B-778	9-4-18	10:05	9-4-18	10:10	HQ440D	9-4-18	00:15	-53.88	How Phelps	7.36
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Notes:

4 SC-700B-579	10-2-18	0900	10-2-18	0908	HQ440D	10-2-18	0000	-52.66	How Phelps	7.51
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Notes:

5 SC-700B-579	10-2-18	0903	10-2-18	0910	HQ440D	10-2-18	0000	-52.66	How Phelps	7.19
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Notes:

6										
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Notes:

7										
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Notes:

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

Purge Water Accumulation Log

[illegible]