



**Pacific Gas and  
Electric Company**

**Curt Russell**  
Topock Site Manager  
GT&D Remediation

Topock Compressor Station  
145453 National Trails Hwy  
Needles, CA 92363

Mailing Address  
P.O. Box 337  
Needles, CA 92363

760.326.5582  
Fax: 760.326.5542  
Email: gcr4@pge.com

January 15, 2015

Pamela S. Innis  
Topock Remedial Project Manager  
U.S. Department of the Interior  
Office of Environmental Policy and Compliance  
P.O Box 2507 (D-108)  
Denver Federal Center, Building 56  
Denver, CO 80225-0007

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

**Subject: Topock IM-3 Combined Fourth Quarter 2014 Monitoring, Semiannual July – December 2014 and Annual January - December 2014 Operation and Maintenance Report  
PG&E Topock Compressor Station, Needles, California  
Interim Measure No. 3 Groundwater Treatment System  
(Document ID: PGE2015011B)**

Dear Ms. Innis and Mr. Perdue:

Enclosed is the Fourth Quarter 2014 Monitoring, Semiannual July - December 2014 and Annual January – December 2014 Operation and Maintenance Report for the Pacific Gas and Electric Company (PG&E) Topock Compressor Station, Interim Measure No. 3 (IM-3) Groundwater Treatment System.

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

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

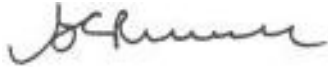
The IM-3 groundwater extraction and treatment system has extracted and treated approximately 623,282,970 gallons of water and removed approximately 6,337 pounds of total chromium from August 1, 2005 through December 31, 2014.

Pamela S. Innis  
Robert Perdue  
January 15, 2015  
Page 2

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 dark ink, appearing to read "Curt Russell", is positioned above the printed name.

Curt Russell  
Topock Site Manager

Enclosures:

Topock IM-3 Combined Fourth Quarter 2014 Monitoring, Semiannual July - December 2014, and Annual January - December 2014 Operation and Maintenance Report

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

# Topock Project Executive Abstract

<p>Document Title:  Topock IM-3 Fourth Quarter 2014 Monitoring, Semiannual July - December 2014 and Annual January – December 2014 Operation and Maintenance Report  Submitting Agency/ Authored by: U.S. Department of the Interior and Regional Water Quality Control Board  Final Document? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No</p>	<p>Date of Document: January 15, 2015  Who Created this Document?: (i.e. PG&amp;E, DTSC, DOI, Other)  PG&amp;E  Document ID Number:  PGE2015011B</p>
<p>Priority Status: <input type="checkbox"/> HIGH <input type="checkbox"/> MED <input checked="" type="checkbox"/> LOW  Is this time critical? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No</p>	<p>Action Required:  <input checked="" type="checkbox"/> Information Only <input type="checkbox"/> Review &amp; Comment  Return to: _____   By Date: _____  <input type="checkbox"/> Other / Explain:</p>
<p>Type of Document:  <input type="checkbox"/> Draft <input checked="" type="checkbox"/> Report <input type="checkbox"/> Letter <input type="checkbox"/> Memo   <input type="checkbox"/> Other / Explain:</p>	<p>What does this information pertain to?  <input type="checkbox"/> Resource Conservation and Recovery Act (RCRA) Facility Assessment (RFA)/Preliminary Assessment (PA)  <input type="checkbox"/> RCRA Facility Investigation (RFI)/Remedial Investigation (RI) (including Risk Assessment)  <input type="checkbox"/> Corrective Measures Study (CMS)/Feasibility Study (FS)  <input type="checkbox"/> Corrective Measures Implementation (CMI)/Remedial Action  <input type="checkbox"/> California Environmental Quality Act (CEQA)/Environmental Impact Report (EIR)  <input checked="" type="checkbox"/> Interim Measures  <input type="checkbox"/> Other / Explain:</p>
<p>What is the consequence of NOT doing this item? What is the consequence of DOING this item?   Submittal of this report is a compliance requirement of the ARARs for waste discharge as documented in Attachment A to the Letter Agreement issued July 26, 2011.</p>	<p>Is this a Regulatory Requirement?  <input checked="" type="checkbox"/> Yes  <input type="checkbox"/> No  If no, why is the document needed?   Other Justification/s:  <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 Fourth Quarter 2014 period, and the operation and maintenance activities during the July 1, 2014 to December 31, 2014 semiannual and the January 1, 2014 to December 31, 2014 annual periods. 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&amp;E</p>	
<p>Recommendations:  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 Fourth Quarter 2014 Monitoring, Semiannual July - December 2014 and Annual January – December 2014 Operation and Maintenance Report is related to the Interim Measure. PG&amp;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</p>	

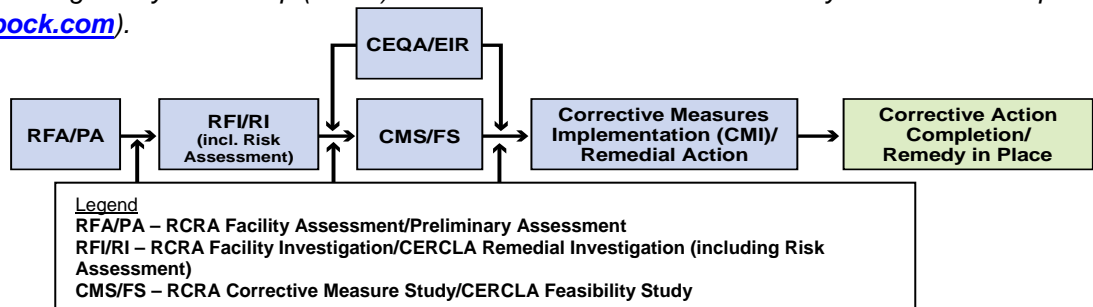
Concurrence issued August 18, 2011 from DOI to the Regional Water Board.

Other requirements of this information?

None.

Related Reports and Documents:

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



Version 9

---

**Combined Fourth Quarter 2014 Monitoring,  
Semiannual July – December 2014 and  
Annual January - December 2014 Operation and  
Maintenance Report  
Interim Measure No. 3 Groundwater  
Treatment System**

**Document ID: PGE2015011B**

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

Prepared for

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

on behalf of

**Pacific Gas and Electric Company**

January 15, 2015

**CH2MHILL®**  
155 Grand Avenue, Suite 800  
Oakland, CA 94612



**Combined Fourth Quarter 2014 Monitoring, Semiannual July - December 2014, and  
Annual January - December 2014 Operation and Maintenance Report  
for Interim Measure No. 3 Groundwater Treatment System**

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

Prepared for

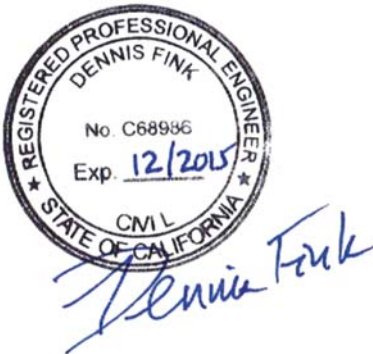
United States Department of the Interior  
and  
Colorado River Basin Regional Water Quality Control Board

on behalf of

Pacific Gas and Electric Company

January 15, 2015

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



---

Dennis Fink, P.E.  
Project Engineer



# Contents

---

	Page
<b>Acronyms and Abbreviations .....</b>	<b>vii</b>
<b>1.0 Introduction .....</b>	<b>1-1</b>
<b>2.0 Sampling Station Locations .....</b>	<b>2-1</b>
<b>3.0 Description of Activities.....</b>	<b>3-1</b>
3.1 Groundwater Treatment System .....	3-1
3.2 Groundwater Treatment System Flow Rates for Fourth Quarter 2014 .....	3-1
3.3 Sampling and Analytical Procedures.....	3-2
<b>4.0 Analytical Results .....</b>	<b>4-1</b>
<b>5.0 Semiannual Operation and Maintenance .....</b>	<b>5-1</b>
5.1 Flowmeter Calibration Records .....	5-1
5.2 Volumes of Groundwater Treated .....	5-1
5.3 Residual Solids Generated (Sludge) .....	5-2
5.4 Reverse Osmosis Concentrate Generated .....	5-2
5.5 Summary of ARARs Compliance .....	5-2
5.6 Operation and Maintenance – Required Shutdowns .....	5-2
5.7 Treatment Facility Modifications .....	5-3
<b>6.0 Conclusions .....</b>	<b>6-1</b>
<b>7.0 Certification.....</b>	<b>7-1</b>

## Tables

1	Sampling Station Descriptions
2	Flow Monitoring Results
3	Sample Collection Dates
4	Topock IM-3 Waste Discharge ARARs Influent Monitoring Results
5	Topock IM-3 Waste Discharge ARARs Effluent Monitoring Results
6	Topock IM-3 Waste Discharge ARARs Reverse Osmosis Concentrate Monitoring Results
7	Topock IM-3 Waste Discharge ARARs Sludge Monitoring Results
8	Topock IM-3 Waste Discharge ARARs Monitoring Information

## Figures

1	IM-3 Project Site Features
TP-PR-10-10-04	Raw Water Storage and Treated Water Storage Tanks and Sampling Locations
PR-10-03	Reverse Osmosis System Sampling and Metering Locations (1 of 2)
PR-10-04	Reverse Osmosis System Sampling and Metering Locations (2 of 2)
TP-PR-10-10-06	Sludge Storage Tanks Sampling Locations
TP-PR-10-10-03	Extraction Wells - Influent Metering Locations
TP-PR-10-10-11	Injection Wells - Effluent Metering Locations

## **Appendixes**

- A Semiannual Operations and Maintenance Log, July 1, 2014 through December 31, 2014
- B Daily Volumes of Groundwater Treated
- C Flowmeter Calibration Records
- D Fourth Quarter 2014 Laboratory Analytical Reports

# Acronyms and Abbreviations

---

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



## SECTION 1

# Introduction

---

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

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

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

**This report covers monitoring activities related to operation of the IM-3 groundwater treatment system during the Fourth Quarter 2014 and the operation and maintenance (O&M) activities during the July 1, 2014 to December 31, 2014 semiannual period and the January 1, 2014 to December 31, 2014 annual period.** The groundwater monitoring results for wells OW-1S/M/D, OW-2S/M/D, OW-5S/M/D, CW-1M/D, CW-2M/D, CW-3M/D, and CW-4M/D will be submitted under separate cover, as part of the Compliance Monitoring Program.



## SECTION 2

# Sampling Station Locations

---

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



## SECTION 3

# Description of Activities

---

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

As previously noted, this report describes Fourth Quarter 2014 monitoring activities and the July 1, 2014 through December 31, 2014 (Third and Fourth Quarters) O&M activities related to the IM-3 groundwater treatment system. It also serves as the Annual January – December 2014 O&M Report for IM-3. IM-3 monitoring activities from January 1, 2014 through September 30, 2014 (First, Second and Third Quarters) were presented in the following monitoring and O&M reports:

- *Topock IM-3 First Quarter 2014 Monitoring Report*, submitted to the DOI and Regional Water Board April 15, 2014
- *Topock IM-3 Second Quarter 2014 Monitoring and Semi-annual January 1, 2014 through June 30, 2014 Operation and Maintenance Report*, submitted to the DOI and Regional Water Board July 15, 2014
- *Topock IM-3 Third Quarter 2013 Monitoring Report*, submitted to the DOI and Regional Water Board October 15, 2014

## 3.1 Groundwater Treatment System

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

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

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

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

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

## 3.2 Groundwater Treatment System Flow Rates for Fourth Quarter 2014

Downtime is defined as any periods when all extraction wells are not operating so that no groundwater is being extracted and piped into IM-3 as influent. Periods of planned and unplanned extraction system downtime (that together resulted in approximately 1.4 percent downtime during Fourth Quarter 2014) are summarized in the Semiannual Operations and Maintenance Log provided in Appendix A. The times shown

are in Pacific Standard Time to be consistent with other data collected (e.g., water level data) at the site. Periods of planned and unplanned extraction system downtime during the months July 2014 through September 2014 were originally reported in the *Third Quarter 2014 Monitoring Report for Interim Measure No. 3 Groundwater Treatment System, PG&E Topock Compressor Station, Needles, CA*, published October 15, 2014, and are also included in Appendix A of this report.

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

### 3.2.1 Treatment System Influent

During the Fourth Quarter 2014, extraction wells TW-3D and PE-1 operated with a target pumping rate of 135 gallons per minute (gpm), excluding periods of planned and unplanned downtime. Extraction well TW-2D was only operated for a short time on December 15, 2014 for groundwater sampling. Extraction well TW-2S was not operated during Fourth Quarter 2014. The operational run time for the IM groundwater extraction system (combined or individual pumping), by month, was approximately:

- 99.5 percent during October 2014
- 97.1 percent during November 2014
- 99.1 percent during December 2014

The Fourth Quarter 2014 treatment system monthly average flow rates (influent, effluent, and RO concentrate) are presented in Table 2. The system influent flow rate was measured by flowmeters at groundwater extraction wells TW-2S, TW-2D, TW-3D, and PE-1 (Figure TP-PR-10-10-03).

The IM-3 facility treated approximately 17,670,079 gallons of extracted groundwater during Fourth Quarter 2014.

In addition to extracted groundwater, during Fourth Quarter 2014 the IM-3 facility treated 750 gallons of water generated from the groundwater monitoring program and 10,800 gallons of injection well development water.

### 3.2.2 Effluent Streams

The treatment system effluent flow rate was measured by flowmeters in the piping leading to injection wells IW-2 and IW-3 (Figure TP-PR-10-10-11) and in the piping running from the treated water tank T-700 to the injection wells (Figure TP-PR-10-10-04). The IM-3 facility injected 17,540,574 gallons of treatment system effluent during Fourth Quarter 2014. The monthly average flow rate to injection wells is shown in Table 2.

The RO concentrate flow rate was measured by a flowmeter at the piping carrying water from RO concentrate tank T-701 to the truck load-out station (Figure PR-10-04). The IM-3 facility generated 77,136 gallons of RO concentrate during Fourth Quarter 2014. The monthly average RO concentrate flow rate is shown in Table 2.

The sludge flow rate is measured by the size and weight of containers shipped offsite. Five sludge containers were shipped offsite from the IM-3 facility during Fourth Quarter 2014. The shipment dates and approximate weights are provided in Section 5.3.

## 3.3 Sampling and Analytical Procedures

With the exception of pH, all samples were collected at the designated sampling locations and placed directly into containers provided by 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 Truesdail via courier under chain-of-custody documentation. The laboratories confirmed the samples were received in chilled condition upon arrival.

Truesdail is certified by the California Department of Health Services (Certification No. 1237) under the State of California's Environmental Laboratory Accreditation Program. California-certified laboratory analyses were performed in accordance with the latest edition of the *Guidelines Establishing Test Procedures for Analysis of Pollutants* (40 Code of Federal Regulations Part 136), promulgated by the U.S. Environmental Protection Agency.

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

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

Influent, effluent, RO concentrate, and sludge sampling frequency were in accordance with the MRP. The Fourth Quarter 2014 sample collection schedule is shown in Table 3.

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



## SECTION 4

# Analytical Results

---

The analytical results and laboratory reports for the IM-3 groundwater treatment system monitoring program were previously reported for the First, Second and Third Quarters of 2014:

- The January 1, 2014 through March 31, 2014 results were included in the First Quarter 2014 Monitoring Report submitted to the DOI and Regional Water Board on April 15, 2014.
- The April 1, 2014 through June 30, 2014 results were included in the Second Quarter 2014 Monitoring Report submitted to the DOI and Regional Water Board on July 15, 2014.
- The July 1, 2014 through September 30, 2014 results were included in the Third Quarter 2014 Monitoring Report submitted to the DOI and Regional Water Board on October 15, 2014.

Laboratory reports for samples collected in Fourth Quarter 2014 were prepared by certified analytical laboratories, and are presented in Appendix D. The Fourth Quarter 2014 analytical results are presented in Tables 4, 5, 6, and 7:

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

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

Table 8 identifies the following information for each analysis:

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



## SECTION 5

# Semiannual Operation and Maintenance

This section includes the Semiannual Operation and Maintenance Report for the IM-3 groundwater treatment system for the period July 1, 2014 through December 31, 2014.

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

## 5.1 Flowmeter Calibration Records

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

Location	Location ID Where Flowmeter is Installed	Current Flowmeter Serial No.	Date of Calibration	Date of Installation
Extraction well PE-1	FIT-103	6C036F16000	8/6/2010	9/18/2013
Extraction well TW-3D	FIT-102	6C037316000	1/7/2013	9/4/2013
Extraction well TW-2D <sup>a</sup>	FIT-101	6A022016000	9/20/2013	11/1/2013
Extraction well TW-2S <sup>b</sup>	FIT-100	6A022116000	9/20/2013	11/1/2013
Injection well IW-02	FIT-1202	6C037016000	6/19/2012	7/12/2012
Injection well IW-03	FIT-1203	6C037216000	9/20/2013	10/1/2013
Combined IW-02 and IW-03	FIT-700	7700F316000	6/19/2012	8/31/2014
Reverse osmosis concentrate	FIT-701	6A021F16000	6/19/2012	7/14/2012

**Notes:**

<sup>a</sup> TW-2D is a backup extraction well only operated for brief testing and sampling periods since January 2006.

<sup>b</sup> TW-2S is a backup extraction well only operated for brief testing and sampling periods since October 2005.

## 5.2 Volumes of Groundwater Treated

Data regarding daily volumes of groundwater treated between July 1, 2014 and December 31, 2014 are provided in Appendix B. The daily volumes of groundwater treated from January 1, 2014 through June 30, 2014 were reported in the Second Quarter 2014 Monitoring Report and Semiannual January 1- June 30, 2014 Operation and Maintenance Report submitted on July 15, 2014.

Approximately 34,206,805 gallons of groundwater were extracted and treated between July 1, 2014 and December 31, 2014. Treatment of this water at the IM-3 facility is being performed in accordance with the conditions of ARARs.

Additionally, approximately 750 gallons of well purge water (generated during well development, monitoring well sampling, and/or aquifer testing), as well as 23,150 gallons of injection well re-development water, were treated at the IM-3 facility during the July 1, 2014 through December 31, 2014 semiannual period.

A total of approximately 34,176,304 gallons of treated groundwater were injected back into the Alluvial Aquifer between July 1, 2014 and December 31, 2014.

### 5.3 Residual Solids Generated (Sludge)

During the July 1, 2014 through December 31, 2014 reporting period, 11 containers of sludge were shipped offsite for disposal. The sludge was shipped to U.S. Ecology in Beatty, Nevada, for disposal. A listing of each shipment during the July 1, 2014 through December 31, 2014 reporting period is provided below.

Date Sludge Bin Removed from Site	Approximate Quantity from Waste Manifests (cubic yards)	Type of Shipment
August 13, 2014	8	Non-RCRA hazardous waste
August 13, 2014	8	Non-RCRA hazardous waste
September 15, 2014	8	Non-RCRA hazardous waste
September 15, 2014	8	Non-RCRA hazardous waste
September 29, 2014	8	Non-RCRA hazardous waste
September 29, 2014	8	Non-RCRA hazardous waste
October 8, 2014	8	Non-RCRA hazardous waste
December 4, 2014	8	Non-RCRA hazardous waste
December 4, 2014	8	Non-RCRA hazardous waste
December 22, 2014	8	Non-RCRA hazardous waste
December 22, 2014	8	Non-RCRA hazardous waste

**Notes:**

RCRA = Resource Conservation and Recovery Act

### 5.4 Reverse Osmosis Concentrate Generated

Data regarding daily volumes of RO concentrate generated are provided in Appendix B, as measured by flowmeter FIT-701 (Figures PR-10-03 and PR-10-04). From July 1, 2014 through December 31, 2014, approximately 115,989 gallons of RO concentrate were transported to Liquid Environmental Solutions in Phoenix, Arizona for disposal.

### 5.5 Summary of ARARs Compliance

No ARAR violations were identified during the July 1, 2014 through December 31, 2014 semiannual reporting period.

### 5.6 Operation and Maintenance – Required Shutdowns

Records of routine maintenance are kept onsite.

Appendix A contains a summary of the operation or maintenance issues that required the groundwater extraction system to be shut down during the July 1, 2014 through December 31, 2014 semiannual reporting period.

Activities during the Fourth Quarter 2014 included no extended shutdown.

## 5.7 Treatment Facility Modifications

No modifications were made to the IM-3 treatment facility that resulted in a material change in the quality or quantity of wastewater treated or discharged, nor resulted in a material change in the location of discharge, during the July 1, 2014 through December 31, 2014 semiannual period.



## SECTION 6

# Conclusions

---

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

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



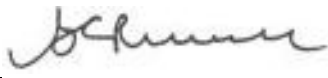
## SECTION 7

# Certification

---

### Certification Statement:

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

Signature: 

Name: Curt Russell

Company: Pacific Gas and Electric Company

Title: Topock Site Manager

Date: January 15, 2015



## Tables

---



TABLE 1

**Sampling Station Descriptions***Fourth Quarter 2014 Monitoring Report for Interim Measure No. 3 Groundwater Treatment System*

Sample Station	Sample ID <sup>a</sup>	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

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

TABLE 2

**Flow Monitoring Results***Fourth Quarter 2014 Monitoring Report for Interim Measure No. 3 Groundwater Treatment System*

Parameter	System Influent <sup>a,b</sup> (gpm)	System Effluent <sup>b</sup> (gpm)	Reverse Osmosis Concentrate <sup>b</sup> (gpm)
October 2014 Average Monthly Flowrate	134.79	133.93	0.71
November 2014 Average Monthly Flowrate	132.09	131.01	0.40
December 2014 Average Monthly Flowrate	133.23	132.22	0.62

**Notes:**

gpm: gallons per minute

<sup>a</sup> Extraction wells TW-3D and PE-1 were operated during the Fourth Quarter 2014. Extraction well TW-2D operated on December 15, 2014 for groundwater sampling. Extraction well TW-2S did not operate during the Fourth Quarter 2014.

<sup>b</sup> The difference between influent flow rate and the sum of the effluent and reverse osmosis concentrate flow rates during the Fourth Quarter 2014 is approximately 0.30 percent.

TABLE 3

**Sample Collection Dates***Fourth Quarter 2014 Monitoring Report for Interim Measure No. 3 Groundwater Treatment System*

Parameter	Sample Collection Dates	Results
Influent	October 7, 2014 November 4, 2014 December 2, 2014	See Table 4
Effluent	October 7, 2014 October 14, 2014 October 21, 2014 October 28, 2014 November 4, 2014 November 12, 2014 November 18, 2014 November 25, 2014 December 2, 2014 December 9, 2014 December 16, 2014 December 23, 2014 December 30, 2014	See Table 5
Reverse Osmosis Concentrate	October 7, 2014	See Table 6
Sludge <sup>a</sup>	Fourth Quarter Composite sent to lab October 7, 2014	See Table 7

**Notes:**<sup>a</sup> Sludge samples analysis is required quarterly by composite.



TABLE 4  
Topock IM-3 Waste Discharge Applicable or Relevant and Appropriate Requirements (ARARs)  
Influent Monitoring Results <sup>a</sup>  
Fourth Quarter 2014 Monitoring Report for Interim Measure No.3 Groundwater Treatment System

Sampling Frequency		Monthly																							
<div>Sample ID</div>	<div>Analytes Units <sup>b</sup></div> <div>MDL</div>	TDS	Turbidity	Specific Conductance	Field <sup>c</sup> pH	Chromium	Hexavalent Chromium	Aluminium	Ammonia (as N)	Antimony	Arsenic	Barium	Boron	Copper	Fluoride	Lead	Manganese	Molybdenum	Nickel	Nitrate (as N)	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	µg/L	mg/L	mg/L	mg/L	µg/L	µg/L
		1.76	0.0140	0.606	---	0.710	0.150	7.20	0.0318	0.0350	0.0500	0.300	0.0041	0.190	0.0600	0.140	0.0600	0.0500	0.240	0.0415	0.00063	0.768	3.00	5.10	
SC-100B-WDR-489	10/7/2014	4520	0.110	7150	7.4	563	586	ND (50.0)	ND (0.500)	ND (2.00)	3.30	27.2	0.996	ND (1.00)	1.80	ND (1.00)	7.00	20.3	ND (2.00)	2.70	ND (0.0050)	517	60.6	ND (20.0)	
RL		250	0.100	2.00	---	5.00	5.00	50.0	0.500	2.00	0.500	5.00	0.0500	1.00	0.500	1.00	0.500	2.00	2.00	0.500	0.0050	12.5	20.0	20.0	
SC-100B-WDR-493	11/4/2014	4350	ND (0.100)	7160	7.3	581	560	ND (50.0)	ND (0.500)	ND (2.00)	3.30	28.3	0.872	ND (1.00)	1.72	ND (1.00)	8.20	21.0	ND (2.00)	2.43	ND (0.0050)	499	ND (20.0)	ND (20.0)	
RL		250	0.100	2.00	---	4.00	5.00	50.0	0.500	2.00	0.500	5.00	0.0500	1.00	0.500	1.00	0.500	2.00	2.00	0.500	0.0050	12.5	20.0	20.0	
SC-100B-WDR-497	12/2/2014	4410	0.253	7300	7.3	598	587	ND (50.0)	ND (0.500)	ND (2.00)	3.40	27.9	0.903	ND (1.00)	2.23	ND (1.00)	9.10	19.7	ND (2.00)	2.42	ND (0.0050)	490	ND (20.0)	ND (20.0)	
RL		250	0.100	2.00	---	1.00	5.00	50.0	0.500	2.00	0.500	5.00	0.0500	1.00	0.500	1.00	0.500	2.00	2.00	0.500	0.0050	25.0	20.0	20.0	

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

<sup>a</sup> 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).  
<sup>b</sup> Units reported in this table are those units required in the ARARs.  
<sup>c</sup> 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<sup>a</sup>  
Fourth Quarter 2014 Monitoring Report for Interim Measure No.3 Groundwater Treatment System

Effluent Limits <sup>b</sup>	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	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	NA	
Sampling Frequency		Weekly						Monthly																	
<div>Analyses Units<sup>c</sup> MDL<sup>d</sup></div>	Date	TDS	Turbidity	Specific Conductance	Field pH <sup>e</sup>	Chromium	Hexavalent Chromium	Aluminium	Ammonia (as N)	Antimony	Arsenic	Barium	Boron	Copper	Fluoride	Lead	Manganese	Molybdenum	Nickel	Nitrate (as N)	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	mg/L	µg/L	µg/L	
		1.76	0.0140	0.606	---	0.0710	0.0060	7.20	0.0318	0.0350	0.0500	0.300	0.0041	0.190	0.0600	0.140	0.0600	0.0500	0.240	0.0415	0.00063	0.768	3.00	5.10	
Sample ID																									
SC-700B-WDR-489	10/7/2014	4440	ND (0.100)	7190	6.70	ND (1.00)	ND (0.200)	ND (50.0)	ND (0.500)	ND (2.00)	ND (0.500)	8.70	0.946	ND (1.00)	1.48	ND (1.00)	5.80	20.8	3.20	2.69	0.0052	497	22.0	ND (20.0)	
	RL	250	0.100	2.00	---	1.00	0.200	50.0	0.500	2.00	0.500	5.00	0.0500	1.00	0.500	1.00	0.500	2.00	2.00	0.500	0.0050	12.5	20.0	20.0	
SC-700B-WDR-490	10/14/2014	4340	ND (0.100)	7170	7.14	ND (1.00)	ND (0.200)	---	---	---	---	---	---	---	---	---	6.10	---	---	---	---	---	---	---	
	RL	250	0.100	2.00	---	1.00	0.200	---	---	---	---	---	---	---	---	---	0.500	---	---	---	---	---	---	---	
SC-700B-WDR-491	10/21/2014	4220	0.175	7060	7.10	ND (1.00)	ND (0.200)	---	---	---	---	---	---	---	---	---	3.80	---	---	---	---	---	---	---	
	RL	250	0.100	2.00	---	1.00	0.200	---	---	---	---	---	---	---	---	---	0.500	---	---	---	---	---	---	---	
SC-700B-WDR-492	10/28/2014	3930	0.110	7140	7.03	ND (1.00)	ND (0.200)	---	---	---	---	---	---	---	---	---	4.10	---	---	---	---	---	---	---	
	RL	250	0.100	2.00	---	1.00	0.200	---	---	---	---	---	---	---	---	---	0.500	---	---	---	---	---	---	---	
SC-700B-WDR-493	11/4/2014	4160	ND (0.100)	7140	7.17	ND (1.00)	ND (0.200)	ND (50.0)	ND (0.500)	ND (2.00)	ND (0.500)	9.80	0.862	ND (1.00)	1.50	ND (1.00)	6.70	20.5	2.60	2.46	ND (0.0050)	489	ND (20.0)	ND (20.0)	
	RL	250	0.100	2.00	---	1.00	0.200	50.0	0.500	2.00	0.500	5.00	0.0500	1.00	0.500	1.00	0.500	2.00	2.00	0.500	0.0050	12.5	20.0	20.0	
SC-700B-WDR-494	11/12/2014	4170	0.103	7180	7.09	ND (1.00)	ND (0.200)	---	---	---	---	---	---	---	---	---	5.70	---	---	---	---	---	---	---	
	RL	250	0.100	2.00	---	1.00	0.200	---	---	---	---	---	---	---	---	---	0.500	---	---	---	---	---	---	---	
SC-700B-WDR-495	11/18/2014	4280	ND (0.100)	7250	7.11	ND (1.00)	ND (0.200)	---	---	---	---	---	---	---	---	---	5.90	---	---	---	---	---	---	---	
	RL	250	0.100	2.00	---	1.00	0.200	---	---	---	---	---	---	---	---	---	0.500	---	---	---	---	---	---	---	
SC-700B-WDR-496	11/25/2014	4000	0.128	7260	6.89	ND (1.00)	ND (0.200)	---	---	---	---	---	---	---	---	---	2.70	---	---	---	---	---	---	---	
	RL	250	0.100	2.00	---	1.00	0.200	---	---	---	---	---	---	---	---	---	0.500	---	---	---	---	---	---	---	
SC-700B-WDR-497	12/2/2014	4390	0.155	7300	7.04	ND (1.00)	0.200	ND (50.0)	ND (0.500)	ND (2.00)	ND (0.500)	13.8	0.878	ND (1.00)	2.03	ND (1.00)	3.90	22.2	ND (2.00)	2.49	ND (0.0050)	495	ND (20.0)	ND (20.0)	
	RL	250	0.100	2.00	---	1.00	0.200	50.0	0.500	2.00	0.500	5.00	0.0500	1.00	0.500	1.00	0.500	2.00	2.00	0.500	0.0050	25.0	20.0	20.0	
SC-700B-WDR-498	12/9/2014	4270	ND (0.100)	7240	7.25	ND (1.00)	ND (0.200)	---	---	---	---	---	---	---	---	---	6.80	---	---	---	---	---	---	---	
	RL	250	0.100	2.00	---	1.00	0.200	---	---	---	---	---	---	---	---	---	0.500	---	---	---	---	---	---	---	
SC-700B-WDR-499	12/16/2014	4350	ND (0.100)	7320	7.07	ND (1.00)	ND (0.200)	---	---	---	---	---	---	---	---	---	9.60	---	---	---	---	---	---	---	
	RL	250	0.100	2.00	---	1.00	0.200	---	---	---	---	---	---	---	---	---	0.500	---	---	---	---	---	---	---	
SC-700B-WDR-500	12/23/2014	4250	ND (0.100)	7230	7.01	ND (1.00)	ND (0.200)	---	---	---	---	---	---	---	---	---	4.30	---	---	---	---	---	---	---	
	RL	250	0.100	2.00	---	1.00	0.200	---	---	---	---	---	---	---	---	---	0.500	---	---	---	---	---	---	---	
SC-700B-WDR-501	12/30/2014	4400	ND (0.100)	7160	7.46	ND (1.00)	ND (0.200)	---	---	---	---	---	---	---	---	---	99.5	---	---	---	---	---	---	---	
	RL	250	0.100	2.00	---	1.00	0.200	---	---	---	---	---	---	---	---	---	2.50	---	---	---	---	---	---	---	

TABLE 5  
Topock IM-3 Waste Discharge Applicable or Relevant and Appropriate Requirements (ARARs)  
Effluent Monitoring Results<sup>a</sup>  
Fourth Quarter 2014 Monitoring Report for Interim Measure No.3 Groundwater Treatment System

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

- <sup>a</sup> 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).
- <sup>b</sup> 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.
- <sup>c</sup> Units reported in this table are those units required in the ARARs.
- <sup>d</sup> 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.
- <sup>e</sup> 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 <sup>a</sup>  
Fourth Quarter 2014 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 <sup>c</sup> pH	Chromium	Hexavalent Chromium	Antimony	Arsenic	Barium	Beryllium	Cadmium	Cobalt	Copper	Fluoride	Lead	Molybdenum	Mercury	Nickel	Selenium	Silver	Thallium	Vanadium	Zinc
		<div>Units<sup>b</sup></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>	1.76	0.606	---	0.00071	0.000030	0.00035	0.00050	0.0030	0.00036	0.00040	0.00020	0.00095	0.104	0.0014	0.00050	0.00040	0.0024	0.0021	0.00029	0.00030	0.00070	0.0051
SC-701-WDR-489	10/7/2014		19100	25600	7.6	ND (0.0050)	ND (0.0010)	ND (0.0020)	ND (0.0020)	0.0383	ND (0.0020)	ND (0.0050)	ND (0.0050)	0.0150	8.72	ND (0.0050)	0.0876	ND (0.0020)	0.00820	0.0191	ND (0.0050)	ND (0.0020)	ND (0.0050)	ND (0.0200)
RL			500	2.00	---	0.0050	0.0010	0.0020	0.0020	0.0100	0.0020	0.0050	0.0050	0.0025	0.500	0.0050	0.0050	0.0020	0.0050	0.0100	0.0050	0.0020	0.0050	0.0200

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

<sup>a</sup> Sampling location for all reverse osmosis samples is tap on pipe T-701 (see attached P&ID PR-10-04).  
<sup>b</sup> Units reported in this table are those units required in the ARARs.  
<sup>c</sup> 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<sup>a</sup>  
Fourth Quarter 2014 Monitoring Report for Interim Measure No.3 Groundwater Treatment System

Sampling Frequency		Quarterly																			Annually	
<div> </div>	<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 <sup>b</sup>	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	0.0140	0.0500	0.0694	0.0188	0.0106	0.00072	0.0025	0.0020	0.0264	0.0209	0.0040	0.0216	0.00040	0.0040	0.0064	0.0032	0.0456	0.0056	0.0102	at 750 mg/L <sup>c</sup>
Sample ID	Date																					
SC-Sludge-WDR-489	10/7/2014																					100
		3010	30.6	48.2	ND (5.00)	68.8	ND (1.97)	8.92	ND (10.0)	146	20.6	ND (5.00)	11.1	0.232	46.2	ND (5.00)	ND (5.00)	ND (9.85)	42.0	32.9		100
		RL	9.85	4.42	13.8	5.00	10.0	1.97	1.97	10.0	7.88	4.42	5.00	10.0	0.215	5.00	5.00	5.00	9.85	5.00	10.0	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

<sup>a</sup> Sampling location for all sludge samples is the sludge collection bin (see attached P&ID TP-PR-10-10-06).  
<sup>b</sup> Units reported in this table are those units required in the ARARs.  
<sup>c</sup> Sludge shall have an aquatic bioassay test performed each time sludge is transported offsite, unless transport is more frequent than quaterly, in which case the sampling frequency



TABLE 8

Topock IM-3 Waste Discharge Applicable or Relevant and Appropriate Requirements (ARARs)  
Monitoring Information  
Fourth Quarter 2014 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-489	Chris Lentz	10/7/2014	8:00:00 AM	TLI	EPA 120.1	SC	10/10/2014	Jenny Tankunakorn
					TLI	EPA 200.7	AL	10/10/2014	Ethel Suico
					TLI	EPA 200.7	B	10/10/2014	Ethel Suico
					TLI	EPA 200.7	FE	10/10/2014	Ethel Suico
					TLI	EPA 200.7	ZN	10/10/2014	Ethel Suico
					TLI	EPA 200.8	AS	10/16/2014	Ethel Suico
					TLI	EPA 200.8	BA	10/16/2014	Ethel Suico
					TLI	EPA 200.8	CR	10/16/2014	Ethel Suico
					TLI	EPA 200.8	CU	10/16/2014	Ethel Suico
					TLI	EPA 200.8	MN	10/16/2014	Ethel Suico
					TLI	EPA 200.8	MO	10/16/2014	Ethel Suico
					TLI	EPA 200.8	NI	10/16/2014	Ethel Suico
					TLI	EPA 200.8	PB	10/16/2014	Ethel Suico
					TLI	EPA 200.8	SB	10/16/2014	Ethel Suico
					TLI	EPA 218.6	CR6	10/8/2014	Naheed Eidinejad
					TLI	EPA 300.0	FL	10/8/2014	Giawad Ghenniwa
					TLI	EPA 300.0	NO3N	10/8/2014	Giawad Ghenniwa
					TLI	EPA 300.0	SO4	10/8/2014	Giawad Ghenniwa
					FIELD	HACH	PH	10/7/2014	Chris Lentz
					TLI	SM 2540C	TDS	10/10/2014	Jenny Tankunakorn
					TLI	SM2130B	TRB	10/8/2014	Jennine Ta
					TLI	SM4500NH3D	NH3N	10/16/2014	Maksim Gorbunov
					TLI	SM4500NO2B	NO2N	10/8/2014	Jenny Tankunakorn
SC-100B	SC-100B-WDR-493	Ryan Phelps	11/4/2014	1:00:00 PM	TLI	EPA 120.1	SC	11/7/2014	Jenny Tankunakorn
					TLI	EPA 200.7	AL	11/5/2014	Ethel Suico
					TLI	EPA 200.7	B	11/5/2014	Ethel Suico
					TLI	EPA 200.7	FE	11/5/2014	Ethel Suico
					TLI	EPA 200.7	FETD	12/3/2014	Ethel Suico
					TLI	EPA 200.7	ZN	11/5/2014	Ethel Suico
					TLI	EPA 200.8	AS	11/5/2014	Tom Martinez/Ethel Suico
					TLI	EPA 200.8	BA	11/5/2014	Tom Martinez/Ethel Suico
					TLI	EPA 200.8	CR	11/5/2014	Tom Martinez/Ethel Suico
					TLI	EPA 200.8	CU	11/11/2014	Tom Martinez/Ethel Suico
					TLI	EPA 200.8	MN	11/5/2014	Tom Martinez/Ethel Suico
					TLI	EPA 200.8	MND	11/25/2014	Tom Martinez/Ethel Suico
					TLI	EPA 200.8	MO	11/5/2014	Tom Martinez/Ethel Suico

TABLE 8

Topock IM-3 Waste Discharge Applicable or Relevant and Appropriate Requirements (ARARs)  
Monitoring Information  
Fourth Quarter 2014 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-493	Ryan Phelps	11/4/2014	1:00:00 PM	TLI	EPA 200.8	NI	11/5/2014	Tom Martinez/Ethel Suico
					TLI	EPA 200.8	PB	11/5/2014	Tom Martinez/Ethel Suico
					TLI	EPA 200.8	SB	11/5/2014	Tom Martinez/Ethel Suico
					TLI	EPA 218.6	CR6	11/5/2014	Naheed Eidinejad
					TLI	EPA 300.0	FL	11/5/2014	Giawad Ghenniwa
					TLI	EPA 300.0	NO3N	11/5/2014	Giawad Ghenniwa
					TLI	EPA 300.0	SO4	11/5/2014	Giawad Ghenniwa
					FIELD	HACH	PH	11/4/2014	Ryan Phelps
					TLI	SM 2320B	ALKB	11/13/2014	Alex Luna
					TLI	SM 2320B	ALKC	11/13/2014	Alex Luna
					TLI	SM 2540C	TDS	11/6/2014	Jenny Tankunakorn
					TLI	SM2130B	TRB	11/6/2014	Jennine Ta
					TLI	SM4500NH3D	NH3N	11/8/2014	Maksim Gorbunov
					TLI	SM4500NO2B	NO2N	11/5/2014	Jenny Tankunakorn
SC-100B	SC-100B-WDR-497	George Gloria	12/2/2014	1:52:00 PM	TLI	EPA 120.1	SC	12/3/2014	Jenny Tankunakorn
					TLI	EPA 200.7	AL	12/3/2014	Ethel Suico
					TLI	EPA 200.7	B	12/3/2014	Ethel Suico
					TLI	EPA 200.7	FE	12/4/2014	Ethel Suico
					TLI	EPA 200.7	FETD	12/5/2014	Ethel Suico
					TLI	EPA 200.7	ZN	12/3/2014	Ethel Suico
					TLI	EPA 200.8	AS	12/4/2014	Tom Martinez
					TLI	EPA 200.8	BA	12/4/2014	Tom Martinez
					TLI	EPA 200.8	CR	12/4/2014	Tom Martinez
					TLI	EPA 200.8	CU	12/9/2014	Tom Martinez
					TLI	EPA 200.8	MN	12/4/2014	Tom Martinez
					TLI	EPA 200.8	MND	12/4/2014	Tom Martinez
					TLI	EPA 200.8	MO	12/4/2014	Tom Martinez
					TLI	EPA 200.8	NI	12/4/2014	Tom Martinez
					TLI	EPA 200.8	PB	12/4/2014	Tom Martinez
					TLI	EPA 200.8	SB	12/4/2014	Tom Martinez
					TLI	EPA 218.6	CR6	12/5/2014	Naheed Eidinejad
					TLI	EPA 300.0	FL	12/3/2014	Giawad Ghenniwa
					TLI	EPA 300.0	NO3N	12/3/2014	Giawad Ghenniwa
					TLI	EPA 300.0	SO4	12/4/2014	Giawad Ghenniwa
					FIELD	HACH	PH	12/2/2014	G.Gloria
					TLI	SM 2320B	ALKB	12/11/2014	Alex Luna

TABLE 8

Topock IM-3 Waste Discharge Applicable or Relevant and Appropriate Requirements (ARARs)  
Monitoring Information  
Fourth Quarter 2014 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-497	George Gloria	12/2/2014	1:52:00 PM	TLI	SM 2320B	ALKC	12/11/2014	Alex Luna
					TLI	SM 2540C	TDS	12/4/2014	Jenny Tankunakorn
					TLI	SM2130B	TRB	12/3/2014	Jennine Ta
					TLI	SM4500NH3D	NH3N	12/30/2014	Maksim Gorbunov
					TLI	SM4500NO2B	NO2N	12/3/2014	Jenny Tankunakorn
SC-700B	SC-700B-WDR-489	Chris Lentz	10/7/2014	8:00:00 AM	TLI	EPA 120.1	SC	10/10/2014	Jenny Tankunakorn
					TLI	EPA 200.7	AL	10/10/2014	Ethel Suico
					TLI	EPA 200.7	B	10/10/2014	Ethel Suico
					TLI	EPA 200.7	FE	10/10/2014	Ethel Suico
					TLI	EPA 200.7	ZN	10/10/2014	Ethel Suico
					TLI	EPA 200.8	AS	10/16/2014	Ethel Suico
					TLI	EPA 200.8	BA	10/16/2014	Ethel Suico
					TLI	EPA 200.8	CR	10/16/2014	Ethel Suico
					TLI	EPA 200.8	CU	10/16/2014	Ethel Suico
					TLI	EPA 200.8	MN	10/16/2014	Ethel Suico
					TLI	EPA 200.8	MO	10/16/2014	Ethel Suico
					TLI	EPA 200.8	NI	10/16/2014	Ethel Suico
					TLI	EPA 200.8	PB	10/16/2014	Ethel Suico
					TLI	EPA 200.8	SB	10/16/2014	Ethel Suico
					TLI	EPA 218.6	CR6	10/8/2014	Naheed Eidinejad
					TLI	EPA 300.0	FL	10/8/2014	Giawad Ghenniwa
					TLI	EPA 300.0	NO3N	10/8/2014	Giawad Ghenniwa
					TLI	EPA 300.0	SO4	10/8/2014	Giawad Ghenniwa
					FIELD	HACH	PH	10/7/2014	Chris Lentz
					TLI	SM 2540C	TDS	10/10/2014	Jenny Tankunakorn
					TLI	SM2130B	TRB	10/8/2014	Jennine Ta
					TLI	SM4500NH3D	NH3N	10/16/2014	Maksim Gorbunov
					TLI	SM4500NO2B	NO2N	10/8/2014	Jenny Tankunakorn
SC-700B	SC-700B-WDR-490	Chris Lentz	10/14/2014	2:00:00 PM	TLI	EPA 120.1	SC	10/16/2014	Jenny Tankunakorn
					TLI	EPA 200.8	CR	10/16/2014	Ethel Suico
					TLI	EPA 200.8	MN	10/16/2014	Ethel Suico
					TLI	EPA 218.6	CR6	10/15/2014	Naheed Eidinejad
					FIELD	HACH	PH	10/14/2014	Chris Lentz
					TLI	SM 2540C	TDS	10/15/2014	Jenny Tankunakorn
					TLI	SM2130B	TRB	10/15/2014	Jennine Ta

TABLE 8

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

Monitoring Information

Fourth Quarter 2014 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-491	Ron Phelps	10/21/2014	10:00:00 AM	TLI	EPA 120.1	SC	10/27/2014	Jenny Tankunakorn
					TLI	EPA 200.8	CR	10/29/2014	Tom Martinez
					TLI	EPA 200.8	MN	10/29/2014	Tom Martinez
					TLI	EPA 218.6	CR6	10/24/2014	Naheed Eidinejad
					FIELD	HACH	PH	10/21/2014	Ron Phelps
					TLI	SM 2540C	TDS	10/22/2014	Jenny Tankunakorn
					TLI	SM2130B	TRB	10/22/2014	Naheed Eidinejad
SC-700B	SC-700B-WDR-492	Chris Lentz	10/28/2014	3:35:00 PM	TLI	EPA 120.1	SC	10/30/2014	Jenny Tankunakorn
					TLI	EPA 200.8	CR	11/3/2014	Tom Martinez
					TLI	EPA 200.8	MN	11/7/2014	Tom Martinez
					TLI	EPA 218.6	CR6	10/29/2014	Naheed Eidinejad
					FIELD	HACH	PH	10/28/2014	Chris Lentz
					TLI	SM 2540C	TDS	10/30/2014	Jenny Tankunakorn
					TLI	SM2130B	TRB	10/29/2014	Jennine Ta
SC-700B	SC-700B-WDR-493	Ryan Phelps	11/4/2014	1:00:00 PM	TLI	EPA 120.1	SC	11/7/2014	Jenny Tankunakorn
					TLI	EPA 200.7	AL	11/5/2014	Ethel Suico
					TLI	EPA 200.7	B	11/5/2014	Ethel Suico
					TLI	EPA 200.7	FE	11/5/2014	Ethel Suico
					TLI	EPA 200.7	ZN	11/5/2014	Ethel Suico
					TLI	EPA 200.8	AS	11/5/2014	Tom Martinez/Ethel Suico
					TLI	EPA 200.8	BA	11/5/2014	Tom Martinez/Ethel Suico
					TLI	EPA 200.8	CR	11/5/2014	Tom Martinez/Ethel Suico
					TLI	EPA 200.8	CU	11/11/2014	Tom Martinez/Ethel Suico
					TLI	EPA 200.8	MN	11/5/2014	Tom Martinez/Ethel Suico
					TLI	EPA 200.8	MO	11/5/2014	Tom Martinez/Ethel Suico
					TLI	EPA 200.8	NI	11/5/2014	Tom Martinez/Ethel Suico
					TLI	EPA 200.8	PB	11/5/2014	Tom Martinez/Ethel Suico
					TLI	EPA 200.8	SB	11/5/2014	Tom Martinez/Ethel Suico
					TLI	EPA 218.6	CR6	11/5/2014	Naheed Eidinejad
					TLI	EPA 300.0	FL	11/5/2014	Giawad Ghenniwa
					TLI	EPA 300.0	NO3N	11/5/2014	Giawad Ghenniwa
					TLI	EPA 300.0	SO4	11/5/2014	Giawad Ghenniwa
					FIELD	HACH	PH	11/4/2014	Ryan Phelps
					TLI	SM 2540C	TDS	11/6/2014	Jenny Tankunakorn
					TLI	SM2130B	TRB	11/6/2014	Jennine Ta

TABLE 8

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

Monitoring Information

Fourth Quarter 2014 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-493	Ryan Phelps	11/4/2014	1:00:00 PM	TLI	SM4500NH3D	NH3N	11/8/2014	Maksim Gorbunov
					TLI	SM4500NO2B	NO2N	11/5/2014	Jenny Tankunakorn
SC-700B	SC-700B-WDR-494	George Gloria	11/12/2014		TLI	EPA 120.1	SC	11/13/2014	Jenny Tankunakorn
					TLI	EPA 200.8	CR	11/17/2014	Tom Martinez
					TLI	EPA 200.8	MN	11/17/2014	Tom Martinez
					TLI	EPA 218.6	CR6	11/13/2014	Naheed Eidinejad
					FIELD	HACH	PH	11/12/2014	G.Gloria
					TLI	SM 2540C	TDS	11/13/2014	Jenny Tankunakorn
					TLI	SM2130B	TRB	11/13/2014	Jennine Ta
SC-700B	SC-700B-WDR-495	Chris Lentz	11/18/2014	8:00:00 AM	TLI	EPA 120.1	SC	11/20/2014	Jenny Tankunakorn
					TLI	EPA 200.8	CR	11/25/2014	Tom Martinez
					TLI	EPA 200.8	MN	11/25/2014	Tom Martinez
					TLI	EPA 218.6	CR6	11/19/2014	Naheed Eidinejad
					FIELD	HACH	PH	11/18/2014	Chris Lentz
					TLI	SM 2540C	TDS	11/21/2014	Jenny Tankunakorn
					TLI	SM2130B	TRB	11/19/2014	Naheed Eidinejad
SC-700B	SC-700B-WDR-496	Chris Lentz	11/25/2014	7:54:00 AM	TLI	EPA 120.1	SC	11/26/2014	Jenny Tankunakorn
					TLI	EPA 200.8	CR	12/3/2014	Tom Martinez
					TLI	EPA 200.8	MN	12/3/2014	Tom Martinez
					TLI	EPA 218.6	CR6	12/2/2014	Naheed Eidinejad
					FIELD	HACH	PH	11/25/2014	Chris Lentz
					TLI	SM 2540C	TDS	12/1/2014	Jenny Tankunakorn
					TLI	SM2130B	TRB	11/26/2014	Jennine Ta
SC-700B	SC-700B-WDR-497	George Gloria	12/2/2014	1:52:00 PM	TLI	EPA 120.1	SC	12/3/2014	Jenny Tankunakorn
					TLI	EPA 200.7	AL	12/3/2014	Ethel Suico
					TLI	EPA 200.7	B	12/3/2014	Ethel Suico
					TLI	EPA 200.7	FE	12/4/2014	Ethel Suico
					TLI	EPA 200.7	ZN	12/3/2014	Ethel Suico
					TLI	EPA 200.8	AS	12/4/2014	Tom Martinez
					TLI	EPA 200.8	BA	12/4/2014	Tom Martinez
					TLI	EPA 200.8	CR	12/4/2014	Tom Martinez
					TLI	EPA 200.8	CU	12/9/2014	Tom Martinez
					TLI	EPA 200.8	MN	12/4/2014	Tom Martinez
					TLI	EPA 200.8	MO	12/4/2014	Tom Martinez
					TLI	EPA 200.8	NI	12/4/2014	Tom Martinez

TABLE 8

Topock IM-3 Waste Discharge Applicable or Relevant and Appropriate Requirements (ARARs)  
Monitoring Information  
Fourth Quarter 2014 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-497	George Gloria	12/2/2014	1:52:00 PM	TLI	EPA 200.8	PB	12/4/2014	Tom Martinez
					TLI	EPA 200.8	SB	12/4/2014	Tom Martinez
					TLI	EPA 218.6	CR6	12/5/2014	Naheed Eidinejad
					TLI	EPA 300.0	FL	12/3/2014	Giawad Ghenniwa
					TLI	EPA 300.0	NO3N	12/3/2014	Giawad Ghenniwa
					TLI	EPA 300.0	SO4	12/4/2014	Giawad Ghenniwa
					FIELD	HACH	PH	12/2/2014	G.Gloria
					TLI	SM 2540C	TDS	12/4/2014	Jenny Tankunakorn
					TLI	SM2130B	TRB	12/3/2014	Jennine Ta
					TLI	SM4500NH3D	NH3N	12/30/2014	Maksim Gorbunov
					TLI	SM4500NO2B	NO2N	12/3/2014	Jenny Tankunakorn
SC-700B	SC-700B-WDR-498	Chris Lentz	12/9/2014	12:30:00 PM	TLI	EPA 120.1	SC	12/15/2014	Jenny Tankunakorn
					TLI	EPA 200.8	CR	12/11/2014	Tom Martinez
					TLI	EPA 200.8	MN	12/11/2014	Tom Martinez
					TLI	EPA 218.6	CR6	12/12/2014	Naheed Eidinejad
					FIELD	HACH	PH	12/9/2014	Chris Lentz
					TLI	SM 2540C	TDS	12/10/2014	Jenny Tankunakorn
					TLI	SM2130B	TRB	12/10/2014	Naheed Eidinejad
SC-700B	SC-700B-WDR-499	Chris Lentz	12/16/2014	12:30:00 PM	TLI	EPA 120.1	SC	12/17/2014	Jenny Tankunakorn
					TLI	EPA 200.8	CR	12/22/2014	Tom Martinez
					TLI	EPA 200.8	MN	12/22/2014	Tom Martinez
					TLI	EPA 218.6	CR6	12/22/2014	Naheed Eidinejad
					FIELD	HACH	PH	12/16/2014	Chris Lentz
					TLI	SM 2540C	TDS	12/17/2014	Jenny Tankunakorn
					TLI	SM2130B	TRB	12/18/2014	Naheed Eidinejad
SC-700B	SC-700B-WDR-500	Chris Lentz	12/23/2014	7:30:00 AM	TLI	EPA 120.1	SC	12/24/2014	Jenny Tankunakorn
					TLI	EPA 200.8	CR	12/31/2014	Tom Martinez
					TLI	EPA 200.8	MN	12/31/2014	Tom Martinez
					TLI	EPA 218.6	CR6	12/30/2014	Naheed Eidinejad
					FIELD	HACH	PH	12/23/2014	Chris Lentz
					TLI	SM 2540C	TDS	12/23/2014	Jenny Tankunakorn
					TLI	SM2130B	TRB	12/24/2014	Naheed Eidinejad
SC-700B	SC-700B-WDR-501	Chris Lentz	12/30/2014	7:30:00 AM	TLI	EPA 120.1	SC	1/2/2015	Jenny Tankunakorn
					TLI	EPA 200.8	CR	1/2/2015	Tom Martinez
					TLI	EPA 200.8	MN	1/5/2015	Tom Martinez

TABLE 8

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

Monitoring Information

Fourth Quarter 2014 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-501	Chris Lentz	12/30/2014	7:30:00 AM	TLI	EPA 218.6	CR6	12/31/2014	Naheed Eidinejad
					FIELD	HACH	PH	12/30/2014	Chris Lentz
					TLI	SM 2540C	TDS	1/2/2015	Jenny Tankunakorn
					TLI	SM2130B	TRB	12/31/2014	Naheed Eidinejad
SC-701	SC-701-WDR-489	Chris Lentz	10/7/2014	8:00:00 AM	TLI	EPA 120.1	SC	10/10/2014	Jenny Tankunakorn
					TLI	EPA 200.7	ZN	10/10/2014	Ethel Suico
					TLI	EPA 200.8	AG	10/16/2014	Ethel Suico
					TLI	EPA 200.8	AS	10/16/2014	Ethel Suico
					TLI	EPA 200.8	BA	10/16/2014	Ethel Suico
					TLI	EPA 200.8	BE	10/21/2014	Ethel Suico
					TLI	EPA 200.8	CD	10/16/2014	Ethel Suico
					TLI	EPA 200.8	CO	10/17/2014	Ethel Suico
					TLI	EPA 200.8	CR	10/16/2014	Ethel Suico
					TLI	EPA 200.8	CU	10/17/2014	Ethel Suico
					TLI	EPA 200.8	HG	10/16/2014	Ethel Suico
					TLI	EPA 200.8	MN	10/16/2014	Ethel Suico
					TLI	EPA 200.8	MO	10/16/2014	Ethel Suico
					TLI	EPA 200.8	NI	10/16/2014	Ethel Suico
					TLI	EPA 200.8	PB	10/16/2014	Ethel Suico
					TLI	EPA 200.8	SB	10/16/2014	Ethel Suico
					TLI	EPA 200.8	SE	10/16/2014	Ethel Suico
					TLI	EPA 200.8	TL	10/16/2014	Ethel Suico
					TLI	EPA 200.8	V	10/16/2014	Ethel Suico
					TLI	EPA 218.6	CR6	10/8/2014	Naheed Eidinejad
					TLI	EPA 300.0	FL	10/8/2014	Giawad Ghenniwa
					FIELD	HACH	PH	10/7/2014	Chris Lentz
					TLI	SM 2540C	TDS	10/10/2014	Jenny Tankunakorn
Phase Separator	SC-Sludge-WDR-489	Chris Lentz	10/7/2014	10:00:00 AM	TLI	EPA 300.0	FL	10/8/2014	Giawad Ghenniwa
					TLI	EPA 6010B	AG	10/13/2014	Ethel Suico/Tom Martinez
					TLI	EPA 6010B	AS	10/13/2014	Ethel Suico/Tom Martinez
					TLI	EPA 6010B	BA	10/13/2014	Ethel Suico/Tom Martinez
					TLI	EPA 6010B	CD	10/13/2014	Ethel Suico/Tom Martinez
					TLI	EPA 6010B	CO	10/13/2014	Ethel Suico/Tom Martinez
					TLI	EPA 6010B	CR	10/13/2014	Ethel Suico/Tom Martinez
					TLI	EPA 6010B	CU	10/31/2014	Ethel Suico/Tom Martinez

TABLE 8

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

Monitoring Information

Fourth Quarter 2014 Monitoring Report for Interim Measure No.3 Groundwater Treatment System

Location	Sample ID	Sampler Name	Sample Date	Sample Time	Lab	Analysis Method	Parameter	Analysis Date	Lab Technician
Phase Separator	SC-Sludge-WDR-489	Chris Lentz	10/7/2014	10:00:00 AM	TLI	EPA 6010B	MN	10/13/2014	Ethel Suico/Tom Martinez
					TLI	EPA 6010B	MO	10/13/2014	Ethel Suico/Tom Martinez
					TLI	EPA 6010B	NI	10/13/2014	Ethel Suico/Tom Martinez
					TLI	EPA 6010B	PB	10/31/2014	Ethel Suico/Tom Martinez
					TLI	EPA 6010B	SB	10/13/2014	Ethel Suico/Tom Martinez
					TLI	EPA 6010B	SE	10/13/2014	Ethel Suico/Tom Martinez
					TLI	EPA 6010B	TL	10/13/2014	Ethel Suico/Tom Martinez
					TLI	EPA 6010B	V	10/13/2014	Ethel Suico/Tom Martinez
					TLI	EPA 6010B	ZN	10/13/2014	Ethel Suico/Tom Martinez
					TLI	SM2540B	MOIST	10/13/2014	Naheed Eidinejad
					TLI	SW 6020A	BE	10/22/2014	Ethel Suico
					TLI	SW 6020A	HG	11/4/2014	Ethel Suico
					TLI	SW 7199	CR6	10/15/2014	Naheed Eidinejad

TABLE 8

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

Monitoring Information

*Fourth Quarter 2014 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&amp;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&amp;ID TP-PR-10-10-04).

SC-701 = Sampling location for all reverse osmosis samples is tap on pipe T-701 (see attached P&amp;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.

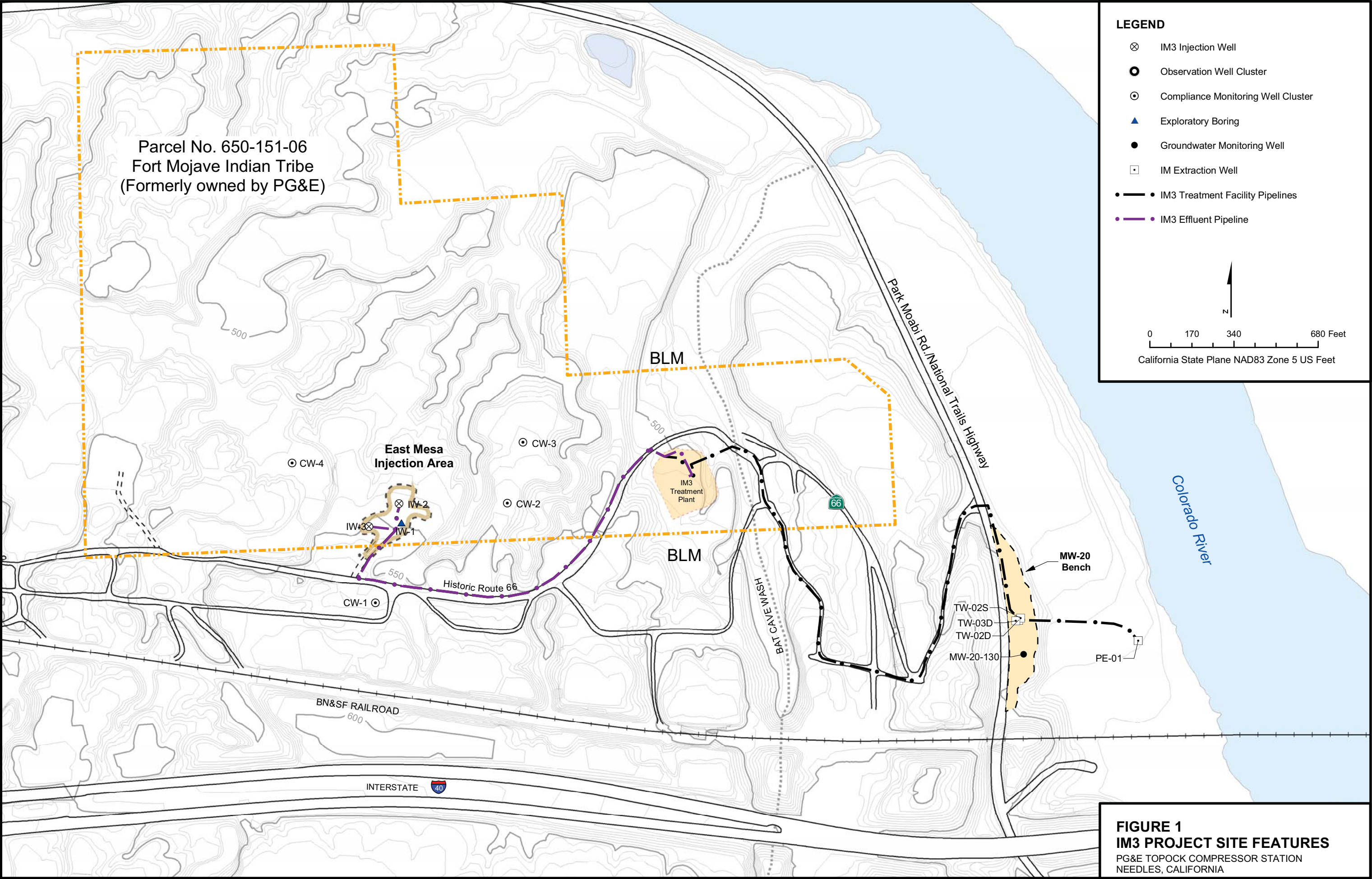
ALKB =	alkalinity, bicarb as CaCO <sub>3</sub>	MO =	molybdenum
ALKC =	alkalinity, carb as CaCO <sub>3</sub>	MOIST =	moisture
AL =	aluminum	NH <sub>3</sub> N =	ammonia (as N)
Ag =	silver	NI =	nickel
AS =	arsenic	NO <sub>2</sub> N =	nitrite (as N)
B =	boron	NO <sub>3</sub> N =	nitrate (as N)
BA =	barium	PB =	lead
BE =	beryllium	PH =	pH
CD =	cadmium	SB =	antimony
CO =	cobalt	SC =	specific conductance
CR =	chromium	SE =	selenium
CR6 =	hexavalent chromium	SO <sub>4</sub> =	sulfate
CU =	copper	TDS =	total dissolved solids
FE =	iron	TL =	thallium
FETD =	iron, dissolved	TLI =	Truesdail Laboratories, Inc.
FL =	fluoride	TRB =	turbidity
HG =	mercury	V =	vanadium
MN =	manganese	ZN =	zinc
MND =	manganese, dissolved		



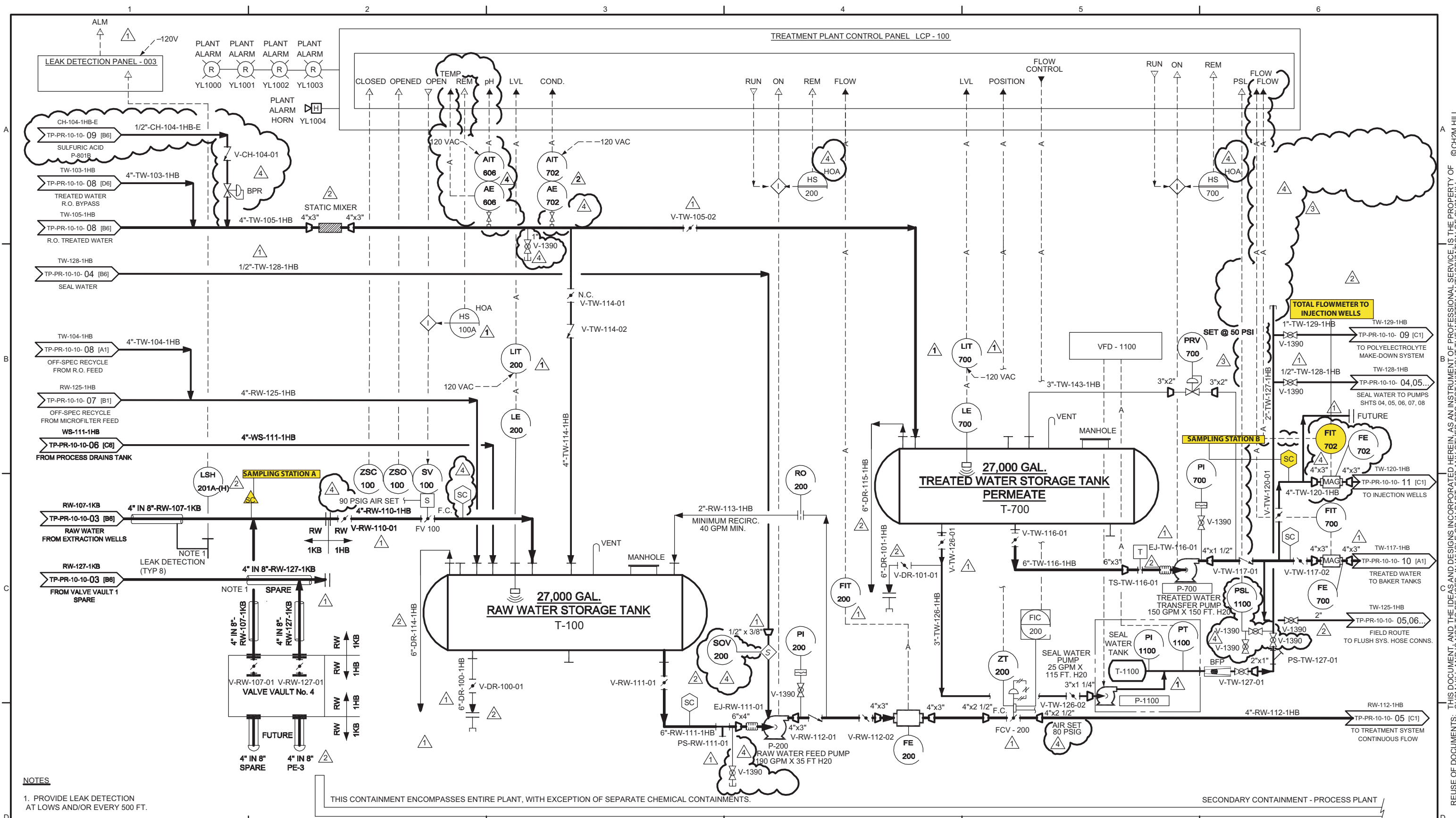
## Figures

---









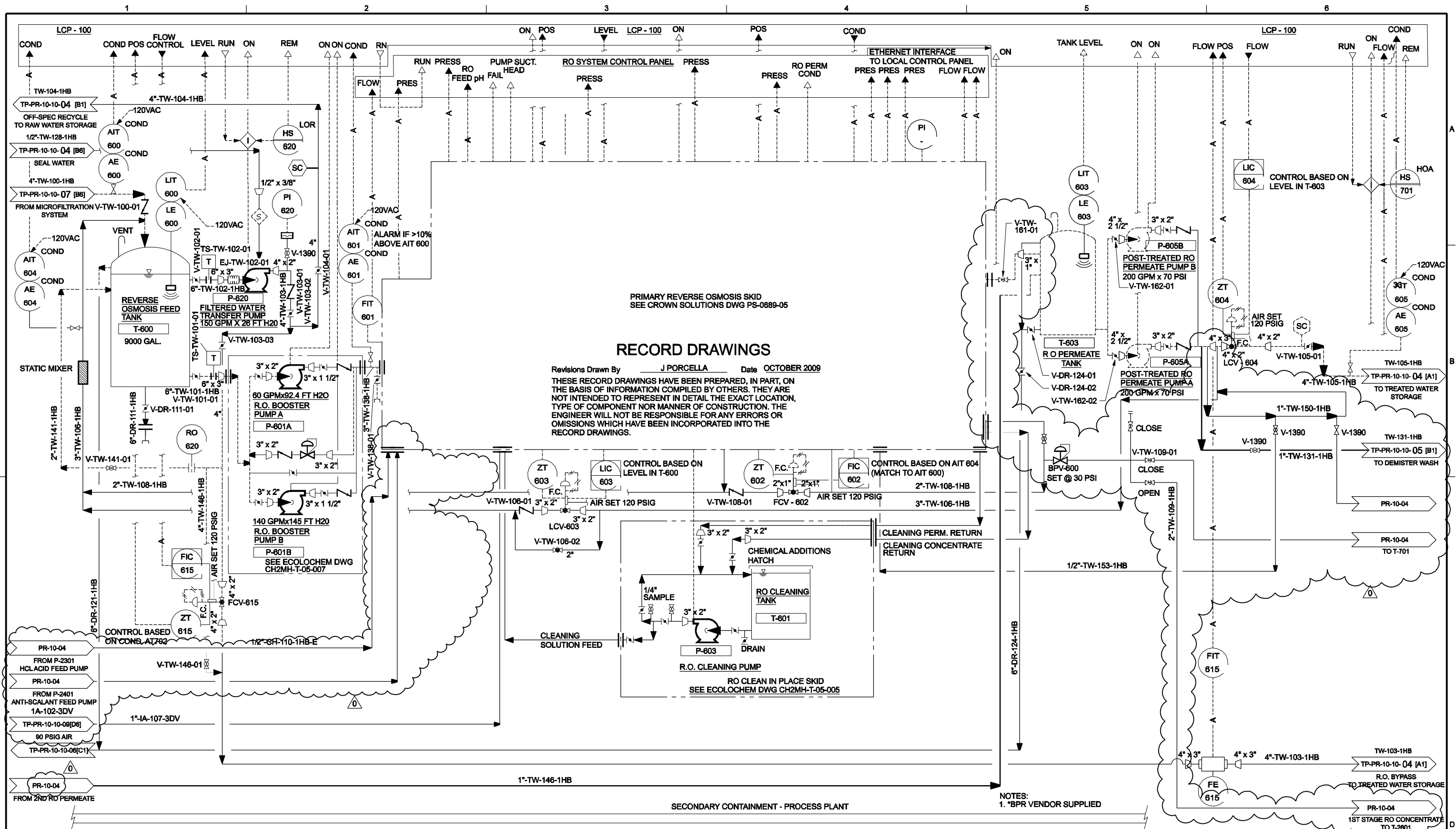
NOTES  
1. PROVIDE LEAK DETECTION AT LOWS AND/OR EVERY 500 FT.

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

SECONDARY CONTAINMENT - PROCESS PLANT

RESPONSIBLE ENGINEER: Kenneth L. Martins CH4876 PE #	NO.	DATE	REVISION	BY	CHK	REVISION APPROVAL	REV 4	DATE 09/21/05	PRINT DISTRIBUTION	STATUS					PACIFIC GAS & ELECTRIC CO. TOPOCK COMPRESSOR STATION INTERIM MEASURE 3 EXPANDED GROUNDWATER EXTRACTION AND TREATMENT SYSTEM PROJ NO. 315994	PROCESS AND INSTRUMENTATION DIAGRAM  SHEET 04 STORAGE AREA			
	0	07/28/04	FOR INTERNAL REVIEW	EFC	AJ	DISCIPLINE	REVIEWED	DISCIPLINE	REVIEWED	DATE		ISSUED	REV	DATE				SDE	PEM
	0	09/03/04	APPROVED FOR CONSTRUCTION	EFC	AJ	CIVIL		ELECTRICAL		STATUS		PRELIMINARY							
	1	10/13/04	REVISED AND APPROVED FOR CONSTRUCTION	EFC	AJ	STRUCTURAL		INST & CONTROL		REV.		FOR REVIEW AND APPROVAL	D	07/28/04					
	2	01/23/05	REVISED AND APPROVED FOR CONSTRUCTION	EFC	AJ	MECHANICAL		ARCHITECTURAL		CLIENT		APPROVED FOR CONSTRUCTION	0	09/03/04				KLM	TP
	3	02/14/05	ADDED RECIRC. LINE AND PRV VALVE TO T-700 - APPROVED FOR CONSTRUCTION	EFC	AJ	PROCESS		ENVIRONMENTAL		FIELD		REVISED & APPROVED FOR CONSTRUCTION	4	/ /					
	4	09/21/05	REVISED PER AS-BUILT CONDITIONS	EFC	AJ	PIPING		GEN. ARRANG.		INTRA CO.									
										SCALE NONE					CH2MHILL		DWG. NO. TP-PR-10-10-04	REV. 4	





### RECORD DRAWINGS

Revisions Drawn By J PORCELLA Date OCTOBER 2009  
THESE RECORD DRAWINGS HAVE BEEN PREPARED, IN PART, ON THE BASIS OF INFORMATION COMPILED BY OTHERS. THEY ARE NOT INTENDED TO REPRESENT IN DETAIL THE EXACT LOCATION, TYPE OF COMPONENT NOR MANNER OF CONSTRUCTION. THE ENGINEER WILL NOT BE RESPONSIBLE FOR ANY ERRORS OR OMISSIONS WHICH HAVE BEEN INCORPORATED INTO THE RECORD DRAWINGS.

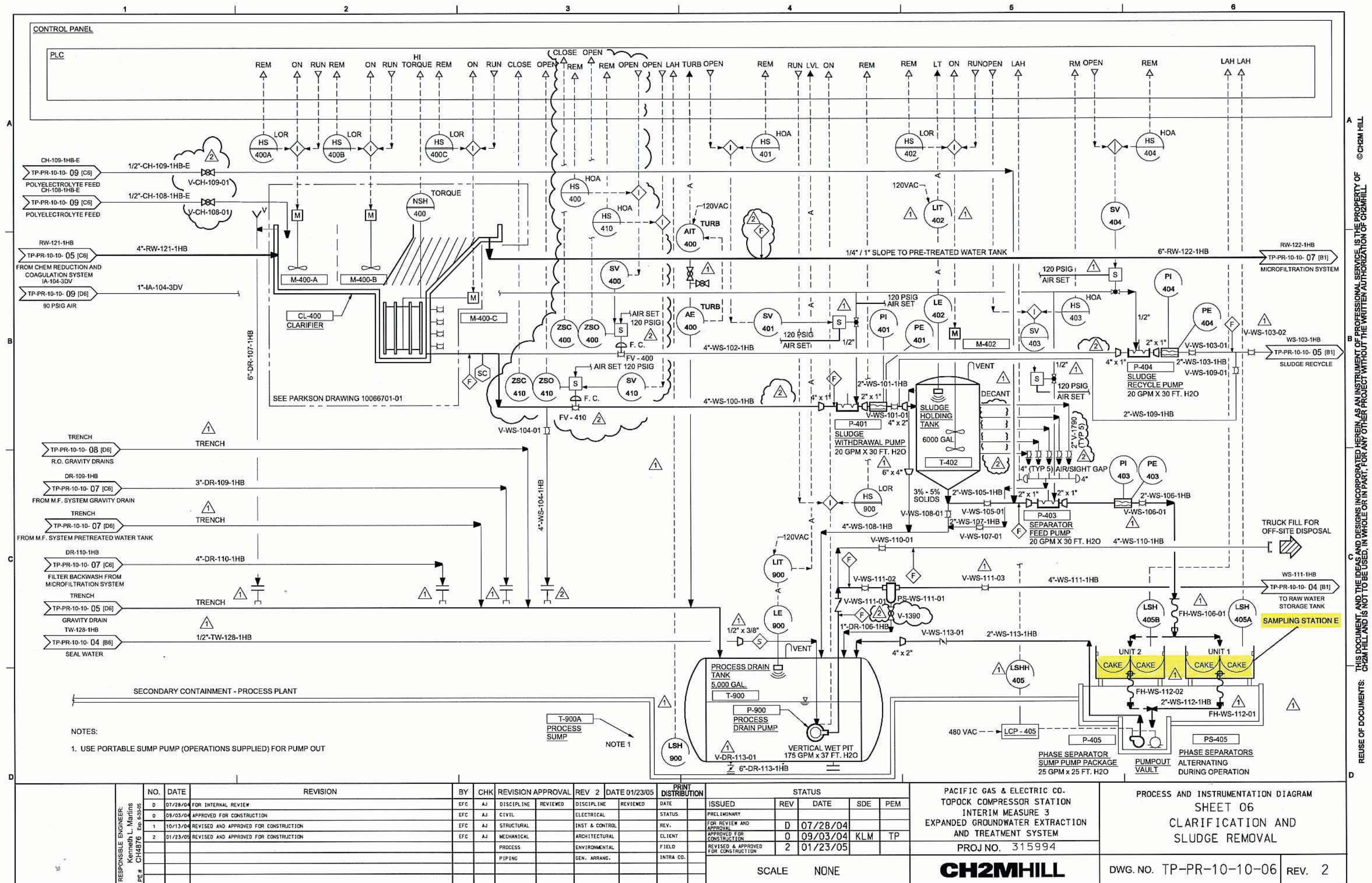
NOTES:  
1. \*BPR VENDOR SUPPLIED

** ORIGINALLY STAMPED AND SIGNED BY: JOHN PORCELLA CALIFORNIA PE NO. C70145 ON 04-01-2009 **	RESPONSIBLE ENGINEER: John Porcella C70145 Exp. 5-30-10  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			
		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	PROJ NO. 362032		
									PIPING	SJ	GEN. ARRANG.	SJ	INTRA CO.								
												SCALE NONE					CH2MHILL			DWG. NO. PR-10-03	REV. 0









THIS DOCUMENT AND THE IDEAS AND DESIGNS INCORPORATED HEREIN, AS AN INSTRUMENT OF PROFESSIONAL SERVICE, IS THE PROPERTY OF CH2M HILL AND IS NOT TO BE USED, IN WHOLE OR IN PART, FOR ANY OTHER PROJECT WITHOUT THE WRITTEN AUTHORIZATION OF CH2M HILL.

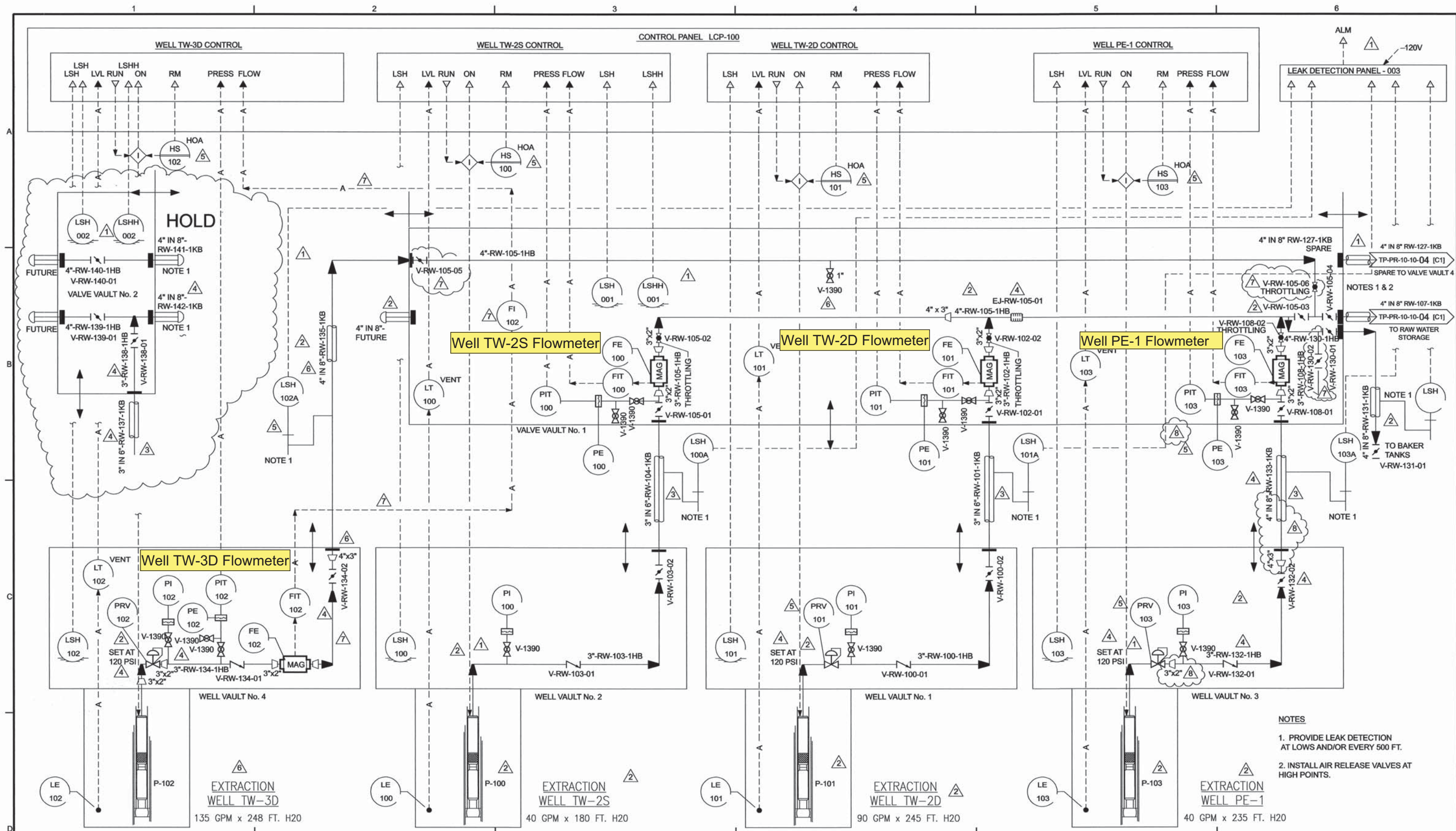
BAR IS ONE INCH  
ON ORIGINAL DRAWING.

FILENAME: tppr101006.dwg

PLOT DATE: 23-JAN-2005

PLOT TIME:





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:

THIS DOCUMENT AND THE IDEAS AND DESIGNS INCORPORATED HEREIN, AS AN INSTRUMENT OF PROFESSIONAL SERVICE, IS THE PROPERTY OF CH2M HILL AND IS NOT TO BE USED, IN WHOLE OR IN PART, FOR ANY OTHER PROJECT WITHOUT THE WRITTEN AUTHORIZATION OF CH2M HILL.

D

A

B

C

D

© CH2M HILL

REUSE OF DOCUMENTS:

TP-PR-10-10-03

REV. 8

CH2M HILL

TP-PR-10-10-03

REV. 8

CH2M HILL

TP-PR-10-10-03

REV. 8

CH2M HILL

TP-PR-10-10-03

REV. 8

CH2M HILL

TP-PR-10-10-03

REV. 8







**Appendix A**  
**Semiannual Operations and Maintenance Log,**  
**July 1, 2014 through December 31, 2014**

---



# Semiannual Operations and Maintenance Log, July 1, 2014 through December 31, 2014

---

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

## July 2014

During July 2014, extraction wells TW-3D and PE-1 operated at a target pump rate of 135 gpm excluding periods of planned and unplanned downtime. Extraction wells TW-2D and TW-2S were not operated during July 2014. The operational run time for the IM-3 groundwater extraction system (combined or individual pumping) was 95.5 percent during the July 2014 reporting period.

The IM-3 facility treated approximately 5,781,399 gallons of extracted groundwater during July 2014.

Periods of planned and unplanned extraction system down time (that together resulted in approximately 4.5 percent of downtime during July 2014) are summarized below.

- **July 2, 2014 (planned):** The extraction well system was offline from 9:24 a.m. to 9:32 a.m., from 9:34 a.m. to 9:54 a.m., from 10:00 a.m. to 10:08 a.m., and from 10:14 a.m. to 10:24 a.m. due to testing of critical alarms and leak detection system. Extraction system downtime was 46 minutes.
- **July 3-4, 2014 (planned):** The extraction well system was offline from 10:40 p.m. on July 3, 2014 to 12:00 a.m. on July 4, 2014 to perform training on generator maintenance, replacement of the strainer on the Raw Water Tank (T-100), and flow meter FSL-201 cleaning. Extraction system downtime was 1 hour, 20 minutes.
- **July 8, 2014 (unplanned):** The extraction well system was offline from 6:26 p.m. to 6:38 p.m., from 6:40 p.m. to 6:50 p.m., from 9:50 p.m. to 9:56 p.m. and from 10:34 p.m. to 10:36 p.m. to switch to/from backup generator power as a precautionary measure due to strong thunderstorms in the area. Extraction system downtime was 30 minutes.
- **July 9, 2014 (unplanned):** The extraction well system was offline from 12:54 p.m. to 1:04 p.m. due to loss of power from the City of Needles Power caused by repairs in the area. Extraction system downtime was 10 minutes.
- **July 10, 2014 (unplanned):** The extraction well system was offline from 9:14 a.m. to 9:20 a.m. and from 10:48 a.m. to 10:52 a.m. due to switch to/from backup generator power as a precautionary measure due to strong thunderstorms in the area. Extraction system downtime was 10 minutes.
- **July 23, 2014 (unplanned):** The extraction well system was offline from 2:04 p.m. to 2:08 p.m. to collect water level measurements from the extraction wells. Extraction system downtime was 4 minutes.
- **July 25-26, 2014 (unplanned):** The extraction well system was offline from 5:26 p.m. on July 25, 2014 to 6:08 p.m. on July 26, 2014 and from 10:20 p.m. to 10:26 p.m. on July 26, 2014 due to power supply and Input/Output (I/O) board failure in the Programmable Logical Controller (PLC). Extraction system downtime was 24 hours, 48 minutes.
- **July 28, 2014 (unplanned):** The extraction well system was offline from 7:32 p.m. to 7:42 p.m. and from 9:44 p.m. to 9:50 p.m. to switch to/from backup generator power as a precautionary measure due to strong thunderstorms in the area. Extraction system downtime was 16 minutes.

- **July 28, 2014 (planned):** The extraction well system was offline from 7:46 a.m. to 12:56 p.m. for new surge protection equipment to be installed around the treatment plant. Extraction system downtime was 5 hours, 10 minutes.

## August 2014

During August 2014, extraction wells TW-3D and PE-1 operated at a target pump rate of 135 gpm excluding periods of planned and unplanned downtime. Extraction wells TW-2D and TW-2S were not operated during August 2014. The operational run time for the IM-3 groundwater extraction system (combined or individual pumping) was 85.1 percent during the August 2014 reporting period.

The IM-3 facility treated approximately 5,180,653 gallons of extracted groundwater during August 2014. Two containers of solids from the IM-3 facility were transported offsite during August 2014.

Periods of planned and unplanned extraction system down time (that together resulted in approximately 14.9 percent of downtime during August 2014) are summarized below.

- **August 3, 2014 (unplanned):** The extraction well system was offline from 1:02 p.m. to 1:32 p.m. due to loss of power from the City of Needles. The facility was transferred to backup generator power during this time. Extraction system downtime was 30 minutes.
- **August 3-4, 2014 (unplanned):** The extraction well system was offline from 11:46 p.m. on August 3, 2014 to 12:04 a.m. on August 4, 2014 to return the facility to City of Needles power. Extraction system downtime was 18 minutes.
- **August 4, 2014 (planned):** The extraction well system was offline from 10:46 a.m. to 10:48 a.m., from 10:50 a.m. to 10:52 a.m., from 11:10 a.m. to 11:12 a.m., and from 11:20 a.m. to 11:24 a.m. due to testing of critical alarms and leak detection system. Extraction system downtime was 10 minutes.
- **August 12, 2014 (unplanned):** The extraction well system was offline from 2:46 p.m. to 3:04 p.m. due to loss of power from the City of Needles. The facility was transferred to backup generator power during this time. Extraction system downtime was 18 minutes.
- **August 13, 2014 (unplanned):** The extraction well system was offline from 1:06 p.m. to 1:12 p.m. to return the facility to City of Needles power. Extraction system downtime was 6 minutes.
- **August 15, 2014 (unplanned):** The extraction well system was offline from 10:54 a.m. to 10:56 a.m. and from 12:26 p.m. to 12:28 p.m. due to switch to/from backup generator power due to loss of power from the City of Needles. Extraction system downtime was 4 minutes.
- **August 18-22, 2014 (planned):** The extraction well system was offline from 6:08 a.m. on August 18, 2014 to 8:10 a.m. on August 22, 2014 and from 8:18 a.m. to 8:52 a.m., 9:02 a.m. to 9:16 a.m., and 11:48 to 1:46 p.m. on August 22, 2014 for semiannual scheduled maintenance. Extraction system downtime was 4 days, 4 hours and 48 minutes.
- **August 22, 2014 (unplanned):** The extraction well system was offline 4:26 p.m. to 10:14 p.m. due to loss of communication with the PLC. Extraction system downtime was 5 hours, 38 minutes.
- **August 22-23, 2014 (unplanned):** The extraction well system was offline from 11:08 p.m. on August 22, 2014 to 12:08 a.m. on August 23, 2014 to place the facility in recirculation for tank level management. Extraction system downtime was 1 hour.
- **August 27, 2014 (unplanned):** The extraction well system was offline from 1:28 p.m. to 12:48 p.m. to repair leaks at the chemical loop and RO system. Extraction system downtime was 20 minutes.

- **August 31, 2014 (unplanned):** The extraction well system was offline from 9:56 a.m. to 11:36 a.m. to replace the Microfilter modules. Extraction system downtime was 1 hour, 40 minutes.

## September 2014

During September 2014, extraction wells TW-3D and PE-1 operated at a target pump rate of 135 gpm excluding periods of planned and unplanned downtime. Extraction well TW-2D operated on September 23 and 24, 2014. Extraction well TW-2S was not operated during September 2014. The operational run time for the IM-3 groundwater extraction system (combined or individual pumping) was 97.8 percent during the September 2014 reporting period.

The IM-3 facility treated approximately 5,574,674 gallons of extracted groundwater during September 2014. The IM-3 facility treated 12,350 gallons of injection well backwashing/re-development water. Four containers of solids from the IM-3 facility were transported offsite during September 2014.

Periods of planned and unplanned extraction system down time (that together resulted in approximately 2.2 percent of downtime during September 2014) are summarized below.

- **September 3, 2014 (planned):** The extraction well system was offline from 11:20 a.m. to 11:26 a.m., from 11:34 a.m. to 11:38 a.m., 11:40 a.m. to 11:44 a.m. and from 11:48 a.m. to 12:04 p.m. due to testing of critical alarms and leak detection system. Extraction system downtime was 30 minutes.
- **September 10, 2014 (unplanned):** The extraction well system was offline from 12:10 a.m. to 12:38 a.m. to clean the microfilter strainer. Extraction system downtime was 28 minutes.
- **September 10, 2014 (unplanned):** The extraction well system was offline from 1:00 p.m. to 1:08 p.m., from 1:22 p.m. to 1:30 p.m., and from 2:22 p.m. to 2:30 p.m. due to loss of power from the City of Needles. The facility was placed on generator power during this time. Extraction system downtime was 24 minutes.
- **September 10, 2014 (unplanned):** The extraction well system was offline from 4:32 p.m. to 5:16 p.m. and from 5:26 p.m. to 6:28 p.m. to clean the microfilter strainer, clean flow control valve 201, troubleshoot an issue with the Permeate Pump (P-605), and return the facility to power from the City of Needles. Extraction system downtime was 1 hour, 46 minutes.
- **September 12, 2014 (unplanned):** The extraction well system was offline from 6:44 a.m. to 7:02 a.m. for maintenance by the City of Needles power company. Extraction system downtime was 18 minutes.
- **September 13, 2014 (unplanned):** The extraction well system was offline from 5:56 a.m. to 6:14 a.m. to change the microfilter strainer. Extraction system downtime was 18 minutes.
- **September 16, 2014 (unplanned):** The extraction well system was offline from 3:38 p.m. to 3:54 p.m. and 7:24 p.m. to 7:34 p.m. to switch the facility onto and off of generator power due to strong storms in the area. Extraction system downtime was 26 minutes.
- **September 18, 2014 (unplanned):** The extraction well system was offline from 12:32 p.m. to 4:18 p.m. and from 4:20 p.m. to 4:34 p.m. to change the microfilter modules, replace a fuse at extraction well PE-1, and repair an electrical connection in the extraction well TW-3D control panel. Extraction system downtime was 4 hours.
- **September 19, 2014 (unplanned):** The extraction well system was offline from 10:16 p.m. to 10:44 p.m. to replace the air pressure mass flow meter at the #2 Iron Oxidation Tank (T-301B). Extraction system downtime was 28 minutes.

- **September 21, 2014 (unplanned):** The extraction well system was offline from 3:40 a.m. to 4:28 a.m. to place the facility in recirculation due to an out of specification process monitoring sample. Extraction system downtime was 48 minutes.
- **September 23, 2014 (planned):** The extraction well system was offline from 8:00 a.m. to 12:48 p.m. for AquaGard injection at extraction wells PE-1 and TW-2D. Extraction system downtime was 4 hours, 48 minutes.
- **September 24, 2014 (unplanned):** The extraction well system was offline from 4:28 a.m. to 4:30 a.m. due to loss of power from the City of Needles. Extraction system downtime was 2 minutes.
- **September 24, 2014 (unplanned):** The extraction well system was offline from 10:08 a.m. to 11:30 a.m. due to a low-level alarm in the Raw Water Storage Tank (T-100). Extraction system downtime was 1 hour, 22 minutes.

## October 2014

During October 2014, extraction wells TW-3D and PE-1 operated at a target pump rate of 135 gpm excluding periods of planned and unplanned downtime. Extraction wells TW-2D and TW-2S were not operated during October 2014. The operational run time for the IM-3 groundwater extraction system (combined or individual pumping) was 99.5 percent during the October 2014 reporting period.

The IM-3 facility treated approximately 6,016,923 gallons of extracted groundwater during October 2014. The IM-3 facility treated 3,600 gallons of injection well backwashing/re-development water and 60 gallons from groundwater monitoring well sampling. One container of solids from the IM-3 facility was transported offsite during October 2014.

Periods of planned and unplanned extraction system down time (that together resulted in approximately 0.5 percent of downtime during October 2014) are summarized below.

- **October 8, 2014 (unplanned):** The extraction well system was offline from 9:36 a.m. to 10:00 a.m. due to loss of power from the City of Needles. Extraction system downtime was 24 minutes.
- **October 8, 2014 (planned):** The extraction well system was offline from 1:20 p.m. to 1:24 p.m., from 1:28 p.m. to 1:30 p.m., from 1:32 p.m. to 1:34 p.m., from 1:38 p.m. to 1:44 p.m. and from 1:48 p.m. to 1:54 p.m. due to testing of critical alarms and leak detection system. Extraction system downtime was 20 minutes.
- **October 10, 2014 (planned):** The extraction well system was offline from 11:14 a.m. to 1:40 p.m. due to replacement of the microfilter modules. Extraction system downtime was 2 hours, 26 minutes.
- **October 29, 2014 (unplanned):** The extraction well system was offline from 3:58 p.m. to 4:12 p.m. due to shutdown of the air compressor. Extraction system downtime was 14 minutes.

## November 2014

During November 2014, extraction wells TW-3D and PE-1 operated at a target pump rate of 135 gpm excluding periods of planned and unplanned downtime. Extraction wells TW-2D and TW-2S were not operated during November 2014. The operational run time for the IM-3 groundwater extraction system (combined or individual pumping) was 97.1 percent during the November 2014 reporting period.

The IM-3 facility treated approximately 5,705,708 gallons of extracted groundwater during November 2014. The IM-3 facility treated 3,600 gallons of injection well backwashing/re-development water and 550 gallons from groundwater monitoring well sampling.

Periods of planned and unplanned extraction system down time (that together resulted in approximately 2.9 percent downtime during November 2014) are summarized below.

- **November 4, 2014 (unplanned):** The extraction well system was offline from 10:10 a.m. to 11:58 a.m. due to loss of power from the City of Needles and the failure of the main PLC uninterruptible power supply (UPS). Extraction system downtime was 1 hour, 48 minutes.
- **November 6, 2014 (planned):** The extraction well system was offline from 1:10 p.m. to 1:48 p.m. due to testing of critical alarms and leak detection system. Extraction system downtime was 38 minutes.
- **November 10, 2014 (unplanned):** The extraction well system was offline from 2:04 a.m. to 4:08 a.m. and 4:42 a.m. to 4:52 a.m. due to shutdown of the air compressor. Extraction system downtime was 2 hours, 14 minutes.
- **November 12, 2014 (unplanned):** The extraction well system was offline from 1:46 a.m. to 2:24 a.m. to clean the microfilter strainer. Extraction system downtime was 38 minutes.
- **November 14, 2014 (unplanned):** The extraction well system was offline from 6:22 a.m. to 6:36 a.m. due to loss of power from the City of Needles. Extraction system downtime was 14 minutes.
- **November 15, 2014 (planned):** The extraction well system was offline from 1:32 p.m. to 1:56 p.m. to install a new UPS on the main PLC. Extraction system downtime was 24 minutes.
- **November 16, 2014 (unplanned):** The extraction well system was offline from 12:36 a.m. to 7:06 a.m. due to failure of the reverse osmosis PLC cards. Extraction system downtime was 6 hours, 30 minutes.
- **November 16, 2014 (unplanned):** The extraction well system was offline from 11:10 a.m. to 11:18 a.m. due to loss of power from the City of Needles. Extraction system downtime was 8 minutes.
- **November 16, 2014 (unplanned):** The extraction well system was offline from 12:50 p.m. to 1:22 p.m. to conduct tank level management in the Raw Water Storage Tank (T-100). Extraction system downtime was 32 minutes.
- **November 19, 2014 (planned):** The extraction well system was offline from 7:28 a.m. to 11:26 a.m. for Helix Electric to install a new surge protection device at IM-3. Extraction system downtime was 3 hours, 58 minutes.
- **November 25, 2014 (planned):** The extraction well system was offline from 9:30 a.m. to 11:58 a.m. for Helix Electric to install a new 4-20 ma signal panel. Extraction system downtime was 2 hours, 28 minutes.
- **November 28, 2014 (unplanned):** The extraction well system was offline from 4:22 a.m. to 5:58 a.m. to replace the microfilter strainer. Extraction system downtime was 1 hour, 36 minutes.

## December 2014

During December 2014, extraction wells TW-3D and PE-1 operated at a target pump rate of 135 gpm excluding periods of planned and unplanned downtime. Extraction well TW-2D operated for a short period of time on December 15, 2014 to be sampled as part of the fourth quarter groundwater monitoring program sampling event. Extraction well TW-2S was not operated during December 2014. The operational run time for the IM-3 groundwater extraction system (combined or individual pumping) was 99.1 percent during the December 2014 reporting period.

The IM-3 facility treated approximately 5,947,448 gallons of extracted groundwater during December 2014. The IM-3 facility treated 3,600 gallons of injection well backwashing/re-development water and 140 gallons

from groundwater monitoring well sampling. Four containers of solids from the IM-3 facility was transported offsite during December 2014.

Periods of planned and unplanned extraction system down time (that together resulted in approximately 0.9 percent downtime during December 2014) are summarized below.

- **December 2, 2014 (unplanned):** The extraction well system was offline from 10:40 p.m. to 10:46 p.m. due to a required reset of the HMI system. Extraction system downtime was 6 minutes.
- **December 3, 2014 (planned):** The extraction well system was offline from 8:50 a.m. to 9:30 a.m. and 9:46 a.m. to 9:48 a.m. due to testing of critical alarms and leak detection system. Extraction system downtime was 42 minutes.
- **December 6, 2014 (unplanned):** The extraction well system was offline from 10:10 a.m. to 1:18 p.m. due to a power surge from the City of Needles causing the malfunction of several PLC cards. Extraction system downtime was 3 hours, 8 minutes.
- **December 9, 2014 (unplanned):** The extraction well system was offline from 1:26 p.m. to 2:56 p.m. to change the microfilter modules. Extraction system downtime was 1 hour, 30 minutes.
- **December 11, 2014 (unplanned):** The extraction well system was offline from 9:48 p.m. to 9:52 p.m. due to loss of power from the City of Needles. Extraction system downtime was 4 minutes.
- **December 12, 2014 (unplanned):** The extraction well system was offline from 9:06 a.m. to 9:20 a.m. and 8:06 p.m. to 8:16 p.m. to switch to/from backup generator power due to loss of power from the City of Needles. Extraction system downtime was 24 minutes.
- **December 26, 2014 (unplanned):** The extraction well system was offline from 1:22 p.m. to 1:38 a.m. to replace the microfilter strainer. Extraction system downtime was 16 minutes.
- **December 31, 2014 (unplanned):** The extraction well system was offline from 11:50 a.m. to 12:02 p.m. and from 2:22 p.m. to 2:28 p.m. to switch to/from backup generator power due to loss of power from the City of Needles. Extraction system downtime was 18 minutes.
- **December 31, 2014 (unplanned):** The extraction well system was offline from 10:00 p.m. to 10:02 p.m., 10:46 p.m. to 10:50 p.m., and 10:52 p.m. to 10:54 p.m. due to loss of power from the City of Needles. Extraction system downtime was 8 minutes.

Appendix B  
Daily Volumes of Groundwater Treated

---



# July 2014 Operational Data

IM-3 Groundwater Extraction and Treatment System

PG&E Topock Compressor Station, Needles, California

Month	Day	Year	Extraction Well System					Injection Well System			RO Brine (gallons)
			TW-2S (gallons)	TW-2D (gallons)	TW-3D (gallons)	PE-1 (gallons)	Total (gallons)	IW-02 (gallons)	IW-03 (gallons)	Total (gallons)	
July	1	2014	--	--	153,021	41,677	194,699	190,832	0	190,832	0
July	2	2014	--	--	147,973	41,187	189,161	193,261	0	193,261	2,766
July	3	2014	--	--	144,260	40,356	184,615	181,314	0	181,314	0
July	4	2014	--	--	152,125	43,054	195,179	198,222	0	198,222	0
July	5	2014	--	--	152,072	42,542	194,615	189,786	0	189,786	0
July	6	2014	--	--	152,123	42,234	194,357	192,660	0	192,660	0
July	7	2014	--	--	152,104	41,974	194,078	197,777	0	197,777	0
July	8	2014	--	--	148,981	41,306	190,287	177,722	10,426	188,148	3,063
July	9	2014	--	--	151,281	43,037	194,318	196,302	0	196,302	0
July	10	2014	--	--	151,047	42,820	193,867	183,918	0	183,918	0
July	11	2014	--	--	151,694	42,935	194,629	202,492	0	202,492	0
July	12	2014	--	--	151,545	42,680	194,225	194,086	0	194,086	0
July	13	2014	--	--	151,493	42,611	194,103	193,165	0	193,165	2,929
July	14	2014	--	--	152,801	42,500	195,301	198,662	0	198,662	0
July	15	2014	--	--	153,782	42,284	196,065	192,495	0	192,495	0
July	16	2014	--	--	153,815	42,166	195,981	191,519	0	191,519	0
July	17	2014	--	--	153,734	41,988	195,722	194,467	0	194,467	2,912
July	18	2014	--	--	153,717	41,809	195,526	199,092	0	199,092	0
July	19	2014	--	--	153,764	41,674	195,438	195,587	0	195,587	0
July	20	2014	--	--	153,850	41,520	195,370	193,231	0	193,231	0
July	21	2014	--	--	153,818	41,444	195,262	202,495	0	202,495	0
July	22	2014	--	--	153,854	41,309	195,162	190,410	0	190,410	0
July	23	2014	--	--	151,130	41,354	192,484	106,151	89,332	195,483	0
July	24	2014	--	--	153,706	42,002	195,708	0	193,576	193,576	0
July	25	2014	--	--	111,529	30,419	141,948	0	141,261	141,261	0
July	26	2014	--	--	36,808	10,303	47,111	0	46,411	46,411	0
July	27	2014	--	--	153,586	42,616	196,201	0	189,981	189,981	0
July	28	2014	--	--	152,101	42,289	194,391	0	190,299	190,299	0
July	29	2014	--	--	153,680	42,324	196,004	0	203,610	203,610	0
July	30	2014	--	--	153,323	42,550	195,873	80,927	114,304	195,231	0
July	31	2014	--	--	120,206	33,512	153,718	149,476	0	149,476	0
<b>Total Monthly Volumes (gallons)</b>			<b>0</b>	<b>0</b>	<b>4,528,924</b>	<b>1,252,475</b>	<b>5,781,399</b>	<b>4,586,049</b>	<b>1,179,200</b>	<b>5,765,249</b>	<b>11,669</b>
<b>Average Pump/Injection Rates (gpm)</b>			<b>0.0</b>	<b>0.0</b>	<b>101.5</b>	<b>28.1</b>	<b>129.5</b>	<b>102.7</b>	<b>26.4</b>	<b>129.1</b>	<b>0.3</b>

NOTES: gpm: gallons per minute RO: Reverse Osmosis

- Extraction wells TW-3D and PE-1 were operated during July 2014 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 2014.
- Effluent was discharged into injection wells IW-02 and IW-03.
- The difference between influent flow rate and the sum of the effluent and reverse osmosis concentrate flow rates during July 2014 is approximately 0.08 percent. This percentage difference includes instrument noise in the system, but is within the accuracy of the flow meters. A well is considered to be offline if the daily reported flow is 140 gallons per day or less.

**August 2014 Operational Data**

IM-3 Groundwater Extraction and Treatment System

PG&amp;E Topock Compressor Station, Needles, California

Month	Day	Year	Extraction Well System					Injection Well System			RO Brine (gallons)
			TW-2S (gallons)	TW-2D (gallons)	TW-3D (gallons)	PE-1 (gallons)	Total (gallons)	IW-02 (gallons)	IW-03 (gallons)	Total (gallons)	
August	1	2014	--	--	153,106	42,463	195,570	194,730	0	194,730	0
August	2	2014	--	--	153,178	42,296	195,473	198,087	0	198,087	0
August	3	2014	--	--	148,573	41,351	189,924	189,094	0	189,094	0
August	4	2014	--	--	151,646	42,504	194,149	195,383	0	195,383	0
August	5	2014	--	--	151,256	42,040	193,297	194,543	0	194,543	0
August	6	2014	--	--	153,235	42,279	195,514	160,323	33,768	194,091	0
August	7	2014	--	--	153,195	42,048	195,243	193,502	0	193,502	0
August	8	2014	--	--	153,005	41,745	194,750	194,383	0	194,383	0
August	9	2014	--	--	152,906	41,659	194,565	194,414	0	194,414	0
August	10	2014	--	--	153,015	41,308	194,323	194,299	0	194,299	0
August	11	2014	--	--	153,027	41,140	194,167	195,795	0	195,795	0
August	12	2014	--	--	151,881	41,581	193,461	196,192	0	196,192	2,951
August	13	2014	--	--	153,451	42,842	196,293	194,317	0	194,317	0
August	14	2014	--	--	152,642	42,265	194,907	194,007	0	194,007	0
August	15	2014	--	--	152,271	41,951	194,222	197,299	0	197,299	0
August	16	2014	--	--	152,445	42,091	194,535	199,056	0	199,056	0
August	17	2014	--	--	152,445	42,214	194,659	194,585	0	194,585	0
August	18	2014	--	--	38,991	10,805	49,796	54,413	0	54,413	0
August	19	2014	--	--	0	0	0	0	0	0	0
August	20	2014	--	--	0	0	0	0	0	0	0
August	21	2014	--	--	0	0	0	0	0	0	0
August	22	2014	--	--	42,978	11,854	54,832	30,056	0	30,056	0
August	23	2014	--	--	157,756	42,615	200,370	205,823	0	205,823	0
August	24	2014	--	--	157,617	42,461	200,078	199,604	0	199,604	0
August	25	2014	--	--	156,412	42,234	198,646	197,635	0	197,635	0
August	26	2014	--	--	156,457	41,974	198,431	202,273	0	202,273	0
August	27	2014	--	--	154,070	41,743	195,813	193,769	0	193,769	2,807
August	28	2014	--	--	156,193	42,339	198,531	195,911	0	195,911	3,116
August	29	2014	--	--	156,084	41,858	197,941	200,702	0	200,702	0
August	30	2014	--	--	155,824	41,486	197,309	201,142	0	201,142	0
August	31	2014	--	--	144,807	39,046	183,852	182,213	0	182,213	0
<b>Total Monthly Volumes (gallons)</b>			<b>0</b>	<b>0</b>	<b>4,068,464</b>	<b>1,112,189</b>	<b>5,180,653</b>	<b>5,143,548</b>	<b>33,768</b>	<b>5,177,316</b>	<b>8,874</b>
<b>Average Pump/Injection Rates (gpm)</b>			<b>0.0</b>	<b>0.0</b>	<b>91.1</b>	<b>24.9</b>	<b>116.1</b>	<b>115.2</b>	<b>0.8</b>	<b>116.0</b>	<b>0.2</b>

NOTES: gpm: gallons per minute RO: Reverse Osmosis

- Extraction wells TW-3D and PE-1 were operated during August 2014 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 2014.
- Effluent was discharged into injection wells IW-02 and IW-03.
- The difference between influent flow rate and the sum of the effluent and reverse osmosis concentrate flow rates during August 2014 is approximately 0.11 percent. This percentage difference includes instrument noise in the system, but is within the accuracy of the flow meters. A well is considered to be offline if the daily reported flow is 140 gallons per day or less.

**September 2014 Operational Data**

IM-3 Groundwater Extraction and Treatment System

PG&amp;E Topock Compressor Station, Needles, California

Month	Day	Year	Extraction Well System					Injection Well System			RO Brine (gallons)
			TW-2S (gallons)	TW-2D (gallons)	TW-3D (gallons)	PE-1 (gallons)	Total (gallons)	IW-02 (gallons)	IW-03 (gallons)	Total (gallons)	
September	1	2014	--	--	155,764	42,495	198,259	203,056	0	203,056	0
September	2	2014	--	--	155,781	42,496	198,277	199,135	0	199,135	0
September	3	2014	--	--	152,448	41,751	194,199	191,946	0	191,946	2,849
September	4	2014	--	--	155,664	42,654	198,317	191,279	0	191,279	0
September	5	2014	--	--	155,368	42,367	197,735	195,191	0	195,191	0
September	6	2014	--	--	155,176	42,237	197,413	198,867	0	198,867	0
September	7	2014	--	--	155,271	42,052	197,323	202,217	0	202,217	0
September	8	2014	--	--	155,548	41,906	197,454	199,608	0	199,608	0
September	9	2014	--	--	155,493	41,769	197,262	196,054	0	196,054	0
September	10	2014	--	17,146	99,521	36,709	153,376	160,474	0	160,474	0
September	11	2014	--	9,386	131,230	41,229	181,845	191,993	0	191,993	0
September	12	2014	--	--	150,204	41,521	191,725	189,285	0	189,285	0
September	13	2014	--	--	153,897	39,750	193,648	198,705	0	198,705	0
September	14	2014	--	--	156,890	38,176	195,065	195,567	0	195,567	0
September	15	2014	--	--	156,891	37,415	194,306	191,498	0	191,498	0
September	16	2014	--	--	154,284	36,932	191,216	189,166	0	189,166	0
September	17	2014	--	--	157,187	37,091	194,278	192,281	0	192,281	0
September	18	2014	--	--	131,205	31,126	162,331	160,799	0	160,799	3,257
September	19	2014	--	--	154,639	37,329	191,968	189,188	0	189,188	0
September	20	2014	--	--	158,082	37,489	195,571	204,574	0	204,574	0
September	21	2014	--	--	153,927	32,541	186,468	179,972	0	179,972	3,167
September	22	2014	--	38,615	82,451	36,720	157,786	173,291	12,542	185,833	0
September	23	2014	--	63,961	0	34,380	98,341	75,581	81,598	157,179	0
September	24	2014	--	29,241	80,519	40,216	149,976	0	162,020	162,020	0
September	25	2014	--	--	153,094	39,376	192,470	96,013	104,211	200,224	4,637
September	26	2014	--	--	155,273	38,848	194,122	195,558	0	195,558	1,447
September	27	2014	--	--	155,342	38,568	193,911	201,566	0	201,566	0
September	28	2014	--	--	155,526	38,139	193,665	187,246	0	187,246	2,953
September	29	2014	--	--	155,580	37,749	193,328	195,423	0	195,423	0
September	30	2014	--	--	155,549	37,488	193,038	187,261	0	187,261	0
<b>Total Monthly Volumes (gallons)</b>			<b>0</b>	<b>158,349</b>	<b>4,247,803</b>	<b>1,168,521</b>	<b>5,574,674</b>	<b>5,332,794</b>	<b>360,371</b>	<b>5,693,165</b>	<b>18,310</b>
<b>Average Pump/Injection Rates (gpm)</b>			<b>0.0</b>	<b>3.7</b>	<b>98.3</b>	<b>27.0</b>	<b>129.0</b>	<b>123.4</b>	<b>8.3</b>	<b>131.8</b>	<b>0.4</b>

NOTES: gpm: gallons per minute RO: Reverse Osmosis

- Extraction wells TW-3D and PE-1 were operated during September 2014 at a target pump rate of 135 gpm excluding periods of planned and unplanned downtime. Extraction well TW-2S was not operated during September 2014.
- Effluent was discharged into injection wells IW-02 and IW-03.
- The difference between influent flow rate and the sum of the effluent and reverse osmosis concentrate flow rates during September 2014 is approximately 2.45 percent. This percentage difference includes instrument noise in the system, but is within the accuracy of the flow meters. A well is considered to be offline if the daily reported flow is 140 gallons per day or less.

**October 2014 Operational Data**

IM-3 Groundwater Extraction and Treatment System

PG&amp;E Topock Compressor Station, Needles, California

Month	Day	Year	Extraction Well System					Injection Well System			RO Brine (gallons)
			TW-2S (gallons)	TW-2D (gallons)	TW-3D (gallons)	PE-1 (gallons)	Total (gallons)	IW-02 (gallons)	IW-03 (gallons)	Total (gallons)	
October	1	2014	--	--	155,497	37,333	192,831	188,173	0	188,173	2,773
October	2	2014	--	--	155,551	37,090	192,641	190,848	0	190,848	0
October	3	2014	--	--	155,474	36,924	192,398	190,625	0	190,625	0
October	4	2014	--	--	155,360	36,794	192,153	190,598	0	190,598	3,440
October	5	2014	--	--	155,306	36,578	191,884	190,922	0	190,922	0
October	6	2014	--	--	155,393	36,329	191,722	190,775	0	190,775	0
October	7	2014	--	--	155,478	36,062	191,541	190,401	0	190,401	2,929
October	8	2014	--	--	149,858	39,491	189,349	186,620	0	186,620	0
October	9	2014	--	--	154,676	41,528	196,204	188,984	0	188,984	0
October	10	2014	--	--	138,886	37,280	176,166	176,945	0	176,945	2,913
October	11	2014	--	--	154,552	41,454	196,007	204,552	0	204,552	0
October	12	2014	--	--	154,629	40,956	195,585	195,988	0	195,988	0
October	13	2014	--	--	154,553	40,657	195,210	186,947	0	186,947	2,640
October	14	2014	--	--	154,618	39,923	194,541	197,570	0	197,570	0
October	15	2014	--	--	154,486	39,831	194,317	190,849	0	190,849	0
October	16	2014	--	--	154,505	39,730	194,235	201,163	0	201,163	2,916
October	17	2014	--	--	154,599	39,361	193,960	192,985	0	192,985	0
October	18	2014	--	--	154,577	39,300	193,877	186,838	0	186,838	0
October	19	2014	--	--	154,537	39,167	193,704	189,671	0	189,671	3,175
October	20	2014	--	--	154,543	38,944	193,486	192,930	0	192,930	0
October	21	2014	--	--	155,585	41,013	196,598	198,308	0	198,308	2,778
October	22	2014	--	--	156,175	41,862	198,036	192,984	0	192,984	0
October	23	2014	--	--	156,123	41,586	197,709	193,097	0	193,097	0
October	24	2014	--	--	155,960	41,453	197,413	194,208	3,410	197,617	2,874
October	25	2014	--	--	155,797	41,467	197,265	203,371	0	203,371	0
October	26	2014	--	--	155,727	41,398	197,125	198,436	0	198,436	0
October	27	2014	--	--	155,627	41,334	196,961	195,502	0	195,502	2,761
October	28	2014	--	--	155,453	41,243	196,696	193,299	0	193,299	0
October	29	2014	--	--	153,891	40,647	194,538	188,863	0	188,863	0
October	30	2014	--	--	155,261	41,248	196,509	195,098	0	195,098	2,626
October	31	2014	--	--	155,066	41,199	196,265	197,509	0	197,509	0
<b>Total Monthly Volumes (gallons)</b>			<b>0</b>	<b>0</b>	<b>4,787,741</b>	<b>1,229,181</b>	<b>6,016,923</b>	<b>5,975,057</b>	<b>3,410</b>	<b>5,978,467</b>	<b>31,825</b>
<b>Average Pump/Injection Rates (gpm)</b>			<b>0.0</b>	<b>0.0</b>	<b>107.3</b>	<b>27.5</b>	<b>134.8</b>	<b>133.8</b>	<b>0.1</b>	<b>133.9</b>	<b>0.7</b>

NOTES: gpm: gallons per minute RO: Reverse Osmosis

- Extraction wells TW-3D and PE-1 were operated during October 2014 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 October 2014.
- Effluent was discharged into injection wells IW-02 and IW-03.
- The difference between influent flow rate and the sum of the effluent and reverse osmosis concentrate flow rates during October 2014 is approximately 0.11 percent. This percentage difference includes instrument noise in the system, but is within the accuracy of the flow meters. A well is considered to be offline if the daily reported flow is 140 gallons per day or less.

**November 2014 Operational Data**

IM-3 Groundwater Extraction and Treatment System

PG&amp;E Topock Compressor Station, Needles, California

Month	Day	Year	Extraction Well System					Injection Well System			RO Brine (gallons)
			TW-2S (gallons)	TW-2D (gallons)	TW-3D (gallons)	PE-1 (gallons)	Total (gallons)	IW-02 (gallons)	IW-03 (gallons)	Total (gallons)	
November	1	2014	--	--	154,948	41,386	196,334	197,030	0	197,030	3,160
November	2	2014	--	--	154,837	41,553	196,390	196,702	0	196,702	0
November	3	2014	--	--	154,730	41,328	196,058	194,919	0	194,919	3,255
November	4	2014	--	--	143,327	38,430	181,757	177,500	0	177,500	0
November	5	2014	--	--	155,096	41,282	196,378	194,593	0	194,593	0
November	6	2014	--	--	151,026	40,074	191,100	190,720	0	190,720	2,992
November	7	2014	--	--	155,336	40,878	196,214	190,575	0	190,575	0
November	8	2014	--	--	155,138	40,990	196,128	195,604	0	195,604	0
November	9	2014	--	--	155,041	40,832	195,872	190,549	0	190,549	2,727
November	10	2014	--	--	140,493	37,999	178,493	168,452	0	168,452	0
November	11	2014	--	--	154,921	41,809	196,730	202,682	0	202,682	0
November	12	2014	--	--	150,741	41,085	191,826	187,772	0	187,772	3,131
November	13	2014	--	--	154,861	42,182	197,043	199,594	0	199,594	0
November	14	2014	--	--	153,696	41,090	194,786	193,264	0	193,264	0
November	15	2014	--	--	152,660	40,443	193,102	190,229	0	190,229	0
November	16	2014	--	--	108,724	29,113	137,837	134,464	0	134,464	2,205
November	17	2014	--	--	155,114	41,272	196,385	196,450	0	196,450	0
November	18	2014	--	--	154,875	41,170	196,045	196,696	0	196,696	0
November	19	2014	--	--	129,074	34,578	163,653	59,800	87,250	147,049	0
November	20	2014	--	--	154,566	41,346	195,912	0	204,079	204,079	0
November	21	2014	--	--	154,394	41,270	195,665	126	201,422	201,547	0
November	22	2014	--	--	154,447	41,001	195,448	0	191,517	191,517	0
November	23	2014	--	--	154,302	40,944	195,246	0	201,146	201,146	0
November	24	2014	--	--	154,134	40,976	195,110	87,016	100,911	187,927	0
November	25	2014	--	--	138,223	36,950	175,173	176,787	0	176,787	0
November	26	2014	--	--	154,091	41,044	195,135	192,719	0	192,719	0
November	27	2014	--	--	153,830	40,985	194,815	193,092	0	193,092	0
November	28	2014	--	--	143,430	38,422	181,852	180,326	0	180,326	0
November	29	2014	--	--	153,561	41,084	194,645	192,738	0	192,738	0
November	30	2014	--	--	153,529	41,046	194,576	193,039	0	193,039	0
<b>Total Monthly Volumes (gallons)</b>			<b>0</b>	<b>0</b>	<b>4,503,146</b>	<b>1,202,562</b>	<b>5,705,708</b>	<b>4,673,436</b>	<b>986,324</b>	<b>5,659,761</b>	<b>17,470</b>
<b>Average Pump/Injection Rates (gpm)</b>			<b>0.0</b>	<b>0.0</b>	<b>104.2</b>	<b>27.8</b>	<b>132.1</b>	<b>108.2</b>	<b>22.8</b>	<b>131.0</b>	<b>0.4</b>

NOTES: gpm: gallons per minute RO: Reverse Osmosis

- Extraction wells TW-3D and PE-1 were operated during November 2014 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 November 2014.
- Effluent was discharged into injection wells IW-02 and IW-03.
- The difference between influent flow rate and the sum of the effluent and reverse osmosis concentrate flow rates during November 2014 is approximately 0.5 percent. This percentage difference includes instrument noise in the system, but is within the accuracy of the flow meters. A well is considered to be offline if the daily reported flow is 140 gallons per day or less.

# December 2014 Operational Data

IM-3 Groundwater Extraction and Treatment System

PG&E Topock Compressor Station, Needles, California

Month	Day	Year	Extraction Well System					Injection Well System			RO Brine (gallons)
			TW-2S (gallons)	TW-2D (gallons)	TW-3D (gallons)	PE-1 (gallons)	Total (gallons)	IW-02 (gallons)	IW-03 (gallons)	Total (gallons)	
December	1	2014	--	--	153,476	40,917	194,393	196,746	0	196,746	0
December	2	2014	--	--	152,783	40,638	193,421	192,755	0	192,755	0
December	3	2014	--	--	148,114	39,804	187,918	155,553	38,406	193,959	0
December	4	2014	--	--	152,369	40,511	192,879	192,330	0	192,330	0
December	5	2014	--	--	152,251	40,361	192,613	181,438	0	181,438	0
December	6	2014	--	--	132,610	35,544	168,154	162,097	0	162,097	3,372
December	7	2014	--	--	152,717	41,030	193,747	195,130	0	195,130	0
December	8	2014	--	--	153,602	40,875	194,477	189,899	0	189,899	0
December	9	2014	--	--	144,647	38,379	183,026	173,048	0	173,048	3,012
December	10	2014	--	--	154,231	40,696	194,927	199,705	0	199,705	0
December	11	2014	--	--	153,605	40,643	194,247	193,296	0	193,296	0
December	12	2014	--	--	152,273	40,876	193,149	181,615	0	181,615	2,805
December	13	2014	--	--	153,837	40,817	194,654	196,542	0	196,542	0
December	14	2014	--	--	153,625	40,690	194,315	198,030	0	198,030	0
December	15	2014	--	3,593	145,806	40,843	190,243	193,965	0	193,965	2,984
December	16	2014	--	--	152,670	41,101	193,771	189,040	0	189,040	0
December	17	2014	--	--	152,854	41,352	194,206	193,104	0	193,104	0
December	18	2014	--	--	152,587	41,398	193,985	182,502	0	182,502	0
December	19	2014	--	--	152,432	41,106	193,538	193,802	0	193,802	4,424
December	20	2014	--	--	152,175	41,304	193,479	193,550	0	193,550	0
December	21	2014	--	--	152,016	41,045	193,061	197,471	0	197,471	0
December	22	2014	--	--	151,934	40,936	192,870	196,491	0	196,491	2,759
December	23	2014	--	--	151,674	41,094	192,767	187,734	0	187,734	0
December	24	2014	--	--	151,537	40,912	192,449	188,858	0	188,858	0
December	25	2014	--	--	151,337	40,780	192,118	194,000	0	194,000	3,051
December	26	2014	--	--	149,359	40,745	190,104	176,011	0	176,011	0
December	27	2014	--	--	151,026	41,401	192,426	195,258	0	195,258	0
December	28	2014	--	--	150,895	41,393	192,288	192,880	0	192,880	2,724
December	29	2014	--	--	152,095	41,524	193,618	193,380	0	193,380	0
December	30	2014	--	--	152,705	41,438	194,144	193,528	0	193,528	0
December	31	2014	--	--	150,113	40,350	190,463	194,179	0	194,179	2,710
<b>Total Monthly Volumes (gallons)</b>			<b>0</b>	<b>3,593</b>	<b>4,683,355</b>	<b>1,260,500</b>	<b>5,947,448</b>	<b>5,863,941</b>	<b>38,406</b>	<b>5,902,346</b>	<b>27,841</b>
<b>Average Pump/Injection Rates (gpm)</b>			<b>0.0</b>	<b>0.1</b>	<b>104.9</b>	<b>28.2</b>	<b>133.2</b>	<b>131.4</b>	<b>0.9</b>	<b>132.2</b>	<b>0.6</b>

NOTES: gpm: gallons per minute RO: Reverse Osmosis

- Extraction wells TW-3D and PE-1 were operated during December 2014 at a target pump rate of 135 gpm excluding periods of planned and unplanned downtime. Extraction well TW-2S was not operated during December 2014.
- Effluent was discharged into injection wells IW-02 and IW-03.
- The difference between influent flow rate and the sum of the effluent and reverse osmosis concentrate flow rates during December 2014 is approximately 0.29 percent. This percentage difference includes instrument noise in the system, but is within the accuracy of the flow meters. A well is considered to be offline if the daily reported flow is 140 gallons per day or less.

## Appendix C

### Flowmeter Calibration Records

---



## Flow Calibration with Adjustment

30171212-1304705

WWRA-006931-F

Purchase order number

US-19068473-30 / Endress+Hauser Flowtec

Order N°/Manufacturer

23P50-AL1A1AA022AW

Order code

PROMAG 23 P 2"

Transmitter/Sensor

6C036F16000

Serial N°

~~FIT 1201~~ FIT location determined on-site

Tag N°

FCP-6.F

Calibration rig

155.6102 us.gal/min ( $\pm 100\%$ )

Calibrated full scale

Current 4 - 20 mA

Calibrated output

0.9101

Calibration factor

-34

Zero point

78.7 °F

Water temperature

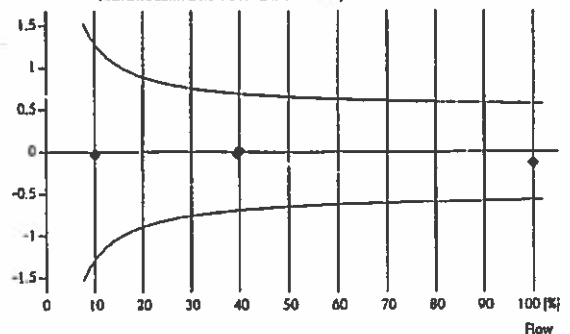
Flow [q]	Flow [us.gal/min]	Duration [s]	V target [us.gal]	V meas. [us.gal]	$\Delta$ o.r.* [%]	Outp.** [mA]
10.1	15.7	30.2	7.8942	7.8921	-0.03	5.61
39.5	61.5	30.2	30.956	30.950	-0.02	10.32
39.9	62.1	30.2	31.263	31.268	0.02	10.39
100.0	155.7	30.2	78.338	78.232	-0.14	19.98
-	-	-	-	-	-	-
-	-	-	-	-	-	-
-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

\*o.r.: of rate

\*\*Calculated value (4 - 20 mA)

Measured error % o.r.

Tolerance limit:  $\pm 0.5\%$  o.r.\*  $\pm$  Zero stability



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

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

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

08-06-2010

Date of calibration

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

*John Davis*

John Davis

Operator

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

## Flow Calibration with Adjustment

10258091-1304700

4600091011

Purchase order number

US-3601523401-200 / Endress+Hauser Flowtec

Order N°/Manufacturer

23P50-AL1A1AA022AW

Order code

PROMAG 23 P 2"

Transmitter/Sensor

6C037316000

Serial N°

~~FIT-1205~~ *FIT location determined onsite*

Tag N°

FCP-7.1.E

Calibration rig

155.6102 us.gal/min ( $\pm 100\%$ )

Calibrated full scale

Current 4 - 20 mA

Calibrated output:

0.9145

Calibration factor

0

Zero point

70.5 °F

Water temperature

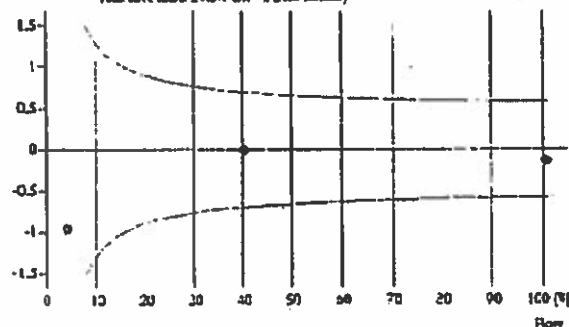
Flow m³/h	Flow m³/d	Duration s	V target m³/gal	V meas. m³/gal	$\Delta$ m³ %	Output** mA
4.0	6.27	55.2	5.7720	5.7163	-0.96	4.64
40.2	62.5	30.2	31.439	31.439	0.00	10.43
40.5	62.6	30.2	31.498	31.497	0.00	10.44
100.7	156.7	30.2	78.760	78.656	-0.13	20.09
-	-	-	-	-	-	-
-	-	-	-	-	-	-
-	-	-	-	-	-	-
-	-	-	-	-	-	-
-	-	-	-	-	-	-
-	-	-	-	-	-	-

\*m³/d rate

\*\*Calculated value (4 - 20 mA)

Measured error % o.r.

Tolerance limit  $\pm 0.5\%$  o.r.  $\pm 2\%$  stability



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

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

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

*John Davis*

John Davis

Operator

Certified acc. to  
ISO 9001, Reg.-N° 030502.2  
ISO 14001, Reg.-N° EM5561346

01-07-2013

Date of calibration

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

**Endress+Hauser** 

People for Process Automation

## Flow Calibration without Adjustment

9230426-1275101

4017515743

Purchase order number

US-3601525/73-100 / Endress+Hauser Inc.

Order N°/Manufacturer

23P50-ALIA1RA022AW

Order code

PROMAG 23 P 2"

Transmitter/Sensor

6A022016000

Serial N°

FIT-101 F.I.T. location determined on-site

Tag N°

FCP-8.2 US

Calibration rig

156 us.gal/min ( $\pm 100\%$ )

Calibrated full scale

Current 4 - 20 mA

Calibrated output

0.9207

Calibration factor

0

Zero point

72.6 °F

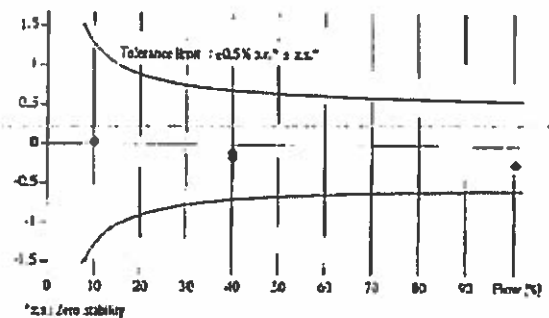
Water temperature

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

\*0.2% of scale

\*\* Calculated value (4 - 20 mA)

Measured error % o.r.



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

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

09-20-2013

Date of calibration

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



W. Watkins  
 Operator

**Endress+Hauser** 

People for Process Automation

## Flow Calibration without Adjustment

37304350-1273/02

4017515743

Purchase order number

US-3601525789-100 / Endress+Hauser Inc.

Order N°/Manufacturer

23P50-AL1A1RA022AW

Order code

PROMAG 23 P 2"

Transmitter/Sensor

6A022116000

Serial N°

~~FIT 102~~ *FIT location determined onsite*

Tag N°

FCP-8.2 US

Calibration tag

156 us.gal/min ( $\pm 100\%$ )

Calibrated full scale

Current 4 - 20 mA

Calibrated output

0.9082

Calibration factor

0

Zero point

72.3 °F

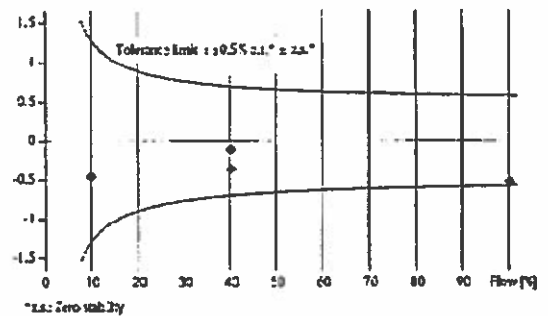
Water temperature

Flow [g]	Flow [us.gal/min]	Duration [sec]	V target [us.gal]	V mea. [us.gal]	$\Delta$ out [%]	Outp.** [mA]
10.0	15.643	60.0	15.654	15.582	-3.40	5.60
40.1	62.618	60.0	62.665	62.443	-3.36	10.40
40.2	62.628	60.0	62.673	62.607	-0.11	10.42
100.3	156.535	60.0	156.646	155.804	-0.54	19.97
-	-	-	-	-	-	-
-	-	-	-	-	-	-
-	-	-	-	-	-	-
-	-	-	-	-	-	-
-	-	-	-	-	-	-
-	-	-	-	-	-	-

\*% of rate

\*\*Calculated value (4 - 20 mA)

Measured error % o.r.



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

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

09-20-2013

Date of calibration

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



W. Watkins

Operator

## Flow Calibration without Adjustment

02002720-1204700

4600082515

Purchase order number

US-3601521707-200 / Endress+Hauser Inc.

Order N°/Manufacturer

23P50-AL1A1AA022AW

Order code

PROMAG 23 P 2"

Transmitter/Sensor

6C037016000

Serial N°

~~HT-1202~~ *FIT location determined onsite*

Tag N°

FCP-8.2 US

Calibration rig

155 us.gal/min ( $\pm 100\%$ )

Calibrated full scale

Current 4 - 20 mA

Calibrated output

0.9154

Calibration factor

0

Zero point

75.5 °F

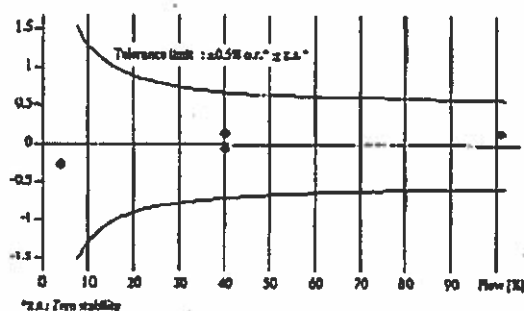
Water temperature

Flow [m]	Flow [us.gal/min]	Duration [sec]	V target [us.gal]	V meas. [us.gal]	$\Delta$ acc. [%]	Output <sup>***</sup> [mA]
4.0	6.12	60.0	6.1222	6.1053	-0.28	4.63
40.1	62.2	60.0	62.267	62.358	0.15	10.43
40.2	62.2	60.0	62.283	62.243	-0.06	10.42
101.1	156.7	60.0	156.700	156.998	0.15	20.20
-	-	-	-	-	-	-
-	-	-	-	-	-	-
-	-	-	-	-	-	-
-	-	-	-	-	-	-
-	-	-	-	-	-	-
-	-	-	-	-	-	-

<sup>\*</sup>acc. of rate

<sup>\*\*</sup>Calculated value (4 - 20 mA)

Measured error % o.r.



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

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

06-19-2012

Date of calibration

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

*Wesley Watkins*

W. Watkins  
Operator

**Endress+Hauser** 

People for Process Automation

**Flow Calibration without Adjustment**

03004352-1304730

4017515743

Purchase order number

US-3601525789-300 / Endress+Hauser Inc.

Order N°/Manufacturer

23P50-AL1A1AA022AW

Order code

PROMAG 23 P 2"

Transmitter/Sensor

6C037216000

Serial N°

~~FIT-1204~~ FIT location determined onsite

Tag N°

FCP-8.2 US

Calibration rig

156 us.gal/min ( $\pm 100\%$ )

Calibrated full scale

Current 4 - 20 mA

Calibrated output

0.9184

Calibration factor

20

Zero point

72.4 °F

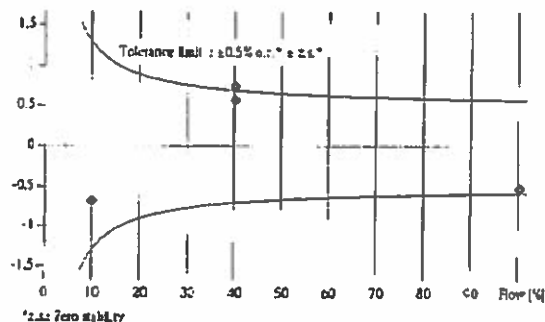
Water temperature

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

\*out. of rate

\*\*Calculated value (4 - 20 mA)

Measured error % o.r.



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

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

09-20-2013

Date of calibration

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

*Wesley Watkins*

W. Watkins

Operator

## Flow Calibration with Adjustment

92002717 1385273

4600082515

Purchase order number

US-3601521707-300 / Endress+Hauser Inc.

Order N°/Manufacturer

23P80-AL1A1AA022AW

Order code

PROMAG 23 P 3"

Transmitter/Sensor

7700F316000

Serial N°

- FIT location determined onsite

Tag N°

Flow (%)	Flow (us.gal/min)	Duration (sec)	V target (us.gal)	V meas. (us.gal)	$\Delta$ o.r.* (%)	Outp.** (mA)
4.0	16.0	60.0	15.964	15.954	-0.06	4.64
40.3	161.3	60.0	161.426	161.393	-0.02	10.45
40.6	162.3	60.0	162.432	162.486	0.03	10.49
100.4	401.5	60.0	401.815	401.258	-0.14	20.04
-	-	-	-	-	-	-
-	-	-	-	-	-	-
-	-	-	-	-	-	-
-	-	-	-	-	-	-
-	-	-	-	-	-	-
-	-	-	-	-	-	-

\*o.r.: of rate

\*\*Calculated value (4 - 20 mA)

Endress+Hauser **EH**

People for Process Automation

FCP-8.2 US

Calibration rig

400 us.gal/min

( $\pm 100\%$ )

Calibrated full scale

Current 4 - 20 mA

Calibrated output

1.1672

Calibration factor

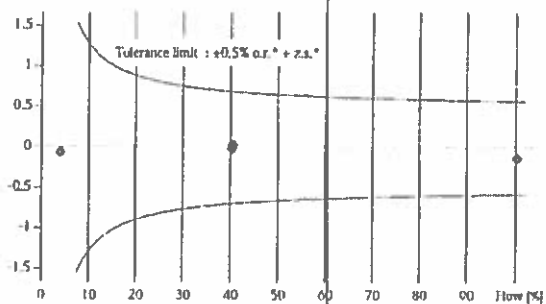
-18

Zero point

75.1 °F

Water temperature

Measured error % o.r.



\*z.s.: Zero stability

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

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

06-19-2012

Date of calibration

Endress+Hauser Inc.

10657 Porter Road

La Porte, Texas 77571

*Wesley Watkins*

W. Watkins

Operator

## Flow Calibration without Adjustment

92003718-1273190

4600082515

Purchase order number

US-3601521707-100 / Endress+Hauser Inc.

Order N°/Manufacturer

23P50-AL1A1RA022AW

Order code

PROMAG 23 P 2"

Transmitter/Sensor

6A021F16000

Serial N°

~~FIT-100~~ FIT location determined on-site

Tag N°

FCP-8.2 US

Calibration rig

155 us.gal/min ( $\pm 100\%$ )

Calibrated full scale

Current 4 - 20 mA

Calibrated output

0.9178

Calibration factor

0

Zero point

75.3 °F

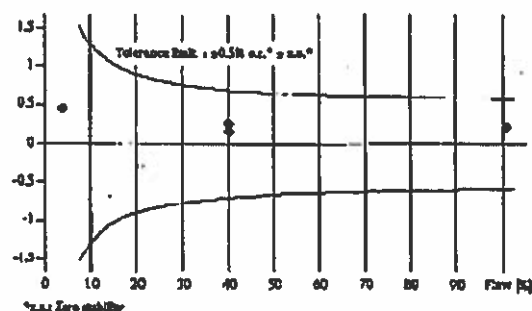
Water temperature

Flow [m]	Flow [us.gal/min]	Duration [sec]	V target [m.gal]	V meas. [m.gal]	$\Delta$ ex.* [m]	Outp.** [mA]
4.0	6.14	60.0	6.1423	6.1699	0.45	4.04
40.2	62.3	60.0	62.353	62.512	0.26	10.45
40.2	62.3	60.0	62.361	62.460	0.16	10.44
100.8	156.3	60.0	156.354	156.703	0.22	20.17
-	-	-	-	-	-	-
-	-	-	-	-	-	-
-	-	-	-	-	-	-
-	-	-	-	-	-	-
-	-	-	-	-	-	-
-	-	-	-	-	-	-

\*ex.: of rate

\*\*Calculated value (4 - 20 mA)

Measured error % o.r.



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

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

06-19-2012

Date of calibration

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

*Wesley Watkins*

W. Watkins  
Operator

**Appendix D**  
**Fourth Quarter 2014**  
**Laboratory Analytical Reports**

---



# TRUESDAIL LABORATORIES, INC.

EXCELLENCE IN INDEPENDENT TESTING



Established 1931

November 3, 2014

14201 FRANKLIN AVENUE  
TUSTIN, CALIFORNIA 92780-7008  
(714) 730-6239 · FAX (714) 730-6462  
www.truesdail.com

E2 Consulting Engineers, Inc.  
Mr. Shawn Duffy  
155 Grand Ave., Suite 1000  
Oakland, California 94612

Dear Mr. Duffy:

SUBJECT: CASE NARRATIVE PG&E TOPOCK IM3PLANT-WDR-489 PROJECT, GROUNDWATER  
MONITORING,  
TLI No.: 815060

Truesdail Laboratories, Inc. is pleased to submit this report summarizing the Topock IM3Plant-WDR-489 project groundwater monitoring. A summary table for this sample delivery group is included in Section 2. Complete laboratory reports, quality control data and chain of custody forms for sampling period are included in Sections 3 and 4. Analytical raw data have been included under Section 5.

The samples were received and delivered with the chain of custody on October 7, 2014, intact and in chilled condition. The samples will be kept in a locked refrigerator for 30 days; thereafter it will be kept in warm storage for an additional 2 months before disposal.

Samples were analyzed and recorded in the raw data as SDG 14J0098 but are reported as SDG 815060 in all final report pages.


The straight runs for the sample and associated matrix spike on sample SC-700B-WDR-489 for Hexavalent Chromium analysis by EPA 218.6 were just outside the retention time window. Because the matrix spike recovery and all other QA/QC were within acceptable limits, the data from the straight run was reported.

The internal standards for sample SC-701-WDR-489 analyzed at dilutions of 2x and 5x for most metals by EPA 200.8 were outside the recovery limits of 70% - 130% as a result of matrix interference. Therefore, the sample was re-analyzed and reported at a 10x dilution. The internal standards were within acceptable limits. Due to the dilution, the reporting limits for some metals exceed the Contract Required Detection Limits. All other QA/QC were within acceptable limits.

No other violations or nonconformance actions occurred for this data package.

If you have any questions or require additional information, please contact me at (714) 730-6239 ext. 200.

Respectfully Submitted,  
TRUESDAIL LABORATORIES, INC.

  
for Mona Nassimi  
Manager, Analytical Services

  
Michael Ngo  
Quality Assurance/Quality Control Officer

002

# TRUESDAIL LABORATORIES, INC.

EXCELLENCE IN INDEPENDENT TESTING



Established 1931

**Client:** E2 Consulting Engineers, Inc.  
155 Grand Ave. Suite 1000  
Oakland, CA 94612

**Attention:** Shawn Duffy

**Sample:** Three (3) Groundwaters

**Project Name:** PG&E Topock Project

**Project No.:** 428648.IM.CS.EX.AC

14201 FRANKLIN AVENUE  
TUSTIN, CALIFORNIA 92780-7008  
(714) 730-6239 · FAX (714) 730-6462  
www.truesdail.com

**Laboratory No.:** 815060

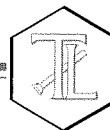
**Date:** November 3, 2014

**Collected:** October 1, 2014

**Received:** October 1, 2014

## ANALYST LIST

METHOD	PARAMETER	ANALYST
EPA 120.1	Specific Conductivity	Jenny Tankunakorn
SM 2540C	Total Dissolved Solids	Jenny Tankunakorn
SM 2130B	Turbidity	Jennine Ta
EPA 300.0	Anions	Giawad Ghenniwa
SM 4500-NH3 D	Ammonia	Maksim Grobunov
SM 4500-NO2 B	Nitrite as N	Jenny Tankunakorn
EPA 200.7	Metals by ICP	Ethel Suico
EPA 200.8	Metals by ICP/MS	Ethel Suico
EPA 218.6	Hexavalent Chromium	Naheed Eidinejad



**Client:** E2 Consulting Engineers, Inc.  
155 Grand Ave. Suite 1000  
Oakland, CA 94612

**Laboratory No.:** 815060  
**Date Received:** October 1, 2014

**Attention:** Shawn Duffy

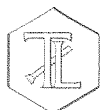
**Project Name:** PG&E Topock Project  
**Project No.:** 428648.IM.CS.EX.AC  
**P.O. No.:** PGEIM11111001

## Analytical Results Summary

Lab Sample ID	Field ID	Analysis Method	Extraction Method	Sample Date	Sample Time	Parameter	Result	Units	RL
815060-001	SC-700B-WDR-489	E120.1	NONE	10/7/2014	8:00	EC	7190	umhos/cm	2.00
815060-001	SC-700B-WDR-489	E200.7	NONE	10/7/2014	8:00	Aluminum	ND	ug/L	50.0
815060-001	SC-700B-WDR-489	E200.7	NONE	10/7/2014	8:00	BORON	946	ug/L	50.0
815060-001	SC-700B-WDR-489	E200.7	NONE	10/7/2014	8:00	Iron	22.0	ug/L	20.0
815060-001	SC-700B-WDR-489	E200.7	NONE	10/7/2014	8:00	Zinc	ND	ug/L	20.0
815060-001	SC-700B-WDR-489	E200.8	NONE	10/7/2014	8:00	Antimony	ND	ug/L	2.0
815060-001	SC-700B-WDR-489	E200.8	NONE	10/7/2014	8:00	Arsenic	ND	ug/L	0.50
815060-001	SC-700B-WDR-489	E200.8	NONE	10/7/2014	8:00	Barium	8.7	ug/L	5.0
815060-001	SC-700B-WDR-489	E200.8	NONE	10/7/2014	8:00	Chromium	ND	ug/L	1.0
815060-001	SC-700B-WDR-489	E200.8	NONE	10/7/2014	8:00	Copper	ND	ug/L	1.0
815060-001	SC-700B-WDR-489	E200.8	NONE	10/7/2014	8:00	Lead	ND	ug/L	1.0
815060-001	SC-700B-WDR-489	E200.8	NONE	10/7/2014	8:00	Manganese	5.8	ug/L	0.50
815060-001	SC-700B-WDR-489	E200.8	NONE	10/7/2014	8:00	Molybdenum	20.8	ug/L	2.0
815060-001	SC-700B-WDR-489	E200.8	NONE	10/7/2014	8:00	Nickel	3.2	ug/L	2.0
815060-001	SC-700B-WDR-489	E218.6	LABFLT	10/7/2014	8:00	Chromium, Hexavalent	ND	ug/L	0.20
815060-001	SC-700B-WDR-489	E300	NONE	10/7/2014	8:00	Fluoride	1.48	mg/L	0.500
815060-001	SC-700B-WDR-489	E300	NONE	10/7/2014	8:00	Nitrate as N	2.69	mg/L	0.500
815060-001	SC-700B-WDR-489	E300	NONE	10/7/2014	8:00	Sulfate	497	mg/L	12.50
815060-001	SC-700B-WDR-489	SM2130B	NONE	10/7/2014	8:00	Turbidity	ND	NTU	0.100
815060-001	SC-700B-WDR-489	SM2540C	NONE	10/7/2014	8:00	Total Dissolved Solids	4440	mg/L	250
815060-001	SC-700B-WDR-489	SM4500NH3D	NONE	10/7/2014	8:00	Ammonia-N	ND	mg/L	0.500
815060-001	SC-700B-WDR-489	SM4500NO2B	NONE	10/7/2014	8:00	Nitrite as N	0.0052	mg/L	0.0050



Lab Sample ID	Field ID	Analysis Method	Extraction Method	Sample Date	Sample Time	Parameter	Result	Units	RL
815060-002	SC-100B-WDR-489	E120.1	NONE	10/7/2014	8:00	EC	7150	umhos/cm	2.00
815060-002	SC-100B-WDR-489	E200.7	NONE	10/7/2014	8:00	Aluminum	ND	ug/L	50.0
815060-002	SC-100B-WDR-489	E200.7	NONE	10/7/2014	8:00	BORON	996	ug/L	50.0
815060-002	SC-100B-WDR-489	E200.7	NONE	10/7/2014	8:00	Iron	60.6	ug/L	20.0
815060-002	SC-100B-WDR-489	E200.7	NONE	10/7/2014	8:00	Zinc	ND	ug/L	20.0
815060-002	SC-100B-WDR-489	E200.8	NONE	10/7/2014	8:00	Antimony	ND	ug/L	2.0
815060-002	SC-100B-WDR-489	E200.8	NONE	10/7/2014	8:00	Arsenic	3.3	ug/L	0.50
815060-002	SC-100B-WDR-489	E200.8	NONE	10/7/2014	8:00	Barium	27.2	ug/L	5.0
815060-002	SC-100B-WDR-489	E200.8	NONE	10/7/2014	8:00	Chromium	563	ug/L	5.0
815060-002	SC-100B-WDR-489	E200.8	NONE	10/7/2014	8:00	Copper	ND	ug/L	1.0
815060-002	SC-100B-WDR-489	E200.8	NONE	10/7/2014	8:00	Lead	ND	ug/L	1.0
815060-002	SC-100B-WDR-489	E200.8	NONE	10/7/2014	8:00	Manganese	7.0	ug/L	0.50
815060-002	SC-100B-WDR-489	E200.8	NONE	10/7/2014	8:00	Molybdenum	20.3	ug/L	2.0
815060-002	SC-100B-WDR-489	E200.8	NONE	10/7/2014	8:00	Nickel	ND	ug/L	2.0
815060-002	SC-100B-WDR-489	E218.6	LABFLT	10/7/2014	8:00	Chromium, Hexavalent	586	ug/L	5.0
815060-002	SC-100B-WDR-489	E300	NONE	10/7/2014	8:00	Fluoride	1.80	mg/L	0.500
815060-002	SC-100B-WDR-489	E300	NONE	10/7/2014	8:00	Nitrate as N	2.70	mg/L	0.500
815060-002	SC-100B-WDR-489	E300	NONE	10/7/2014	8:00	Sulfate	517	mg/L	12.5
815060-002	SC-100B-WDR-489	SM2130B	NONE	10/7/2014	8:00	Turbidity	0.110	NTU	0.100
815060-002	SC-100B-WDR-489	SM2540C	NONE	10/7/2014	8:00	Total Dissolved Solids	4520	mg/L	250
815060-002	SC-100B-WDR-489	SM4500NH3D	NONE	10/7/2014	8:00	Ammonia-N	ND	mg/L	0.500
815060-002	SC-100B-WDR-489	SM4500NO2B	NONE	10/7/2014	8:00	Nitrite as N	ND	mg/L	0.0050



Lab Sample ID	Field ID	Analysis Method	Extraction Method	Sample Date	Sample Time	Parameter	Result	Units	RL
815060-003	SC-701-WDR-489	E120.1	NONE	10/7/2014	8:00	EC	25600	umhos/cm	2.00
815060-003	SC-701-WDR-489	E200.7	NONE	10/7/2014	8:00	Zinc	ND	ug/L	20.0
815060-003	SC-701-WDR-489	E200.8	NONE	10/7/2014	8:00	Antimony	ND	ug/L	2.0
815060-003	SC-701-WDR-489	E200.8	NONE	10/7/2014	8:00	Arsenic	ND	ug/L	2.0
815060-003	SC-701-WDR-489	E200.8	NONE	10/7/2014	8:00	Barium	38.3	ug/L	10.0
815060-003	SC-701-WDR-489	E200.8	NONE	10/7/2014	8:00	Beryllium	ND	ug/L	2.0
815060-003	SC-701-WDR-489	E200.8	NONE	10/7/2014	8:00	Cadmium	ND	ug/L	5.0
815060-003	SC-701-WDR-489	E200.8	NONE	10/7/2014	8:00	Chromium	ND	ug/L	5.0
815060-003	SC-701-WDR-489	E200.8	NONE	10/7/2014	8:00	Cobalt	ND	ug/L	5.0
815060-003	SC-701-WDR-489	E200.8	NONE	10/7/2014	8:00	Copper	15.0	ug/L	2.5
815060-003	SC-701-WDR-489	E200.8	NONE	10/7/2014	8:00	Lead	ND	ug/L	5.0
815060-003	SC-701-WDR-489	E200.8	NONE	10/7/2014	8:00	Manganese	22.0	ug/L	5.0
815060-003	SC-701-WDR-489	E200.8	NONE	10/7/2014	8:00	Mercury	ND	ug/L	2.0
815060-003	SC-701-WDR-489	E200.8	NONE	10/7/2014	8:00	Molybdenum	87.6	ug/L	5.0
815060-003	SC-701-WDR-489	E200.8	NONE	10/7/2014	8:00	Nickel	8.2	ug/L	5.0
815060-003	SC-701-WDR-489	E200.8	NONE	10/7/2014	8:00	Selenium	19.1	ug/L	10.0
815060-003	SC-701-WDR-489	E200.8	NONE	10/7/2014	8:00	Silver	ND	ug/L	5.0
815060-003	SC-701-WDR-489	E200.8	NONE	10/7/2014	8:00	Thallium	ND	ug/L	2.0
815060-003	SC-701-WDR-489	E200.8	NONE	10/7/2014	8:00	Vanadium	ND	ug/L	5.0
815060-003	SC-701-WDR-489	E218.6	LABFLT	10/7/2014	8:00	Chromium, Hexavalent	ND	ug/L	1.0
815060-003	SC-701-WDR-489	E300	NONE	10/7/2014	8:00	Fluoride	8.72	mg/L	0.500
815060-003	SC-701-WDR-489	SM2540C	NONE	10/7/2014	8:00	Total Dissolved Solids	19100	mg/L	500

ND: Non Detected (below reporting limit)

mg/L: Milligrams per liter.

**Note:** The following "Significant Figures" rule has been applied to all results:

Results below 0.01ppm will have two (2) significant figures.

Result above or equal to 0.01ppm will have three (3) significant figures.

Quality Control data will always have three (3) significant figures.

# TRUESDAIL LABORATORIES, INC.

EXCELLENCE IN INDEPENDENT TESTING



Established 1931

14201 FRANKLIN AVENUE  
TUSTIN, CALIFORNIA 92780-7008  
(714) 730-6239 · FAX (714) 730-6462  
www.truesdail.com

## REPORT

**Client:** E2 Consulting Engineers, Inc.

155 Grand Avenue, Suite 800

Oakland, CA 94612

Attention: Shawn Duffy

Project Name: PG&E Topock Project

Project Number: 428648.IM.CS.EX.AC

P.O. Number: PGEIM1111100

Release Number:

Laboratory No. 815060

Page 1 of 32

Printed 11/3/2014

Samples Received on 10/7/2014 6:35:00 PM

Field ID	Lab ID	Collected	Matrix
SC-700B-WDR-489	815060-001	10/07/2014 08:00	Water
SC-100B-WDR-489	815060-002	10/07/2014 08:00	Water
SC-701-WDR-489	815060-003	10/07/2014 08:00	Water

### Anions by I.C. - EPA 300.0

Batch 1410162

Parameter	Unit	Analyzed	DF	MDL	RL	Result
815060-001 Fluoride	mg/L	10/08/2014 12:10	5.00	0.104	0.500	1.48
Nitrate as Nitrogen	mg/L	10/08/2014 12:10	5.00	0.0415	0.500	2.69
Sulfate	mg/L	10/08/2014 14:21	25.0	0.768	12.5	497
815060-002 Fluoride	mg/L	10/08/2014 12:21	5.00	0.104	0.500	1.80
Nitrate as Nitrogen	mg/L	10/08/2014 12:21	5.00	0.0415	0.500	2.70
Sulfate	mg/L	10/08/2014 14:32	25.0	0.768	12.5	517
815060-003 Fluoride	mg/L	10/08/2014 12:55	5.00	0.104	0.500	8.72

### Method Blank

Parameter	Unit	DF	Result
Chloride	mg/L	1.00	ND
Fluoride	mg/L	1.00	ND
Sulfate	mg/L	1.00	ND
Nitrate as Nitrogen	mg/L	1.00	ND

### Duplicate

Lab ID = 815060-002

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Fluoride	mg/L	5.00	1.79	1.80	0.334	0 - 20
Nitrate as Nitrogen	mg/L	5.00	2.73	2.70	1.14	0 - 20

This report applies only to the sample, or samples, investigated and is not necessarily indicative of the quality or condition of apparently identical or similar products. As a mutual protection to clients, the public, and these laboratories, this report is submitted and accepted for the exclusive use of the client to whom it is addressed and upon the condition that it is not to be used, in whole or in part, in any advertising or publicity matter without prior written authorization from Truesdail Laboratories.

015



Client: E2 Consulting Engineers, Inc.

Project Name: PG&E Topock Project  
Project Number: 428648.IM.CS.EX.AC

Page 2 of 32  
Printed 11/3/2014

Duplicate

Lab ID = 815067-004

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Chloride	mg/L	25.0	52.7	56.7	7.27	0 - 20
Sulfate	mg/L	25.0	64.1	65.7	2.40	0 - 20

Lab Control Sample

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chloride	mg/L	1.00	3.83	4.00	95.8	90 - 110
Fluoride	mg/L	1.00	4.05	4.00	101	90 - 110
Sulfate	mg/L	1.00	20.0	20.0	99.9	90 - 110
Nitrate as Nitrogen	mg/L	1.00	3.94	4.00	98.6	90 - 110

Matrix Spike

Lab ID = 815060-002

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Fluoride	mg/L	5.00	23.0	21.8(20.0)	106	85 - 115
Nitrate as Nitrogen	mg/L	5.00	24.1	22.7(20.0)	107	85 - 115

Matrix Spike

Lab ID = 815067-004

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chloride	mg/L	25.0	160	157(100)	103	85 - 115
Sulfate	mg/L	25.0	170	166(100)	104	85 - 115

MRCCS - Secondary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chloride	mg/L	1.00	3.90	4.00	97.6	90 - 110
Fluoride	mg/L	1.00	4.04	4.00	101	90 - 110
Sulfate	mg/L	1.00	19.8	20.0	99.3	90 - 110
Nitrate as Nitrogen	mg/L	1.00	3.93	4.00	98.3	90 - 110

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chloride	mg/L	1.00	2.78	3.00	92.7	90 - 110

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chloride	mg/L	1.00	2.89	3.00	96.4	90 - 110

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chloride	mg/L	1.00	2.84	3.00	94.8	90 - 110

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chloride	mg/L	1.00	3.14	3.00	105	90 - 110



Client: E2 Consulting Engineers, Inc.

Project Name: PG&amp;E Topock Project

Page 4 of 32

Project Number: 428648.IM.CS.EX.AC

Printed 11/3/2014

**Nitrite SM 4500-NO2 B**

Batch 1410134

Parameter	Unit	Analyzed	DF	MDL	RL	Result
815060-001 Nitrite as Nitrogen	mg/L	10/08/2014 15:42	1.00	0.000630	0.0050	0.0052
815060-002 Nitrite as Nitrogen	mg/L	10/08/2014 15:47	1.00	0.000630	0.0050	ND

## Method Blank

Parameter	Unit	DF	Result
Nitrite as Nitrogen	mg/L	1.00	ND

## Duplicate

Lab ID = 815060-001

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Nitrite as Nitrogen	mg/L	1.00	0.00520	0.00520	0	0 - 20

## Lab Control Sample

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Nitrite as Nitrogen	mg/L	1.00	0.0207	0.0226	91.6	90 - 110

## Matrix Spike

Lab ID = 815060-001

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Nitrite as Nitrogen	mg/L	1.00	0.0242	0.0278(0.0226)	84.1	80 - 120

## MRCCS - Secondary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Nitrite as Nitrogen	mg/L	1.00	0.0207	0.0226	91.6	90 - 110

## MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Nitrite as Nitrogen	mg/L	1.00	0.0198	0.0200	99.0	90 - 110

## MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Nitrite as Nitrogen	mg/L	1.00	0.0198	0.0200	99.0	90 - 110



Client: E2 Consulting Engineers, Inc.

Project Name: PG&E Topock Project

Page 5 of 32

Project Number: 428648.IM.CS.EX.AC

Printed 11/3/2014

**Specific Conductivity - EPA 120.1**

Batch 1410051

Parameter	Unit	Analyzed	DF	MDL	RL	Result
815060-001 Specific Conductivity	umhos/cm	10/10/2014	1.00	0.606	2.00	7190
815060-002 Specific Conductivity	umhos/cm	10/10/2014	1.00	0.606	2.00	7150
815060-003 Specific Conductivity	umhos/cm	10/10/2014	1.00	0.606	2.00	25600

**Method Blank**

Parameter	Unit	DF	Result
Specific Conductivity	umhos	1.00	ND

**Duplicate**

Lab ID = 815060-003

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Specific Conductivity	umhos	1.00	25800	25600	0.778	0 - 10

**Lab Control Sample**

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Specific Conductivity	umhos	1.00	743	706	105	90 - 110

**MRCCS - Secondary**

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Specific Conductivity	umhos	1.00	743	706	105	90 - 110

**MRCVS - Primary**

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Specific Conductivity	umhos	1.00	1050	1000	105	90 - 110

**MRCVS - Primary**

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Specific Conductivity	umhos	1.00	1050	1000	105	90 - 110



Client: E2 Consulting Engineers, Inc.

Project Name: PG&E Topock Project

Page 6 of 32

Project Number: 428648.IM.CS.EX.AC

Printed 11/3/2014

**Chrome VI by EPA 218.6**

Batch 1410121

Parameter	Unit	Analyzed	DF	MDL	RL	Result
815060-001 Chromium, Hexavalent	ug/L	10/08/2014 13:45	1.00	0.00600	0.20	ND
815060-002 Chromium, Hexavalent	ug/L	10/08/2014 13:55	25.0	0.150	5.0	586
815060-003 Chromium, Hexavalent	ug/L	10/08/2014 14:56	5.00	0.0300	1.0	ND

**Method Blank**

Parameter	Unit	DF	Result
Chromium, Hexavalent	ug/L	1.00	ND

**Duplicate**

Lab ID = 815065-001

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	3.63	3.67	1.15	0 - 20

**Low Level Calibration Verification**

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	0.192	0.200	96.2	70 - 130

**Lab Control Sample**

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	5.10	5.00	102	90 - 110

**Matrix Spike**

Lab ID = 815060-001

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	5.00	4.98	5.11(5.00)	97.5	90 - 110

**Matrix Spike**

Lab ID = 815060-001

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	1.15	1.11(1.00)	104	90 - 110

**Matrix Spike**

Lab ID = 815060-002

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	50.0	1160	1210(625)	92.0	90 - 110

**Matrix Spike**

Lab ID = 815060-003

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	5.00	5.31	5.58(5.00)	94.5	90 - 110

**Matrix Spike**

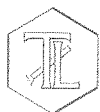
Lab ID = 815060-003

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	ND	1.00(1.00)		90 - 110

**Matrix Spike**

Lab ID = 815065-001

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	8.50	8.67(5.00)	96.5	90 - 110



Client: E2 Consulting Engineers, Inc.

Project Name: PG&E Topock Project

Page 8 of 32

Project Number: 428648.IM.CS.EX.AC

Printed 11/3/2014

**Metals by EPA 200.7, Total**

Batch 101014A-Th2

Parameter	Unit	Analyzed	DF	MDL	RL	Result
815060-001 Aluminum	ug/L	10/10/2014 14:18	1.00	7.20	50.0	ND
Boron	ug/L	10/10/2014 14:18	1.00	4.10	50.0	946
Iron	ug/L	10/10/2014 14:18	1.00	3.00	20.0	22.0
Zinc	ug/L	10/10/2014 14:18	1.00	5.10	20.0	ND
815060-002 Aluminum	ug/L	10/10/2014 14:39	1.00	7.20	50.0	ND
Boron	ug/L	10/10/2014 14:39	1.00	4.10	50.0	996
Iron	ug/L	10/10/2014 14:39	1.00	3.00	20.0	60.6
Zinc	ug/L	10/10/2014 14:39	1.00	5.10	20.0	ND
815060-003 Zinc	ug/L	10/10/2014 14:56	1.00	5.10	20.0	ND

**Method Blank**

Parameter	Unit	DF	Result
Aluminum	ug/L	1.00	ND
Iron	ug/L	1.00	ND
Zinc	ug/L	1.00	ND
Boron	ug/L	1.00	ND

**Duplicate**

Lab ID = 815060-001

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Aluminum	ug/L	1.00	ND	0	0	0 - 20
Iron	ug/L	1.00	22.6	22.0	2.69	0 - 20
Zinc	ug/L	1.00	ND	0	0	0 - 20
Boron	ug/L	1.00	953	946	0.737	0 - 20

**Lab Control Sample**

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Aluminum	ug/L	1.00	2070	2000	103	85 - 115
Iron	ug/L	1.00	2140	2000	107	85 - 115
Zinc	ug/L	1.00	2000	2000	100	85 - 115
Boron	ug/L	1.00	2030	2000	102	85 - 115

**Matrix Spike**

Lab ID = 815060-001

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Aluminum	ug/L	1.00	1760	2000(2000)	88.2	75 - 125
Iron	ug/L	1.00	1970	2020(2000)	97.3	75 - 125
Zinc	ug/L	1.00	2210	2000(2000)	111	75 - 125
Boron	ug/L	1.00	2940	2950(2000)	100	75 - 125

This report applies only to the sample, or samples, investigated and is not necessarily indicative of the quality or condition of apparently identical or similar products. As a mutual protection to clients, the public, and these laboratories, this report is submitted and accepted for the exclusive use of the client to whom it is addressed and upon the condition that it is not to be used, in whole or in part, in any advertising or publicity matter without prior written authorization from Truesdail Laboratories.



Client: E2 Consulting Engineers, Inc.

Project Name: PG&amp;E Topock Project

Page 9 of 32

Project Number: 428648.IM.CS.EX.AC

Printed 11/3/2014

## Matrix Spike Duplicate

Lab ID = 815060-001

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Aluminum	ug/L	1.00	1730	2000(2000)	86.3	75 - 125
Iron	ug/L	1.00	1970	2020(2000)	97.2	75 - 125
Zinc	ug/L	1.00	2220	2000(2000)	111	75 - 125
Boron	ug/L	1.00	2950	2950(2000)	100	75 - 125

## MRCCS - Secondary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Aluminum	ug/L	1.00	5030	5000	101	95 - 105
Iron	ug/L	1.00	5040	5000	101	95 - 105
Zinc	ug/L	1.00	5050	5000	101	95 - 105
Boron	ug/L	1.00	4990	5000	99.8	95 - 105

## MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Aluminum	ug/L	1.00	5290	5000	106	90 - 110

## MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Aluminum	ug/L	1.00	5220	5000	104	90 - 110

## MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Iron	ug/L	1.00	5430	5000	109	90 - 110

## MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Iron	ug/L	1.00	5260	5000	105	90 - 110

## MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Zinc	ug/L	1.00	5050	5000	101	90 - 110

## MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Zinc	ug/L	1.00	5000	5000	100	90 - 110
Boron	ug/L	1.00	5010	5000	100	90 - 110

## MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Boron	ug/L	1.00	5130	5000	103	90 - 110



Client: E2 Consulting Engineers, Inc.

Project Name: PG&amp;E Topock Project

Page 12 of 32

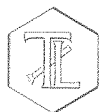
Project Number: 428648.IM.CS.EX.AC

Printed 11/3/2014

**Metals by EPA 200.8, Total**

Batch 101614A

Parameter	Unit	Analyzed	DF	MDL	RL	Result
815060-001 Antimony	ug/L	10/16/2014 17:23	1.00	0.0350	2.0	ND
Arsenic	ug/L	10/16/2014 17:23	1.00	0.0500	0.50	ND
Barium	ug/L	10/16/2014 17:23	1.00	0.297	2.0	8.7
Chromium	ug/L	10/16/2014 17:23	1.00	0.0710	1.0	ND
Lead	ug/L	10/16/2014 17:23	1.00	0.143	1.0	ND
Manganese	ug/L	10/16/2014 17:23	1.00	0.0600	0.50	5.8
Molybdenum	ug/L	10/16/2014 17:23	1.00	0.0500	2.0	20.8
Nickel	ug/L	10/16/2014 17:23	1.00	0.240	2.0	3.2
815060-002 Antimony	ug/L	10/16/2014 17:30	1.00	0.0350	2.0	ND
Arsenic	ug/L	10/16/2014 17:30	1.00	0.0500	0.50	3.3
Barium	ug/L	10/16/2014 17:30	1.00	0.297	2.0	27.2
Chromium	ug/L	10/16/2014 17:43	10.0	0.710	5.0	563
Lead	ug/L	10/16/2014 17:30	1.00	0.143	1.0	ND
Manganese	ug/L	10/16/2014 17:30	1.00	0.0600	0.50	7.0
Molybdenum	ug/L	10/16/2014 17:30	1.00	0.0500	2.0	20.3
Nickel	ug/L	10/16/2014 17:30	1.00	0.240	2.0	ND
815060-003 Antimony	ug/L	10/16/2014 17:56	10.0	0.350	2.0	ND
Arsenic	ug/L	10/16/2014 17:56	10.0	0.500	2.0	ND
Barium	ug/L	10/16/2014 17:56	10.0	2.97	10.0	38.3
Cadmium	ug/L	10/16/2014 17:56	10.0	0.400	5.0	ND
Chromium	ug/L	10/16/2014 17:56	10.0	0.710	5.0	ND
Lead	ug/L	10/16/2014 17:56	10.0	1.43	5.0	ND
Manganese	ug/L	10/16/2014 17:56	10.0	0.600	5.0	22.0
Mercury	ug/L	10/16/2014 17:56	10.0	0.400	2.0	ND
Molybdenum	ug/L	10/16/2014 17:56	10.0	0.500	5.0	87.6
Nickel	ug/L	10/16/2014 17:56	10.0	2.40	5.0	8.2
Selenium	ug/L	10/16/2014 17:56	10.0	2.12	10.0	19.1
Silver	ug/L	10/16/2014 17:56	10.0	0.290	5.0	ND
Thallium	ug/L	10/16/2014 17:56	10.0	0.300	2.0	ND
Vanadium	ug/L	10/16/2014 17:56	10.0	0.700	5.0	ND



Client: E2 Consulting Engineers, Inc.

Project Name: PG&amp;E Topock Project

Page 13 of 32

Project Number: 428648.IM.CS.EX.AC

Printed 11/3/2014

## Method Blank

Parameter	Unit	DF	Result
Arsenic	ug/L	1.00	ND
Barium	ug/L	1.00	ND
Cadmium	ug/L	1.00	ND
Chromium	ug/L	1.00	ND
Mercury	ug/L	1.00	ND
Nickel	ug/L	1.00	ND
Selenium	ug/L	1.00	ND
Antimony	ug/L	1.00	ND
Lead	ug/L	1.00	ND
Silver	ug/L	1.00	ND
Thallium	ug/L	1.00	ND
Vanadium	ug/L	1.00	ND
Manganese	ug/L	1.00	ND
Molybdenum	ug/L	1.00	ND

## Duplicate

Lab ID = 815064-001

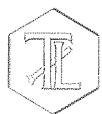
Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Arsenic	ug/L	1.00	ND	0	0	0 - 20
Barium	ug/L	1.00	11.6	11.5	0.728	0 - 20
Cadmium	ug/L	1.00	ND	0	0	0 - 20
Chromium	ug/L	1.00	ND	0	0	0 - 20
Mercury	ug/L	1.00	ND	0	0	0 - 20
Nickel	ug/L	1.00	ND	0	0	0 - 20
Selenium	ug/L	1.00	ND	0	0	0 - 20
Antimony	ug/L	1.00	ND	0	0	0 - 20
Lead	ug/L	1.00	ND	0	0	0 - 20
Silver	ug/L	1.00	ND	0	0	0 - 20
Thallium	ug/L	1.00	ND	0	0	0 - 20
Vanadium	ug/L	1.00	ND	0	0	0 - 20
Manganese	ug/L	1.00	6.10	6.13	0.556	0 - 20
Molybdenum	ug/L	1.00	18.6	18.9	1.74	0 - 20

**Client: E2 Consulting Engineers, Inc.****Project Name: PG&E Topock Project****Page 14 of 32****Project Number: 428648.IM.CS.EX.AC****Printed 11/3/2014****Low Level Calibration Verification**

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Arsenic	ug/L	1.00	0.198	0.200	99.0	70 - 130
Barium	ug/L	1.00	1.01	1.00	101	70 - 130
Cadmium	ug/L	1.00	0.484	0.500	96.8	70 - 130
Chromium	ug/L	1.00	0.436	0.500	87.2	70 - 130
Mercury	ug/L	1.00	0.184	0.200	92.0	70 - 130
Nickel	ug/L	1.00	0.444	0.500	88.8	70 - 130
Selenium	ug/L	1.00	1.11	1.00	111	70 - 130
Antimony	ug/L	1.00	0.182	0.200	91.0	70 - 130
Lead	ug/L	1.00	0.395	0.500	79.0	70 - 130
Silver	ug/L	1.00	0.497	0.500	99.4	70 - 130
Thallium	ug/L	1.00	0.218	0.200	109	70 - 130
Vanadium	ug/L	1.00	0.213	0.200	106	70 - 130
Manganese	ug/L	1.00	0.404	0.500	80.8	70 - 130
Molybdenum	ug/L	1.00	0.519	0.500	104	70 - 130

**Lab Control Sample**

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Arsenic	ug/L	2.00	47.6	50.0	95.3	85 - 115
Barium	ug/L	2.00	48.3	50.0	96.6	85 - 115
Cadmium	ug/L	2.00	48.7	50.0	97.5	85 - 115
Chromium	ug/L	2.00	46.6	50.0	93.1	85 - 115
Mercury	ug/L	2.00	4.58	5.00	91.5	85 - 115
Nickel	ug/L	2.00	46.4	50.0	92.7	85 - 115
Selenium	ug/L	2.00	47.2	50.0	94.4	85 - 115
Antimony	ug/L	2.00	48.1	50.0	96.3	85 - 115
Lead	ug/L	2.00	53.2	50.0	106	85 - 115
Silver	ug/L	2.00	45.2	50.0	90.4	85 - 115
Thallium	ug/L	2.00	48.1	50.0	96.2	85 - 115
Vanadium	ug/L	2.00	46.8	50.0	93.6	85 - 115
Manganese	ug/L	2.00	47.4	50.0	94.7	85 - 115
Molybdenum	ug/L	2.00	49.9	50.0	99.8	85 - 115



Client: E2 Consulting Engineers, Inc.

Project Name: PG&E Topock Project

Page 15 of 32

Project Number: 428648.IM.CS.EX.AC

Printed 11/3/2014

Matrix Spike

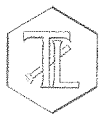
Lab ID = 815064-001

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Arsenic	ug/L	1.00	52.3	50.0(50.0)	105	75 - 125
Barium	ug/L	1.00	62.0	61.5(50.0)	101	75 - 125
Cadmium	ug/L	1.00	46.9	50.0(50.0)	93.9	75 - 125
Chromium	ug/L	1.00	44.9	50.0(50.0)	89.8	75 - 125
Mercury	ug/L	1.00	4.77	5.00(5.00)	95.4	75 - 125
Nickel	ug/L	1.00	44.5	50.0(50.0)	89.0	75 - 125
Selenium	ug/L	1.00	50.5	50.0(50.0)	101	75 - 125
Antimony	ug/L	1.00	52.5	50.0(50.0)	105	75 - 125
Lead	ug/L	1.00	46.3	50.0(50.0)	92.5	75 - 125
Silver	ug/L	1.00	42.5	50.0(50.0)	85.0	75 - 125
Thallium	ug/L	1.00	46.6	50.0(50.0)	93.1	75 - 125
Vanadium	ug/L	1.00	47.2	50.0(50.0)	94.4	75 - 125
Manganese	ug/L	1.00	51.6	56.1(50.0)	90.9	75 - 125
Molybdenum	ug/L	1.00	70.2	68.9(50.0)	102	75 - 125

Matrix Spike Duplicate

Lab ID = 815064-001

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Arsenic	ug/L	1.00	51.4	50.0(50.0)	103	75 - 125
Barium	ug/L	1.00	63.0	61.5(50.0)	103	75 - 125
Cadmium	ug/L	1.00	46.6	50.0(50.0)	93.3	75 - 125
Chromium	ug/L	1.00	44.2	50.0(50.0)	88.5	75 - 125
Mercury	ug/L	1.00	4.80	5.00(5.00)	95.9	75 - 125
Nickel	ug/L	1.00	44.2	50.0(50.0)	88.4	75 - 125
Selenium	ug/L	1.00	49.7	50.0(50.0)	99.5	75 - 125
Antimony	ug/L	1.00	53.3	50.0(50.0)	107	75 - 125
Lead	ug/L	1.00	46.4	50.0(50.0)	92.8	75 - 125
Silver	ug/L	1.00	42.2	50.0(50.0)	84.3	75 - 125
Thallium	ug/L	1.00	46.6	50.0(50.0)	93.2	75 - 125
Vanadium	ug/L	1.00	46.5	50.0(50.0)	92.9	75 - 125
Manganese	ug/L	1.00	50.9	56.1(50.0)	89.6	75 - 125
Molybdenum	ug/L	1.00	70.4	68.9(50.0)	103	75 - 125

**Client: E2 Consulting Engineers, Inc.****Project Name: PG&E Topock Project****Page 25 of 32****Project Number: 428648.IM.CS.EX.AC****Printed 11/3/2014****Serial Dilution****Lab ID = 815060-002**

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Barium	ug/L	5.00	25.6	27.2	5.90	0 - 10
Chromium	ug/L	50.0	570	563	1.19	0 - 10

**Serial Dilution****Lab ID = 815060-003**

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Molybdenum	ug/L	50.0	90.5	87.6	3.31	0 - 10



Client: E2 Consulting Engineers, Inc.

Project Name: PG&E Topock Project

Page 26 of 32

Project Number: 428648.IM.CS.EX.AC

Printed 11/3/2014

Metals by EPA 200.8, Total		Batch 101614A-ICPMS1				
Parameter	Unit	Analyzed	DF	MDL	RL	Result
815060-001 Copper	ug/L	10/16/2014 23:45	1.00	0.190	1.0	ND
815060-002 Copper	ug/L	10/16/2014 23:52	1.00	0.190	1.0	ND
815060-003 Cobalt	ug/L	10/17/2014	5.00	0.200	5.0	ND
Copper	ug/L	10/17/2014	5.00	0.950	2.5	15.0

Method Blank

Parameter	Unit	DF	Result
Cobalt	ug/L	1.00	ND
Copper	ug/L	1.00	ND

Duplicate

Lab ID = 815064-001

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Cobalt	ug/L	1.00	ND	0	0	0 - 20
Copper	ug/L	1.00	ND	0	0	0 - 20

Low Level Calibration Verification

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Cobalt	ug/L	1.00	0.197	0.200	98.6	70 - 130
Copper	ug/L	1.00	0.524	0.500	105	70 - 130

Lab Control Sample

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Cobalt	ug/L	1.00	50.4	50.0	101	85 - 115
Copper	ug/L	1.00	51.7	50.0	103	85 - 115

Matrix Spike

Lab ID = 815064-001

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Cobalt	ug/L	1.00	50.4	50.0(50.0)	101	75 - 125
Copper	ug/L	1.00	45.2	50.0(50.0)	90.5	75 - 125

Matrix Spike Duplicate

Lab ID = 815064-001

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Cobalt	ug/L	1.00	49.9	50.0(50.0)	99.8	75 - 125
Copper	ug/L	1.00	45.8	50.0(50.0)	91.7	75 - 125

MRCCS - Secondary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Cobalt	ug/L	1.00	19.8	20.0	99.2	90 - 110
Copper	ug/L	1.00	19.6	20.0	97.8	90 - 110



Client: E2 Consulting Engineers, Inc.

Project Name: PG&E Topock Project

Page 29 of 32

Project Number: 428648.IM.CS.EX.AC

Printed 11/3/2014

**Metals by EPA 200.8, Total**

Batch 102114B-ICPMS1

Parameter	Unit	Analyzed	DF	MDL	RL	Result
815060-003 Beryllium	ug/L	10/21/2014 22:13	10.0	0.360	2.0	ND

**Method Blank**

Parameter	Unit	DF	Result
Beryllium	ug/L	1.00	ND

**Duplicate**

Lab ID = 815064-001

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Beryllium	ug/L	2.00	ND	0	0	0 - 20

**Low Level Calibration Verification**

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Beryllium	ug/L	1.00	0.198	0.200	98.8	70 - 130

**Lab Control Sample**

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Beryllium	ug/L	2.00	45.9	50.0	91.9	85 - 115

**Matrix Spike**

Lab ID = 815064-001

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Beryllium	ug/L	2.00	46.0	50.0(50.0)	92.1	75 - 125

**Matrix Spike Duplicate**

Lab ID = 815064-001

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Beryllium	ug/L	2.00	45.4	50.0(50.0)	90.9	75 - 125

**MRCCS - Secondary**

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Beryllium	ug/L	1.00	19.9	20.0	99.6	90 - 110

**MRCVS - Primary**

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Beryllium	ug/L	1.00	19.4	20.0	97.0	90 - 110

**MRCVS - Primary**

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Beryllium	ug/L	1.00	19.0	20.0	94.8	90 - 110

**Interference Check Standard A**

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Beryllium	ug/L	1.00	ND	0		



Client: E2 Consulting Engineers, Inc.

Project Name: PG&E Topock Project

Page 30 of 32

Project Number: 428648.IM.CS.EX.AC

Printed 11/3/2014

Interference Check Standard A

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Beryllium	ug/L	1.00	ND	0		

Interference Check Standard AB

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Beryllium	ug/L	1.00	ND	0		

Interference Check Standard AB

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Beryllium	ug/L	1.00	ND	0		

Total Dissolved Solids by SM 2540 C

Batch 1410135

Parameter	Unit	Analyzed	DF	MDL	RL	Result
815060-001 Total Dissolved Solids	mg/L	10/10/2014	1.00	1.76	250	4440
815060-002 Total Dissolved Solids	mg/L	10/10/2014	1.00	1.76	250	4520
815060-003 Total Dissolved Solids	mg/L	10/10/2014	1.00	1.76	500	19100

Method Blank

Parameter	Unit	DF	Result
Total Dissolved Solids	mg/L	1.00	ND

Duplicate

Lab ID = 815060-003

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Total Dissolved Solids	mg/L	1.00	19100	19100	0.105	0 - 10

Lab Control Sample

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Total Dissolved Solids	mg/L	1.00	481	500	96.2	90 - 110



Client: E2 Consulting Engineers, Inc.

Project Name: PG&E Topock Project  
Project Number: 428648.IM.CS.EX.AC

Page 31 of 32  
Printed 11/3/2014

**Ammonia Nitrogen by SM4500-NH3D**

Batch 10NH314A

Parameter	Unit	Analyzed	DF	MDL	RL	Result
815060-001 Ammonia as N	mg/L	10/16/2014	1.00	0.0318	0.500	ND
815060-002 Ammonia as N	mg/L	10/16/2014	1.00	0.0318	0.500	ND

**Method Blank**

Parameter	Unit	DF	Result
Ammonia as N	mg/L	1.00	ND

**Lab Control Sample**

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Ammonia as N	mg/L	1.00	7.24	8.00	90.5	90 - 110

**Lab Control Sample Duplicate**

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Ammonia as N	mg/L	1.00	7.39	8.00	92.4	90 - 110

**Matrix Spike**

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Ammonia as N	mg/L	1.00	9.01	10.0(10.0)	90.1	75 - 125

**MRCCS - Secondary**

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Ammonia as N	mg/L	1.00	6.53	6.00	109	90 - 110

**MRCVS - Primary**

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Ammonia as N	mg/L	1.00	5.58	6.00	92.9	90 - 110

**MRCVS - Primary**

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Ammonia as N	mg/L	1.00	5.60	6.00	93.3	90 - 110

Client: **E2 Consulting Engineers, Inc.**Project Name: **PG&E Topock Project**

Page 32 of 32

Project Number: **428648.IM.CS.EX.AC**

Printed 11/3/2014

**Turbidity by SM 2130 B**

Batch 1410126

Parameter	Unit	Analyzed	DF	MDL	RL	Result
815060-001 Turbidity	NTU	10/08/2014	1.00	0.0140	0.100	ND
815060-002 Turbidity	NTU	10/08/2014	1.00	0.0140	0.100	0.110

**Method Blank**

Parameter	Unit	DF	Result
Turbidity	NTU	1.00	ND

**Duplicate**

Lab ID = 815073-002

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Turbidity	NTU	1.00	ND	0	0	0 - 20

**Lab Control Sample**


Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Turbidity	NTU	1.00	7.23	8.00	90.4	90 - 110

**Lab Control Sample Duplicate**

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Turbidity	NTU	1.00	7.53	8.00	94.1	90 - 110

Respectfully submitted,

**TRUESDAIL LABORATORIES, INC.**

  
to- Mona Nassimi  
Manager, Analytical Services

**Total Dissolved Solids by SM 2540 C****Calculations**
 Batch: 1410135  
 Date Analyzed: 10/10/2014

Laboratory Number	Sample volume, mL	Initial weight, g	1st Final weight, g	2nd Final weight, g	Weight Difference, g	Exceeds 0.5mg? Yes/No	Residue weight, g	Filterable residue, ppm	RL, ppm	Reported Value, ppm	DF
Blank	100	71.9650	71.9657	71.9657	0.0000	No	0.0007	7.0	25.0	ND	1
14J0003-02E	100	76.1572	76.1755	76.1751	0.0004	No	0.0179	179.0	25.0	179.0	1
14J0003-04F	100	75.2572	75.2895	75.2894	0.0001	No	0.0322	322.0	25.0	322.0	1
14J0068-01D	100	74.7209	74.7759	74.7759	0.0000	No	0.0550	550.0	25.0	550.0	1
14J0068-02	100	67.9580	68.0111	68.0111	0.0000	No	0.0531	531.0	25.0	531.0	1
14J0096-09D	100	68.7156	68.7723	68.7723	0.0000	No	0.0567	567.0	25.0	567.0	1
14J0097-01B	20	29.3260	29.3776	29.3775	0.0001	No	0.0515	2575.0	125.0	2575.0	1
14J0097-02A	10	28.5916	28.6420	28.6416	0.0004	No	0.0500	5000.0	250.0	5000.0	1
14J0098-01D	10	30.5006	30.5450	30.5450	0.0000	No	0.0444	4440.0	250.0	4440.0	1
14J0098-02	10	30.3628	30.4083	30.4080	0.0003	No	0.0452	4520.0	250.0	4520.0	1
14J0098-03	5	29.6292	29.7246	29.7246	0.0000	No	0.0954	19080.0	500.0	19080.0	1
14J0098-03 Dup	5	28.7842	28.8798	28.8796	0.0002	No	0.0954	19080.0	500.0	19080.0	1
LCS	100	66.7491	66.7972	66.7972	0.0000	No	0.0481	481.0	25.0	481.0	1
14J0124-01C	100	74.6291	74.6813	74.6811	0.0002	No	0.0520	520.0	25.0	520.0	1
14J0124-02	100	78.7826	78.8357	78.8353	0.0004	No	0.0527	527.0	25.0	527.0	1
14J0124-03	100	75.3990	75.4510	75.4510	0.0000	No	0.0520	520.0	25.0	520.0	1
14J0124-04	100	77.4874	77.5413	77.5410	0.0003	No	0.0536	536.0	25.0	536.0	1
14J0128-01D	100	74.5820	74.6387	74.6386	0.0001	No	0.0566	566.0	25.0	566.0	1
14J0128-02	100	71.3090	71.3672	71.3668	0.0004	No	0.0578	578.0	25.0	578.0	1
14J0134-01D	100	78.3535	78.3857	78.3857	0.0000	No	0.0322	322.0	25.0	322.0	1
14J0152-01A	100	78.2325	78.2471	78.2468	0.0003	No	0.0143	143.0	25.0	143.0	1
14J0160-01C	100	74.8656	74.9252	74.9250	0.0002	No	0.0594	594.0	25.0	594.0	1
14J0134-01 Dup	100	71.2867	71.3203	71.3203	0.0000	No	0.0336	336.0	25.0	336.0	1

Calculation as follows:

Filterable residue (TDS), mg/L =

$$\left( \frac{A - B}{C} \right) \times 10^6$$

Where:

 A = weight of dish + residue in grams.  
 B = weight of dish in grams.  
 C = mL of sample filtered.

 RL = reporting limit.  
 ND = not detected (below the reporting limit)
**Laboratory Control Sample (LCS) Summary**

QC Std I.D.	Measured Value, ppm	Theoretical Value, ppm	Percent Rec	Acceptance Limit	QC Within Control?
LCS	481.0	500	96.2%	90-110%	Yes
LCSD					

**LCS Recovery**

$$P = \left( \frac{LC}{LT} \right) \times 100$$

P = Percent recovery.

LC = Measured LCS value (ppm).

LT = Theoretical LCS value (ppm).

**Duplicate Determinations Difference Summary**

Lab Number	Sample Weight, g	Sample Dup Weight, g	% RPD	Acceptance Limit	QC Within Control?
14J0098-03	0.0954	0.0954	0.0%	≤5%	Yes
14J0134-01	0.0322	0.0336	2.1%	≤5%	Yes

**Duplicate Determination Difference**

$$\% \text{ Difference} = \frac{|A - B|}{C} \times 100$$

$$\text{where } C = \frac{A + B}{2}$$

A = Weight of the first sample in (g).

B = Weight of the second sample in (g).

C = Average weight in (g).

Jenny T.

Analyst Printed Name

Analyst Signature

Maksim G.

Reviewer Printed Name

Reviewer Signature

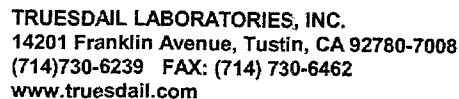
# Total Dissolved Solids by SM 2540 C

## TDS/EC CHECK

Batch: 1410135  
Date Analyzed: 10/10/2014

Laboratory Number	EC	TDS/EC Ratio: 0.55-0.90	Calculated TDS (EC*0.65)	Measured TDS / Calc TDS <1.3
14J0003-02E	313	0.57	203.45	0.88
14J0003-04F	526	0.61	341.9	0.94
14J0068-01D	989	0.56	642.85	0.86
14J0068-02	911	0.58	592.15	0.90
14J0096-09D	940	0.60	611	0.93
14J0097-01B	4160	0.62	2704	0.95
14J0097-02A	7910	0.63	5141.5	0.97
14J0098-01D	7190	0.62	4673.5	0.95
14J0098-02	7150	0.63	4647.5	0.97
14J0098-03	25600	0.75	16640	1.15
14J0098-03 Dup	25600	0.75	16640	1.15
LCS				
14J0124-01C	883	0.59	573.95	0.91
14J0124-02	883	0.60	573.95	0.92
14J0124-03	883	0.59	573.95	0.91
14J0124-04	885	0.61	575.25	0.93
14J0128-01D	974	0.58	633.1	0.89
14J0128-02	924	0.63	600.6	0.96
14J0134-01D	528	0.61	343.2	0.94
14J0152-01A	209	0.68	135.85	1.05
14J0160-01C	1002	0.59	651.3	0.91
14J0134-01 Dup	528	0.64	343.2	0.98





[IM3Plant-WDR-489]

TURNAROUND TIME 10 Days  
DATE 10/07/14 PAGE 1 OF 1

COMPANY <u>CH2M HILL /E2</u> PROJECT NAME <u>PG&amp;E Topock IM3</u> PHONE <u>530-229-3303</u> FAX <u>530-339-3303</u> ADDRESS <u>155 Grand Ave Ste 1000</u> <u>Oakland, CA 94612</u> P.O. NUMBER <u>428648.IM.CS.EX.AC</u> SAMPLERS (SIGNATURE) <u><i>Chris Rine</i></u>				<div style="display: flex; justify-content: space-between;"> <div>             Cr(VI) (218.6) Lab Filtered              Title 22 Metals List (200.7, 200.8, 245.1)              EC (120.1)              TDS (2840 c)              Turb (2130)              Total Metals (200.7, 200.8)              Ammonia (4500-NH3)              Anions (300.0) F              Anions (300.0) F, NO3, SO4              TOC (5310 C)              Total Metals (200.8) Mn              NO2 (4500-NO2B)           </div> <div>NUMBER OF CONTAINERS</div> </div>														COMMENTS
SAMPLE I.D.	DATE	TIME	DESCRIPTION	Cr(VI)	EC	TDS	Turb	Total Metals	Ammonia	Anions	Anions	TOC	Total Metals	NO2	NO2B	CONTAINERS	COMMENTS	
SC-700B-WDR-489	10/07/14	0800		X	X	X	X	X	X	X			X			4	<i>               ml = 6                ml = 6                ml = 6                200.7                200.8             </i>	
SC-100B-WDR-489	10/07/14	0800		X	X	X	X	X		X			X			4		
SC-701-WDR-489	10/07/14	0800		X	X	X			X			X				4		
<div style="border: 2px solid black; padding: 5px; display: inline-block;">             ALERT !!              Level III QC           </div>																12	TOTAL NUMBER OF CONTAINERS	

CHAIN OF CUSTODY SIGNATURE RECORD					SAMPLE CONDITIONS	
Signature (Relinquished)	Printed Name	Company/ Agency	Date/ Time	RECEIVED	COOL <input checked="" type="checkbox"/>	WARM <input type="checkbox"/> 4.2°C F
Signature (Received)	Printed Name	Company/ Agency	Date/ Time	CUSTODY SEALED YES <input type="checkbox"/> NO <input type="checkbox"/>		
Signature (Relinquished)	Printed Name	Company/ Agency	Date/ Time	SPECIAL REQUIREMENTS:		
Signature (Received)	Printed Name	Company/ Agency	Date/ Time	The metals include: Cr, Al, Sb, As, Ba, B, Cu, Pb, Mn, Mo, Ni, Fe, Zn		
Signature (Relinquished)	Printed Name	Company/ Agency	Date/ Time	Please Provide a preliminary Result for the Cr6 and TDS ASAP.		
Signature (Received)	Printed Name	Company/ Agency	Date/ Time			

## Method EPA 218.6 and SW 7199 Sample pH Log

122



Turbidity/pH Check

Sample Number	Turbidity	pH	Date	Analyst	Need Digest (Y/N)	Time of Adjustment to pH 2	Date/Time of 2nd pH check	Comments
14J0081-02	<1	<2	10/7/14	ES	Yes			
14J0083-06	↓	↓	↓	↓	↓			
14J0086-02	↓	↓	↓	↓	↓			
14J0087-02	↓	↓	↓	↓	↓			
14J0088-02	↓	↓	↓	↓	↓			
14J0089-01-04	↓	↓	↓	↓	↓			-2, 4 TH >1
14J0090-02	↓	↓	↓	↓	↓			
14J0003-(01,-02,-04)	<1	>2	10/8/14	rm	No	10:05		
14J0104-01	<1	>2	↓	↓	↓	↓		
14J0097-(01,-02)	<1	>2	10/8/14	rm	Yes			
14J0098-(01,-02,-04)	<1	>2	↓	↓	Yes	10:10		
14J0116-01	>1	<2	10/8/14	rm	Yes			
14J0094 (01-02)	<1	>2	10/8/14	ES	Yes	1:00		Filter and then acidify
<del>14J0120 (01,-02)</del>	<del>&gt;1</del>	<del>&lt;2</del>	<del>rm</del>					
<del>14J0128 (01,-02)</del>			10/9/14					
14J0120-(01,-02,-04)	<1	>2	10/9/14	rm	No	14:20		
14J0128(01,-02)	>1	<2	↓	↓	Yes			
14J0129-02	↓	↓	↓	↓	↓			
14J0130-02	↓	↓	↓	↓	↓			
14J0131-06	↓	↓	↓	↓	↓			
14J0134-01	<1	>2	↓	↓	No	10/10/14 14:20		
14J0145(01-02)	<1	>2	10/10/14	ES	Yes	5:00		
14J0128(01-02)	>1	<2	↓	↓	Yes			
14J0129-02	↓	↓	↓	↓	↓			
14J0130-02	↓	↓	↓	↓	↓			
14J0131-02	↓	↓	↓	↓	↓			
14J0132(01-02)	>1	>2	↓	↓	↓			
14J0141-01	<1	↓	↓	↓	No			
14J0142-01	↓	<2	↓	↓	Yes			
14J0149-02	>1	↓	↓	↓	↓			
14J0150-01	<1	↓	↓	↓	↓			
151-02	↓	↓	↓	↓	↓			
152-01	↓	↓	↓	↓	↓			
153-02	↓	↓	↓	↓	↓			
154-01	↓	↓	↓	↓	↓			
14J0176-2	>1	>2	10/12/14	ES	Yes			
14J0177(01,-02)	>1	<2	10/14/14	rm	Yes			
14J0184-01	↓	↓	↓	↓	↓			
14J0185-01	↓	↓	↓	↓	↓			
14J0189-06	<1	>2	10/15/14	↓	No	11:00		
14J0192-02	>1	<2	10/15/14	rm	Yes			
14J0194-02	↓	↓	↓	↓	↓			
14J0196-02	↓	↓	↓	↓	↓			
14J0203-02	↓	↓	↓	↓	↓			

Notes:

1. Samples should be analyzed after 24 hrs of pH adjustment to pH2 for Dissolved Analytes.
2. All Total Recoverable Analytes must be pH adjusted and digested.
3. Do not use disposable pipette to measure pH; pour a little amount of sample from the bottle.

## WORK ORDER

Printed: 10/8/2014 6:27:09PM

14J0098

## Truesdail Laboratories, Inc

Client: E2 Consulting Engineers, Inc.  
Project: Topock IM3Plant-WDR

Project Manager: Sean Condon  
Project Number: PGE-2152

Report To:

E2 Consulting Engineers, Inc.  
Christi Gitlin  
1900 Powell Street, Suite 250  
Emeryville, CA 94608  
Phone: 510-428-4728  
Fax: 510-652-5604

Invoice To:

E2 Consulting Engineers, Inc.  
Christy Gitlin  
1900 Powell Street, Suite 250  
Emeryville, CA 94608  
Phone :510-428-4728  
Fax: 510-652-5604

Date Due: 10/17/2014 16:30 (7 day TAT)

Received By: Alexander Wood

Date Received: 10/07/2014 18:35

Logged In By: Luda Shabunina

Date Logged In: 10/08/2014 07:22

Samples Received at: 4.2°C

Chain of Custody re	Yes	Samples intact?	Yes
Letter (if sent) matc	No	Custody seals (if an	No
Requested analyses	Yes	Analyses within hol	Yes
Samples received in	Yes		

Analysis	Due	TAT	Expires	Comments
----------	-----	-----	---------	----------

14J0098-01 SC-700B-WDR-489 [Water] Sampled 10/07/2014 08:00  
(GMT-08:00) Pacific Time (US &

Nitrite	10/17/2014 12:00	7	10/09/2014 08:00	
Al-200.7	10/17/2014 12:00	7	04/05/2015 08:00	
Zn-200.7	10/17/2014 12:00	7	04/05/2015 08:00	
Turbidity	10/17/2014 12:00	7	10/09/2014 08:00	
TDS	10/17/2014 12:00	7	10/14/2014 08:00	
Specific Conductivity	10/17/2014 12:00	7	11/04/2014 08:00	
Pb-200.8	10/17/2014 12:00	7	04/05/2015 08:00	
Ni-200.8	10/17/2014 12:00	7	04/05/2015 08:00	
Mo-200.8	10/17/2014 12:00	7	04/05/2015 08:00	
Mn-200.8	10/17/2014 12:00	7	04/05/2015 08:00	
IC-SO4	10/17/2014 12:00	7	11/04/2014 08:00	
As-200.8	10/17/2014 12:00	7	04/05/2015 08:00	
IC-F	10/17/2014 12:00	7	11/04/2014 08:00	
Fe-200.7	10/17/2014 12:00	7	04/05/2015 08:00	
Cu-200.8	10/17/2014 12:00	7	04/05/2015 08:00	
Ammonia E	10/17/2014 12:00	7	11/04/2014 08:00	
Cr-200.8	10/17/2014 12:00	7	04/05/2015 08:00	
Cr VI-218.6	10/17/2014 12:00	7	11/04/2014 08:00	
Ba-200.8	10/17/2014 12:00	7	04/05/2015 08:00	
B-200.7	10/17/2014 12:00	7	04/05/2015 08:00	
IC-NO3	10/17/2014 12:00	7	10/09/2014 08:00	

14J0098

## Truesdail Laboratories, Inc

Client: E2 Consulting Engineers, Inc.  
 Project: Topock IM3Plant-WDR

Project Manager: Sean Condon  
 Project Number: PGE-2152

Analysis	Due	TAT	Expires	Comments
14J0098-01 SC-700B-WDR-489 [Water] Sampled 10/07/2014 08:00 (GMT-08:00) Pacific Time (US &				
Sb-200.8	10/17/2014 12:00	7	04/05/2015 08:00	
14J0098-02 SC-100B-WDR-489 [Water] Sampled 10/07/2014 08:00 (GMT-08:00) Pacific Time (US &				
Fe-200.7	10/17/2014 12:00	7	04/05/2015 08:00	
Cu-200.8	10/17/2014 12:00	7	04/05/2015 08:00	
Cr-200.8	10/17/2014 12:00	7	04/05/2015 08:00	
Cr VI-218.6	10/17/2014 12:00	7	11/04/2014 08:00	
Ba-200.8	10/17/2014 12:00	7	04/05/2015 08:00	
B-200.7	10/17/2014 12:00	7	04/05/2015 08:00	
As-200.8	10/17/2014 12:00	7	04/05/2015 08:00	
Al-200.7	10/17/2014 12:00	7	04/05/2015 08:00	
IC-NO3	10/17/2014 12:00	7	10/09/2014 08:00	
IC-SO4	10/17/2014 12:00	7	11/04/2014 08:00	
Ammonia E	10/17/2014 12:00	7	11/04/2014 08:00	
Mn-200.8	10/17/2014 12:00	7	04/05/2015 08:00	
Mo-200.8	10/17/2014 12:00	7	04/05/2015 08:00	
Specific Conductivity	10/17/2014 12:00	7	11/04/2014 08:00	
TDS	10/17/2014 12:00	7	10/14/2014 08:00	
Turbidity	10/17/2014 12:00	7	10/09/2014 08:00	
Zn-200.7	10/17/2014 12:00	7	04/05/2015 08:00	
Pb-200.8	10/17/2014 12:00	7	04/05/2015 08:00	
Nitrite	10/17/2014 12:00	7	10/09/2014 08:00	
Ni-200.8	10/17/2014 12:00	7	04/05/2015 08:00	
IC-F	10/17/2014 12:00	7	11/04/2014 08:00	
Sb-200.8	10/17/2014 12:00	7	04/05/2015 08:00	

14J0098

## Truesdail Laboratories, Inc

Client: E2 Consulting Engineers, Inc.  
Project: Topock IM3Plant-WDR

Project Manager: Sean Condon  
Project Number: PGE-2152

Analysis	Due	TAT	Expires	Comments
14J0098-03 SC-701-WDR-489 [Water] Sampled 10/07/2014 08:00 (GMT-08:00) Pacific Time (US &				
Se-200.7	10/17/2014 12:00	7	04/05/2015 08:00	
As-200.8	10/17/2014 12:00	7	04/05/2015 08:00	
Ba-200.8	10/17/2014 12:00	7	04/05/2015 08:00	
Be-200.8	10/17/2014 12:00	7	04/05/2015 08:00	
Cu-200.8	10/17/2014 12:00	7	04/05/2015 08:00	
Hg-200.8	10/17/2014 12:00	7	11/04/2014 08:00	
Mn-200.8	10/17/2014 12:00	7	04/05/2015 08:00	
Specific Conductivity	10/17/2014 12:00	7	11/04/2014 08:00	
TDS	10/17/2014 12:00	7	10/14/2014 08:00	
IC-F	10/17/2014 12:00	7	11/04/2014 08:00	
Ag-200.8	10/17/2014 12:00	7	04/05/2015 08:00	
V-200.8	10/17/2014 12:00	7	04/05/2015 08:00	
Tl-200.8	10/17/2014 12:00	7	04/05/2015 08:00	
Sb-200.8	10/17/2014 12:00	7	04/05/2015 08:00	
Pb-200.8	10/17/2014 12:00	7	04/05/2015 08:00	
Ni-200.8	10/17/2014 12:00	7	04/05/2015 08:00	
Mo-200.8	10/17/2014 12:00	7	04/05/2015 08:00	
Cr-200.8	10/17/2014 12:00	7	04/05/2015 08:00	
Cr VI-218.6	10/17/2014 12:00	7	11/04/2014 08:00	
Co-200.8	10/17/2014 12:00	7	04/05/2015 08:00	
Cd-200.8	10/17/2014 12:00	7	04/05/2015 08:00	
Zn-200.7	10/17/2014 12:00	7	04/05/2015 08:00	

Reviewed By

Date

# TRUESDAIL LABORATORIES, INC.

EXCELLENCE IN INDEPENDENT TESTING



Established 1931

14201 FRANKLIN AVENUE  
TUSTIN, CALIFORNIA 92780-7008  
(714) 730-6239 · FAX (714) 730-6462  
www.truesdail.com

November 18, 2014

E2 Consulting Engineers, Inc.  
Mr. Shawn Duffy  
155 Grand Ave., Suite 1000  
Oakland, California 94612

Dear Mr. Duffy:

SUBJECT: REVISED CASE NARRATIVE PG&E TOPOCK IM3PLANT-WDR-489 PROJECT, SLUDGE  
MONITORING,  
TLI No.: 815061

Truesdail Laboratories, Inc. is pleased to submit this report summarizing the Topock IM3Plant-WDR-489 project sludge monitoring. A summary table for this sample delivery group is included in Section 2. Complete laboratory reports, quality control data and chain of custody forms for sampling period are included in Sections 3 and 4. Analytical raw data have been included under Section 5.

The samples were received and delivered with the chain of custody on October 7, 2014, intact and in chilled condition. The samples will be kept in a locked refrigerator for 30 days; thereafter it will be kept in warm storage for an additional 2 months before disposal.

Sample SC-Sludge-WDR-489 was analyzed as sample I.D. 14J0099-01 in the raw data but is reported as 815061 in all final report pages.

The internal standard for Total Beryllium by SW 6020A analyzed at a 10x dilution was outside the recovery limits of 70% - 130% as a result of matrix interference. Therefore, the sample was re-analyzed at a 20x dilution and was reported. Due to the dilution, the reporting limit for Total Beryllium exceeded the Contract Required Detection Limit and the result was below the reporting limit. All other QA/QC were within acceptable limits.

The RPD between the matrix spike and matrix spike duplicate for Total Manganese and Selenium were 30.3% and 25.5%, respectively, which exceeds the upper limit of 20%. The individual MS and MSD recoveries, the sample and sample duplicate RPD, and all other QA/QC were within acceptable limits. After discussing the results with Mr. Duffy, the data was accepted.

All final results and associated dilution factors are reported on a dry weight basis.


No other violations or nonconformance actions occurred for this data package.

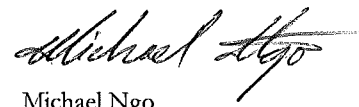


November 18, 2014

If you have any questions or require additional information, please contact me at (714) 730-6239 ext. 200.

Respectfully Submitted,  
TRUESDAIL LABORATORIES, INC.

*for -*   
Mona Nassimi  
Manager, Analytical Services

  
Michael Ngo  
Quality Assurance/Quality Control Officer

# TRUESDAIL LABORATORIES, INC.

EXCELLENCE IN INDEPENDENT TESTING



Established 1931

**Client:** E2 Consulting Engineers, Inc.  
155 Grand Ave. Suite 1000  
Oakland, CA 94612

**Attention:** Shawn Duffy

**Sample:** One (1) Soil Sample

**Project Name:** PG&E Topock Project

**Project No.:** 428648.IM.CS.EX.AC

14201 FRANKLIN AVENUE  
TUSTIN, CALIFORNIA 92780-7008  
(714) 730-6239 · FAX (714) 730-6462  
www.truesdail.com

**Laboratory No.:** 815061

**Date:** November 7, 2014

**Collected:** October 7, 2014

**Received:** October 7, 2014

## ANALYST LIST

METHOD	PARAMETER	ANALYST
EPA 300.0	Anions	Giawad Ghenniwa
SM 2540 B	% Moisture	Naheed Eidinejad
SW 6010B	Metals by ICP	Ethel Suico / Tom Martinez
SW 6020A	Metals by ICP/MS	Ethel Suico
SW 7199	Hexavalent Chromium	Naheed Eidinejad

# TRUESDAIL LABORATORIES, INC.

EXCELLENCE IN INDEPENDENT TESTING



Established 1931

14201 FRANKLIN AVENUE · TUSTIN, CALIFORNIA 92780-7008  
(714) 730-6239 · FAX (714) 730-6462 · www.truesdail.com

**Client:** E2 Consulting Engineers, Inc.  
155 Grand Ave. Suite 1000  
Oakland, CA 94612

**Laboratory No.:** 815061  
**Date Received:** October 7, 2014

**Attention:** Shawn Duffy

**Project Name:** PG&E Topock Project  
**Project No.:** 428648.IM.CS.EX.AC  
**P.O. No.:** PGEIM11111001

## Analytical Results Summary

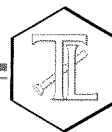
<u>Lab I.D.</u>	<u>Sample I.D.</u>	<u>Sample Time</u>	<u>SW 7199</u> Hexavalent Chromium <u>mg/kg</u>	<u>EPA 300.0</u> Fluoride <u>mg/kg</u>	<u>SM 2540 B</u> % Moisture <u>%</u>
815061	SC-Sludge-WDR-489	10:00	30.6	20.6	54.8

ND: Non Detected (below reporting limit)  
mg/L: Milligrams per liter.

**Note:** The following "Significant Figures" rule has been applied to all results:  
Results below 0.01ppm will have two (2) significant figures.  
Result above or equal to 0.01ppm will have three (3) significant figures.  
Quality Control data will always have three (3) significant figures.

# TRUESDAIL LABORATORIES, INC.

EXCELLENCE IN INDEPENDENT TESTING



Established 1931

14201 FRANKLIN AVENUE · TUSTIN, CALIFORNIA 92780-7008  
(714) 730-6239 · FAX (714) 730-6462 · www.truesdail.com

**Client:** E2 Consulting Engineers, Inc.  
155 Grand Ave. Suite 1000  
Oakland, CA 94612

**Laboratory No.:** 815061  
**Date Received:** October 7, 2014

**Attention:** Shawn Duffy  
**Project Name:** PG&E Topock Project  
**Project No.:** 428648.IM.CS.EX.AC  
**P.O. No.:** PGEIM11111001

## Analytical Results Summary

**METALS ANALYSIS:** Total Metal Analyses as Requested

Lab I.D.	Sample ID	Date of Analysis: Time Coll.	Antimony	Arsenic	Barium	Beryllium	Cadmium	Chromium	Cobalt	Copper	Lead
			SW 6010B	SW 6010B	SW 6010B	SW 6020A	SW 6010B	SW 6010B	SW 6010B	SW 6010B	SW 6010B
Lab I.D.	Sample ID	Date of Analysis: Time Coll.	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
815061	SC-Sludge-WDR-489	10:00	48.2	ND	68.8	ND	8.92	3010	ND	146	ND

Lab I.D.	Sample ID	Date of Analysis: Time Coll.	Manganese	Mercury	Molybdenum	Nickel	Selenium	Silver	Thallium	Vanadium	Zinc
			SW 6010B	SW 6020A	SW 6010B	SW 6010B	SW 6010B	SW 6010B	SW 6010B	SW 6010B	SW 6010B
Lab I.D.	Sample ID	Date of Analysis: Time Coll.	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
815061	SC-Sludge-WDR-489	10:00	397	0.232	11.1	46.2	ND	ND	ND	42.0	32.9

### NOTES:

ND: Not detected, or below limit of detection

906



14201 FRANKLIN AVENUE  
TUSTIN, CALIFORNIA 92780-7008  
(714) 730-6239 · FAX (714) 730-6462  
www.truesdail.com

## REPORT

**Client:** E2 Consulting Engineers, Inc.  
155 Grand Ave. Suite 1000  
Oakland, CA 94612

**Attention:** Shawn Duffy

**Sample:** One (1) Soil Sample

**Project Name:** PG&E Topock Project

**Project No.:** 428648.IM.CS.EX.AC

**P.O. No.:** PGEIM11111001

**Prep. Batch:** 1410216

**Laboratory No.:** 815061

**Date:** November 7, 2014

**Collected:** October 7, 2014

**Received:** October 7, 2014

**Prep/ Analyzed:** October 15, 2014

**Analytical Batch:** 1410216

**Investigation:**

Hexavalent Chromium by IC Using Method SW 7199

### Analytical Results Hexavalent Chromium

TLI I.D.	Field I.D.	Sample Time	Run Time	Units	DF	RL	Results
815061	SC-Sludge-WDR-489	10:00	12:23	mg/kg	5.00	4.42	30.6

### QA/QC Summary

QC STD I.D.	Laboratory Number	Sample Concentration	Duplicate Concentration	Relative Percent Difference	Acceptance limits	QC Within Control
Duplicate	815061	30.6	30.5	0.297%	≤ 20%	Yes

QC Std I.D.	Lab Number	Conc. of unspiked sample	Dilution Factor	Added Spike Conc.	MS Amount	Measured Conc. of spiked sample	Theoretical Conc. of spiked sample	MS% Recovery	Acceptance limits	QC Within Control
MS	815061	30.6	10.0	177	177	201	208	96.5%	75-125%	Yes
IMS	815061	30.6	100	2718	2718	2540	2748	92.3%	75-125%	Yes
PDMS	815061	30.6	10.0	17.7	177	191	208	90.9%	85-115%	Yes


  

QC Std I.D.	Measured Concentration	Theoretical Concentration	Percent Recovery	Acceptance Limits	QC Within Control
Blank	ND	<0.400	---	<0.400	Yes
MRCCS	2.06	2.00	103%	90% - 110%	Yes
MRCVS#1	2.08	2.00	104%	90% - 110%	Yes
LLCS	0.0107	0.0100	107%	70% - 130%	Yes
LCS	2.06	2.00	103%	80% - 120%	Yes

ND: Below the reporting limit (Not Detected).

DF: Dilution Factor.

Respectfully submitted,  
**TRUESDAIL LABORATORIES, INC.**

  
for Mona Nassimi, Manager  
Analytical Services

# TRUESDAIL LABORATORIES, INC.

EXCELLENCE IN INDEPENDENT TESTING



Established 1931

**Client:** E2 Consulting Engineers, Inc.  
155 Grand Ave. Suite 1000  
Oakland, CA 94612

**Attention:** Shawn Duffy

**Sample:** One (1) Soil Sample

**Project Name:** PG&E Topock Project

**Project No.:** 428648.IM.CS.EX.AC

**P.O. No.:** PGEIM11111001

## REPORT

14201 FRANKLIN AVENUE  
TUSTIN, CALIFORNIA 92780-7008  
(714) 730-6239 · FAX (714) 730-6462  
www.truesdail.com

**Laboratory No.:** 815061

**Date:** November 7, 2014

**Collected:** October 7, 2014

**Received:** October 7, 2014

**Prep/ Analyzed:** October 13, 2014

**Analytical Batch:** 10SOLID14A

**Investigation:**

**Total Solids by SM 2540 B**

### Analytical Results % Moisture

<u>TLI I.D.</u>	<u>Field I.D.</u>	<u>Sample Time</u>	<u>Units</u>	<u>Results</u>
815061	SC-Sludge-WDR-489	10:00	%	54.8

### QA/QC Summary

QC STD I.D.	Laboratory Number	Concentration	Duplicate Concentration	Relative Percent Difference	Acceptance limits	QC Within Control
Duplicate	815061	54.8	53.5	2.43%	≤ 20%	Yes

ND: Below the reporting limit (Not Detected).

DF: Dilution Factor.

Respectfully submitted,  
**TRUESDAIL LABORATORIES, INC.**

*Mona Nassimi*  
for - Mona Nassimi, Manager  
Analytical Services

# TRUESDAIL LABORATORIES, INC.

EXCELLENCE IN INDEPENDENT TESTING



Established 1931

14201 FRANKLIN AVENUE  
TUSTIN, CALIFORNIA 92780-7008  
(714) 730-6239 · FAX (714) 730-6462  
www.truesdail.com

## REPORT

**Client:** E2 Consulting Engineers, Inc.  
155 Grand Ave. Suite 1000  
Oakland, CA 94612

**Attention:** Shawn Duffy

**Sample:** One (1) Soil Sample

**Project Name:** PG&E Topock Project

**Project No.:** 428648.IM.CS.EX.AC

**P.O. No.:** PGEIM11111001

**Laboratory No.:** 815061

**Date:** November 7, 2014

**Collected:** October 7, 2014

**Received:** October 7, 2014

**Prep/ Analyzed:** October 8, 2014

**Analytical Batch:** 1410162

**Investigation:** Fluoride by Ion Chromatography using EPA 300.0

### Analytical Results Fluoride

<u>TLI I.D.</u>	<u>Field I.D.</u>	<u>Sample Time</u>	<u>Run Time</u>	<u>Units</u>	<u>DF</u>	<u>RL</u>	<u>Results</u>
815061	SC-Sludge-WDR-489	10:00	14:15	mg/kg	1.00	4.42	20.6

### QA/QC Summary

QC STD I.D.	Laboratory Number	Concentration	Duplicate Concentration	Relative Percent Difference	Acceptance limits	QC Within Control
Duplicate	14J0098-2	1.80	1.79	0.33%	≤ 20%	Yes

QC Std I.D.	Lab Number	Conc. of unspiked sample	Dilution Factor	Added Spike Conc.	MS Amount	Measured Conc. of spiked sample	Theoretical Conc. of spiked sample	MS% Recovery	Acceptance limits	QC Within Control
MS	14J0098-2	1.80	5.00	4.00	20.0	23.0	21.8	106%	85-115%	Yes

QC Std I.D.	Measured Concentration	Theoretical Concentration	Percent Recovery	Acceptance Limits	QC Within Control
Blank	ND	<0.500	---	<0.500	Yes
MRCCS	4.04	4.00	101%	90% - 110%	Yes
MRCVS#1	3.02	3.00	101%	90% - 110%	Yes
MRCVS#2	3.01	3.00	100%	90% - 110%	Yes
MRCVS#3	2.99	3.00	100%	90% - 110%	Yes
MRCVS#4	2.99	3.00	100%	90% - 110%	Yes
LCS	4.05	4.00	101%	90% - 110%	Yes

ND: Below the reporting limit (Not Detected).

DF: Dilution Factor.

Respectfully submitted,  
**TRUESDAIL LABORATORIES, INC.**

  
Mona Nassimi, Manager  
Analytical Services

This report applies only to the sample, or samples, investigated and is not necessarily indicative of the quality or condition of apparently identical or similar products. As a mutual protection to clients, the public, and these laboratories, this report is submitted and accepted for the exclusive use of the client to whom it is addressed and upon the condition that it is not to be used, in whole or in part, in any advertising or publicity matter without prior written authorization from Truesdail Laboratories.

# TRUESDAIL LABORATORIES, INC.

EXCELLENCE IN INDEPENDENT TESTING



Established 1931

14201 FRANKLIN AVENUE  
TUSTIN, CALIFORNIA 92780-7008  
(714) 730-6239 · FAX (714) 730-6462  
www.truesdail.com

## REPORT

**Client:** E2 Consulting Engineers, Inc.  
155 Grand Ave. Suite 1000  
Oakland, CA 94612

**Attention:** Shawn Duffy

**Samples:** One (1) Soil Sample  
**Project Name:** PG&E Topock Project  
**Project No.:** 428648.IM.CS.EX.AC  
**P.O. No.:** PGEIM11111001

**Investigation:** Total Metal Analyses as Requested

**Laboratory No.:** 815061

**Reported:** November 7, 2014

**Collected:** October 7, 2014

**Received:** October 7, 2014

**Analyzed:** See Below

## Analytical Results

SAMPLE ID: SC-Sludge-WDR-489		Time Collected: 10:00		LAB ID: 815061				
Parameter	Method	Reported	DF	Units	RL	Batch	Date	Time
		Value					Analyzed	Analyzed
Antimony	SW 6010B	48.2	2.00	mg/kg	13.8	101314A-Th2	10/13/14	14:12
Arsenic	SW 6010B	ND	2.00	mg/kg	5.00	101314A-Th2	10/13/14	14:12
Barium	SW 6010B	68.8	2.00	mg/kg	10.0	101314A-Th2	10/13/14	14:12
Beryllium	SW 6020A	ND	20.0	mg/kg	1.97	102114B-ICPMS-1	10/22/14	00:22
Cadmium	SW 6010B	8.92	2.00	mg/kg	1.97	101314A-Th2	10/13/14	14:12
Chromium	SW 6010B	3010	10.0	mg/kg	9.85	101314A-Th2	10/13/14	14:56
Cobalt	SW 6010B	ND	2.00	mg/kg	10.0	101314A-Th2	10/13/14	14:12
Copper	SW 6010B	146	2.00	mg/kg	7.88	103114A-Th2	10/31/14	12:53
Lead	SW 6010B	ND	2.00	mg/kg	5.00	103114A-Th2	10/31/14	12:53
Manganese	SW 6010B	397	2.00	mg/kg	7.88	101314A-Th2	10/13/14	14:12
Mercury	SW 6020A	0.232	10.0	mg/kg	0.215	110414A	11/04/14	14:46
Molybdenum	SW 6010B	11.1	2.00	mg/kg	10.0	101314A-Th2	10/13/14	14:12
Nickel	SW 6010B	46.2	2.00	mg/kg	5.00	101314A-Th2	10/13/14	14:12
Selenium	SW 6010B	ND	2.00	mg/kg	5.00	101314A-Th2	10/13/14	14:12
Silver	SW 6010B	ND	2.00	mg/kg	5.00	101314A-Th2	10/13/14	14:12
Thallium	SW 6010B	ND	2.00	mg/kg	9.85	101314A-Th2	10/13/14	14:12
Vanadium	SW 6010B	42.0	2.00	mg/kg	5.00	101314A-Th2	10/13/14	14:12
Zinc	SW 6010B	32.9	2.00	mg/kg	10.0	101314A-Th2	10/13/14	14:12

### NOTES:

Sample results and reporting limits reported on a dry weight basis.

ND: Not detected, or below limit of detection.

DF: Dilution factor.

Respectfully submitted,  
TRUESDAIL LABORATORIES, INC.

*for*   
Mona Nassimi, Manager  
Analytical Services

This report applies only to the sample, or samples, investigated and is not necessarily indicative of the quality or condition of apparently identical or similar products. As a mutual protection to clients, the public, and these laboratories, this report is submitted and accepted for the exclusive use of the client to whom it is addressed and upon the condition that it is not to be used, in whole or in part, in any advertising or publicity matter without prior written authorization from Truesdail Laboratories.

# TRUESDAIL LABORATORIES, INC.

EXCELLENCE IN INDEPENDENT TESTING



Established 1931

14201 FRANKLIN AVENUE · TUSTIN, CALIFORNIA 92780-7008  
(714) 730-6239 · FAX (714) 730-6462 · www.truesdail.com

**Client:** E2 Consulting Engineers, Inc.  
155 Grand Ave. Suite 1000  
Oakland, CA 94612

**Attention:** Shawn Duffy

**Samples:** One (1) Soil Sample

**Project Name:** PG&E Topock Project

**Project No.:** 428648.IM.CS.EX.AC

**P.O. No.:** PGEIM11111001

**Laboratory No.:** 815061

**Reported:** November 7, 2014

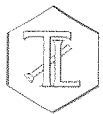
**Collected:** October 7, 2014

**Received:** October 7, 2014

## Quality Control/Quality Assurance Report

DIGESTED BLANK						MRCCS				MRCVS			
Parameter	Method	Batch	Units	Blank	RL	Observed Value	TRUE Value	% Rec	Control Limits	Observed Value	TRUE Value	% Rec	Control Limits %
Antimony	SW 6010B	101314A-Th2	mg/kg	ND	5.00	4.90	5.00	98.1%	90-110%	4.89	5.00	97.8%	90-110%
Arsenic	SW 6010B	101314A-Th2	mg/kg	ND	5.00	4.99	5.00	99.8%	90-110%	4.90	5.00	97.9%	90-110%
Barium	SW 6010B	101314A-Th2	mg/kg	ND	10.0	4.70	5.00	94.0%	90-110%	4.74	5.00	94.9%	90-110%
Beryllium	SW 6020A	102114B-ICPMS-1	mg/kg	ND	1.00	0.0199	0.0200	99.7%	90-110%	0.0198	0.0200	99.2%	90-110%
Cadmium	SW 6010B	101314A-Th2	mg/kg	ND	1.00	5.04	5.00	101%	90-110%	5.02	5.00	100%	90-110%
Chromium	SW 6010B	101314A-Th2	mg/kg	ND	5.00	5.41	5.00	108%	90-110%	5.38	5.00	108%	90-110%
Cobalt	SW 6010B	101314A-Th2	mg/kg	ND	10.0	5.02	5.00	100%	90-110%	5.04	5.00	101%	90-110%
Copper	SW 6010B	103114A-Th2	mg/kg	ND	5.00	4.86	5.00	97.1%	90-110%	5.01	5.00	100%	90-110%
Lead	SW 6010B	103114A-Th2	mg/kg	ND	5.00	4.73	5.00	94.5%	90-110%	5.03	5.00	101%	90-110%
Manganese	SW 6010B	101314A-Th2	mg/kg	ND	4.00	5.14	5.00	103%	90-110%	4.98	5.00	99.5%	90-110%
Mercury	SW 6020A	110414A	mg/kg	ND	0.100	0.00194	0.00200	97.2%	90-110%	0.00198	0.00200	99.0%	90-110%
Molybdenum	SW 6010B	101314A-Th2	mg/kg	ND	10.0	4.95	5.00	99.1%	90-110%	4.92	5.00	98.3%	90-110%
Nickel	SW 6010B	101314A-Th2	mg/kg	ND	5.00	5.02	5.00	100%	90-110%	5.01	5.00	100%	90-110%
Selenium	SW 6010B	101314A-Th2	mg/kg	ND	5.00	4.79	5.00	95.8%	90-110%	4.81	5.00	96.2%	90-110%
Silver	SW 6010B	101314A-Th2	mg/kg	ND	5.00	4.94	5.00	98.8%	90-110%	5.04	5.00	101%	90-110%
Thallium	SW 6010B	101314A-Th2	mg/kg	ND	5.00	5.08	5.00	102%	90-110%	5.02	5.00	100%	90-110%
Vanadium	SW 6010B	101314A-Th2	mg/kg	ND	5.00	5.38	5.00	108%	90-110%	5.35	5.00	107%	90-110%
Zinc	SW 6010B	101314A-Th2	mg/kg	ND	10.0	4.96	5.00	99.3%	90-110%	4.96	5.00	99.2%	90-110%

This report applies only to the sample, or samples, investigated and is not necessarily indicative of the quality or condition of apparently identical or similar products. As a mutual protection to clients, the public, and these laboratories, this report is submitted and accepted for the exclusive use of the client to whom it is addressed and upon the condition that it is not to be used, in whole or in part, in any advertising or publicity matter without prior written authorization from Truesdail Laboratories.



INTERFERENCE CHECK STANDARD (ICS A+B #1)

INTERFERENCE CHECK STANDARD (ICS A+B #2)

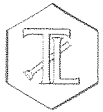
Parameter	Method	Units	ICS Obs.	ICS Theo.	% Rec.	Control Limits	ICS Obs.	ICS Theo.	% Rec.	Control Limits
Arsenic	SW 6010B	mg/kg	1.95	2.00	97.7%	80-120%	2.03	2.00	102%	80-120%
Cadmium	SW 6010B	mg/kg	2.01	2.00	101%	80-120%	2.10	2.00	105%	80-120%
Chromium	SW 6010B	mg/kg	2.18	2.00	109%	80-120%	2.29	2.00	114%	80-120%
Cobalt	SW 6010B	mg/kg	2.04	2.00	102%	80-120%	2.14	2.00	107%	80-120%
Copper	SW 6010B	mg/kg	1.98	2.00	99.2%	80-120%	1.96	2.00	97.9%	80-120%
Manganese	SW 6010B	mg/kg	2.07	2.00	104%	80-120%	2.10	2.00	105%	80-120%
Mercury	SW 6020A	mg/kg	0.00207	0.00200	103%	80-120%	0.00198	0.00200	99.1%	80-120%
Nickel	SW 6010B	mg/kg	2.04	2.00	102%	80-120%	2.12	2.00	106%	80-120%
Silver	SW 6010B	mg/kg	1.64	2.00	82.0%	80-120%	1.83	2.00	91.6%	80-120%
Zinc	SW 6010B	mg/kg	1.99	2.00	99.6%	80-120%	2.08	2.00	104%	80-120%

LABORATORY CONTROL SAMPLES

SAMPLE DUPLICATES

Parameter	Method	Units	LCS Obs.	LCS Theo.	% Rec.	Control Limits	SAMPLE ID	SAMPLE RESULT	DUP RESULT	% RPD	Precision Control Limits %
Antimony	SW 6010B	mg/kg	1.98	2.00	98.9%	85-115%	14J0099-01	48.2	43.9	9.32%	≤20
Arsenic	SW 6010B	mg/kg	2.04	2.00	102%	85-115%	14J0099-01	ND	ND	0.00%	≤20
Barium	SW 6010B	mg/kg	1.92	2.00	95.9%	85-115%	14J0099-01	68.8	65.5	4.87%	≤20
Beryllium	SW 6020A	mg/kg	0.0457	0.0500	91.4%	85-115%	14J0099-01	ND	ND	0.00%	≤20
Cadmium	SW 6010B	mg/kg	2.06	2.00	103%	85-115%	14J0099-01	8.92	8.66	2.92%	≤20
Chromium	SW 6010B	mg/kg	2.24	2.00	112%	85-115%	14J0099-01	3010	2900	3.72%	≤20
Cobalt	SW 6010B	mg/kg	2.10	2.00	105%	85-115%	14J0099-01	ND	ND	0.00%	≤20
Copper	SW 6010B	mg/kg	2.04	2.00	102%	85-115%	14J0099-01	146	134	8.61%	≤20
Lead	SW 6010B	mg/kg	1.96	2.00	97.9%	85-115%	14J0099-01	ND	ND	0.00%	≤20
Manganese	SW 6010B	mg/kg	2.13	2.00	107%	85-115%	14J0099-01	397	370	7.04%	≤20
Mercury	SW 6020A	mg/kg	0.00467	0.00500	93.4%	85-115%	14J0099-01	0.232	ND	0.00%	≤20
Molybdenum	SW 6010B	mg/kg	2.07	2.00	104%	85-115%	14J0099-01	11.1	10.6	4.50%	≤20
Nickel	SW 6010B	mg/kg	2.08	2.00	104%	85-115%	14J0099-01	46.2	44.0	4.92%	≤20
Selenium	SW 6010B	mg/kg	1.90	2.00	95.2%	85-115%	14J0099-01	ND	ND	0.00%	≤20
Silver	SW 6010B	mg/kg	1.97	2.00	98.5%	85-115%	14J0099-01	ND	ND	0.00%	≤20
Thallium	SW 6010B	mg/kg	2.07	2.00	103%	85-115%	14J0099-01	ND	ND	0.00%	≤20
Vanadium	SW 6010B	mg/kg	2.23	2.00	112%	85-115%	14J0099-01	42.0	40.3	4.19%	≤20
Zinc	SW 6010B	mg/kg	2.00	2.00	100%	85-115%	14J0099-01	32.9	31.0	5.88%	≤20

This report applies only to the sample, or samples, investigated and is not necessarily indicative of the quality or condition of apparently identical or similar products. As a mutual protection to clients, the public, and these laboratories, this report is submitted and accepted for the exclusive use of the client to whom it is addressed and upon the condition that it is not to be used, in whole or in part, in any advertising or publicity matter without prior written authorization from Truesdail Laboratories.



## MATRIX SPIKE

Sample ID	Parameter	Method	Units	Sample Result	DF	Spike Level	Total Amt. of Spike	Theo. Value	MS Obs.	% Rec.	Accuracy Control Limits %
14J0099-01	Antimony	SW 6010B	mg/kg	48.2	2.00	105	209	257	275	109%	75-125%
14J0099-01	Arsenic	SW 6010B	mg/kg	0.00	2.00	105	209	209	243	116%	75-125%
14J0099-01	Barium	SW 6010B	mg/kg	68.8	2.00	105	209	278	310	115%	75-125%
14J0099-01	Beryllium	SW 6020A	mg/kg	0.00	20.0	0.275	5.50	5.50	5.04	91.6%	75-125%
14J0099-01	Cadmium	SW 6010B	mg/kg	8.92	2.00	105	209	218	223	102%	75-125%
14J0099-01	Chromium	SW 6010B	mg/kg	3010	10.0	209	2091	5101	4980	94.2%	75-125%
14J0099-01	Cobalt	SW 6010B	mg/kg	0.00	2.00	105	209	209	215	103%	75-125%
14J0099-01	Copper	SW 6010B	mg/kg	146	2.00	105	209	355	364	104%	75-125%
14J0099-01	Lead	SW 6010B	mg/kg	0.00	2.00	105	209	209	160	76.5%	75-125%
14J0099-01	Manganese	SW 6010B	mg/kg	397	2.00	105	209	606	646	119%	75-125%
14J0099-01	Mercury	SW 6020A	mg/kg	0.232	10.0	0.0550	0.550	0.782	0.713	87.5%	75-125%
14J0099-01	Molybdenum	SW 6010B	mg/kg	11.1	2.00	105	209	220	236	108%	75-125%
14J0099-01	Nickel	SW 6010B	mg/kg	46.2	2.00	105	209	255	261	103%	75-125%
14J0099-01	Selenium	SW 6010B	mg/kg	0.00	2.00	105	182	182	188	103%	75-125%
14J0099-01	Silver	SW 6010B	mg/kg	0.00	2.00	105	209	209	200	95.6%	75-125%
14J0099-01	Thallium	SW 6010B	mg/kg	0.00	2.00	105	209	209	194	92.6%	75-125%
14J0099-01	Vanadium	SW 6010B	mg/kg	42.0	2.00	105	209	251	271	110%	75-125%
14J0099-01	Zinc	SW 6010B	mg/kg	32.9	2.00	105	209	242	266	111%	75-125%



## MATRIX SPIKE DUPLICATE

Sample ID	Parameter	Method	Units	Sample Result	DF	Spike Level	Total Amt. of Spike	Theo. Value	MS Obs.	% Rec.	Accuracy	
											Control Limits %	% RPD
14J0099-01	Antimony	SW 6010B	mg/kg	48.2	2.00	85.4	171	219	212	95.9%	75-125%	12.3%
14J0099-01	Arsenic	SW 6010B	mg/kg	0.00	2.00	85.4	171	171	182	107%	75-125%	8.58%
14J0099-01	Barium	SW 6010B	mg/kg	68.8	2.00	85.4	171	240	238	99.3%	75-125%	14.8%
14J0099-01	Beryllium	SW 6020A	mg/kg	0.00	20.0	0.276	5.53	5.53	5.04	91.2%	75-125%	0.42%
14J0099-01	Cadmium	SW 6010B	mg/kg	8.92	2.00	85.4	171	180	169	93.9%	75-125%	8.57%
14J0099-01	Cobalt	SW 6010B	mg/kg	0.00	2.00	85.4	171	171	163	95.3%	75-125%	7.79%
14J0099-01	Manganese	SW 6010B	mg/kg	397	2.00	85.4	171	568	547	87.9%	75-125%	30.3%
14J0099-01	Mercury	SW 6020A	mg/kg	0.232	10.0	0.0553	0.553	0.785	0.763	96.0%	75-125%	9.34%
14J0099-01	Molybdenum	SW 6010B	mg/kg	11.1	2.00	85.4	171	182	179	98.1%	75-125%	9.22%
14J0099-01	Nickel	SW 6010B	mg/kg	46.2	2.00	85.4	171	217	203	91.7%	75-125%	11.4%
14J0099-01	Selenium	SW 6010B	mg/kg	0.00	2.00	85.4	171	171	137	80.0%	75-125%	25.5%
14J0099-01	Silver	SW 6010B	mg/kg	0.00	2.00	85.4	171	171	144	84.4%	75-125%	12.5%
14J0099-01	Thallium	SW 6010B	mg/kg	0.00	2.00	85.4	171	171	145	84.7%	75-125%	8.97%
14J0099-01	Vanadium	SW 6010B	mg/kg	42.0	2.00	85.4	171	213	210	98.2%	75-125%	11.1%
14J0099-01	Zinc	SW 6010B	mg/kg	32.9	2.00	85.4	171	204	208	103%	75-125%	8.24%

ND: Not detected, or below limit of detection.

DF: Dilution Factor

Respectfully submitted,  
TRUESDAIL LABORATORIES, INC.  
Mona Nassimi, Manager  
Analytical Services



## Dry Weight Calculations

Date Calculated: 11/7/2014

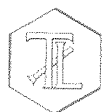
Sample I.D. 815061

	Sample Result Wet Weight mg/kg	Dilution Factor	% Moisture %	Sample Result Dry* Weight mg/kg	Reported Value mg/kg	Reporting Limit Wet Weight mg/kg	Reporting Limit Dry Weight mg/kg
Fluoride	9.307	---	54.8	20.5793	20.6	2.00	4.42
Hexavalent Chromium	13.8542	---	54.8	30.6340	30.6	2.00	4.42
Hexavalent Chromium - Dup	13.8131	---	54.8	30.5430	30.5	2.00	4.42
Hexavalent Chromium - MS	91.0764	---	54.8	201.3850	201.4	4.00	8.84
Hexavalent Chromium - IMS	1148.139	---	54.8	2538.727	2540	40.0	88.4
Hexavalent Chromium - PDMS	86.5948	---	54.8	191.4754	191	4.00	8.84
Antimony	21.78	2.00	54.8	48.1592	48.2	6.2366	13.8
Arsenic	1.787	2.00	54.8	3.9514	ND	1.7819	5.00
Barium	31.11	2.00	54.8	68.7894	68.8	1.7819	10.0
Beryllium	ND	20.0	54.8	ND	ND	0.8909	1.97
Cadmium	4.034	2.00	54.8	8.9198	8.92	0.8909	1.97
Chromium	1361	10.0	54.8	3009.3975	3010	4.4547	9.85
Cobalt	2.171	2.00	54.8	4.8004	ND	0.8909	10.0
Copper	66.17	2.00	54.8	146.3129	146	3.5638	7.88
Lead	0.7993	2.00	54.8	1.7674	ND	0.8909	5.00
Manganese	179.5	2.00	54.8	396.9044	397	3.5638	7.88
Mercury	0.10500	10.0	54.8	0.23217	0.232	0.09707	0.215
Molybdenum	5.004	2.00	54.8	11.0647	11.1	3.5638	10.0
Nickel	20.92	2.00	54.8	46.2576	46.2	0.8909	5.00
Selenium	ND	2.00	54.8	ND	ND	0.8909	5.00
Silver	ND	2.00	54.8	ND	ND	0.8909	5.00
Thallium	0.1359	2.00	54.8	0.3005	ND	4.4547	9.85
Vanadium	19.01	2.00	54.8	42.0343	42.0	0.8909	5.00
Zinc	14.89	2.00	54.8	32.9243	32.9	1.7819	10.0

Sample Result in Dry Weight =  $[\text{Sample}_{\text{ww}} / (100 - \% \text{Moisture})] * 100$

where:

Sample<sub>ww</sub> = Sample result in wet weight



### Dry Weight Calculations

Date Calculated: 11/7/2014

	Sample Result Wet Weight mg/kg	Dilution Factor	% Moisture %	Sample Result Dry* Weight mg/kg	Reported Value mg/kg	Reporting Limit Wet Weight mg/kg	Reporting Limit Dry Weight mg/kg
<b>Sample Duplicate: 14J0099-01</b>							
Antimony	19.84	2.00	54.8	43.8695	43.9	5.4915	12.1
Arsenic	1.964	2.00	54.8	4.3427	ND	1.5690	5.00
Barium	29.63	2.00	54.8	65.5169	65.5	1.5690	10.0
Beryllium	ND	20.0	54.8	ND	ND	0.7845	1.73
Cadmium	3.918	2.00	54.8	8.6633	8.66	0.7845	1.73
Chromium	1310	10.0	54.8	2896.6280	2900	3.9225	8.67
Cobalt	2.041	2.00	54.8	4.5130	ND	0.7845	10.0
Copper	60.71	2.00	54.8	134.2399	134	3.1380	6.94
Lead	0.9302	2.00	54.8	2.0568	ND	0.7845	5.00
Manganese	167.3	2.00	54.8	369.9281	370	3.1380	6.94
Mercury	0.05463	10.0	54.8	0.12080	ND	0.08732	0.193
Molybdenum	4.784	2.00	54.8	10.5782	10.6	3.1380	10.0
Nickel	19.89	2.00	54.8	43.9801	44.0	0.7845	5.00
Selenium	ND	2.00	54.8	ND	ND	0.7845	5.00
Silver	ND	2.00	54.8	ND	ND	0.7845	5.00
Thallium	0.3321	2.00	54.8	0.7343	ND	3.9225	8.67
Vanadium	18.23	2.00	54.8	40.3096	40.3	0.7845	5.00
Zinc	14.04	2.00	54.8	31.0448	31.0	1.5690	10.0
<b>Matrix Spike: 14J0099-01</b>							
Antimony	124.4	2.00	54.8	275.0691	275	6.6200	14.6
Arsenic	110.0	2.00	54.8	243.2283	243	1.8914	5.00
Barium	140.0	2.00	54.8	309.5633	310	1.8914	10.0
Beryllium	2.278550	20.0	54.8	5.0383	5.04	0.9948	2.20
Cadmium	100.8	2.00	54.8	222.8856	223	0.9457	2.09
Chromium	2253	10.0	54.8	4981.758	4980	4.7286	10.5
Cobalt	97.39	2.00	54.8	215.3455	215	0.9457	10.0
Copper	164.8	2.00	54.8	364.4002	364	3.7829	8.36
Lead	72.36	2.00	54.8	160.0000	160	0.9457	5.00
Manganese	292.3	2.00	54.8	646.3239	646	3.7829	8.36
Mercury	0.322550	10.0	54.8	0.713212	0.713	0.09948	0.220
Molybdenum	106.8	2.00	54.8	236.1526	236	3.7829	10.0
Nickel	118.1	2.00	54.8	261.1388	261	0.9457	5.00
Selenium	85.08	2.00	54.8	188.1260	188	0.9457	5.00
Silver	90.72	2.00	54.8	200.5970	200	0.9457	5.00
Thallium	87.59	2.00	54.8	193.6761	194	4.7286	10.5
Vanadium	122.7	2.00	54.8	271.3101	271	0.9457	5.00
Zinc	120.2	2.00	54.8	265.7822	266	1.8914	10.0

Sample Result in Dry Weight =  $[\text{Sample}_{\text{ww}} / (100 - \% \text{Moisture})] * 100$

where:

Sample<sub>ww</sub> = Sample result in wet weight



## Dry Weight Calculations

Date Calculated: 11/7/2014

	Sample Result Wet Weight mg/kg	Dilution Factor	% Moisture %	Sample Result Dry* Weight mg/kg	Reported Value mg/kg	Reporting Limit Wet Weight mg/kg	Reporting Limit Dry Weight mg/kg
Matrix Spike Duplicate: 14J0099-01							
Antimony	96.1	2.00	54.8	212.5815	212	5.4079	12.0
Arsenic	82.5	2.00	54.8	182.3549	182	1.5451	5.00
Barium	107.8	2.00	54.8	238.3637	238	1.5451	10.0
Beryllium	2.280	20.0	54.8	5.04146	5.04	0.9996	2.21
Cadmium	76.59	2.00	54.8	169.3532	169	0.7726	1.71
Cobalt	73.59	2.00	54.8	162.7197	163	0.7726	10.0
Manganese	247.4	2.00	54.8	547.0426	547	3.0902	6.83
Mercury	0.34500	10.0	54.8	0.762852	0.763	0.1000	0.221
Molybdenum	80.8	2.00	54.8	178.7286	179	3.0902	10.0
Nickel	91.7	2.00	54.8	202.8524	203	0.7726	5.00
Selenium	61.80	2.00	54.8	136.6501	137	0.7726	5.00
Silver	65.22	2.00	54.8	144.2123	144	0.7726	5.00
Thallium	65.41	2.00	54.8	144.6324	145	3.8628	8.54
Vanadium	94.84	2.00	54.8	209.7070	210	0.7726	5.00
Zinc	94.11	2.00	54.8	208.0929	208	1.5451	10.0

Sample Result in Dry Weight =  $[\text{Sample}_{\text{ww}} / (100 - \% \text{Moisture})] * 100$

where:

Sample<sub>ww</sub> = Sample result in wet weight

## Date of Analysis: 10/13/14

Analytical Batch:	10SOLID14A
Oven Temp, °C:	105

[illegible]

Relative Percent Difference			
Sample ID	Sample	Sample Dup	RPD
14J0099-01	54.775	53.462	2.4

$$\% \text{ Total Solids} = \frac{(A - B) \times 100}{C - B} = \frac{\text{Weight of dried residue} \times 100}{\text{Weight of wet sample}}$$

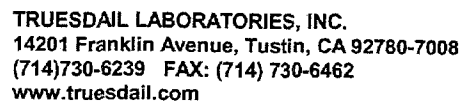
C = Weight of wet sample + Dish, g

Naheed  
Analyst Name

  
Analyst Signature

Maksim  
Reviewer Name

  
\_\_\_\_\_  
Reviewer Signature



## CHAIN OF CUSTODY RECORD

[IM3plant-WDR-489]

TURNAROUND TIME 10 Days  
DATE 10/07/14 PAGE 1 OF 1

ALERT !!  
Level III QC

CHAIN OF CUSTODY SIGNATURE RECORD				SAMPLE CONDITIONS	
Signature (Relinquished)	Printed Name	Company/ Agency	Date/ Time	RECEIVED	COOL <input checked="" type="checkbox"/> WARM <input type="checkbox"/> 4.6°C °F
Signature (Received)	Printed Name	Company/ Agency	Date/ Time	CUSTODY SEALED	YES <input type="checkbox"/> NO <input type="checkbox"/>
Signature (Relinquished)	Printed Name	Company/ Agency	Date/ Time	SPECIAL REQUIREMENTS:	
Signature (Received)	Printed Name	Company/ Agency	Date/ Time		
Signature (Relinquished)	Printed Name	Company/ Agency	Date/ Time		
Signature (Received)	Printed Name	Company/ Agency	Date/ Time		
Signature (Relinquished)	Printed Name	Company/ Agency	Date/ Time		
Signature (Received)	Printed Name	Company/ Agency	Date/ Time		

054

14J0099

## Truesdail Laboratories, Inc

Client: E2 Consulting Engineers, Inc.  
Project: Topock IM3Plant-WDR

Project Manager: Sean Condon  
Project Number: PGE-2152

Report To:

E2 Consulting Engineers, Inc.  
Christi Gitlin  
1900 Powell Street, Suite 250  
Emeryville, CA 94608  
Phone: 510-428-4728  
Fax: 510-652-5604

Invoice To:

E2 Consulting Engineers, Inc.  
Christy Gitlin  
1900 Powell Street, Suite 250  
Emeryville, CA 94608  
Phone :510-428-4728  
Fax: 510-652-5604

Date Due: 10/17/2014 16:30 (7 day TAT)

Received By: Alexander Wood

Date Received: 10/07/2014 18:35

Logged In By: Luda Shabunina

Date Logged In: 10/08/2014 08:01

Samples Received at: 4.6°C

Chain of Custody re	Yes	Samples intact?	Yes
Letter (if sent) matc	No	Custody seals (if an	No
Requested analyses	Yes	Analyses within hol	Yes
Samples received in	Yes		

Analysis	Due	TAT	Expires	Comments
----------	-----	-----	---------	----------

14J0099-01 SC-Sludge-WDR-489 [Soil] Sampled 10/07/2014 10:00 (GMT-08:00)  
Pacific Time (US &

IC-F	10/24/2014 12:00	7	11/04/2014 10:00
Anions Leaching Ext	10/24/2014 12:00	7	10/21/2014 10:00
As-6010	10/24/2014 12:00	7	04/05/2015 10:00
Ba-6010	10/24/2014 12:00	7	04/05/2015 10:00
Be-6010	10/24/2014 12:00	7	04/05/2015 10:00
Cd-6010	10/24/2014 12:00	7	04/05/2015 10:00
Co-6010	10/24/2014 12:00	7	04/05/2015 10:00
Cr VI-7199	10/24/2014 12:00	7	10/08/2014 10:00
Cr-6010	10/24/2014 12:00	7	04/05/2015 10:00
Ag-6010	10/24/2014 12:00	7	04/05/2015 10:00
Hg-6020	10/24/2014 12:00	7	11/04/2014 10:00
Zn-6010	10/24/2014 12:00	7	04/05/2015 10:00
Mn-6010	10/24/2014 12:00	7	04/05/2015 10:00
Mo-6010	10/24/2014 12:00	7	04/05/2015 10:00
Ni-6010	10/24/2014 12:00	7	04/05/2015 10:00
Pb-6010	10/24/2014 12:00	7	04/05/2015 10:00
Sb-6010	10/24/2014 12:00	7	04/05/2015 10:00
Se-6010	10/24/2014 12:00	7	04/05/2015 10:00
Tl-6010	10/24/2014 12:00	7	04/05/2015 10:00
TS/Moisture/TVS	10/24/2014 12:00	7	10/14/2014 10:00
V-6010	10/24/2014 12:00	7	04/05/2015 10:00

## WORK ORDER

Printed: 11/7/2014 3:55:03PM

14J0099

## Truesdail Laboratories, Inc

Client: E2 Consulting Engineers, Inc.  
Project: Topock IM3Plant-WDR

Project Manager: Sean Condon  
Project Number: PGE-2152

Analysis	Due	TAT	Expires	Comments
14J0099-01 SC-Sludge-WDR-489 [Soil] Sampled 10/07/2014 10:00 (GMT-08:00) Pacific Time (US &				
Cu-6010	10/24/2014 12:00	7	04/05/2015 10:00	

Reviewed By

Date

# TRUESDAIL LABORATORIES, INC.

EXCELLENCE IN INDEPENDENT TESTING



Established 1931

14201 FRANKLIN AVENUE  
TUSTIN, CALIFORNIA 92780-7008  
(714) 730-6239 · FAX (714) 730-6462  
www.truesdail.com

November 2, 2014

E2 Consulting Engineers, Inc.  
Mr. Shawn Duffy  
155 Grand Ave., Suite 1000  
Oakland, California 94612

Dear Mr. Duffy:

SUBJECT: CASE NARRATIVE PG&E TOPOCK IM3PLANT-WDR-490 PROJECT, GROUNDWATER  
MONITORING, TLI NO.: 815064

Truesdail Laboratories, Inc. is pleased to submit this report summarizing the Topock IM3Plant-WDR-490 project groundwater monitoring for Hexavalent and Total Chromium, Total Manganese, Turbidity, Specific Conductivity, and Total Dissolved Solids. A summary table for this sample delivery group is included in Section 2. Complete laboratory reports, quality control data and chain of custody forms for sampling period are included in Sections 3 and 4. Analytical raw data have been included under Section 5.

The samples were received and delivered with the chain of custody on October 14, 2014, intact and in chilled condition. The samples will be kept in a locked refrigerator for 30 days; thereafter it will be kept in warm storage for an additional 2 months before disposal.


Sample SC-700B-WDR-490 was analyzed as sample I.D. 14J0217 in the raw data but is reported as 815064 in all final report pages.


The straight runs for the sample and associated matrix spike on sample SC-700B-WDR-490 for Hexavalent Chromium analysis by EPA 218.6 were just outside the retention time window. Because the matrix spike recovery and all other QA/QC were within acceptable limits, the data from the straight run was reported.

No other violations or nonconformance actions occurred for this data package.

If you have any questions or require additional information, please contact me at (714) 730-6239 ext. 200.

Respectfully Submitted,  
TRUESDAIL LABORATORIES, INC.

  
for Mona Nassimi  
Manager, Analytical Services

  
Michael Ngo  
Quality Assurance/Quality Control Officer

# TRUESDAIL LABORATORIES, INC.

EXCELLENCE IN INDEPENDENT TESTING



Established 1931

**Client:** E2 Consulting Engineers, Inc.  
155 Grand Ave. Suite 1000  
Oakland, CA 94612

**Attention:** Shawn Duffy

**Sample:** One (1) Groundwater Sample

**Project Name:** PG&E Topock Project

**Project No.:** 428648.IM.CS.EX.AC

14201 FRANKLIN AVENUE  
TUSTIN, CALIFORNIA 92780-7008  
(714) 730-6239 · FAX (714) 730-6462  
www.truesdail.com

**Laboratory No.:** 815064

**Date:** November 2, 2014

**Collected:** October 14, 2014

**Received:** October 14, 2014

## ANALYST LIST

METHOD	PARAMETER	ANALYST
EPA 120.1	Specific Conductivity	Jenny Tankunakorn
SM 2540C	Total Dissolved Solids	Jenny Tankunakorn
SM 2130B	Turbidity	Jennine Ta
EPA 200.8	Total Metals	Ethel Suico
EPA 218.6	Hexavalent Chromium	Naheed Eidinejad

# TRUESDAIL LABORATORIES, INC.

EXCELLENCE IN INDEPENDENT TESTING



Established 1931

14201 FRANKLIN AVENUE · TUSTIN, CALIFORNIA 92780-7008  
(714) 730-6239 · FAX (714) 730-6462 · www.truesdail.com

**Client:** E2 Consulting Engineers, Inc.  
155 Grand Ave. Suite 1000  
Oakland, CA 94612  
**Attention:** Shawn Duffy

**Laboratory No.:** 815064  
**Date Received:** October 14, 2014

**Project Name:** PG&E Topock Project  
**Project No.:** 428648.IM.CS.EX.AC  
**P.O. No.:** PGEIM11111001

## Analytical Results Summary

Lab Sample ID	Field ID	Analysis Method	Extraction Method	Sample Date	Sample Time	Parameter	Result	Units	RL
815064-001	SC-700B-WDR-490	E120.1	NONE	10/14/2014	14:00	EC	7170	umhos/cm	2.00
815064-001	SC-700B-WDR-490	E200.8	NONE	10/14/2014	14:00	Chromium	ND	ug/L	1.0
815064-001	SC-700B-WDR-490	E200.8	NONE	10/14/2014	14:00	Manganese	6.1	ug/L	0.50
815064-001	SC-700B-WDR-490	E218.6	LABFLT	10/14/2014	14:00	Chromium, Hexavalent	ND	ug/L	0.20
815064-001	SC-700B-WDR-490	SM2130B	NONE	10/14/2014	14:00	Turbidity	ND	NTU	0.100
815064-001	SC-700B-WDR-490	SM2540C	NONE	10/14/2014	14:00	Total Dissolved Solids	4340	mg/L	250

ND: Non Detected (below reporting limit)

mg/L: Milligrams per liter.

**Note:** The following "Significant Figures" rule has been applied to all results:

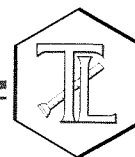
Results below 0.01ppm will have two (2) significant figures.

Result above or equal to 0.01ppm will have three (3) significant figures.

Quality Control data will always have three (3) significant figures.

# TRUESDAIL LABORATORIES, INC.

EXCELLENCE IN INDEPENDENT TESTING



Established 1931

14201 FRANKLIN AVENUE  
TUSTIN, CALIFORNIA 92780-7008  
(714) 730-6239 · FAX (714) 730-6462  
www.truesdail.com

## REPORT

**Client:** E2 Consulting Engineers, Inc.

155 Grand Avenue, Suite 800

Oakland, CA 94612

Attention: Shawn Duffy

Project Name: PG&E Topock Project

Project Number: 428648.IM.CS.EX.AC

P.O. Number: PGEIM1111100

Release Number:

Laboratory No. 815064

Page 1 of 16

Printed 11/2/2014

Samples Received on 10/14/2014 7:30:00 PM

Field ID	Lab ID	Collected	Matrix
SC-700B-WDR-490	815064-001	10/14/2014 14:00	Water

### Specific Conductivity - EPA 120.1

Batch 1410227

Parameter	Unit	Analyzed	DF	MDL	RL	Result
815064-001 Specific Conductivity	umhos/cm	10/16/2014	1.00	0.606	2.00	7170

#### Method Blank

Parameter	Unit	DF	Result
Specific Conductivity	umhos	1.00	ND

#### Duplicate

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Specific Conductivity	umhos	1.00	931	927	0.430	0 - 10

Lab ID = 815074-002

#### Lab Control Sample

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Specific Conductivity	umhos	1.00	730	706	103	90 - 110

#### MRCCS - Secondary

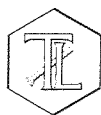
Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Specific Conductivity	umhos	1.00	730	706	103	90 - 110

#### MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Specific Conductivity	umhos	1.00	1090	1000	109	90 - 110

#### MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Specific Conductivity	umhos	1.00	1090	1000	109	90 - 110



# TRUESDAIL LABORATORIES, INC.

Report Continued

Client: E2 Consulting Engineers, Inc.

Project Name: PG&E Topock Project

Page 2 of 16

Project Number: 428648.IM.CS.EX.AC

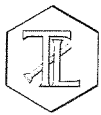
Printed 11/2/2014

## Chrome VI by EPA 218.6

Batch 1410255

Parameter	Unit	Analyzed	DF	MDL	RL	Result
815064-001 Chromium, Hexavalent	ug/L	10/15/2014 13:26	1.00	0.00600	0.20	ND
Method Blank						
Parameter	Unit	DF	Result			
Chromium, Hexavalent	ug/L	1.00	ND			
Duplicate						
Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Chromium, Hexavalent	ug/L	5.00	0.129	0.124	3.95	0 - 20
Low Level Calibration Verification						
Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	0.205	0.200	103	70 - 130
Lab Control Sample						
Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	5.10	5.00	102	90 - 110
Matrix Spike						
Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	5.00	5.00	5.12(5.00)	97.6	90 - 110
Matrix Spike						
Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	1.13	1.12(1.00)	101	90 - 110
MRCCS - Secondary						
Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	5.10	5.00	102	90 - 110
MRCVS - Primary						
Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	10.1	10.0	101	95 - 105

This report applies only to the sample, or samples, investigated and is not necessarily indicative of the quality or condition of apparently identical or similar products. As a mutual protection to clients, the public, and these laboratories, this report is submitted and accepted for the exclusive use of the client to whom it is addressed and upon the condition that it is not to be used, in whole or in part, in any advertising or publicity matter without prior written authorization from Truesdail Laboratories.



# TRUESDAIL LABORATORIES, INC.

Report Continued

Client: E2 Consulting Engineers, Inc.

Project Name: PG&E Topock Project

Page 3 of 16

Project Number: 428648.IM.CS.EX.AC

Printed 11/2/2014

## Metals by EPA 200.8, Total

Batch 101614A

Parameter	Unit	Analyzed	DF	MDL	RL	Result
815064-001 Chromium	ug/L	10/16/2014 16:44	1.00	0.0710	1.0	ND
Manganese	ug/L	10/16/2014 16:44	1.00	0.0600	0.50	6.1

### Method Blank

Parameter	Unit	DF	Result
Arsenic	ug/L	1.00	ND
Barium	ug/L	1.00	ND
Cadmium	ug/L	1.00	ND
Chromium	ug/L	1.00	ND
Mercury	ug/L	1.00	ND
Nickel	ug/L	1.00	ND
Selenium	ug/L	1.00	ND
Antimony	ug/L	1.00	ND
Lead	ug/L	1.00	ND
Silver	ug/L	1.00	ND
Thallium	ug/L	1.00	ND
Vanadium	ug/L	1.00	ND
Manganese	ug/L	1.00	ND
Molybdenum	ug/L	1.00	ND

### Duplicate

Lab ID = 815064-001

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Arsenic	ug/L	1.00	ND	0	0	0 - 20
Barium	ug/L	1.00	11.6	11.5	0.728	0 - 20
Cadmium	ug/L	1.00	ND	0	0	0 - 20
Chromium	ug/L	1.00	ND	0	0	0 - 20
Mercury	ug/L	1.00	ND	0	0	0 - 20
Nickel	ug/L	1.00	ND	0	0	0 - 20
Selenium	ug/L	1.00	ND	0	0	0 - 20
Antimony	ug/L	1.00	ND	0	0	0 - 20
Lead	ug/L	1.00	ND	0	0	0 - 20
Silver	ug/L	1.00	ND	0	0	0 - 20
Thallium	ug/L	1.00	ND	0	0	0 - 20
Vanadium	ug/L	1.00	ND	0	0	0 - 20
Manganese	ug/L	1.00	6.10	6.13	0.556	0 - 20
Molybdenum	ug/L	1.00	18.6	18.9	1.74	0 - 20

This report applies only to the sample, or samples, investigated and is not necessarily indicative of the quality or condition of apparently identical or similar products. As a mutual protection to clients, the public, and these laboratories, this report is submitted and accepted for the exclusive use of the client to whom it is addressed and upon the condition that it is not to be used, in whole or in part, in any advertising or publicity matter without prior written authorization from Truesdail Laboratories.

**Client: E2 Consulting Engineers, Inc.****Project Name: PG&E Topock Project****Page 4 of 16****Project Number: 428648.IM.CS.EX.AC****Printed 11/2/2014****Low Level Calibration Verification**

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Arsenic	ug/L	1.00	0.198	0.200	99.0	70 - 130
Barium	ug/L	1.00	1.01	1.00	101	70 - 130
Cadmium	ug/L	1.00	0.484	0.500	96.8	70 - 130
Chromium	ug/L	1.00	0.436	0.500	87.2	70 - 130
Mercury	ug/L	1.00	0.184	0.200	92.0	70 - 130
Nickel	ug/L	1.00	0.444	0.500	88.8	70 - 130
Selenium	ug/L	1.00	1.11	1.00	111	70 - 130
Antimony	ug/L	1.00	0.182	0.200	91.0	70 - 130
Lead	ug/L	1.00	0.395	0.500	79.0	70 - 130
Silver	ug/L	1.00	0.497	0.500	99.4	70 - 130
Thallium	ug/L	1.00	0.218	0.200	109	70 - 130
Vanadium	ug/L	1.00	0.213	0.200	106	70 - 130
Manganese	ug/L	1.00	0.404	0.500	80.8	70 - 130
Molybdenum	ug/L	1.00	0.519	0.500	104	70 - 130

**Lab Control Sample**

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Arsenic	ug/L	2.00	47.6	50.0	95.3	85 - 115
Barium	ug/L	2.00	48.3	50.0	96.6	85 - 115
Cadmium	ug/L	2.00	48.7	50.0	97.5	85 - 115
Chromium	ug/L	2.00	46.6	50.0	93.1	85 - 115
Mercury	ug/L	2.00	4.58	5.00	91.5	85 - 115
Nickel	ug/L	2.00	46.4	50.0	92.7	85 - 115
Selenium	ug/L	2.00	47.2	50.0	94.4	85 - 115
Antimony	ug/L	2.00	48.1	50.0	96.3	85 - 115
Lead	ug/L	2.00	53.2	50.0	106	85 - 115
Silver	ug/L	2.00	45.2	50.0	90.4	85 - 115
Thallium	ug/L	2.00	48.1	50.0	96.2	85 - 115
Vanadium	ug/L	2.00	46.8	50.0	93.6	85 - 115
Manganese	ug/L	2.00	47.4	50.0	94.7	85 - 115
Molybdenum	ug/L	2.00	49.9	50.0	99.8	85 - 115



Client: E2 Consulting Engineers, Inc.

Project Name: PG&E Topock Project

Page 5 of 16

Project Number: 428648.IM.CS.EX.AC

Printed 11/2/2014

Matrix Spike

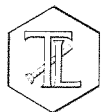
Lab ID = 815064-001

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Arsenic	ug/L	1.00	52.3	50.0(50.0)	105	75 - 125
Barium	ug/L	1.00	62.0	61.5(50.0)	101	75 - 125
Cadmium	ug/L	1.00	46.9	50.0(50.0)	93.9	75 - 125
Chromium	ug/L	1.00	44.9	50.0(50.0)	89.8	75 - 125
Mercury	ug/L	1.00	4.77	5.00(5.00)	95.4	75 - 125
Nickel	ug/L	1.00	44.5	50.0(50.0)	89.0	75 - 125
Selenium	ug/L	1.00	50.5	50.0(50.0)	101	75 - 125
Antimony	ug/L	1.00	52.5	50.0(50.0)	105	75 - 125
Lead	ug/L	1.00	46.3	50.0(50.0)	92.5	75 - 125
Silver	ug/L	1.00	42.5	50.0(50.0)	85.0	75 - 125
Thallium	ug/L	1.00	46.6	50.0(50.0)	93.1	75 - 125
Vanadium	ug/L	1.00	47.2	50.0(50.0)	94.4	75 - 125
Manganese	ug/L	1.00	51.6	56.1(50.0)	90.9	75 - 125
Molybdenum	ug/L	1.00	70.2	68.9(50.0)	102	75 - 125

Matrix Spike Duplicate

Lab ID = 815064-001

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Arsenic	ug/L	1.00	51.4	50.0(50.0)	103	75 - 125
Barium	ug/L	1.00	63.0	61.5(50.0)	103	75 - 125
Cadmium	ug/L	1.00	46.6	50.0(50.0)	93.3	75 - 125
Chromium	ug/L	1.00	44.2	50.0(50.0)	88.5	75 - 125
Mercury	ug/L	1.00	4.80	5.00(5.00)	95.9	75 - 125
Nickel	ug/L	1.00	44.2	50.0(50.0)	88.4	75 - 125
Selenium	ug/L	1.00	49.7	50.0(50.0)	99.5	75 - 125
Antimony	ug/L	1.00	53.3	50.0(50.0)	107	75 - 125
Lead	ug/L	1.00	46.4	50.0(50.0)	92.8	75 - 125
Silver	ug/L	1.00	42.2	50.0(50.0)	84.3	75 - 125
Thallium	ug/L	1.00	46.6	50.0(50.0)	93.2	75 - 125
Vanadium	ug/L	1.00	46.5	50.0(50.0)	92.9	75 - 125
Manganese	ug/L	1.00	50.9	56.1(50.0)	89.6	75 - 125
Molybdenum	ug/L	1.00	70.4	68.9(50.0)	103	75 - 125



# TRUESDAIL LABORATORIES, INC.

Report Continued

Client: E2 Consulting Engineers, Inc.

Project Name: PG&E Topock Project

Page 15 of 16

Project Number: 428648.IM.CS.EX.AC

Printed 11/2/2014

## Serial Dilution

Lab ID = 815060-002

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Barium	ug/L	5.00	25.6	27.2	5.90	0 - 10
Chromium	ug/L	50.0	570	563	1.19	0 - 10

## Serial Dilution

Lab ID = 815060-003

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Molybdenum	ug/L	50.0	90.5	87.6	3.31	0 - 10

## Total Dissolved Solids by SM 2540 C

Batch 1410228

Parameter	Unit	Analyzed	DF	MDL	RL	Result
815064-001 Total Dissolved Solids	mg/L	10/15/2014	1.00	1.76	250	4340

## Method Blank

Parameter	Unit	DF	Result
Total Dissolved Solids	mg/L	1.00	ND

## Duplicate

Lab ID = 815075-004

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Total Dissolved Solids	mg/L	1.00	385	370	3.97	0 - 10

## Lab Control Sample

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Total Dissolved Solids	mg/L	1.00	494	500	98.8	90 - 110



# TRUESDAIL LABORATORIES, INC.

Report Continued

Client: E2 Consulting Engineers, Inc.

Project Name: PG&E Topock Project

Page 16 of 16

Project Number: 428648.IM.CS.EX.AC

Printed 11/2/2014

## Turbidity by SM 2130 B

Batch 1410257

Parameter	Unit	Analyzed	DF	MDL	RL	Result
815064-001 Turbidity	NTU	10/15/2014	1.00	0.0140	0.100	ND

### Method Blank

Parameter	Unit	DF	Result
Turbidity	NTU	1.00	ND

### Duplicate

Lab ID = 815076-002

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Turbidity	NTU	1.00	ND	0	0	0 - 20

### Lab Control Sample


Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Turbidity	NTU	1.00	7.51	8.00	93.9	90 - 110

### Lab Control Sample Duplicate

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Turbidity	NTU	1.00	7.67	8.00	95.9	90 - 110

Respectfully submitted,

TRUESDAIL LABORATORIES, INC.

  
for Mona Nassimi  
Manager, Analytical Services



## Calculations

Date Analyzed: 10/15/2014

14J0244-02 Dup	100	68.7532	68.8080	68.8080	0.0000	No	0.0548	548.0	25.0	548.0	1
----------------	-----	---------	---------	---------	--------	----	--------	-------	------	-------	---

Filterable residue (TDS), mg/L =

Where:

RL= reporting limit.  
ND = not detected (below the reporting limit)

## LCS Recovery

$P$  = Percent recovery.

LC= Measured LCS value (ppm).

$LT$  = Theoretical LCS value (ppm).

### Duplicate Determination Difference

where  $C = \frac{A+B}{2}$

A = Weight of the first sample in (g).

B = Weight of the second sample in (g).

C = Average weight in (g).

Jenny T.

Analyst Printed Name

Analyst Signature

Maksim G.

Reviewer Printed Name

Reviewer Signature \_\_\_\_\_

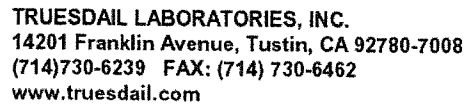
# Total Dissolved Solids by SM 2540 C

## TDS/EC CHECK

Batch: 1410228  
Date Analyzed: 10/15/2014

Laboratory Number	EC	TDS/EC Ratio: 0.55-0.90	Calculated TDS (EC*0.65)	Measured TDS / Calc TDS <1.3
14J0172-01A	802	0.55	521.3	0.85
14J0172-02	772	0.54	501.8	0.84
14J0177-01D	954	0.54	620.1	0.83
14J0177-02	919	0.59	597.35	0.90
14J0214-02F	464	0.54	301.6	0.84
14J0214-04F	647	0.57	420.55	0.88
14J0217-01A	7170	0.61	4660.5	0.93
14J0232-01B	985	0.66	640.25	1.01
14J0232-02	636	0.57	413.4	0.87
14J0244-01C	908	0.55	590.2	0.84
14J0214-04 Dup	647	0.60	420.55	0.92
LCS				
14J0244-02	927	0.60	602.55	0.92
MDL Ver@5ppm				
14J0244-02 Dup	927	0.59	602.55	0.91





[IM3Plant-WDR-490]

915064/14J0217  
COC Number

TURNAROUND TIME 10 Days  
DATE 10/14/14 PAGE 1 OF 1

**Please Provide a preliminary Result for the TDS ASAP**

ALERT !!  
Level III QC

CHAIN OF CUSTODY SIGNATURE RECORD					SAMPLE CONDITIONS	
Signature (Relinquished)	Printed Name	Company/ Agency	Date/ Time	RECEIVED	COOL <input checked="" type="checkbox"/>	WARM <input type="checkbox"/> _____ °F
Signature (Received)	Printed Name	Company/ Agency	Date/ Time	CUSTODY SEALED YES <input type="checkbox"/> NO <input type="checkbox"/>		
Signature (Relinquished)	Printed Name	Company/ Agency	Date/ Time	SPECIAL REQUIREMENTS:		
Signature (Received)	Printed Name	Company/ Agency	Date/ Time			
Signature (Relinquished)	Printed Name	Company/ Agency	Date/ Time			
Signature (Received)	Printed Name	Company/ Agency	Date/ Time			

052

## Hexavalent Chromium

### Method EPA 218.6 and SW 7199 Sample pH Log

[illegible]

10/16/14



TRUESDAIL LABORATORIES, INC.  
Metals

Turbidity/pH Check

Sample Number	Turbidity	pH	Date	Analyst	Need Digest (Y/N)	Time of Adjustment to pH 2	Date/Time of 2nd pH check	Comments
14J0204-02	> 1	< 2	10/15/14	TM	yes			
14J0208-01	↓	↓	↓	↓	↓			
14J0209-02	↓	↓	↓	↓	↓			
14J0211-01	↓	↓	↓	↓	↓			
14J0214(01,-02,-02)	< 1	> 2	10/15/14	TM	NO	10:25		
14J0214(045,046)	↓	↓	↓	↓	↓	↓		
14J0224-01	↓	↓	↓	↓	↓	↓		
14J0216-01	↓	↓	↓	↓	yes	↓		
14J0232(01,-02)	↓	↓	↓	↓	↓	↓		
14J0233-01	< 1	> 2	10/15/14	TM	yes	10:25		
14J0241(01-02)	< 1	72	10/16/14	ES	NO	10:30		
14J0246(01-02)	↓	72	10/16/14	↓	↓	↓		
14J0250(10-13)	↓	↓	↓	↓	↓	↓		
14J0254(1-5)	↓	↓	↓	↓	↓	↓		
14J0255(01-02)	↓	↓	↓	↓	↓	↓		
14J0242(01)	< 1	72	↓	↓	yes	10:30		
14J0243(01-03)	< 1	< 2	↓	↓	↓	↓		-3 TU > 1
14J0244(01-02)	↓	↓	↓	↓	↓	↓		-1 TU > 1
14J0217-01	< 1	72	10/16/14	ES	yes	10:30		pH < 2
14J0306-01	< 1	< 2	10/21/14	ES	yes			
14J0310-01	> 1	↓	↓	↓	↓			
-02	< 1	↓	↓	↓	↓			
14J0330-02	< 1	↓	↓	↓	↓			
14J0332-02	↓	↓	↓	↓	↓			
14J0270-01	> 1	< 2	10/22/14	TM	yes			
14J0307-01	↓	↓	↓	↓	↓			
14J0337-01	↓	↓	↓	↓	↓			
14J0338-01	↓	↓	↓	↓	↓			
14J0339-01	↓	↓	↓	↓	↓			
14J0340-01	↓	↓	↓	↓	↓			
14J0359-01	↓	↓	↓	↓	↓			
14J0341-01	↓	↓	↓	↓	↓			
14J0349-01	< 1	> 2	10/22/14	TM	NO	11:15		
14J0348(02,-02)	↓	↓	↓	↓	↓	↓		
14J0348(04,-04)	↓	↓	↓	↓	↓	↓		
14J0364(01,-02)	> 1	< 2	10/23/14	TM	yes			
14J0372(01,-02)	> 1	< 2	10/23/14	TM	yes			
14J0369(01,-02,-02)	< 1	> 2	↓	↓	NO	9:55		
-16)	↓	↓	↓	↓	↓			
14J0277-01	< 1	< 2	10/27/14	ES	yes			
14J0278-01	↓	↓	↓	↓	↓			
14J0302-01	> 1	↓	↓	↓	↓			
4B 10/27/14	< 1	↓	↓	↓	↓			
14J0393-01	> 1	72	↓	↓	↓	1:30		pH < 2

Notes:

1. Samples should be analyzed after 24 hrs of pH adjustment to pH2 for Dissolved Analytes.
2. All Total Recoverable Analytes must be pH adjusted and digested.
3. Do not use disposable pipette to measure pH; pour a little amount of sample from the bottle.

## WORK ORDER

Printed: 10/15/14 7:07:39AM

14J0217

## Truesdail Laboratories, Inc

Client: E2 Consulting Engineers, Inc.  
Project: Topock IM3Plant-WDR Weekly

Project Manager: Sean Condon  
Project Number: PGE-2152

Report To:

E2 Consulting Engineers, Inc.  
Christi Gitlin  
1900 Powell Street, Suite 250  
Emeryville, CA 94608  
Phone: 510-428-4728  
Fax: 510-652-5604

Invoice To:

E2 Consulting Engineers, Inc.  
Christi Gitlin  
1900 Powell Street, Suite 250  
Emeryville, CA 94608  
Phone :510-428-4728  
Fax: 510-652-5604

Date Due: 10/24/2014 16:30 (7 day TAT)

Received By: Michael Ngo

Date Received: 10/14/2014 19:30

Logged In By: Luda Shabunina

Date Logged In: 10/15/2014 07:05

Samples Received at: 3.8°C

Chain of Custody re	Yes	Samples intact?	Yes
Letter (if sent) matc	No	Custody seals (if an	No
Requested analyses	Yes	Analyses within hol	Yes
Samples received in	Yes		

Analysis	Due	TAT	Expires	Comments
----------	-----	-----	---------	----------

14J0217-01 SC-700B-WDR-490 [Water] Sampled 10/14/2014 14:00  
(GMT-08:00) Pacific Time (US &

Turbidity	10/24/2014 12:00	7	10/16/2014 14:00	
TDS	10/24/2014 12:00	7	10/21/2014 14:00	
Specific Conductivity	10/24/2014 12:00	7	11/11/2014 14:00	
Mn-200.8	10/24/2014 12:00	7	04/12/2015 14:00	
Cr-200.8	10/24/2014 12:00	7	04/12/2015 14:00	
Cr VI-218.6	10/24/2014 12:00	7	11/11/2014 14:00	

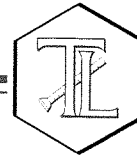
ALERT !!  
Level III QC

  
Reviewed By

10/15/14  
Date

# TRUESDAIL LABORATORIES, INC.

EXCELLENCE IN INDEPENDENT TESTING



Established 1931

14201 FRANKLIN AVENUE  
TUSTIN, CALIFORNIA 92780-7008  
(714) 730-6239 · FAX (714) 730-6462  
www.truesdail.com

November 2, 2014

E2 Consulting Engineers, Inc.  
Mr. Shawn Duffy  
155 Grand Ave., Suite 1000  
Oakland, California 94612

Dear Mr. Duffy:

SUBJECT: CASE NARRATIVE PG&E TOPOCK IM3PLANT-WDR-491 PROJECT, GROUNDWATER  
MONITORING, TLI NO.: 815068

Truesdail Laboratories, Inc. is pleased to submit this report summarizing the Topock IM3Plant-WDR-491 project groundwater monitoring for Hexavalent and Total Chromium, Total Manganese, Turbidity, Specific Conductivity, and Total Dissolved Solids. A summary table for this sample delivery group is included in Section 2. Complete laboratory reports, quality control data and chain of custody forms for sampling period are included in Sections 3 and 4. Analytical raw data have been included under Section 5.

The samples were received and delivered with the chain of custody on October 21, 2014, intact and in chilled condition. The samples will be kept in a locked refrigerator for 30 days; thereafter it will be kept in warm storage for an additional 2 months before disposal.


Sample SC-700B-WDR-491 was analyzed as sample I.D. 14J0344 in the raw data but is reported as 815068 in all final report pages.

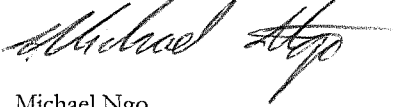
The straight runs for the sample and associated matrix spike on sample SC-700B-WDR-491 for Hexavalent Chromium analysis by EPA 218.6 were just outside the retention time window. Because the matrix spike recovery and all other QA/QC were within acceptable limits, the data from the straight run was reported.

No other violations or nonconformance actions occurred for this data package.

If you have any questions or require additional information, please contact me at (714) 730-6239 ext. 200.

Respectfully Submitted,  
TRUESDAIL LABORATORIES, INC.

  
to - Mona Nassimi  
Manager, Analytical Services

  
Michael Ngo  
Quality Assurance/Quality Control Officer

# TRUESDAIL LABORATORIES, INC.

EXCELLENCE IN INDEPENDENT TESTING



Established 1931

**Client:** E2 Consulting Engineers, Inc.  
155 Grand Ave. Suite 1000  
Oakland, CA 94612

**Attention:** Shawn Duffy

**Sample:** One (1) Groundwater Sample

**Project Name:** PG&E Topock Project

**Project No.:** 428648.IM.CS.EX.AC

14201 FRANKLIN AVENUE  
TUSTIN, CALIFORNIA 92780-7008  
(714) 730-6239 · FAX (714) 730-6462  
[www.truesdail.com](http://www.truesdail.com)

**Laboratory No.:** 815068

**Date:** November 2, 2014

**Collected:** October 21, 2014

**Received:** October 21, 2014

## ANALYST LIST

METHOD	PARAMETER	ANALYST
EPA 120.1	Specific Conductivity	Jenny Tankunakorn
SM 2540C	Total Dissolved Solids	Jenny Tankunakorn
SM 2130B	Turbidity	Naheed Eidinejad
EPA 200.8	Total Metals	Tom Martinez
EPA 218.6	Hexavalent Chromium	Naheed Eidinejad

# TRUESDAIL LABORATORIES, INC.

EXCELLENCE IN INDEPENDENT TESTING



Established 1931

14201 FRANKLIN AVENUE · TUSTIN, CALIFORNIA 92780-7008  
(714) 730-6239 · FAX (714) 730-6462 · www.truesdail.com

**Client:** E2 Consulting Engineers, Inc.  
155 Grand Ave. Suite 1000  
Oakland, CA 94612

**Attention:** Shawn Duffy

**Laboratory No.:** 815068

**Date Received:** October 21, 2014

**Project Name:** PG&E Topock Project  
**Project No.:** 428648.IM.CS.EX.AC  
**P.O. No.:** PGEIM11111001

## Analytical Results Summary

Lab Sample ID	Field ID	Analysis Method	Extraction Method	Sample Date	Sample Time	Parameter	Result	Units	RL
815068-001	SC-700B-WDR-491	E120.1	NONE	10/21/2014	10:00	EC	7060	umhos/cm	2.00
815068-001	SC-700B-WDR-491	E200.8	NONE	10/21/2014	10:00	Chromium	ND	ug/L	1.0
815068-001	SC-700B-WDR-491	E200.8	NONE	10/21/2014	10:00	Manganese	3.8	ug/L	0.50
815068-001	SC-700B-WDR-491	E218.6	LABFLT	10/21/2014	10:00	Chromium, Hexavalent	ND	ug/L	0.20
815068-001	SC-700B-WDR-491	SM2130B	NONE	10/21/2014	10:00	Turbidity	0.175	NTU	0.100
815068-001	SC-700B-WDR-491	SM2540C	NONE	10/21/2014	10:00	Total Dissolved Solids	4220	mg/L	250

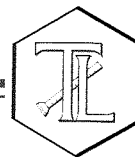
ND: Non Detected (below reporting limit)

mg/L: Milligrams per liter.

**Note:** The following "Significant Figures" rule has been applied to all results:  
Results below 0.01ppm will have two (2) significant figures.  
Result above or equal to 0.01ppm will have three (3) significant figures.  
Quality Control data will always have three (3) significant figures.

# TRUESDAIL LABORATORIES, INC.

EXCELLENCE IN INDEPENDENT TESTING



Established 1931

14201 FRANKLIN AVENUE  
TUSTIN, CALIFORNIA 92780-7008  
(714) 730-6239 · FAX (714) 730-6462  
www.truesdail.com

## REPORT

**Client:** CH2MHill

155 Grand Avenue, Suite 800

Oakland, CA 94612

Attention: Shawn Duffy

Project Name: PG&E Topock Project

Project Number: 428648.IM.CS.EX.AC

P.O. Number: PGEIM1111100\*

Release Number:

Laboratory No. 815068

Page 1 of 6

Printed 11/2/2014

Samples Received on 10/21/2014 7:30:00 PM

Field ID	Lab ID	Collected	Matrix
SC-700B-WDR-491	815068-001	10/21/2014 10:00	Water

### Specific Conductivity - EPA 120.1

Batch 1410341

Parameter	Unit	Analyzed	DF	MDL	RL	Result
815068-001 Specific Conductivity	umhos/cm	10/27/2014	1.00	0.606	2.00	7060

#### Method Blank

Parameter	Unit	DF	Result
Specific Conductivity	umhos	1.00	ND

#### Duplicate

Lab ID = 815077-001

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Specific Conductivity	umhos	1.00	ND	0	0	0 - 10

#### Lab Control Sample

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Specific Conductivity	umhos	1.00	772	706	109	90 - 110

#### MRCCS - Secondary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Specific Conductivity	umhos	1.00	772	706	109	90 - 110

#### MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Specific Conductivity	umhos	1.00	979	1000	97.9	90 - 110

#### MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Specific Conductivity	umhos	1.00	979	1000	97.9	90 - 110

This report applies only to the sample, or samples, investigated and is not necessarily indicative of the quality or condition of apparently identical or similar products. As a mutual protection to clients, the public, and these laboratories, this report is submitted and accepted for the exclusive use of the client to whom it is addressed and upon the condition that it is not to be used, in whole or in part, in any advertising or publicity matter without prior written authorization from Truesdail Laboratories.



Client: CH2MHill

Project Name: PG&E Topock Project

Page 2 of 6

Project Number: 428648.IM.CS.EX.AC

Printed 11/2/2014

**Chrome VI by EPA 218.6**

Batch 1410398

Parameter	Unit	Analyzed	DF	MDL	RL	Result
815068-001 Chromium, Hexavalent	ug/L	10/24/2014 11:11	1.00	0.00600	0.20	ND

**Method Blank**

Parameter	Unit	DF	Result
Chromium, Hexavalent	ug/L	1.00	ND

**Duplicate**

Lab ID = 815068-001

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Chromium, Hexavalent	ug/L	5.00	0.172	0.166	3.55	0 - 20

**Low Level Calibration Verification**

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	0.184	0.200	92.0	70 - 130

**Lab Control Sample**

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	5.09	5.00	102	90 - 110

**Matrix Spike**

Lab ID = 815068-001

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	5.00	5.05	5.17(5.00)	97.8	90 - 110

**Matrix Spike**

Lab ID = 815068-001

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	1.20	1.15(1.00)	105	90 - 110

**MRCCS - Secondary**

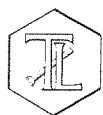
Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	5.12	5.00	102	90 - 110

**MRCVS - Primary**

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	10.1	10.0	101	95 - 105

**MRCVS - Primary**

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	10.2	10.0	102	95 - 105



Client: CH2MHill

Project Name: PG&E Topock Project

Page 3 of 6

Project Number: 428648.IM.CS.EX.AC

Printed 11/2/2014

**Metals by EPA 200.8, Total**

Batch 102914A

Parameter	Unit	Analyzed	DF	MDL	RL	Result
815068-001 Chromium	ug/L	10/29/2014 14:56	1.00	0.0710	1.0	ND
Manganese	ug/L	10/29/2014 14:56	1.00	0.0600	0.50	3.8

**Method Blank**

Parameter	Unit	DF	Result
Chromium	ug/L	1.00	ND
Manganese	ug/L	1.00	ND

**Duplicate**

Lab ID = 815068-001

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Chromium	ug/L	1.00	ND	0	0	0 - 20
Manganese	ug/L	1.00	3.98	3.84	3.68	0 - 20

**Low Level Calibration Verification**

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium	ug/L	1.00	0.642	0.500	128	70 - 130
Manganese	ug/L	1.00	0.173	0.200	86.5	70 - 130

**Lab Control Sample**

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium	ug/L	1.00	47.9	50.0	95.7	85 - 115
Manganese	ug/L	1.00	47.8	50.0	95.7	85 - 115

**Matrix Spike**

Lab ID = 815068-001

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium	ug/L	1.00	49.1	50.0(50.0)	98.2	75 - 125
Manganese	ug/L	1.00	54.0	53.8(50.0)	100	75 - 125

**Matrix Spike Duplicate**

Lab ID = 815068-001

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium	ug/L	1.00	49.1	50.0(50.0)	98.2	75 - 125
Manganese	ug/L	1.00	53.2	53.8(50.0)	98.8	75 - 125

**MRCCS - Secondary**

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium	ug/L	1.00	20.3	20.0	101	90 - 110
Manganese	ug/L	1.00	20.3	20.0	102	90 - 110

**MRCVS - Primary**

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium	ug/L	1.00	19.4	20.0	97.1	90 - 110



# TRUESDAIL LABORATORIES, INC.

Report Continued

Client: CH2MHill

Project Name: PG&E Topock Project

Page 5 of 6

Project Number: 428648.IM.CS.EX.AC

Printed 11/2/2014

## Interference Check Standard AB

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Manganese	ug/L	1.00	19.4	20.0	96.9	80 - 120

## Total Dissolved Solids by SM 2540 C

Batch 1410340

Parameter	Unit	Analyzed	DF	MDL	RL	Result
815068-001 Total Dissolved Solids	mg/L	10/22/2014	1.00	1.76	250	4220

### Method Blank

Parameter	Unit	DF	Result
Total Dissolved Solids	mg/L	1.00	ND

### Duplicate

Lab ID = 815068-001

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Total Dissolved Solids	mg/L	1.00	4080	4220	3.37	0 - 10

### Lab Control Sample

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Total Dissolved Solids	mg/L	1.00	515	500	103	90 - 110

## Turbidity by SM 2130 B

Batch 1410453

Parameter	Unit	Analyzed	DF	MDL	RL	Result
815068-001 Turbidity	NTU	10/22/2014	1.00	0.0140	0.100	0.175

### Method Blank

Parameter	Unit	DF	Result
Turbidity	NTU	1.00	ND

### Duplicate

Lab ID = 815078-001

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Turbidity	NTU	1.00	0.272	0.273	0.367	0 - 20

### Lab Control Sample

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Turbidity	NTU	1.00	8.37	8.00	105	90 - 110

### Lab Control Sample Duplicate

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Turbidity	NTU	1.00	7.96	8.00	99.5	90 - 110



**TRUESDAIL LABORATORIES, INC.**

*Report Continued*

**Client: CH2MHill**

**Project Name: PG&E Topock Project**

**Page 6 of 6**

**Project Number: 428648.IM.CS.EX.AC**

**Printed 11/2/2014**

Respectfully submitted,

**TRUESDAIL LABORATORIES, INC.**

for - Mona Nassimi

Manager, Analytical Services

**Total Dissolved Solids by SM 2540 C****Calculations**

Batch: 1410340

Date Analyzed: 10/22/2014

Laboratory Number	Sample volume, mL	Initial weight, g	1st Final weight, g	2nd Final weight, g	Weight Difference, g	Exceeds 0.5mg? Yes/No	Residue weight, g	Filterable residue, ppm	RL, ppm	Reported Value, ppm	DF
Blank	100	49.1142	49.1142	49.1142	0.0000	No	0.0000	0.0	25.0	ND	1
14J0249-01C	100	76.2566	76.3018	76.3018	0.0000	No	0.0452	452.0	25.0	452.0	1
14J0249-02	100	74.0165	74.0602	74.0597	0.0005	No	0.0432	432.0	25.0	432.0	1
14J0249-03	100	76.0170	76.0623	76.0620	0.0003	No	0.0450	450.0	25.0	450.0	1
14J0249-04	100	68.5341	68.5784	68.5782	0.0002	No	0.0441	441.0	25.0	441.0	1
14J0255-01B	50	61.9582	62.0385	62.0385	0.0000	No	0.0803	1606.0	50.0	1606.0	1
14J0255-02	50	50.7798	50.8615	50.8615	0.0000	No	0.0817	1634.0	50.0	1634.0	1
14J02310-01	100	74.3644	74.4096	74.4096	0.0000	No	0.0452	452.0	25.0	452.0	1
14J02310-02	100	74.5010	74.5461	74.5458	0.0003	No	0.0448	448.0	25.0	448.0	1
14J02313-01	500	158.8737	158.8778	158.8778	0.0000	No	0.0041	8.2	5.0	8.2	1
14J02313-02	500	168.6186	168.6206	168.6206	0.0000	No	0.0020	4.0	5.0	ND	1
14J0255-02 Dup	50	50.7460	50.8262	50.8262	0.0000	No	0.0802	1604.0	50.0	1604.0	1
LCS	100	66.6885	66.7400	66.7400	0.0000	No	0.0515	515.0	25.0	515.0	1
14J0344-01A	10	30.3855	30.4281	30.4277	0.0004	No	0.0422	4220.0	250.0	4220.0	1
14J0348-02A	100	76.7763	76.7933	76.7930	0.0003	No	0.0167	167.0	25.0	167.0	1
14J0348-04	100	76.6567	76.6882	76.6878	0.0004	No	0.0311	311.0	25.0	311.0	1
14J0364-01C	100	72.0573	72.1030	72.1030	0.0000	No	0.0457	457.0	25.0	457.0	1
14J0364-02	100	72.7492	72.7956	72.7956	0.0000	No	0.0464	464.0	25.0	464.0	1
14J0365-01B	100	75.2700	75.3211	75.3211	0.0000	No	0.0511	511.0	25.0	511.0	1
14J0365-02	100	77.7617	77.8130	77.8130	0.0000	No	0.0513	513.0	25.0	513.0	1
14J0365-03	100	75.1427	75.1948	75.1948	0.0000	No	0.0521	521.0	25.0	521.0	1
14J0365-04	100	78.3705	78.4221	78.4221	0.0000	No	0.0516	516.0	25.0	516.0	1
14J0344-01A Du	10	28.4744	28.5156	28.5152	0.0004	No	0.0408	4080.0	250.0	4080.0	1

Calculation as follows:

Filterable residue (TDS), mg/L =

$$\left( \frac{A - B}{C} \right) \times 10^6$$

Where:

A = weight of dish + residue in grams.  
 B = weight of dish in grams.  
 C = mL of sample filtered.

RL = reporting limit.  
 ND = not detected (below the reporting limit)

**Laboratory Control Sample (LCS) Summary**

QC Std I.D.	Measured Value, ppm	Theoretical Value, ppm	Percent Rec	Acceptance Limit	QC Within Control?
LCS	515.0	500	103.0%	90-110%	Yes
LCSD					

**LCS Recovery**

$$P = \left( \frac{LC}{LT} \right) \times 100$$

P = Percent recovery.

LC = Measured LCS value (ppm).

LT = Theoretical LCS value (ppm).

**Duplicate Determinations Difference Summary**

Lab Number	Sample Weight, g	Sample Dup Weight, g	% RPD	Acceptance Limit	QC Within Control?
14J0255-02	0.0817	0.0802	0.9%	≤5%	Yes
14J0344-01A	0.0422	0.0408	1.7%	≤5%	Yes

**Duplicate Determination Difference**

$$\% \text{ Difference} = \frac{|A \text{ or } B - C|}{C} \times 100$$

$$\text{where } C = \frac{A + B}{2}$$

A = Weight of the first sample in (g).

B = Weight of the second sample in (g).

C = Average weight in (g).

Jenny T.

Analyst Printed Name

Analyst Signature

Maksim G.

Reviewer Printed Name

Reviewer Signature

# Total Dissolved Solids by SM 2540 C

## TDS/EC CHECK

Batch: 1410340  
Date Analyzed: 10/22/2014

Laboratory Number	EC	TDS/EC Ratio: 0.55-0.90	Calculated TDS (EC*0.65)	Measured TDS / Calc TDS <1.3
14J0249-01C	794	0.57	516.1	0.88
14J0249-02	779	0.55	506.35	0.85
14J0249-03	784	0.57	509.6	0.88
14J0249-04	779	0.57	506.35	0.87
14J0255-01B	1866	0.86	1212.9	1.32
14J0255-02	2100	0.78	1365	1.20
14J02310-01	824	0.55	535.6	0.84
14J02310-02	759	0.59	493.35	0.91
14J02313-01	13.3	0.62	8.645	0.95
14J02313-02	1.363	ND	0.88595	ND
14J0255-02 Dup	2100	0.76	1365	1.18
LCS				
14J0344-01A	7060	0.60	4589	0.92
14J0348-02A	271	0.62	176.15	0.95
14J0348-04	499	0.62	324.35	0.96
14J0364-01C	823	0.56	534.95	0.85
14J0364-02	782	0.59	508.3	0.91
14J0365-01B	894	0.57	581.1	0.88
14J0365-02	894	0.57	581.1	0.88
14J0365-03	894	0.58	581.1	0.90
14J0365-04	894	0.58	581.1	0.89
14J0344-01A Dup	7060	0.58	4589	0.89

*JK*  
*MP*



TRUESDAIL LABORATORIES, INC.  
14201 Franklin Avenue, Tustin, CA 92780-7008  
(714)730-6239 FAX: (714) 730-6462  
www.truesdail.com

# CHAIN OF CUSTODY RECORD

[IM3Plant-WDR-491]

815068/14J0344

COC Number

TURNAROUND TIME 10 Days

DATE 10/21/14 PAGE 1 OF 1

COMPANY E2				<div style="display: flex; flex-direction: column; align-items: center;"> <div style="writing-mode: vertical-rl; transform: rotate(180deg);">Cf6 (218.6) Lab Filtered</div> <div style="writing-mode: vertical-rl; transform: rotate(180deg);">Total Metals (200.8) Cr, Mn</div> <div style="writing-mode: vertical-rl; transform: rotate(180deg);">Specific Conductance (120.1)</div> <div style="writing-mode: vertical-rl; transform: rotate(180deg);">TDS (SM2540C)</div> <div style="writing-mode: vertical-rl; transform: rotate(180deg);">Turbidity (SM2130)</div> <div style="writing-mode: vertical-rl; transform: rotate(180deg);">NUMBER OF CONTAINERS</div> </div>												COMMENTS							
PROJECT NAME PG&E Topock																							
PHONE (530) 229-3303 FAX (530) 339-3303																							
ADDRESS 155 Grand Ave Ste 1000 Oakland, CA 94612																							
P.O. NUMBER 652547.xx.xx.xx TEAM 1																							
SAMPLERS (SIGNATURE)																							
SAMPLE I.D.				DATE		TIME		DESCRIPTION		Cf6		Total Metals		Specific Conductance		TDS		Turbidity		NUMBER OF CONTAINERS		COMMENTS	
SC-700B-WDR-491				10/21/14		10:00		Water		x		x		x		x		x		3		pH = 6 (20.8)	
																				3		TOTAL NUMBER OF CONTAINERS	

Please Provide a preliminary Result for the TDS ASAP

ALERT !!  
Level III QC

CHAIN OF CUSTODY SIGNATURE RECORD					SAMPLE CONDITIONS	
Signature (Relinquished)	Printed Name	Company/Agency	Date/Time	RECEIVED	COOL <input checked="" type="checkbox"/>	WARM <input type="checkbox"/> 39.0 °C
	THANH NGO	TRUESDAIL	10-21-14 15:15	CUSTODY SEALED	YES <input type="checkbox"/>	NO <input type="checkbox"/>
Signature (Received)	Printed Name	Company/Agency	Date/Time	SPECIAL REQUIREMENTS:		
	THANH NGO	TRUESDAIL	10-21-14 19:30			
Signature (Relinquished)	Printed Name	Company/Agency	Date/Time			
	Michael Ngo	TLI	10/21/14 19:30			
Signature (Received)	Printed Name	Company/Agency	Date/Time			





TRUESDAIL LABORATORIES, INC.  
Metals

Turbidity/pH Check

Sample Number	Turbidity	pH	Date	Analyst	Need Digest (Y/N)	Time of Adjustment to pH 2	Date/Time of 2nd pH check	Comments
14J0081-02	<1	>2	10/7/14	ES	Yes			
14J0083-06	↓	↓	↓	↓	↓			
14J0086-02	↓	↓	↓	↓	↓			
14J0087-02	↓	↓	↓	↓	↓			
14J0088-02	↓	↓	↓	↓	↓			
14J0089-01-04	↓	↓	↓	↓	↓			-2,4 TH 71
14J0090-02	↓	↓	↓	↓	↓			
14J0093 (01,-02,-04)	<1	>2	10/8/14	TM	No	10:05		
14J0104-01	<1	>2	↓	↓	↓	↓		
14J0092 (01,-02)	<1	>2	10/8/14	TM	Yes	1:00		Filtered then acidify
14J0098 (01,-02,-04)	<1	>2	↓	↓	Yes	10:10		
14J0116-01	>1	<2	10/8/14	TM	Yes			
14J0098 (01-02)	<1	>2	10/8/14	ES	Yes	1:00		Filtered then acidify 10/8/14
14J0120 (01,-11,-12)	>1	<2	TM					
14J0128 (01,-02)			10/9/14					
14J0120 (01,-11,-12)	<1	>2	10/9/14	TM	No	14:20		
14J0128 (01,-02)	>1	<2	↓	↓	Yes			
14J0129-02	↓	↓	↓	↓	↓			
14J0130-02	↓	↓	↓	↓	↓			
14J0131-06	↓	↓	↓	↓	↓			
14J0134-01	<1	>2	↓	↓	NO	10/10/14 14:20		
14J0145 (01-02)	<1	>2	10/10/14	ES	YES-NO	5:00		
14J0128 (01-02)	>1	<2	↓	↓	Yes			
14J0129-02	↓	↓	↓	↓	↓			
14J0130-02	↓	↓	↓	↓	↓			
14J0131-02	↓	↓	↓	↓	↓			
14J0172 (01-02)	>1	>2	↓	↓	↓			
14J0141-01	<1	↓	↓	↓	NO			
14J0142-01	↓	<2	↓	↓	Yes			
14J0149-02	>1	↓	↓	↓	↓			
14J0150-01	<1	↓	↓	↓	↓			
151-02	↓	↓	↓	↓	↓			
152-01	↓	↓	↓	↓	↓			
153-02	↓	↓	↓	↓	↓			
154-01	↓	↓	↓	↓	↓			
14J0176-2	>1	>2	10/12/14	ES	Yes			
14J0177 (01,-02)	>1	<2	10/14/14	TM	Yes			
14J0184-01	↓	↓	↓	↓	↓			
14J0185-01	↓	↓	↓	↓	↓			
14J0189-06	<1	>2	10/15/14	↓	NO	11:00		
14J0192-02	>1	<2	10/15/14	TM	Yes			
14J0194-02	↓	↓	↓	↓	↓			
14J0196-02	↓	↓	↓	↓	↓			
14J0203-02	↓	↓	↓	↓	↓			

Notes:

1. Samples should be analyzed after 24 hrs of pH adjustment to pH2 for Dissolved Analytes.
2. All Total Recoverable Analytes must be pH adjusted and digested.
3. Do not use disposable pipette to measure pH; pour a little amount of sample from the bottle.

## WORK ORDER

Printed: 10/22/14 7:42:40AM

14J0344

Truesdail Laboratories, Inc

Client: E2 Consulting Engineers, Inc.  
Project: Topock IM3Plant-WDR Weekly

Project Manager: Sean Condon  
Project Number: PGE-2152

**Report To:**

E2 Consulting Engineers, Inc.  
Christi Gitlin  
1900 Powell Street, Suite 250  
Emeryville, CA 94608  
Phone: 510-428-4728  
Fax: 510-652-5604

**Invoice To:**

E2 Consulting Engineers, Inc.  
Christi Gitlin  
1900 Powell Street, Suite 250  
Emeryville, CA 94608  
Phone :510-428-4728  
Fax: 510-652-5604

Date Due: 10/31/2014 16:30 (7 day TAT)

Received By: Michael Ngo

Date Received: 10/21/2014 19:30

Logged In By: Luda Shabunina

Date Logged In: 10/22/2014 07:39

Samples Received at: 3.9°C

Chain of Custody re	Yes	Samples intact?	Yes
Letter (if sent) matc	No	Custody seals (if an	No
Requested analyses	Yes	Analyses within hol	Yes
Samples received in	Yes		

Analysis	Due	TAT	Expires	Comments
----------	-----	-----	---------	----------

14J0344-01 SC-700B-WDR-491 [Water] Sampled 10/21/2014 10:00  
(GMT-08:00) Pacific Time (US &

Turbidity	10/31/2014 12:00	7	10/23/2014 10:00
TDS	10/31/2014 12:00	7	10/28/2014 10:00
Specific Conductivity	10/31/2014 12:00	7	11/18/2014 10:00
Mn-200.8	10/31/2014 12:00	7	04/19/2015 10:00
Cr-200.8	10/31/2014 12:00	7	04/19/2015 10:00
Cr VI-218.6	10/31/2014 12:00	7	11/18/2014 10:00

**ALERT !!**  
**Level III QC**

  
Reviewed By

10/22/14  
Date

Page 1 of 1

# TRUESDAIL LABORATORIES, INC.

EXCELLENCE IN INDEPENDENT TESTING



Established 1931

14201 FRANKLIN AVENUE  
TUSTIN, CALIFORNIA 92780-7008  
(714) 730-6239 · FAX (714) 730-6462  
www.truesdail.com

November 17, 2014

E2 Consulting Engineers, Inc.  
Mr. Shawn Duffy  
155 Grand Ave., Suite 1000  
Oakland, California 94612

Dear Mr. Duffy:

SUBJECT: CASE NARRATIVE PG&E TOPOCK IM3PLANT-WDR-492 PROJECT, GROUNDWATER  
MONITORING, TLI NO.: 815071

Truesdail Laboratories, Inc. is pleased to submit this report summarizing the Topock IM3Plant-WDR-492 project groundwater monitoring for Hexavalent and Total Chromium, Total Manganese, Turbidity, Specific Conductivity, and Total Dissolved Solids. A summary table for this sample delivery group is included in Section 2. Complete laboratory reports, quality control data and chain of custody forms for sampling period are included in Sections 3 and 4. Analytical raw data have been included under Section 5.


The samples were received and delivered with the chain of custody on October 28, 2014, intact and in chilled condition. The samples will be kept in a locked refrigerator for 30 days; thereafter it will be kept in warm storage for an additional 2 months before disposal.

Sample SC-700B-WDR-492 was analyzed as sample I.D. 14J0415 in the raw data but is reported as 815071 in all final report pages.

No violations or nonconformance actions occurred for this data package.

If you have any questions or require additional information, please contact me at (714) 730-6239 ext. 200.

Respectfully Submitted,  
TRUESDAIL LABORATORIES, INC.

  
Mona Nassimi  
Manager, Analytical Services

  
Michael Ngo  
Quality Assurance/Quality Control Officer

# TRUESDAIL LABORATORIES, INC.

EXCELLENCE IN INDEPENDENT TESTING



Established 1931

**Client:** E2 Consulting Engineers, Inc.  
155 Grand Ave. Suite 1000  
Oakland, CA 94612

**Attention:** Shawn Duffy

**Sample:** One (1) Groundwater Sample

**Project Name:** PG&E Topock Project

**Project No.:** 428648.IM.CS.EX.AC

14201 FRANKLIN AVENUE  
TUSTIN, CALIFORNIA 92780-7008  
(714) 730-6239 · FAX (714) 730-6462  
www.truesdail.com

**Laboratory No.:** 815071

**Date:** November 17, 2014

**Collected:** October 28, 2014

**Received:** October 28, 2014

## ANALYST LIST

METHOD	PARAMETER	ANALYST
EPA 120.1	Specific Conductivity	Jenny Tankunakorn
SM 2540C	Total Dissolved Solids	Jenny Tankunakorn
SM 2130B	Turbidity	Jennine Ta
EPA 200.8	Total Metals	Tom Martinez
EPA 218.6	Hexavalent Chromium	Naheed Eidinejad



**Client:** E2 Consulting Engineers, Inc.  
155 Grand Ave. Suite 1000  
Oakland, CA 94612

**Attention:** Shawn Duffy

**Laboratory No.:** 815071  
**Date Received:** October 28, 2014

**Project Name:** PG&E Topock Project  
**Project No.:** 428648.IM.CS.EX.AC  
**P.O. No.:** PGEIM11111001

## Analytical Results Summary

Lab Sample ID	Field ID	Analysis Method	Extraction Method	Sample Date	Sample Time	Parameter	Result	Units	RL
815071-001	SC-700B-WDR-492	E120.1	NONE	10/28/2014	15:35	EC	7140	umhos/cm	2.00
815071-001	SC-700B-WDR-492	E200.8	NONE	10/28/2014	15:35	Chromium	ND	ug/L	1.0
815071-001	SC-700B-WDR-492	E200.8	NONE	10/28/2014	15:35	Manganese	4.1	ug/L	0.50
815071-001	SC-700B-WDR-492	E218.6	LABFLT	10/28/2014	15:35	Chromium, Hexavalent	ND	ug/L	0.20
815071-001	SC-700B-WDR-492	SM2130B	NONE	10/28/2014	15:35	Turbidity	0.110	NTU	0.100
815071-001	SC-700B-WDR-492	SM2540C	NONE	10/28/2014	15:35	Total Dissolved Solids	3930	mg/L	250

ND: Non Detected (below reporting limit)

mg/L: Milligrams per liter.

**Note:** The following "Significant Figures" rule has been applied to all results:  
Results below 0.01ppm will have two (2) significant figures.  
Result above or equal to 0.01ppm will have three (3) significant figures.  
Quality Control data will always have three (3) significant figures.

# TRUESDAIL LABORATORIES, INC.

EXCELLENCE IN INDEPENDENT TESTING



Established 1931

14201 FRANKLIN AVENUE  
TUSTIN, CALIFORNIA 92780-7008  
(714) 730-6239 · FAX (714) 730-6462  
www.truesdail.com

## REPORT

**Client:** E2 Consulting Engineers, Inc.

155 Grand Avenue, Suite 800

Oakland, CA 94612

Attention: Shawn Duffy

Project Name: PG&E Topock Project

Project Number: 428648.IM.CS.EX.AC

P.O. Number: PGEIM1111100'

Release Number:

Laboratory No. 815071

Page 1 of 8

Printed 11/17/2014

Samples Received on 10/28/2014 9:25:00 PM

Field ID	Lab ID	Collected	Matrix
SC-700B-WDR-492	815071-001	10/28/2014 15:35	Water

### Specific Conductivity - EPA 120.1

Batch 1410479

Parameter	Unit	Analyzed	DF	MDL	RL	Result
815071-001 Specific Conductivity	umhos/cm	10/30/2014	1.00	0.606	2.00	7140

#### Method Blank

Parameter	Unit	DF	Result
Specific Conductivity	umhos	1.00	ND

#### Duplicate

Lab ID = 815071-001

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Specific Conductivity	umhos	1.00	7130	7140	0.140	0 - 10

#### Lab Control Sample

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Specific Conductivity	umhos	1.00	741	706	105	90 - 110

#### MRCCS - Secondary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Specific Conductivity	umhos	1.00	741	706	105	90 - 110

#### MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Specific Conductivity	umhos	1.00	1040	1000	104	90 - 110

#### MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Specific Conductivity	umhos	1.00	1040	1000	104	90 - 110

This report applies only to the sample, or samples, investigated and is not necessarily indicative of the quality or condition of apparently identical or similar products. As a mutual protection to clients, the public, and these laboratories, this report is submitted and accepted for the exclusive use of the client to whom it is addressed and upon the condition that it is not to be used, in whole or in part, in any advertising or publicity matter without prior written authorization from Truesdail Laboratories.

009



Client: E2 Consulting Engineers, Inc.

Project Name: PG&E Topock Project

Page 2 of 8

Project Number: 428648.IM.CS.EX.AC

Printed 11/17/2014

**Chrome VI by EPA 218.6**

Batch 1410524

Parameter	Unit	Analyzed	DF	MDL	RL	Result
815071-001 Chromium, Hexavalent	ug/L	10/29/2014 11:24	1.00	0.00600	0.20	ND

**Method Blank**

Parameter	Unit	DF	Result
Chromium, Hexavalent	ug/L	1.00	ND

**Duplicate**

Lab ID = 815071-001

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Chromium, Hexavalent	ug/L	5.00	0.121	0.121	0	0 - 20

**Low Level Calibration Verification**

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	0.189	0.200	94.5	70 - 130

**Lab Control Sample**

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	5.09	5.00	102	90 - 110

**Matrix Spike**

Lab ID = 815071-001

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	5.00	4.90	5.12(5.00)	95.7	90 - 110

**Matrix Spike**

Lab ID = 815071-001

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	1.16	1.12(1.00)	104	90 - 110

**MRCCS - Secondary**

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	5.08	5.00	102	90 - 110

**MRCVS - Primary**

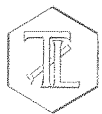
Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	10.2	10.0	102	95 - 105

**MRCVS - Primary**

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	10.2	10.0	102	95 - 105

**MRCVS - Primary**

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	10.3	10.0	103	95 - 105



Client: E2 Consulting Engineers, Inc.

Project Name: PG&E Topock Project

Page 4 of 8

Project Number: 428648.IM.CS.EX.AC

Printed 11/17/2014

**Metals by EPA 200.8, Total**

Batch 110314A

Parameter	Unit	Analyzed	DF	MDL	RL	Result
815071-001 Chromium	ug/L	11/03/2014 17:59	1.00	0.0710	1.0	ND
Method Blank						
Parameter	Unit	DF	Result			
Chromium	ug/L	1.00	ND			
Duplicate						
Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Chromium	ug/L	1.00	ND	0	0	0 - 20
Low Level Calibration Verification						
Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium	ug/L	1.00	0.201	0.200	100	70 - 130
Lab Control Sample						
Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium	ug/L	1.00	48.5	50.0	97.0	85 - 115
Matrix Spike						
Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium	ug/L	1.00	48.5	50.0(50.0)	97.0	75 - 125
Matrix Spike Duplicate						
Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium	ug/L	1.00	48.0	50.0(50.0)	96.0	75 - 125
MRCCS - Secondary						
Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium	ug/L	1.00	20.1	20.0	100	90 - 110
MRCVS - Primary						
Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium	ug/L	1.00	20.0	20.0	100	90 - 110
MRCVS - Primary						
Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium	ug/L	1.00	19.2	20.0	96.2	90 - 110
MRCVS - Primary						
Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium	ug/L	1.00	19.6	20.0	97.8	90 - 110

This report applies only to the sample, or samples, investigated and is not necessarily indicative of the quality or condition of apparently identical or similar products. As a mutual protection to clients, the public, and these laboratories, this report is submitted and accepted for the exclusive use of the client to whom it is addressed and upon the condition that it is not to be used, in whole or in part, in any advertising or publicity matter without prior written authorization from Truesdail Laboratories.



Client: E2 Consulting Engineers, Inc.

Project Name: PG&E Topock Project

Page 6 of 8

Project Number: 428648.IM.CS.EX.AC

Printed 11/17/2014

**Metals by EPA 200.8, Total**

Batch 110714A

Parameter	Unit	Analyzed	DF	MDL	RL	Result
815071-001 Manganese	ug/L	11/07/2014 14:48	1.00	0.0600	0.50	4.1

Method Blank

Parameter	Unit	DF	Result
Manganese	ug/L	1.00	ND

Duplicate

Lab ID = 815071-001

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Manganese	ug/L	1.00	4.34	4.12	5.11	0 - 20

Low Level Calibration Verification

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Manganese	ug/L	1.00	0.484	0.500	96.8	70 - 130

Lab Control Sample

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Manganese	ug/L	1.00	49.4	50.0	98.9	85 - 115

Matrix Spike

Lab ID = 815071-001

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Manganese	ug/L	1.00	51.9	54.1(50.0)	95.5	75 - 125

Matrix Spike Duplicate

Lab ID = 815071-001

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Manganese	ug/L	1.00	51.7	54.1(50.0)	95.2	75 - 125

MRCCS - Secondary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Manganese	ug/L	1.00	19.5	20.0	97.6	90 - 110

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Manganese	ug/L	1.00	20.2	20.0	101	90 - 110

Interference Check Standard A

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Manganese	ug/L	1.00	ND	0		

Interference Check Standard A

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Manganese	ug/L	1.00	ND	0		



Client: E2 Consulting Engineers, Inc.

Project Name: PG&E Topock Project

Page 7 of 8

Project Number: 428648.IM.CS.EX.AC

Printed 11/17/2014

Interference Check Standard AB

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Manganese	ug/L	1.00	21.0	20.0	105	80 - 120

Interference Check Standard AB

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Manganese	ug/L	1.00	20.7	20.0	103	80 - 120

Total Dissolved Solids by SM 2540 C

Batch 1410480

Parameter	Unit	Analyzed	DF	MDL	RL	Result
815071-001 Total Dissolved Solids	mg/L	10/30/2014	1.00	1.76	250	3930

Method Blank

Parameter	Unit	DF	Result
Total Dissolved Solids	mg/L	1.00	ND

Duplicate

Lab ID = 815071-001

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Total Dissolved Solids	mg/L	1.00	4120	3930	4.72	0 - 10

Duplicate

Lab ID = 815072-011

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Total Dissolved Solids	mg/L	1.00	1030	1020	0.976	0 - 10

Lab Control Sample

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Total Dissolved Solids	mg/L	1.00	503	500	101	90 - 110



Client: E2 Consulting Engineers, Inc.

Project Name: PG&E Topock Project  
Project Number: 428648.IM.CS.EX.ACPage 8 of 8  
Printed 11/17/2014**Turbidity by SM 2130 B**

Batch 1410519

Parameter	Unit	Analyzed	DF	MDL	RL	Result
815071-001 Turbidity	NTU	10/29/2014	1.00	0.0140	0.100	0.110

## Method Blank

Parameter	Unit	DF	Result
Turbidity	NTU	1.00	ND

## Duplicate

Lab ID = 815083-007

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Turbidity	NTU	1.00	ND	0	0	0 - 20

## Lab Control Sample

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Turbidity	NTU	1.00	8.17	8.00	102	90 - 110

## Lab Control Sample Duplicate

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Turbidity	NTU	1.00	7.84	8.00	98.0	90 - 110

Respectfully submitted,

**TRUESDAIL LABORATORIES, INC.**  
Mona Nassimi

Manager, Analytical Services

**Total Dissolved Solids by SM 2540 C****Calculations**Batch: 1410480  
Date Analyzed: 10/30/2014

Laboratory Number	Sample volume, mL	Initial weight, g	1st Final weight, g	2nd Final weight, g	Weight Difference, g	Exceeds 0.5mg? Yes/No	Residue weight, g	Filterable residue, ppm	RL, ppm	Reported Value, ppm	DF
Blank	100	73.7980	73.7980	73.7980	0.0000	No	0.0000	0.0	25.0	ND	1
14J0402-01	100	71.2865	71.3305	71.3305	0.0000	No	0.0440	440.0	25.0	440.0	1
14J0402-02	100	74.6261	74.6722	74.6722	0.0000	No	0.0461	461.0	25.0	461.0	1
14J0415-01A	10	29.2567	29.2961	29.2960	0.0001	No	0.0393	3930.0	250.0	3930.0	1
14J0416-01B	5	29.3295	29.4442	29.4438	0.0004	No	0.1143	22860.0	500.0	22860.0	1
14J0416-02	1	28.7608	28.9062	28.9059	0.0003	No	0.1451	145100.0	2500.0	145100.0	1
14J0416-03	5	30.4525	30.6089	30.6085	0.0004	No	0.1560	31200.0	500.0	31200.0	1
14J0416-04	100	66.7760	66.8210	66.8209	0.0001	No	0.0449	449.0	25.0	449.0	1
14J0416-05	50	60.0560	60.1035	60.1031	0.0004	No	0.0471	942.0	50.0	942.0	1
14J0416-06	100	73.1111	73.1709	73.1709	0.0000	No	0.0598	598.0	25.0	598.0	1
14J0416-07	50	51.9668	52.0181	52.0180	0.0001	No	0.0512	1024.0	50.0	1024.0	1
14J0415-01 Dup	10	30.4215	30.4631	30.4627	0.0004	No	0.0412	4120.0	250.0	4120.0	1
LCS	100	78.1713	78.2218	78.2216	0.0002	No	0.0503	503.0	25.0	503.0	1
14J0416-08	100	69.7394	69.7826	69.7824	0.0002	No	0.0430	430.0	25.0	430.0	1
14J0416-09	100	74.6856	74.7420	74.7416	0.0004	No	0.0560	560.0	25.0	560.0	1
14J0416-10	50	60.1737	60.2170	60.2169	0.0001	No	0.0432	864.0	50.0	864.0	1
14J0416-11	50	59.7399	59.7909	59.7907	0.0002	No	0.0508	1016.0	50.0	1016.0	1
14J0446-01D	100	70.3686	70.4139	70.4139	0.0000	No	0.0453	453.0	25.0	453.0	1
14J0446-02	100	67.7959	67.8444	67.8442	0.0002	No	0.0483	483.0	25.0	483.0	1
14J0447-01	100	79.4904	79.5386	79.5385	0.0001	No	0.0481	481.0	25.0	481.0	1
14J0447-02	100	77.4707	77.5178	77.5178	0.0000	No	0.0471	471.0	25.0	471.0	1
14J0447-03	100	76.5171	76.5655	76.5654	0.0001	No	0.0483	483.0	25.0	483.0	1
14J0447-04	100	75.7338	75.7813	75.7813	0.0000	No	0.0475	475.0	25.0	475.0	1
14J0416-11 Dup	50	49.5766	49.6283	49.6281	0.0002	No	0.0515	1030.0	50.0	1030.0	1

Calculation as follows:

$$\text{Filterable residue (TDS), mg/L} = \left( \frac{A - B}{C} \right) \times 10^6$$

Where:

A = weight of dish + residue in grams.  
B = weight of dish in grams.  
C = mL of sample filtered.

RL = reporting limit.  
ND = not detected (below the reporting limit)

**Laboratory Control Sample (LCS) Summary**

QC Std I.D.	Measured Value, ppm	Theoretical Value, ppm	Percent Rec	Acceptance Limit	QC Within Control?
LCS	503.0	500	100.6%	90-110%	Yes
LCSD					

**LCS Recovery**

$$P = \left( \frac{LC}{LT} \right) \times 100$$

P = Percent recovery.

LC = Measured LCS value (ppm).

LT = Theoretical LCS value (ppm).

**Duplicate Determinations Difference Summary**

Lab Number	Sample Weight, g	Sample Dup Weight, g	% RPD	Acceptance Limit	QC Within Control?
14J0415-01	0.0393	0.0412	2.4%	≤5%	Yes
14J0416-11	0.0508	0.0515	0.7%	≤5%	Yes

**Duplicate Determination Difference**

$$\% \text{ Difference} = \frac{|A \text{ or } B - C|}{C} \times 100$$

$$\text{where } C = \frac{A + B}{2}$$

A = Weight of the first sample in (g).

B = Weight of the second sample in (g).

C = Average weight in (g).

Jenny T.

Analyst Printed Name

Analyst Signature

Maksim G.

Reviewer Printed Name

Reviewer Signature

# Total Dissolved Solids by SM 2540 C

## TDS/EC CHECK

Batch: 1410480  
Date Analyzed: 10/30/2014

Laboratory Number	EC	TDS/EC Ratio: 0.55-0.90	Calculated TDS (EC*0.65)	Measured TDS / Calc TDS <1.3
14J0402-01	806	0.55	523.9	0.84
14J0402-02	762	0.60	495.3	0.93
14J0415-01A	7140	0.55	4641	0.85
14J0416-01B	30600	0.75	19890	1.15
14J0416-02	123300	1.18	80145	1.81
14J0416-03	38900	0.80	25285	1.23
14J0416-04	751	0.60	488.15	0.92
14J0416-05	1236	0.76	803.4	1.17
14J0416-06	966	0.62	627.9	0.95
14J0416-07	1605	0.64	1043.25	0.98
14J0415-01 Dup	7140	0.58	4641	0.89
LCS				
14J0416-08	682	0.63	443.3	0.97
14J0416-09	939	0.60	610.35	0.92
14J0416-10	1230	0.70	799.5	1.08
14J0416-11	1612	0.63	1047.8	0.97
14J0446-01D	799	0.57	519.35	0.87
14J0446-02	780	0.62	507	0.95
14J0447-01	815	0.59	529.75	0.91
14J0447-02	818	0.58	531.7	0.89
14J0447-03	815	0.59	529.75	0.91
14J0447-04	818	0.58	531.7	0.89
14J0416-11 Dup	1612	0.64	1047.8	0.98





TRUESDAIL LABORATORIES, INC.  
14201 Franklin Avenue, Tustin, CA 92780-7008  
(714)730-6239 FAX: (714) 730-6462  
www.truesdail.com

# CHAIN OF CUSTODY RECORD

[[IM3Plant-WDR-492]]

COC Number

TURNAROUND TIME

10 Days

DATE 10/28/14

PAGE 1 OF 1

COMPANY	E2			<div>Cr6 (218.6) Lab Filtered</div> <div>Total Metals (200.8) Cr, Mn</div> <div>Specific Conductance (120.1)</div> <div>TDS (SM2540C)</div> <div>Turbidity (SM2130)</div> <div>NUMBER OF CONTAINERS</div>												COMMENTS		
PROJECT NAME	PG&E Topock																	
PHONE	(530) 229-3303		FAX														(530) 339-3303	
ADDRESS	155 Grand Ave Ste 1000 Oakland, CA 94612																	
P.O. NUMBER	652547.XX.XX.XX		TEAM														1	
SAMPLERS (SIGNATURE)																		
SAMPLE I.D.	DATE	TIME	DESCRIPTION	Cr6	Total Metals	Specific Conductance	TDS	Turbidity						NUMBER OF CONTAINERS	COMMENTS			
SC-700B-WDR-492	10/28/14	1535	Water	X	X	X	X	X						3	DU = 7 (200.9)			
														3	TOTAL NUMBER OF CONTAINERS			

Please Provide a preliminary Result for the TDS ASAP

ALERT !!  
Level III QC

CHAIN OF CUSTODY SIGNATURE RECORD					SAMPLE CONDITIONS	
Signature (Relinquished)	Printed Name	Company/Agency	Date/Time	RECEIVED	COOL <input checked="" type="checkbox"/>	WARM <input type="checkbox"/>
	CHRIS LANTZ	CH2MHILL	10/28/14 17:10			3.4 °F
Signature (Received)	Printed Name	Company/Agency	Date/Time	CUSTODY SEALED YES <input type="checkbox"/> NO <input type="checkbox"/>		
	THANH NGO	TRUESDAIL	10-28-14 17:10			
Signature (Relinquished)	Printed Name	Company/Agency	Date/Time	SPECIAL REQUIREMENTS:		
	THANH		10-28-14 21:25			
Signature (Received)	Printed Name	Company/Agency	Date/Time			
	MARCHED	TLI	10/28/14 21:25			
Signature (Relinquished)	Printed Name	Company/Agency	Date/Time			
Signature (Received)	Printed Name	Company/Agency	Date/Time			

041

## Method EPA 218.6 and SW 7199 Sample pH Log

*[Signature]* ~~N<sub>2</sub>~~  
1103/14



TRUESDAIL LABORATORIES, INC.  
Metals

Turbidity/pH Check

Sample Number	Turbidity	pH	Date	Analyst	Need Digest (Y/N)	Time of Adjustment to pH 2	Date/Time of 2nd pH check	Comments
14T0412-01	>1	>2	11/29/14	TM	Yes			
14J0414 (01,-02)	<1	>2	↓	↓	No	10:45		
14J0431(1-3)	<1	72	11/29/14	ES	NO	2:30		
14J0438-01	>1	>2	11/30/14	TM	Yes			
14J0440(01,-02)	<1	>2	↓	↓	No	9:55		
↓ (-03,-04,-05,-06)	↓	↓	↓	↓	↓	↓		
↓ (-07)	↓	↓	↓	↓	↓	↓		
14J0446-01,-02	>1	<2	↓	↓	Yes			
14J0444	<1	72	10/23/14	ES	Yes	10:10		pH < 2
14J0415-01	<1	72	11/3/14	ES	Yes	10:10		pH < 2
14K0008-01	>1	<2	11/4/14	TM	Yes			
14K0009-01	↓	↓	↓	↓	↓			
14K0018-02	↓	↓	↓	↓	↓			
14K0019-01	↓	↓	↓	↓	↓			
14K0045 (01,-02)	↓	↓	↓	↓	↓			
14K0050(01,-02,-03)	↓	↓	↓	↓	↓			
↓ (-04,-05)	↓	↓	↓	↓	↓			
14K0055(01,-02,-03)	↓	↓	↓	↓	↓			
14K0068(1-3)	>1	<2	11/4/14	ES	Yes			
14K0078(01,-02)	<1	>2	11/5/14	TM	NO	10:00		
14K0079(01,-02,-03)	↓	↓	↓	↓	↓	↓		
14K0080-01	>1	<2	↓	↓	Yes			
14K0084-01	<1	>2	↓	↓	↓			
14K0084-02	↓	<2	↓	↓	↓			
14K0012-02	>1	<2	11/5/14	TM	Yes			
14K0013-02	↓	↓	↓	↓	↓			
14K0014-02	↓	↓	↓	↓	↓			
14K0025-01	↓	↓	↓	↓	↓			
14K0026-02	↓	↓	↓	↓	↓			
14K0022-02	↓	↓	↓	↓	↓			
14K0023-02	↓	↓	↓	↓	↓			
14K0024-02	↓	↓	↓	↓	↓			
14K0083-(01-02)	<1	72	11/5/14	ES	Yes	1:00		Filtered then acidify
14K0084-02	↓	↓	↓	↓	↓	↓		↓
14K0102 (10-12)	<1	>2	11/6/14	ES	NO	11:00		
14K0116(02,03,05)	↓	↓	↓	↓	↓	↓		
14K0028-01	↓	<2	↓	↓	Yes			
14K0029-01	71	↓	↓	↓	↓			
14K0067-02	<1	↓	↓	↓	↓			
14K0075-01	↓	↓	↓	↓	↓			
14K0110-01	71	↓	↓	↓	↓			
14K0110-02	71	↓	↓	↓	↓			
14K0120-01	↓	↓	↓	↓	↓			
14K0007-24	<1	72	11/6/14	ES	NO	5:00		

Notes:

1. Samples should be analyzed after 24 hrs of pH adjustment to pH2 for Dissolved Analytes.
2. All Total Recoverable Analytes must be pH adjusted and digested.
3. Do not use disposable pipette to measure pH; pour a little amount of sample from the bottle.

## WORK ORDER

Printed: 10/29/14 7:34:56AM

14J0415

## Truesdail Laboratories, Inc

Client: E2 Consulting Engineers, Inc.  
Project: Topock IM3Plant-WDR Weekly

Project Manager: Sean Condon  
Project Number: PGE-2152

**Report To:**

E2 Consulting Engineers, Inc.  
Christi Gitlin  
1900 Powell Street, Suite 250  
Emeryville, CA 94608  
Phone: 510-428-4728  
Fax: 510-652-5604

**Invoice To:**

E2 Consulting Engineers, Inc.  
Christi Gitlin  
1900 Powell Street, Suite 250  
Emeryville, CA 94608  
Phone :510-428-4728  
Fax: 510-652-5604

Date Due: 11/07/2014 16:30 (7 day TAT)

Received By: Shelly Brady

Date Received: 10/28/2014 21:25

Logged In By: Shelly Brady

Date Logged In: 10/28/2014 21:33

Samples Received at: 3.4°C  
Chain of Custody re Yes Samples intact? Yes  
Letter (if sent) matc No Custody seals (if any No  
Requested analyses Yes Analyses within hol Yes  
Samples received in Yes

Analysis	Due	TAT	Expires	Comments
14J0415-01 SC-700B-WDR-492 [Water] Sampled 10/28/2014 15:35 (GMT-08:00) Pacific Time (US &				
Turbidity	11/07/2014 12:00	7	10/30/2014 15:35	
TDS	11/07/2014 12:00	7	11/04/2014 15:35	
Specific Conductivity	11/07/2014 12:00	7	11/25/2014 15:35	
Mn-200.8	11/07/2014 12:00	7	04/26/2015 15:35	
Cr-200.8	11/07/2014 12:00	7	04/26/2015 15:35	
Cr VI-218.6	11/07/2014 12:00	7	11/25/2014 15:35	

ALERT !!  
Level III QC

Reviewed By

Date



# TRUESDAIL LABORATORIES, INC.

EXCELLENCE IN INDEPENDENT TESTING



Established 1931

14201 FRANKLIN AVENUE  
TUSTIN, CALIFORNIA 92780-7008  
(714) 730-6239 · FAX (714) 730-6462  
www.truesdail.com

December 4, 2014

E2 Consulting Engineers, Inc.  
Mr. Shawn Duffy  
155 Grand Ave., Suite 1000  
Oakland, California 94612

Dear Mr. Duffy:

SUBJECT: CASE NARRATIVE PG&E TOPOCK IM3PLANT-WDR-493 PROJECT, GROUNDWATER  
MONITORING,  
TLI NO.: 815081

Truesdail Laboratories, Inc. is pleased to submit this report summarizing the Topock IM3Plant-WDR-493 project groundwater monitoring. A summary table for this sample delivery group is included in Section 2. Complete laboratory reports, quality control data and chain of custody forms for sampling period are included in Sections 3 and 4. Analytical raw data have been included under Section 5.

The samples were received and delivered with the chain of custody on November 4, 2014, intact and in chilled condition. The samples will be kept in a locked refrigerator for 30 days; thereafter it will be kept in warm storage for an additional 2 months before disposal.

Samples were analyzed and recorded in the raw data as SDG 14K0084 but are reported as SDG 815081 in all final report pages.


The straight runs for the sample and associated matrix spike on sample SC-700B-WDR-493 for Hexavalent Chromium analysis by EPA 218.6 were just outside the retention time window. Because the matrix spike recovery and all other QA/QC were within acceptable limits, the data from the straight run was reported.

Due to the discrepancy between the Total Iron (ND<20.0 ug/L) and Total Dissolved Iron (35.3 ug/L) results for sample SC-100B-WDR-493, the Total and Total Dissolved Iron samples were re-digested and analyzed. The results were both ND<20.0 ug/L. Therefore, the original Total Iron and the re-digested Total Dissolved Iron results were reported.

No other violations or nonconformance actions occurred for this data package.

If you have any questions or require additional information, please contact me at (714) 730-6239 ext. 200.

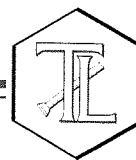
Respectfully Submitted,  
TRUESDAIL LABORATORIES, INC.

  
fo - Mona Nassimi  
Manager, Analytical Services

  
Michael Ngo  
Quality Assurance/Quality Control Officer

# TRUESDAIL LABORATORIES, INC.

EXCELLENCE IN INDEPENDENT TESTING



Established 1931

**Client:** E2 Consulting Engineers, Inc.  
155 Grand Ave. Suite 1000  
Oakland, CA 94612

**Attention:** Shawn Duffy

**Sample:** Two (2) Groundwaters

**Project Name:** PG&E Topock Project

**Project No.:** 428648.IM.CS.EX.AC

14201 FRANKLIN AVENUE  
TUSTIN, CALIFORNIA 92780-7008  
(714) 730-6239 · FAX (714) 730-6462  
www.truesdail.com

**Laboratory No.:** 815081

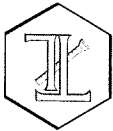
**Date:** December 4, 2014

**Collected:** November 4, 2014

**Received:** November 4, 2014

## ANALYST LIST

METHOD	PARAMETER	ANALYST
EPA 120.1	Specific Conductivity	Jenny Tankunakorn
SM 2540C	Total Dissolved Solids	Jenny Tankunakorn
SM 2320B	Total Alkalinity	Alex Luna
SM 4500-Si D	Soluble Silica	Jenny Tankunakorn
SM 4500-P B,E	Total Phosphorus	Jenny Tankunakorn
SM 5310C	Total Organic Carbon	Jenny Tankunakorn
SM 2130B	Turbidity	Jennine Ta
EPA 300.0	Anions	Giawad Ghenniwa
SM 4500-NH3 D	Ammonia	Maksim Gorbunov
SM 4500-NO2 B	Nitrite as N	Jenny Tankunakorn
EPA 200.7	Metals by ICP	Ethel Suico
EPA 200.8	Metals by ICP/MS	Tom Martinez / Ethel Suico
EPA 218.6	Hexavalent Chromium	Naheed Eidinejad



14201 FRANKLIN AVENUE • TUSTIN, CALIFORNIA 92780-7008  
(714) 730-6239 • FAX (714) 730-6462 • www.truesdail.com

Established 1931

**Client:** E2 Consulting Engineers, Inc.  
155 Grand Ave. Suite 1000  
Oakland, CA 94612  
**Attention:** Shawn Duffy

**Project Name:** PG&E Topock Project  
**Project No.:** 428648.IM.CS.EX.AC  
**P.O. No.:** PGEM11111001

## Analytical Results Summary

Lab Sample ID	Field ID	Analysis Method	Extraction Method	Sample Date	Sample Time	Parameter	Result	Units	RL
815081-001	SC-700B-WDR-493	E120.1	NONE	11/4/2014	13:00	EC	7140	umhos/cm	2.00
815081-001	SC-700B-WDR-493	E200.7	NONE	11/4/2014	13:00	Aluminum	ND	ug/L	50.0
815081-001	SC-700B-WDR-493	E200.7	NONE	11/4/2014	13:00	BORON	862	ug/L	50.0
815081-001	SC-700B-WDR-493	E200.7	NONE	11/4/2014	13:00	Iron	ND	ug/L	20.0
815081-001	SC-700B-WDR-493	E200.7	NONE	11/4/2014	13:00	Zinc	ND	ug/L	20.0
815081-001	SC-700B-WDR-493	E200.8	NONE	11/4/2014	13:00	Antimony	ND	ug/L	2.0
815081-001	SC-700B-WDR-493	E200.8	NONE	11/4/2014	13:00	Arsenic	ND	ug/L	0.50
815081-001	SC-700B-WDR-493	E200.8	NONE	11/4/2014	13:00	Barium	9.8	ug/L	5.0
815081-001	SC-700B-WDR-493	E200.8	NONE	11/4/2014	13:00	Chromium	ND	ug/L	1.0
815081-001	SC-700B-WDR-493	E200.8	NONE	11/4/2014	13:00	Copper	ND	ug/L	1.0
815081-001	SC-700B-WDR-493	E200.8	NONE	11/4/2014	13:00	Lead	ND	ug/L	1.0
815081-001	SC-700B-WDR-493	E200.8	NONE	11/4/2014	13:00	Manganese	6.7	ug/L	0.50
815081-001	SC-700B-WDR-493	E200.8	NONE	11/4/2014	13:00	Molybdenum	20.5	ug/L	2.0
815081-001	SC-700B-WDR-493	E200.8	NONE	11/4/2014	13:00	Nickel	2.6	ug/L	2.0
815081-001	SC-700B-WDR-493	E218.6	LABFLT	11/4/2014	13:00	Chromium, Hexavalent	ND	ug/L	0.20
815081-001	SC-700B-WDR-493	E300	NONE	11/4/2014	13:00	Fluoride	1.50	mg/L	0.500
815081-001	SC-700B-WDR-493	E300	NONE	11/4/2014	13:00	Nitrate as N	2.46	mg/L	0.500
815081-001	SC-700B-WDR-493	E300	NONE	11/4/2014	13:00	Sulfate	489	mg/L	12.5
815081-001	SC-700B-WDR-493	SM2130B	NONE	11/4/2014	13:00	Turbidity	ND	NTU	0.100
815081-001	SC-700B-WDR-493	SM2540C	NONE	11/4/2014	13:00	Total Dissolved Solids	4160	mg/L	250
815081-001	SC-700B-WDR-493	SM4500NH3D	NONE	11/4/2014	13:00	Ammonia-N	ND	mg/L	0.500
815081-001	SC-700B-WDR-493	SM4500NO2B	NONE	11/4/2014	13:00	Nitrite as N	ND	mg/L	0.0050

This report applies only to the sample, or samples, investigated and is not necessarily indicative of the quality or condition of apparently identical or similar products. As a mutual protection to clients, the public, and these laboratories, this report is submitted and accepted for the exclusive use of the client to whom it is addressed and upon the condition that it is not to be used, in whole or in part, in any advertising or publicity matter without prior written authorization from Truesdail Laboratories.



Lab Sample ID	Field ID	Analysis Method	Extraction Method	Sample Date	Sample Time	Parameter	Result	Units	RL
815081-002	SC-100B-WDR-493	E120.1	NONE	11/4/2014	13:00	EC	7160	umhos/cm	2.00
815081-002	SC-100B-WDR-493	E200.7	NONE	11/4/2014	13:00	Aluminum	ND	ug/L	50.0
815081-002	SC-100B-WDR-493	E200.7	NONE	11/4/2014	13:00	BORON	872	ug/L	50.0
815081-002	SC-100B-WDR-493	E200.7	NONE	11/4/2014	13:00	Iron	ND	ug/L	20.0
815081-002	SC-100B-WDR-493	E200.7	LABFLT	11/4/2014	13:00	Iron	ND	ug/L	20.0
815081-002	SC-100B-WDR-493	E200.7	NONE	11/4/2014	13:00	Zinc	ND	ug/L	20.0
815081-002	SC-100B-WDR-493	E200.8	NONE	11/4/2014	13:00	Antimony	ND	ug/L	2.0
815081-002	SC-100B-WDR-493	E200.8	NONE	11/4/2014	13:00	Arsenic	3.3	ug/L	0.50
815081-002	SC-100B-WDR-493	E200.8	NONE	11/4/2014	13:00	Barium	28.3	ug/L	5.0
815081-002	SC-100B-WDR-493	E200.8	NONE	11/4/2014	13:00	Chromium	581	ug/L	4.0
815081-002	SC-100B-WDR-493	E200.8	NONE	11/4/2014	13:00	Copper	ND	ug/L	1.0
815081-002	SC-100B-WDR-493	E200.8	NONE	11/4/2014	13:00	Lead	ND	ug/L	1.0
815081-002	SC-100B-WDR-493	E200.8	NONE	11/4/2014	13:00	Manganese	8.2	ug/L	0.50
815081-002	SC-100B-WDR-493	E200.8	LABFLT	11/4/2014	13:00	Manganese	8.9	ug/L	0.50
815081-002	SC-100B-WDR-493	E200.8	NONE	11/4/2014	13:00	Molybdenum	21.0	ug/L	2.0
815081-002	SC-100B-WDR-493	E200.8	NONE	11/4/2014	13:00	Nickel	ND	ug/L	2.0
815081-002	SC-100B-WDR-493	E218.6	LABFLT	11/4/2014	13:00	Chromium, Hexavalent	560	ug/L	5.0
815081-002	SC-100B-WDR-493	E300	NONE	11/4/2014	13:00	Fluoride	1.72	mg/L	0.500
815081-002	SC-100B-WDR-493	E300	NONE	11/4/2014	13:00	Nitrate as N	2.43	mg/L	0.500
815081-002	SC-100B-WDR-493	E300	NONE	11/4/2014	13:00	Sulfate	499	mg/L	12.5
815081-002	SC-100B-WDR-493	SM2130B	NONE	11/4/2014	13:00	Turbidity	ND	NTU	0.100
815081-002	SC-100B-WDR-493	SM2320B	NONE	11/4/2014	13:00	Alkalinity	151	mg/L	5.00
815081-002	SC-100B-WDR-493	SM2320B	NONE	11/4/2014	13:00	Alkalinity, Bicarbonate (As CaCO3)	139	mg/L	5.00
815081-002	SC-100B-WDR-493	SM2320B	NONE	11/4/2014	13:00	Alkalinity, Carbonate (As CaCO3)	12.0	mg/L	5.00
815081-002	SC-100B-WDR-493	SM2540C	NONE	11/4/2014	13:00	Total Dissolved Solids	4350	mg/L	250
815081-002	SC-100B-WDR-493	SM4500NH3D	NONE	11/4/2014	13:00	Ammonia-N	ND	mg/L	0.500
815081-002	SC-100B-WDR-493	SM4500NO2B	NONE	11/4/2014	13:00	Nitrite as N	ND	mg/L	0.0050
815081-002	SC-100B-WDR-493	SM4500-PB_E	NONE	11/4/2014	13:00	Total Phosphorous-P	ND	mg/L	0.0200
815081-002	SC-100B-WDR-493	SM4500SI	LABFLT	11/4/2014	13:00	Soluble Silica	18.6	mg/L	1.00
815081-002	SC-100B-WDR-493	SM5310C	NONE	11/4/2014	13:00	Total Organic Carbon	0.567	mg/L	0.300

ND: Non Detected (below reporting limit)

mg/L: Milligrams per liter.

Note: The following "Significant Figures" rule has been applied to all results:

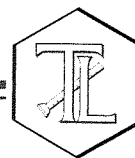
Results below 0.01ppm will have two (2) significant figures.

Result above or equal to 0.01ppm will have three (3) significant figures.

Quality Control data will always have three (3) significant figures.

# TRUESDAIL LABORATORIES, INC.

EXCELLENCE IN INDEPENDENT TESTING



Established 1931

14201 FRANKLIN AVENUE  
TUSTIN, CALIFORNIA 92780-7008  
(714) 730-6239 · FAX (714) 730-6462  
www.truesdail.com

## REPORT

**Client:** E2 Consulting Engineers, Inc.

155 Grand Avenue, Suite 800

Oakland, CA 94612

Attention: Shawn Duffy

Project Name: PG&E Topock Project

Project Number: 428648.IM.CS.EX.AC

P.O. Number: PGEIM1111100'

Release Number:

Laboratory No. 815081

Page 1 of 28

Printed 12/8/2014

Revised

Samples Received on 11/4/2014 7:40:00 PM

Field ID	Lab ID	Collected	Matrix
SC-700B-WDR-493	815081-001	11/04/2014 13:00	Water
SC-100B-WDR-493	815081-002	11/04/2014 13:00	Water

### Anions By I.C. - EPA 300.0

Batch 1411091

Parameter	Unit	Analyzed	DF	MDL	RL	Result
815081-001 Fluoride	mg/L	11/05/2014 13:33	5.00	0.104	0.500	1.50
Nitrate as Nitrogen	mg/L	11/05/2014 13:33	5.00	0.0415	0.500	2.46
Sulfate	mg/L	11/05/2014 14:30	25.0	0.768	12.5	489
815081-002 Fluoride	mg/L	11/05/2014 13:45	5.00	0.104	0.500	1.72
Nitrate as Nitrogen	mg/L	11/05/2014 13:45	5.00	0.0415	0.500	2.43
Sulfate	mg/L	11/05/2014 15:04	25.0	0.768	12.5	499

### Method Blank

Parameter	Unit	DF	Result
Chloride	mg/L	1.00	ND
Fluoride	mg/L	1.00	ND
Sulfate	mg/L	1.00	ND
Nitrate as Nitrogen	mg/L	1.00	ND

### Duplicate

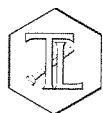
Lab ID = 815080-001

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Chloride	mg/L	500	866	970	11.3	0 - 20

### Duplicate

Lab ID = 815080-002

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Sulfate	mg/L	100	487	478	1.87	0 - 20



# TRUESDAIL LABORATORIES, INC.

Report Continued

Client: E2 Consulting Engineers, Inc.

Project Name: PG&E Topock Project

Page 2 of 28

Project Number: 428648.IM.CS.EX.AC

Printed 12/4/2014

## Duplicate

Lab ID = 815081-002

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Fluoride	mg/L	5.00	1.73	1.72	0.348	0 - 20
Nitrate as Nitrogen	mg/L	5.00	2.37	2.43	2.46	0 - 20

## Lab Control Sample

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chloride	mg/L	1.00	3.82	4.00	95.4	90 - 110
Fluoride	mg/L	1.00	4.02	4.00	101	90 - 110
Sulfate	mg/L	1.00	19.9	20.0	99.4	90 - 110
Nitrate as Nitrogen	mg/L	1.00	3.94	4.00	98.5	90 - 110

## Matrix Spike

Lab ID = 815080-001

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chloride	mg/L	500	3070	2970(2000)	105	85 - 115

## Matrix Spike

Lab ID = 815080-002

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Sulfate	mg/L	100	1530	1480(1000)	105	85 - 115

## Matrix Spike

Lab ID = 815081-002

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Fluoride	mg/L	5.00	22.1	21.7(20.0)	102	85 - 115
Nitrate as Nitrogen	mg/L	5.00	23.3	22.4(20.0)	104	85 - 115

## MRCSS - Secondary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chloride	mg/L	1.00	3.85	4.00	96.2	90 - 110
Fluoride	mg/L	1.00	4.06	4.00	102	90 - 110
Sulfate	mg/L	1.00	20.0	20.0	100	90 - 110
Nitrate as Nitrogen	mg/L	1.00	3.92	4.00	98.0	90 - 110

## MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chloride	mg/L	1.00	2.83	3.00	94.4	90 - 110

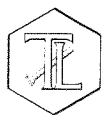
## MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chloride	mg/L	1.00	2.72	3.00	90.6	90 - 110

## MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Fluoride	mg/L	1.00	2.98	3.00	99.4	90 - 110

This report applies only to the sample, or samples, investigated and is not necessarily indicative of the quality or condition of apparently identical or similar products. As a mutual protection to clients, the public, and these laboratories, this report is submitted and accepted for the exclusive use of the client to whom it is addressed and upon the condition that it is not to be used, in whole or in part, in any advertising or publicity matter without prior written authorization from Truesdail Laboratories.



Client: E2 Consulting Engineers, Inc.

Project Name: PG&E Topock Project

Page 4 of 28

Project Number: 428648.IM.CS.EX.AC

Printed 12/4/2014

**Nitrite SM 4500-NO2 B**

Batch 1411034

Parameter	Unit	Analyzed	DF	MDL	RL	Result
815081-001 Nitrite as Nitrogen	mg/L	11/05/2014	1.00	0.000630	0.0050	ND
815081-002 Nitrite as Nitrogen	mg/L	11/05/2014	1.00	0.000630	0.0050	ND

Method Blank

Parameter	Unit	DF	Result
Nitrite as Nitrogen	mg/L	1.00	ND

Duplicate

Lab ID = 815081-002

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Nitrite as Nitrogen	mg/L	1.00	ND	0	0	0 - 20

Lab Control Sample

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Nitrite as Nitrogen	mg/L	1.00	0.0204	0.0226	90.3	90 - 110

Matrix Spike

Lab ID = 815081-002

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Nitrite as Nitrogen	mg/L	1.00	0.0221	0.0226(0.0226)	97.8	80 - 120

MRCCS - Secondary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Nitrite as Nitrogen	mg/L	1.00	0.0204	0.0226	90.3	90 - 110

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Nitrite as Nitrogen	mg/L	1.00	0.0191	0.0200	95.5	90 - 110

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Nitrite as Nitrogen	mg/L	1.00	0.0191	0.0200	95.5	90 - 110



Client: E2 Consulting Engineers, Inc.

Project Name: PG&E Topock Project

Page 5 of 28

Project Number: 428648.IM.CS.EX.AC

Printed 12/4/2014

**Alkalinity by SM 2320B**

Batch 1411190

Parameter	Unit	Analyzed	DF	MDL	RL	Result
815081-002 Alkalinity as CaCO <sub>3</sub>	mg/L	11/13/2014	1.00	1.68	5.00	151
Bicarbonate (Calculated)	mg/L	11/13/2014	1.00	1.68	5.00	139
Carbonate (Calculated)	mg/L	11/13/2014	1.00	1.68	5.00	12.0

Method Blank

Parameter	Unit	DF	Result
Alkalinity as CaCO <sub>3</sub>	mg/L	1.00	ND

Duplicate

Lab ID = 815090-021

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Alkalinity as CaCO <sub>3</sub>	mg/L	1.00	130	128	1.55	0 - 20

Lab Control Sample

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Alkalinity as CaCO <sub>3</sub>	mg/L	1.00	103	100	103	90 - 110

Lab Control Sample Duplicate

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Alkalinity as CaCO <sub>3</sub>	mg/L	1.00	100	100	100	90 - 110

Matrix Spike

Lab ID = 815090-017

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Alkalinity as CaCO <sub>3</sub>	mg/L	1.00	200	206(100)	94.0	75 - 125

Matrix Spike Duplicate

Lab ID = 815090-017

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Alkalinity as CaCO <sub>3</sub>	mg/L	1.00	199	206(100)	93.0	75 - 125



Client: E2 Consulting Engineers, Inc.

Project Name: PG&E Topock Project

Page 6 of 28

Project Number: 428648.IM.CS.EX.AC

Printed 12/4/2014

**Specific Conductivity - EPA 120.1**

Batch 1411045

Parameter	Unit	Analyzed	DF	MDL	RL	Result
815081-001 Specific Conductivity	umhos/cm	11/07/2014	1.00	0.606	2.00	7140
815081-002 Specific Conductivity	umhos/cm	11/07/2014	1.00	0.606	2.00	7160

Method Blank

Parameter	Unit	DF	Result
Specific Conductivity	umhos	1.00	ND

Duplicate

Lab ID = 815089-003

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Specific Conductivity	umhos	1.00	67.2	67.3	0.149	0 - 10

Lab Control Sample

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Specific Conductivity	umhos	1.00	708	706	100	90 - 110

MRCCS - Secondary

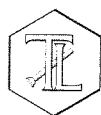
Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Specific Conductivity	umhos	1.00	708	706	100	90 - 110

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Specific Conductivity	umhos	1.00	996	1000	99.6	90 - 110

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Specific Conductivity	umhos	1.00	996	1000	99.6	90 - 110



Client: E2 Consulting Engineers, Inc.

Project Name: PG&E Topock Project

Page 7 of 28

Project Number: 428648.IM.CS.EX.AC

Printed 12/4/2014

**Chrome VI by EPA 218.6**

Batch 1411031

Parameter	Unit	Analyzed	DF	MDL	RL	Result
815081-001 Chromium, Hexavalent	ug/L	11/05/2014 12:30	1.00	0.00600	0.20	ND
815081-002 Chromium, Hexavalent	ug/L	11/05/2014 12:41	25.0	0.150	5.0	560

Method Blank

Parameter	Unit	DF	Result
Chromium, Hexavalent	ug/L	1.00	ND

Duplicate

Lab ID = 815080-001

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	4.00	4.01	0.187	0 - 20

Low Level Calibration Verification

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	0.192	0.200	96.0	70 - 130

Lab Control Sample

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	5.14	5.00	103	90 - 110

Matrix Spike

Lab ID = 815080-001

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	8.94	9.01(5.00)	98.6	90 - 110

Matrix Spike

Lab ID = 815080-002

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	50.0	1440	1460(750)	97.5	90 - 110

Matrix Spike

Lab ID = 815081-001

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	1.20	1.17(1.00)	102	90 - 110

Matrix Spike

Lab ID = 815081-001

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	5.00	4.96	5.18(5.00)	95.6	90 - 110

Matrix Spike

Lab ID = 815081-002

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	25.0	1170	1180(625)	98.2	90 - 110

MRCCS - Secondary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	5.10	5.00	102	90 - 110



Client: E2 Consulting Engineers, Inc.

Project Name: PG&E Topock Project

Page 9 of 28

Project Number: 428648.IM.CS.EX.AC

Printed 12/4/2014

**Metals by EPA 200.7, Total**

Batch 110514A-Th2

Parameter	Unit	Analyzed	DF	MDL	RL	Result
815081-001 Aluminum	ug/L	11/05/2014 17:10	1.00	7.20	50.0	ND
Boron	ug/L	11/05/2014 17:10	1.00	4.10	50.0	862
Iron	ug/L	11/05/2014 17:10	1.00	3.00	20.0	ND
Zinc	ug/L	11/05/2014 17:10	1.00	5.10	20.0	ND
815081-002 Aluminum	ug/L	11/05/2014 18:05	1.00	7.20	50.0	ND
Boron	ug/L	11/05/2014 18:05	1.00	4.10	50.0	872
Iron	ug/L	11/05/2014 18:05	1.00	3.00	20.0	ND
Zinc	ug/L	11/05/2014 18:05	1.00	5.10	20.0	ND

**Method Blank**

Parameter	Unit	DF	Result
Aluminum	ug/L	1.00	ND
Iron	ug/L	1.00	ND
Zinc	ug/L	1.00	ND
Boron	ug/L	1.00	ND

**Duplicate**

Lab ID = 815081-001

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Aluminum	ug/L	1.00	ND	0	0	0 - 20
Iron	ug/L	1.00	ND	0	0	0 - 20
Zinc	ug/L	1.00	ND	0	0	0 - 20
Boron	ug/L	1.00	868	862	0.751	0 - 20

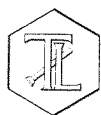
**Lab Control Sample**

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Aluminum	ug/L	1.00	2030	2000	102	85 - 115
Iron	ug/L	1.00	2110	2000	105	85 - 115
Zinc	ug/L	1.00	1990	2000	99.4	85 - 115
Boron	ug/L	1.00	1890	2000	94.4	85 - 115

**Matrix Spike**

Lab ID = 815081-001

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Aluminum	ug/L	1.00	1530	2000(2000)	76.5	75 - 125
Iron	ug/L	1.00	1830	2000(2000)	91.4	75 - 125
Zinc	ug/L	1.00	2220	2000(2000)	111	75 - 125
Boron	ug/L	1.00	2530	2860(2000)	83.4	75 - 125



Client: E2 Consulting Engineers, Inc.

Project Name: PG&amp;E Topock Project

Page 12 of 28

Project Number: 428648.IM.CS.EX.AC

Printed 12/4/2014

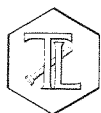
**Metals by EPA 200.8, Total**

Batch 110514A

Parameter	Unit	Analyzed	DF	MDL	RL	Result
815081-001 Antimony	ug/L	11/05/2014 17:34	1.00	0.0350	2.0	ND
Arsenic	ug/L	11/05/2014 17:34	1.00	0.0500	0.50	ND
Barium	ug/L	11/05/2014 17:34	1.00	0.297	2.0	9.8
Chromium	ug/L	11/05/2014 17:34	1.00	0.0710	1.0	ND
Lead	ug/L	11/05/2014 17:34	1.00	0.143	1.0	ND
Manganese	ug/L	11/05/2014 17:34	1.00	0.0600	0.50	6.7
Molybdenum	ug/L	11/05/2014 17:34	1.00	0.0500	2.0	20.5
Nickel	ug/L	11/05/2014 17:34	1.00	0.240	2.0	2.6
815081-002 Antimony	ug/L	11/05/2014 15:01	1.00	0.0350	2.0	ND
Arsenic	ug/L	11/05/2014 15:01	1.00	0.0500	0.50	3.3
Barium	ug/L	11/05/2014 15:01	1.00	0.297	2.0	28.3
Chromium	ug/L	11/05/2014 16:49	20.0	1.42	4.0	581
Lead	ug/L	11/05/2014 15:01	1.00	0.143	1.0	ND
Manganese	ug/L	11/05/2014 15:01	1.00	0.0600	0.50	8.2
Molybdenum	ug/L	11/05/2014 15:01	1.00	0.0500	2.0	21.0
Nickel	ug/L	11/05/2014 15:01	1.00	0.240	2.0	ND

**Method Blank**

Parameter	Unit	DF	Result
Arsenic	ug/L	1.00	ND
Barium	ug/L	1.00	ND
Chromium	ug/L	1.00	ND
Nickel	ug/L	1.00	ND
Antimony	ug/L	1.00	ND
Lead	ug/L	1.00	ND
Manganese	ug/L	1.00	ND
Molybdenum	ug/L	1.00	ND

**Client: E2 Consulting Engineers, Inc.****Project Name: PG&E Topock Project****Page 13 of 28****Project Number: 428648.IM.CS.EX.AC****Printed 12/4/2014****Duplicate**

Lab ID = 815081-002

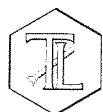
Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Arsenic	ug/L	1.00	3.36	3.32	1.32	0 - 20
Barium	ug/L	1.00	27.2	28.3	4.00	0 - 20
Chromium	ug/L	20.0	566	581	2.66	0 - 20
Nickel	ug/L	1.00	ND	0	0	0 - 20
Antimony	ug/L	1.00	ND	0	0	0 - 20
Lead	ug/L	1.00	ND	0	0	0 - 20
Manganese	ug/L	1.00	8.58	8.22	4.28	0 - 20
Molybdenum	ug/L	1.00	19.2	21.0	9.02	0 - 20

**Low Level Calibration Verification**

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Arsenic	ug/L	1.00	0.213	0.200	106	70 - 130
Barium	ug/L	1.00	1.09	1.00	109	70 - 130
Chromium	ug/L	1.00	0.242	0.200	121	70 - 130
Nickel	ug/L	1.00	2.02	2.00	101	70 - 130
Antimony	ug/L	1.00	0.227	0.200	114	70 - 130
Lead	ug/L	1.00	0.518	0.500	104	70 - 130
Manganese	ug/L	1.00	0.237	0.200	118	70 - 130
Molybdenum	ug/L	1.00	0.513	0.500	103	70 - 130

**Lab Control Sample**

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Arsenic	ug/L	1.00	47.3	50.0	94.6	85 - 115
Barium	ug/L	1.00	50.8	50.0	102	85 - 115
Chromium	ug/L	1.00	49.2	50.0	98.5	85 - 115
Nickel	ug/L	1.00	48.3	50.0	96.6	85 - 115
Antimony	ug/L	1.00	50.2	50.0	100	85 - 115
Lead	ug/L	1.00	50.2	50.0	100	85 - 115
Manganese	ug/L	1.00	50.0	50.0	99.9	85 - 115
Molybdenum	ug/L	1.00	50.7	50.0	101	85 - 115


**Client: E2 Consulting Engineers, Inc.**
**Project Name: PG&E Topock Project**
**Page 14 of 28**
**Project Number: 428648.IM.CS.EX.AC**
**Printed 12/4/2014**
**Matrix Spike**
**Lab ID = 815081-002**

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Arsenic	ug/L	1.00	52.7	53.3(50.0)	98.7	75 - 125
Barium	ug/L	1.00	75.8	78.3(50.0)	95.0	75 - 125
Chromium	ug/L	20.0	1060	1080(500)	96.3	75 - 125
Nickel	ug/L	1.00	45.3	50.0(50.0)	90.5	75 - 125
Antimony	ug/L	1.00	50.3	50.0(50.0)	100	75 - 125
Lead	ug/L	1.00	45.9	50.0(50.0)	91.9	75 - 125
Manganese	ug/L	1.00	57.4	58.2(50.0)	98.4	75 - 125
Molybdenum	ug/L	1.00	68.0	71.0(50.0)	94.0	75 - 125

**Matrix Spike Duplicate**
**Lab ID = 815081-002**

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Arsenic	ug/L	1.00	54.0	53.3(50.0)	101	75 - 125
Barium	ug/L	1.00	75.8	78.3(50.0)	95.1	75 - 125
Nickel	ug/L	1.00	45.2	50.0(50.0)	90.5	75 - 125
Antimony	ug/L	1.00	49.8	50.0(50.0)	99.6	75 - 125
Lead	ug/L	1.00	44.4	50.0(50.0)	88.8	75 - 125
Manganese	ug/L	1.00	58.5	58.2(50.0)	100	75 - 125
Molybdenum	ug/L	1.00	67.7	71.0(50.0)	93.4	75 - 125

**MRCSS - Secondary**

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Arsenic	ug/L	1.00	20.3	20.0	102	90 - 110
Barium	ug/L	1.00	19.8	20.0	99.2	90 - 110
Chromium	ug/L	1.00	20.2	20.0	101	90 - 110
Nickel	ug/L	1.00	19.9	20.0	99.6	90 - 110
Antimony	ug/L	1.00	19.8	20.0	99.0	90 - 110
Lead	ug/L	1.00	19.7	20.0	98.7	90 - 110
Manganese	ug/L	1.00	20.1	20.0	100	90 - 110
Molybdenum	ug/L	1.00	19.2	20.0	96.0	90 - 110

**MRCVS - Primary**

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Arsenic	ug/L	1.00	20.1	20.0	100	90 - 110

**MRCVS - Primary**

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Arsenic	ug/L	1.00	19.8	20.0	99.2	90 - 110
Barium	ug/L	1.00	19.8	20.0	99.0	90 - 110

**Client: E2 Consulting Engineers, Inc.****Project Name: PG&E Topock Project****Page 18 of 28****Project Number: 428648.IM.CS.EX.AC****Printed 12/4/2014****Interference Check Standard AB**

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Manganese	ug/L	1.00	20.7	20.0	103	80 - 120

**Interference Check Standard AB**

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Manganese	ug/L	1.00	20.8	20.0	104	80 - 120

**Interference Check Standard AB**

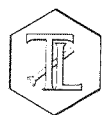
Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Molybdenum	ug/L	1.00	ND	0		

**Interference Check Standard AB**

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Molybdenum	ug/L	1.00	ND	0		

**Serial Dilution****Lab ID = 815081-002**

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Barium	ug/L	5.00	26.0	28.3	8.44	0 - 10
Chromium	ug/L	100	599	581	3.07	0 - 10


**Client: E2 Consulting Engineers, Inc.**
**Project Name: PG&E Topock Project**
**Page 19 of 28**
**Project Number: 428648.IM.CS.EX.AC**
**Printed 12/4/2014**
**Metals by EPA 200.8, Total**

Batch 111114A-ICPMS-1

Parameter	Unit	Analyzed	DF	MDL	RL	Result
815081-001 Copper	ug/L	11/11/2014 20:01	1.00	0.190	1.0	ND
815081-002 Copper	ug/L	11/11/2014 19:33	1.00	0.190	1.0	ND

**Method Blank**

Parameter	Unit	DF	Result
Copper	ug/L	1.00	ND

**Duplicate**

Lab ID = 815081-002

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Copper	ug/L	1.00	ND	0	0	0 - 20

**Low Level Calibration Verification**

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Copper	ug/L	1.00	0.507	0.500	101	70 - 130

**Lab Control Sample**

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Copper	ug/L	1.00	51.1	50.0	102	85 - 115

**Matrix Spike**

Lab ID = 815081-002

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Copper	ug/L	1.00	45.7	50.0(50.0)	91.3	75 - 125

**Matrix Spike Duplicate**

Lab ID = 815081-002

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Copper	ug/L	1.00	44.3	50.0(50.0)	88.6	75 - 125

**MRCCS - Secondary**

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Copper	ug/L	1.00	20.1	20.0	101	90 - 110

**MRCVS - Primary**

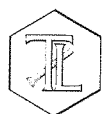
Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Copper	ug/L	1.00	18.6	20.0	93.1	90 - 110

**Interference Check Standard A**

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Copper	ug/L	1.00	ND	0		

**Interference Check Standard A**

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Copper	ug/L	1.00	ND	0		

**TRUESDAIL LABORATORIES, INC.**

Report Continued

Client: E2 Consulting Engineers, Inc.

Project Name: PG&amp;E Topock Project

Page 20 of 28

Project Number: 428648.IM.CS.EX.AC

Printed 12/4/2014

## Interference Check Standard AB

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Copper	ug/L	1.00	20.9	20.0	104	80 - 120

## Interference Check Standard AB

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Copper	ug/L	1.00	21.1	20.0	105	80 - 120

**Reactive Silica by SM4500-Si D**

Batch 1411131

Parameter	Unit	Analyzed	DF	MDL	RL	Result
815081-002 Silica	mg/L	11/11/2014	25.0	0.252	1.00	18.6

## Method Blank

Parameter	Unit	DF	Result
Silica	mg/L	1.00	ND

## Duplicate

Lab ID = 815081-002

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Silica	mg/L	25.0	19.3	18.6	3.68	0 - 20

## Lab Control Sample

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Silica	mg/L	1.00	0.192	0.206	93.2	90 - 110

## Matrix Spike

Lab ID = 815081-002

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Silica	mg/L	25.0	22.8	23.8(5.15)	82.1	75 - 125

## MRCCS - Secondary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Silica	mg/L	1.00	0.192	0.206	93.2	90 - 110

## MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Silica	mg/L	1.00	0.385	0.400	96.3	90 - 110

This report applies only to the sample, or samples, investigated and is not necessarily indicative of the quality or condition of apparently identical or similar products. As a mutual protection to clients, the public, and these laboratories, this report is submitted and accepted for the exclusive use of the client to whom it is addressed and upon the condition that it is not to be used, in whole or in part, in any advertising or publicity matter without prior written authorization from Truesdail Laboratories.

**Client: E2 Consulting Engineers, Inc.****Project Name: PG&E Topock Project****Page 21 of 28****Project Number: 428648.IM.CS.EX.AC****Printed 12/4/2014****Total Dissolved Solids by SM 2540 C**

Batch 1411019

Parameter	Unit	Analyzed	DF	MDL	RL	Result
815081-001 Total Dissolved Solids	mg/L	11/06/2014	1.00	1.76	250	4160
815081-002 Total Dissolved Solids	mg/L	11/06/2014	1.00	1.76	250	4350

## Method Blank

Parameter	Unit	DF	Result
Total Dissolved Solids	mg/L	1.00	ND

## Duplicate

Lab ID = 815080-001

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Total Dissolved Solids	mg/L	1.00	2540	2500	1.39	0 - 10

## Lab Control Sample

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Total Dissolved Solids	mg/L	1.00	524	500	105	90 - 110



Client: E2 Consulting Engineers, Inc.

Project Name: PG&E Topock Project

Page 22 of 28

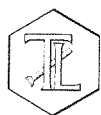
Project Number: 428648.IM.CS.EX.AC

Printed 12/4/2014

**Total Organic Carbon (T/DOC) SM 5310 C**

Batch 1411033

Parameter	Unit	Analyzed	DF	MDL	RL	Result
815081-002 Total Organic Carbon	mg/L	11/06/2014 14:35	1.00	0.0877	0.300	0.567
Method Blank						
Parameter	Unit	DF	Result			
Total Organic Carbon	mg/L	1.00	ND			
Duplicate						
Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Total Organic Carbon	mg/L	1.00	0.552	0.567	2.72	0 - 20
Lab Control Sample						
Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Total Organic Carbon	mg/L	1.00	9.66	10.5	92.0	90 - 110
Matrix Spike						
Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Total Organic Carbon	mg/L	1.00	9.24	11.1(10.5)	82.6	75 - 125
MRCCS - Secondary						
Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Total Organic Carbon	mg/L	1.00	9.53	10.5	90.8	85 - 115
MRCVS - Primary						
Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Total Organic Carbon	mg/L	1.00	10.7	10.0	107	90 - 110
MRCVS - Primary						
Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Total Organic Carbon	mg/L	1.00	9.42	10.0	94.2	90 - 110
MRCVS - Primary						
Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Total Organic Carbon	mg/L	1.00	10.2	10.0	102	90 - 110



# TRUESDAIL LABORATORIES, INC.

Report Continued

Client: E2 Consulting Engineers, Inc.

Project Name: PG&E Topock Project

Page 23 of 28

Project Number: 428648.IM.CS.EX.AC

Printed 12/4/2014

## Total Phosphate, SM 4500-PB,E

Batch 1411162

Parameter	Unit	Analyzed	DF	MDL	RL	Result
815081-002 Phosphate, Total As P	mg/L	11/13/2014	1.00	0.00460	0.0200	ND

### Method Blank

Parameter	Unit	DF	Result
Phosphate, Total As P	mg/L	1.00	ND

### Duplicate

Lab ID = 815081-002

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Phosphate, Total As P	mg/L	1.00	ND	0	0	0 - 20

### Lab Control Sample

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Phosphate, Total As P	mg/L	1.00	0.0628	0.0652	96.3	90 - 110

### Matrix Spike

Lab ID = 815081-002

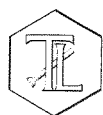
Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Phosphate, Total As P	mg/L	1.00	0.0709	0.0652(0.0652)	109	75 - 125

### MRCCS - Secondary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Phosphate, Total As P	mg/L	1.00	0.0628	0.0652	96.3	90 - 110

### MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Phosphate, Total As P	mg/L	1.00	0.0703	0.0660	106	90 - 110



Client: E2 Consulting Engineers, Inc.

Project Name: PG&E Topock Project

Page 24 of 28

Project Number: 428648.IM.CS.EX.AC

Printed 12/4/2014

**Ammonia Nitrogen by SM4500-NH3D**

Batch 11NH314A

Parameter	Unit	Analyzed	DF	MDL	RL	Result
815081-001 Ammonia as N	mg/L	11/08/2014	1.00	0.0318	0.500	ND
815081-002 Ammonia as N	mg/L	11/08/2014	1.00	0.0318	0.500	ND

Method Blank

Parameter	Unit	DF	Result
Ammonia as N	mg/L	1.00	ND

Lab Control Sample

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Ammonia as N	mg/L	1.00	7.36	8.00	92.0	90 - 110

Lab Control Sample Duplicate

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Ammonia as N	mg/L	1.00	7.45	8.00	93.1	90 - 110

Matrix Spike

Lab ID = 815081-001

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Ammonia as N	mg/L	1.00	9.22	10.0(10.0)	92.2	75 - 125

MRCCS - Secondary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Ammonia as N	mg/L	1.00	6.57	6.00	109	90 - 110

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Ammonia as N	mg/L	1.00	5.62	6.00	93.6	90 - 110

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Ammonia as N	mg/L	1.00	5.43	6.00	90.5	90 - 110



Client: E2 Consulting Engineers, Inc.

Project Name: PG&E Topock Project

Page 25 of 28

Project Number: 428648.IM.CS.EX.AC

Printed 12/4/2014

**Metals by EPA 200.8, Dissolved**

Batch 112514A

Parameter	Unit	Analyzed	DF	MDL	RL	Result
815081-002 Manganese	ug/L	11/25/2014 15:47	1.00	0.0600	0.50	8.9

Method Blank

Parameter	Unit	DF	Result
Manganese	ug/L	1.00	ND

Duplicate

Lab ID = 815080-001

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Manganese	ug/L	2.00	64.9	67.6	4.02	0 - 20

Low Level Calibration Verification

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Manganese	ug/L	1.00	0.536	0.500	107	

Lab Control Sample

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Manganese	ug/L	1.00	50.0	50.0	99.9	85 - 115

Matrix Spike

Lab ID = 815080-001

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Manganese	ug/L	2.00	114	118(50.0)	93.9	75 - 125

Matrix Spike Duplicate

Lab ID = 815080-001

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Manganese	ug/L	2.00	109	118(50.0)	82.9	75 - 125

MRCSS - Secondary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Manganese	ug/L	1.00	19.3	20.0	96.5	90 - 110

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Manganese	ug/L	1.00	19.5	20.0	97.7	90 - 110

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Manganese	ug/L	1.00	19.0	20.0	94.9	90 - 110

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Manganese	ug/L	1.00	19.5	20.0	97.3	90 - 110



Client: E2 Consulting Engineers, Inc.

Project Name: PG&E Topock Project

Page 27 of 28

Project Number: 428648.IM.CS.EX.AC

Printed 12/4/2014

**Metals by 200.7, Dissolved**

Batch 120314A-Th2

Parameter	Unit	Analyzed	DF	MDL	RL	Result
815081-002 Iron	ug/L	12/03/2014 12:30	1.00	3.00	20.0	ND

Method Blank

Parameter	Unit	DF	Result
Iron	ug/L	1.00	ND

Duplicate

Lab ID = 815081-002

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Iron	ug/L	1.00	ND	0	0	0 - 20

Lab Control Sample

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Iron	ug/L	1.00	2190	2000	109	85 - 115

Matrix Spike

Lab ID = 815081-002

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Iron	ug/L	1.00	1970	2000(2000)	98.6	75 - 125

MRCCS - Secondary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Iron	ug/L	1.00	5180	5000	104	95 - 105

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Iron	ug/L	1.00	5210	5000	104	90 - 110

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Iron	ug/L	1.00	5300	5000	106	90 - 110

Interference Check Standard A

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Iron	ug/L	1.00	2190	2000	110	80 - 120

Interference Check Standard A

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Iron	ug/L	1.00	2230	2000	111	80 - 120

Interference Check Standard AB

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Iron	ug/L	1.00	2220	2000	111	80 - 120

**TRUESDAIL LABORATORIES, INC.**

Report Continued

Client: E2 Consulting Engineers, Inc.

Project Name: PG&amp;E Topock Project

Page 28 of 28

Project Number: 428648.IM.CS.EX.AC

Printed 12/4/2014

## Interference Check Standard AB

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Iron	ug/L	1.00	2280	2000	114	80 - 120

**Turbidity by SM 2130 B**

Batch 1411090

Parameter	Unit	Analyzed	DF	MDL	RL	Result
815081-001 Turbidity	NTU	11/06/2014	1.00	0.0140	0.100	ND
815081-002 Turbidity	NTU	11/06/2014	1.00	0.0140	0.100	ND

## Method Blank

Parameter	Unit	DF	Result
Turbidity	NTU	1.00	ND

## Duplicate

Lab ID = 815081-002

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Turbidity	NTU	1.00	ND	0	0	0 - 20

## Lab Control Sample

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Turbidity	NTU	1.00	8.10	8.00	101	90 - 110

## Lab Control Sample Duplicate

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Turbidity	NTU	1.00	7.40	8.00	92.5	90 - 110

Respectfully submitted,

**TRUESDAIL LABORATORIES, INC.**

  
f2 - Mona Nassimi  
Manager, Analytical Services

**Total Dissolved Solids by SM 2540 C****Calculations**
 Batch: 1411019  
 Date Analyzed: 11/6/2014

Laboratory Number	Sample volume, mL	Initial weight, g	1st Final weight, g	2nd Final weight, g	Weight Difference, g	Exceeds 0.5mg? Yes/No	Residue weight, g	Filterable residue, ppm	RL, ppm	Reported Value, ppm	DF
Blank	100	51.4354	51.4354	51.4354	0.0000	No	0.0000	0.0	25.0	ND	1
14K0045-01	100	75.2534	75.2990	75.2990	0.0000	No	0.0456	456.0	25.0	456.0	1
14K0045-02	100	74.8616	74.9073	74.9073	0.0000	No	0.0457	457.0	25.0	457.0	1
14K0083-01	20	28.7488	28.7990	28.7988	0.0002	No	0.0500	2500.0	125.0	2500.0	1
14K0083-02	10	29.3546	29.4044	29.4044	0.0000	No	0.0498	4980.0	250.0	4980.0	1
14K0084-01	10	30.2471	30.2887	30.2887	0.0000	No	0.0416	4160.0	250.0	4160.0	1
14K0084-02	10	28.7550	28.7985	28.7985	0.0000	No	0.0435	4350.0	250.0	4350.0	1
14K0086-9D	100	77.4868	77.5454	77.5454	0.0000	No	0.0586	586.0	25.0	586.0	1
14K0099-01B	100	78.2288	78.2559	78.2555	0.0004	No	0.0267	267.0	25.0	267.0	1
14K0110-01D	100	67.9487	67.9933	67.9931	0.0002	No	0.0444	444.0	25.0	444.0	1
14K0110-02	100	66.7434	66.7880	66.7880	0.0000	No	0.0446	446.0	25.0	446.0	1
14K0083-01 Dup	20	29.3771	29.4278	29.4278	0.0000	No	0.0507	2535.0	125.0	2535.0	1
LCS	100	79.4329	79.4855	79.4853	0.0002	No	0.0524	524.0	25.0	524.0	1
14K0114-01C	100	78.7796	78.8309	78.8305	0.0004	No	0.0509	509.0	25.0	509.0	1
14K0114-02	100	74.5801	74.6312	74.6308	0.0004	No	0.0507	507.0	25.0	507.0	1
14K0114-03	100	79.1415	79.1911	79.1910	0.0001	No	0.0495	495.0	25.0	495.0	1
14K0114-04	100	75.2575	75.3078	75.3074	0.0004	No	0.0499	499.0	25.0	499.0	1
14K0116-04A	100	68.7450	68.8024	68.8022	0.0002	No	0.0572	572.0	25.0	572.0	1
14K0116-04 Dup	100	75.7294	75.7873	75.7872	0.0001	No	0.0578	578.0	25.0	578.0	1

Calculation as follows:

$$\text{Filterable residue (TDS), mg/L} = \left( \frac{A - B}{C} \right) \times 10^6$$

Where:

A = weight of dish + residue in grams.  
 B = weight of dish in grams.  
 C = mL of sample filtered.

RL = reporting limit.  
 ND = not detected (below the reporting limit)

**Laboratory Control Sample (LCS) Summary**

QC Std I.D.	Measured Value, ppm	Theoretical Value, ppm	Percent Rec	Acceptance Limit	QC Within Control?
LCS	524.0	500	104.8%	90-110%	Yes
LCS D					

**LCS Recovery**

$$P = \left( \frac{LC}{LT} \right) \times 100$$

P = Percent recovery.

LC = Measured LCS value (ppm).

LT = Theoretical LCS value (ppm).

**Duplicate Determinations Difference Summary**

Lab Number	Sample Weight, g	Sample Dup Weight, g	% RPD	Acceptance Limit	QC Within Control?
14K0083-01	0.0500	0.0507	0.7%	≤5%	Yes
14K0116-04	0.0572	0.0578	0.5%	≤5%	Yes

**Duplicate Determination Difference**

$$\% \text{ Difference} = \frac{|A \text{ or } B - C|}{C} \times 100$$

$$\text{where } C = \frac{A + B}{2}$$

A = Weight of the first sample in (g).

B = Weight of the second sample in (g).

C = Average weight in (g).

Jenny T.

Analyst Printed Name

Analyst Signature

Maksim G.

Reviewer Printed Name

Reviewer Signature

# Total Dissolved Solids by SM 2540 C

## TDS/EC CHECK

Batch: 1411019  
Date Analyzed: 11/6/2014

Laboratory Number	EC	TDS/EC Ratio: 0.55-0.90	Calculated TDS (EC*0.65)	Measured TDS / Calc TDS <1.3
14K0045-01	811	0.56	527.15	0.87
14K0045-02	760	0.60	494	0.93
14K0083-01	4230	0.59	2749.5	0.91
14K0083-02	7990	0.62	5193.5	0.96
14K0084-01	7140	0.58	4641	0.90
14K0084-02	7160	0.61	4654	0.93
14K0086-9D	923	0.63	599.95	0.98
14K0099-01B	393	0.68	255.45	1.05
14K0110-01D	842	0.53	547.3	0.81
14K0110-02	760	0.59	494	0.90
14K0083-01 Dup	4230	0.60	2749.5	0.92
LCS				
14K0114-01C	869	0.59	564.85	0.90
14K0114-02	871	0.58	566.15	0.90
14K0114-03	868	0.57	564.2	0.88
14K0114-04	859	0.58	558.35	0.89
14K0116-04A	904	0.63	587.6	0.97
14K0116-04 Dup	904	0.64	587.6	0.98



## Alkalinity by SM 2320B

Analytical Batch:	1411190
Matrix:	WATER
Date of Analysis:	11/13/2014

[illegible]

**Calculations as follows:**

T or P =

$$\left( \frac{A \times N \times 50000}{mL \text{ sample}} \right)$$

**Where:**

T = Total Alkalinity, mg CaCO<sub>3</sub>/L

P = Phenolphthalein Alkalinity, mg CaCO<sub>3</sub>/L

A = mL standard acid used

**N** = normality of standard acid

$$\text{Low Alkalinity: as mg/L CaCO}_3 = \frac{(2 \times B - C) \times N \times 50000}{\text{mL sample}}$$

Where: B = mL titrant to first recorded pH

**C** = Total mL titrant to reach pH 0.3 unit lower

**N** = Normality of standard acid

**LCS =** Laboratory Control Standard/Duplicate

MS/MSD = Matrix Spike/Duplicate

ND = Not Detected (below the reporting limit)

## Blank Summary

Reporting Limit, RL	Measured Value, ppm	Accept Limit	QC Within Control?
5 ppm	0	<5	Yes

### Laboratory Control Sample (LCS/LCSD) Summary

QC Std I.D.	Measured Value, ppm	Theoretical Value, ppm	% Recovery	Acceptance Limit	QC Within Control?
LCS	103	100	103.0%	90-110	Yes
LCSD	100	100	100.0%	90-110	Yes

### Duplicate Determination Difference Summary

Lab Number I.D.	Measured Value, ppm	Dup Value, ppm	RPD	Acceptance Limit	QC Within Control?
14k0007-	128	130	1.6%	≤20%	Yes

### Sample Matrix Spike (MS/MSD) Summary

Lab Number	Conc of Unspk spl	Dil Factor	Added Spk Conc	MS/MSD Amt	Measrd Conc of Spk Spl	Theor Conc of Spk Spl	MS/MSD % Rec	MS Accept Limit	QC Within Control?	RPD	RPD Accept Limit	QC Within Control?
14K0007-17	106	1	100	100	200	206.00	94%	75-125	Yes	0.3%	≤20%	Yes
	106	1	100	100	199	206.00	93%		Yes			

Alex L.

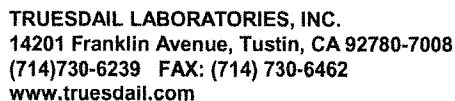
Analyst Printed Name

Analyst Signature

Maksim Gorbunov

Reviewer Printed Name

Reviewer Signature \_\_\_\_\_



**[IM3Plant-WDR-493]**

PAGE 1 OF 1

**ALERT !!**  
**Level III QC**

CHAIN OF CUSTODY SIGNATURE RECORD				SAMPLE CONDITIONS	
Signature (Relinquished)	Printed Name	Company/ Agency	Date/ Time	RECEIVED	COOL <input checked="" type="checkbox"/> WARM <input type="checkbox"/>
	Ryan Phelps	CH2MHILL	11-4-14 15:17		3.80C <input checked="" type="checkbox"/>
Signature (Received)	Printed Name	Company/ Agency	Date/ Time	CUSTODY SEALED	YES <input type="checkbox"/> NO <input type="checkbox"/>
	TITANH NGO	TRUESDALE	11-4-14 15:17		
Signature (Relinquished)	Printed Name	Company/ Agency	Date/ Time	SPECIAL REQUIREMENTS:	
	TITANH NGO		11-4-14 19:40	The metals include: Cr, Al, Sb, As, Ba, B, Cu, Pb, Mn, Mo, Ni, Fe, Zn	
Signature (Received)	Printed Name	Company/ Agency	Date/ Time		
	Michael Ngo	TLI	11/4/14 19:40		
Signature (Relinquished)	Printed Name	Company/ Agency	Date/ Time		
Signature (Received)	Printed Name	Company/ Agency	Date/ Time		

121





Turbidity/pH Check

Sample Number	Turbidity	pH	Date	Analyst	Need Digest (Y/N)	Time of Adjustment to pH 2	Date/Time of 2nd pH check	Comments
14T0412-01	>1	>2	11/29/14	TM	Yes			
14J0414 (01-02)	<1	>2	↓	↓	NO	10:45	10/30/14 11:00	pH < 2
14J0431 (1-3)	<1	72	10/29/14	ES	NO	2:30	↓	↓
14J0438-01	>1	>2	11/30/14	TM	Yes		10/31/14 2:10:00	pH < 2
14J0440 (01-02)	<1	>2			NO	9:55	↓	↓
↓ (-03, -04, -05, -06)	↓	↓	↓	↓	↓	↓	↓	↓
↓ (-07)	↓	↓	↓	↓	↓	↓	↓	↓
14J0446-01, -02	>1	<2	↓	↓	Yes			
14J0444	<1	72	10/23/14	ES	Yes	10:00		pH < 2
14J0415-01	<1	72	11/3/14	ES	Yes	10:00		pH < 2
14K0008-01	>1	<2	11/4/14	TM	Yes			
14K0009-01								
14K0018-02								
14K0019-01								
14K0045 (01-02)								
14K0050 (01-02, -03)								
↓ (-04, -05)								
14K0055 (01-02, -03)	↓	↓	↓	↓	↓			
14K0068 (1-3)	>1	<2	11/4/14	ES	Yes			
14K0078 (01, -02)	<1	>2	11/5/14	TM	NO	10:00	11/6/14 10:00	pH < 2
14K0079 (01, -02, -03)	↓	↓	↓	↓	↓	↓	↓	↓
14K0080-01	>1	<2			Yes			
14K0084-01	<1	>2	↓	↓	↓	10:00		pH < 2
14K0084-02	↓	<2	↓	↓	↓			
14K0012-02	>1	<2	11/5/14	TM	Yes			
14K0013-02			↓	↓	↓			
14K0014-02			↓	↓	↓			
14K0025-01			↓	↓	↓			
14K0026-02	↓	↓	↓	↓	↓			
14K0022-02			↓	↓	↓			
14K0023-02			↓	↓	↓			
14K0024-02	↓	↓	↓	↓	↓			
14K0083 (01-02)	<1	72	11/5/14	ES	Yes	1:00		Filtered and acidified
14K0084-02	↓	↓	↓	↓	↓	↓	11/7/14 10:00	↓
14K0102 (10-12)	<1	>2	11/6/14	ES	NO	11:00	11/7/14 11:00	pH < 2
14K0116 (02-03, 05)	↓	↓	↓	↓	↓	↓	↓	↓
14K0028-01	↓	<2	↓	↓	Yes			
14K0029-01	>1		↓	↓	↓			
14K0067-02	<1		↓	↓	↓			
14K0075-01	↓		↓	↓	↓			
14K0110-01	>1		↓	↓	↓			
14K0110-02	>1		↓	↓	↓			
14K0120-01	↓	↓	↓	↓	↓			
14K0007-24	<1	72	11/6/14	ES	NO	5:00	11/7/14 2:00	pH < 2

Notes:

1. Samples should be analyzed after 24 hrs of pH adjustment to pH2 for Dissolved Analytes.
2. All Total Recoverable Analytes must be pH adjusted and digested.
3. Do not use disposable pipette to measure pH; pour a little amount of sample from the bottle.

14K0084

## Truesdail Laboratories, Inc

**Client:** E2 Consulting Engineers, Inc.  
**Project:** Topock IM3Plant-WDR

**Project Manager:** Sean Condon  
**Project Number:** PGE-2152

**Report To:**

E2 Consulting Engineers, Inc.  
 Christy Gitlin  
 1900 Powell Street, Suite 250  
 Emeryville, CA 94608  
 Phone: 510-428-4728  
 Fax: 510-652-5604

**Invoice To:**

E2 Consulting Engineers, Inc.  
 Christy Gitlin  
 1900 Powell Street, Suite 250  
 Emeryville, CA 94608  
 Phone :510-428-4728  
 Fax: 510-652-5604

Date Due: 11/14/2014 16:30 (7 day TAT)

Received By: Michael Ngo

Date Received: 11/04/2014 19:40

Logged In By: Luda Shabunina

Date Logged In: 11/05/2014 07:31

Samples Received at: 3.8°C

Chain of Custody re Yes Samples intact? Yes

Letter (if sent) matc No Custody seals (if an No

Requested analyses Yes Analyses within hol Yes

Samples received in Yes

Analysis	Due	TAT	Expires	Comments
----------	-----	-----	---------	----------

**14K0084-01 SC-700B-WDR-493 [Water] Sampled 11/04/2014 13:00  
 (GMT-08:00) Pacific Time (US &**

IC-SO4	11/14/2014 12:00	7	12/02/2014 13:00	
Al-200.7	11/14/2014 12:00	7	05/03/2015 13:00	
Zn-200.7	11/14/2014 12:00	7	05/03/2015 13:00	
Turbidity	11/14/2014 12:00	7	11/06/2014 13:00	
TDS	11/14/2014 12:00	7	11/11/2014 13:00	
Specific Conductivity	11/14/2014 12:00	7	12/02/2014 13:00	
Sb-200.8	11/14/2014 12:00	7	05/03/2015 13:00	
Pb-200.8	11/14/2014 12:00	7	05/03/2015 13:00	
Nitrite	11/14/2014 12:00	7	11/06/2014 13:00	
Ni-200.8	11/14/2014 12:00	7	05/03/2015 13:00	
Mn-200.8	11/14/2014 12:00	7	05/03/2015 13:00	
IC-NO3	11/14/2014 12:00	7	11/06/2014 13:00	
IC-F	11/14/2014 12:00	7	12/02/2014 13:00	
Fe-200.7	11/14/2014 12:00	7	05/03/2015 13:00	
Cu-200.8	11/14/2014 12:00	7	05/03/2015 13:00	
Cr-200.8	11/14/2014 12:00	7	05/03/2015 13:00	
Cr VI-218.6	11/14/2014 12:00	7	12/02/2014 13:00	
Ba-200.8	11/14/2014 12:00	7	05/03/2015 13:00	
B-200.7	11/14/2014 12:00	7	05/03/2015 13:00	
As-200.8	11/14/2014 12:00	7	05/03/2015 13:00	
Ammonia, Total	11/14/2014 12:00	7	12/02/2014 13:00	

14K0084

## Truesdail Laboratories, Inc

Client: E2 Consulting Engineers, Inc.  
Project: Topock IM3Plant-WDR

Project Manager: Sean Condon  
Project Number: PGE-2152

Analysis	Due	TAT	Expires	Comments
<b>14K0084-01 SC-700B-WDR-493 [Water] Sampled 11/04/2014 13:00 (GMT-08:00) Pacific Time (US &amp;</b>				
Mo-200.8	11/14/2014 12:00	7	05/03/2015 13:00	
<b>14K0084-02 SC-100B-WDR-493 [Water] Sampled 11/04/2014 13:00 (GMT-08:00) Pacific Time (US &amp;</b>				
As-200.8	11/14/2014 12:00	7	05/03/2015 13:00	
Ammonia, Total	11/14/2014 12:00	7	12/02/2014 13:00	
Al-200.7	11/14/2014 12:00	7	05/03/2015 13:00	
Nitrite	11/14/2014 12:00	7	11/06/2014 13:00	
TDS	11/14/2014 12:00	7	11/11/2014 13:00	
Specific Conductivity	11/14/2014 12:00	7	12/02/2014 13:00	
Silica	11/14/2014 12:00	7	12/02/2014 13:00	
Ni-200.8	11/14/2014 12:00	7	05/03/2015 13:00	
Mo-200.8	11/14/2014 12:00	7	05/03/2015 13:00	
Mn-200.8-diss	11/14/2014 12:00	7	05/03/2015 13:00	
Mn-200.8	11/14/2014 12:00	7	05/03/2015 13:00	
Zn-200.7	11/14/2014 12:00	7	05/03/2015 13:00	
Turbidity	11/14/2014 12:00	7	11/06/2014 13:00	
Sb-200.8	11/14/2014 12:00	7	05/03/2015 13:00	
Alkalinity	11/14/2014 12:00	7	11/18/2014 13:00	
Pb-200.8	11/14/2014 12:00	7	05/03/2015 13:00	
TOC	11/14/2014 12:00	7	12/02/2014 13:00	
IC-SO4	11/14/2014 12:00	7	12/02/2014 13:00	
IC-NO3	11/14/2014 12:00	7	11/06/2014 13:00	
IC-F	11/14/2014 12:00	7	12/02/2014 13:00	
Fe-200.7-diss	11/14/2014 12:00	7	05/03/2015 13:00	
Fe-200.7	11/14/2014 12:00	7	05/03/2015 13:00	
Cu-200.8	11/14/2014 12:00	7	05/03/2015 13:00	
Cr-200.8	11/14/2014 12:00	7	05/03/2015 13:00	
Cr VI-218.6	11/14/2014 12:00	7	12/02/2014 13:00	
Ba-200.8	11/14/2014 12:00	7	05/03/2015 13:00	
B-200.7	11/14/2014 12:00	7	05/03/2015 13:00	
Phosphorus	11/14/2014 12:00	7	12/02/2014 13:00	

Reviewed By

Date

# TRUESDAIL LABORATORIES, INC.

EXCELLENCE IN INDEPENDENT TESTING



Established 1931

14201 FRANKLIN AVENUE  
TUSTIN, CALIFORNIA 92780-7008  
(714) 730-6239 · FAX (714) 730-6462  
www.truesdail.com

December 3, 2014

E2 Consulting Engineers, Inc.  
Mr. Shawn Duffy  
155 Grand Ave., Suite 1000  
Oakland, California 94612

Dear Mr. Duffy:

SUBJECT: CASE NARRATIVE PG&E TOPOCK IM3PLANT-WDR-494 PROJECT, GROUNDWATER  
MONITORING, TLI NO.: 815084

Truesdail Laboratories, Inc. is pleased to submit this report summarizing the Topock IM3Plant-WDR-494 project groundwater monitoring for Hexavalent and Total Chromium, Total Manganese, Turbidity, Specific Conductivity, and Total Dissolved Solids. A summary table for this sample delivery group is included in Section 2. Complete laboratory reports, quality control data and chain of custody forms for sampling period are included in Sections 3 and 4. Analytical raw data have been included under Section 5.

The samples were received and delivered with the chain of custody on November 12, 2014, intact and in chilled condition. The samples will be kept in a locked refrigerator for 30 days; thereafter it will be kept in warm storage for an additional 2 months before disposal.

The sample collection time was not recorded on the chain of custody but the collection time on the sample containers was 15:00. Mr. Duffy was notified and requested that the sample time from the containers be used.


Sample SC-700B-WDR-494 was analyzed as sample I.D. 14K0224 in the raw data but is reported as 815084 in all final report pages.


The straight runs for the sample and associated matrix spike on sample SC-700B-WDR-494 for Hexavalent Chromium analysis by EPA 218.6 were just outside the retention time window. Because the matrix spike recovery and all other QA/QC were within acceptable limits, the data from the straight run was reported.

No violations or nonconformance actions occurred for this data package.

If you have any questions or require additional information, please contact me at (714) 730-6239 ext. 200.

Respectfully Submitted,  
TRUESDAIL LABORATORIES, INC.

  
for Mona Nassimi  
Manager, Analytical Services

  
Michael Ngo  
Quality Assurance/Quality Control Officer

# TRUESDAIL LABORATORIES, INC.

EXCELLENCE IN INDEPENDENT TESTING



Established 1931

**Client:** E2 Consulting Engineers, Inc.  
155 Grand Ave. Suite 1000  
Oakland, CA 94612

**Attention:** Shawn Duffy

**Sample:** One (1) Groundwater Sample

**Project Name:** PG&E Topock Project

**Project No.:** 652547.xx.xx.xx

14201 FRANKLIN AVENUE  
TUSTIN, CALIFORNIA 92780-7008  
(714) 730-6239 · FAX (714) 730-6462  
[www.truesdail.com](http://www.truesdail.com)

**Laboratory No.:** 815084

**Date:** December 3, 2014

**Collected:** November 12, 2014

**Received:** November 12, 2014

## ANALYST LIST

METHOD	PARAMETER	ANALYST
EPA 120.1	Specific Conductivity	Jenny Tankunakorn
SM 2540C	Total Dissolved Solids	Jenny Tankunakorn
SM 2130B	Turbidity	Jennine Ta
EPA 200.8	Total Metals	Tom Martinez
EPA 218.6	Hexavalent Chromium	Naheed Eidinejad



**Client:** E2 Consulting Engineers, Inc.  
155 Grand Ave. Suite 1000  
Oakland, CA 94612

**Attention:** Shawn Duffy

**Project Name:** PG&E Topock Project

**Project No.:** 652547.xx.xx.xx

**P.O. No.:** PGEIM11111001

**Laboratory No.:** 815084

**Date Received:** November 12, 2014

## Analytical Results Summary

Lab Sample ID	Field ID	Analysis Method	Extraction Method	Sample Date	Sample Time	Parameter	Result	Units	RL
815084-001	SC-700B-WDR-494	E120.1	NONE	11/12/2014	15:00	EC	7180	umhos/cm	2.00
815084-001	SC-700B-WDR-494	E200.8	NONE	11/12/2014	15:00	Chromium	ND	ug/L	1.0
815084-001	SC-700B-WDR-494	E200.8	NONE	11/12/2014	15:00	Manganese	5.7	ug/L	0.50
815084-001	SC-700B-WDR-494	E218.6	LABFLT	11/12/2014	15:00	Chromium, Hexavalent	ND	ug/L	0.20
815084-001	SC-700B-WDR-494	SM2130B	NONE	11/12/2014	15:00	Turbidity	0.103	NTU	0.100
815084-001	SC-700B-WDR-494	SM2540C	NONE	11/12/2014	15:00	Total Dissolved Solids	4170	mg/L	250

ND: Non Detected (below reporting limit)

mg/L: Milligrams per liter.

**Note:** The following "Significant Figures" rule has been applied to all results:

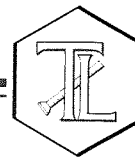
Results below 0.01ppm will have two (2) significant figures.

Result above or equal to 0.01ppm will have three (3) significant figures.

Quality Control data will always have three (3) significant figures.

# TRUESDAIL LABORATORIES, INC.

EXCELLENCE IN INDEPENDENT TESTING



Established 1931

14201 FRANKLIN AVENUE  
TUSTIN, CALIFORNIA 92780-7008  
(714) 730-6239 · FAX (714) 730-6462  
www.truesdail.com

## REPORT

**Client:** E2 Consulting Engineers, Inc.

155 Grand Avenue, Suite 800

Oakland, CA 94612

Attention: Shawn Duffy

Project Name: PG&E Topock Project

Project Number: 652547.xx.xx.xx

P.O. Number: PGEIM1111100

Release Number:

Laboratory No. 815084

Page 1 of 6

Printed 12/3/2014

Samples Received on 11/12/2014 7:30:00 PM

Field ID	Lab ID	Collected	Matrix
SC-700B-WDR-494	815084-001	11/12/2014 15:00	Water

### Specific Conductivity - EPA 120.1

Batch 1411100

Parameter	Unit	Analyzed	DF	MDL	RL	Result
815084-001 Specific Conductivity	umhos/cm	11/13/2014	1.00	0.606	2.00	7180

#### Method Blank

Parameter	Unit	DF	Result
Specific Conductivity	umhos	1.00	ND

#### Duplicate

Lab ID = 815095-001

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Specific Conductivity	umhos	1.00	3.21	3.23	0.621	0 - 10

#### Lab Control Sample

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Specific Conductivity	umhos	1.00	709	706	100	90 - 110

#### MRCCS - Secondary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Specific Conductivity	umhos	1.00	709	706	100	90 - 110

#### MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Specific Conductivity	umhos	1.00	1020	1000	102	90 - 110

#### MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Specific Conductivity	umhos	1.00	1020	1000	102	90 - 110

This report applies only to the sample, or samples, investigated and is not necessarily indicative of the quality or condition of apparently identical or similar products. As a mutual protection to clients, the public, and these laboratories, this report is submitted and accepted for the exclusive use of the client to whom it is addressed and upon the condition that it is not to be used, in whole or in part, in any advertising or publicity matter without prior written authorization from Truesdail Laboratories.

008



# TRUESDAIL LABORATORIES, INC.

Report Continued

Client: E2 Consulting Engineers, Inc.

Project Name: PG&E Topock Project

Page 2 of 6

Project Number: 652547.xx.xx.xx

Printed 12/3/2014

## Chrome VI by EPA 218.6

Batch 1411189

Parameter	Unit	Analyzed	DF	MDL	RL	Result
815084-001 Chromium, Hexavalent	ug/L	11/13/2014 12:37	1.00	0.00600	0.20	ND

### Method Blank

Parameter	Unit	DF	Result
Chromium, Hexavalent	ug/L	1.00	ND

### Duplicate

Lab ID = 815084-001

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Chromium, Hexavalent	ug/L	5.00	0.102	0.100	1.98	0 - 20

### Low Level Calibration Verification

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	0.205	0.200	102	70 - 130

### Lab Control Sample

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	5.14	5.00	103	90 - 110

### Matrix Spike

Lab ID = 815084-001

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	5.00	5.16	5.10(5.00)	101	90 - 110

### Matrix Spike

Lab ID = 815084-001

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	1.15	1.11(1.00)	104	90 - 110

### MRCCS - Secondary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	5.16	5.00	103	90 - 110

### MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	10.2	10.0	102	95 - 105

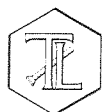
### MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	10.1	10.0	101	95 - 105

### MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	10.2	10.0	102	95 - 105

This report applies only to the sample, or samples, investigated and is not necessarily indicative of the quality or condition of apparently identical or similar products. As a mutual protection to clients, the public, and these laboratories, this report is submitted and accepted for the exclusive use of the client to whom it is addressed and upon the condition that it is not to be used, in whole or in part, in any advertising or publicity matter without prior written authorization from Truesdail Laboratories.

**TRUESDAIL LABORATORIES, INC.**

Report Continued

Client: E2 Consulting Engineers, Inc.

Project Name: PG&amp;E Topock Project

Page 3 of 6

Project Number: 652547.xx.xx.xx

Printed 12/3/2014

**Metals by EPA 200.8, Total**

Batch 111714A

Parameter	Unit	Analyzed	DF	MDL	RL	Result
815084-001 Chromium	ug/L	11/17/2014 15:38	1.00	0.0710	1.0	ND
Manganese	ug/L	11/17/2014 15:38	1.00	0.0600	0.50	5.7

**Method Blank**

Parameter	Unit	DF	Result
Chromium	ug/L	1.00	ND
Manganese	ug/L	1.00	ND

**Duplicate**

Lab ID = 815084-001

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Chromium	ug/L	1.00	ND	0	0	0 - 20
Manganese	ug/L	1.00	5.91	5.70	3.67	0 - 20

**Low Level Calibration Verification**

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium	ug/L	1.00	0.440	0.500	88.0	70 - 130
Manganese	ug/L	1.00	0.449	0.500	89.8	70 - 130

**Lab Control Sample**

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium	ug/L	1.00	48.4	50.0	96.8	85 - 115
Manganese	ug/L	1.00	46.6	50.0	93.3	85 - 115

**Matrix Spike**

Lab ID = 815084-001

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium	ug/L	1.00	48.0	50.0(50.0)	96.0	75 - 125
Manganese	ug/L	1.00	50.7	55.7(50.0)	90.1	75 - 125

**Matrix Spike Duplicate**

Lab ID = 815084-001

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium	ug/L	1.00	46.7	50.0(50.0)	93.5	75 - 125
Manganese	ug/L	1.00	49.8	55.7(50.0)	88.2	75 - 125

**MRCCS - Secondary**

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium	ug/L	1.00	20.4	20.0	102	90 - 110
Manganese	ug/L	1.00	20.8	20.0	104	90 - 110

**MRCVS - Primary**

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium	ug/L	1.00	20.5	20.0	102	90 - 110

This report applies only to the sample, or samples, investigated and is not necessarily indicative of the quality or condition of apparently identical or similar products. As a mutual protection to clients, the public, and these laboratories, this report is submitted and accepted for the exclusive use of the client to whom it is addressed and upon the condition that it is not to be used, in whole or in part, in any advertising or publicity matter without prior written authorization from Truesdail Laboratories.



# TRUESDAIL LABORATORIES, INC.

Report Continued

Client: E2 Consulting Engineers, Inc.

Project Name: PG&E Topock Project

Page 5 of 6

Project Number: 652547.xx.xx.xx

Printed 12/3/2014

## Interference Check Standard AB

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Manganese	ug/L	1.00	20.5	20.0	102	80 - 120

## Total Dissolved Solids by SM 2540 C

Batch 1411159

Parameter	Unit	Analyzed	DF	MDL	RL	Result
815084-001 Total Dissolved Solids	mg/L	11/13/2014	1.00	1.76	250	4170

### Method Blank

Parameter	Unit	DF	Result
Total Dissolved Solids	mg/L	1.00	ND

### Duplicate

Lab ID = 815084-001

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Total Dissolved Solids	mg/L	1.00	4190	4170	0.478	0 - 10

### Lab Control Sample

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Total Dissolved Solids	mg/L	1.00	470	500	94.0	90 - 110

## Turbidity by SM 2130 B

Batch 1411198

Parameter	Unit	Analyzed	DF	MDL	RL	Result
815084-001 Turbidity	NTU	11/13/2014	1.00	0.0140	0.100	0.103

### Method Blank

Parameter	Unit	DF	Result
Turbidity	NTU	1.00	ND

### Duplicate

Lab ID = 815096-004

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Turbidity	NTU	1.00	0.107	0.110	2.76	0 - 20

### Lab Control Sample

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Turbidity	NTU	1.00	7.21	8.00	90.1	90 - 110

### Lab Control Sample Duplicate

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Turbidity	NTU	1.00	7.20	8.00	90.0	90 - 110

This report applies only to the sample, or samples, investigated and is not necessarily indicative of the quality or condition of apparently identical or similar products. As a mutual protection to clients, the public, and these laboratories, this report is submitted and accepted for the exclusive use of the client to whom it is addressed and upon the condition that it is not to be used, in whole or in part, in any advertising or publicity matter without prior written authorization from Truesdail Laboratories.



**TRUESDAIL LABORATORIES, INC.**

*Report Continued*

**Client: E2 Consulting Engineers, Inc.**

**Project Name: PG&E Topock Project**

**Page 6 of 6**

**Project Number: 652547.xx.xx.xx**

**Printed 12/3/2014**

Respectfully submitted,

**TRUESDAIL LABORATORIES, INC.**

  
for Mona Nassimi  
Manager, Analytical Services

**Total Dissolved Solids by SM 2540 C****Calculations**
 Batch: 1411159  
 Date Analyzed: 11/13/2014

Laboratory Number	Sample volume, mL	Initial weight, g	1st Final weight, g	2nd Final weight, g	Weight Difference, g	Exceeds 0.5mg? Yes/No	Residue weight, g	Filterable residue, ppm	RL, ppm	Reported Value, ppm	DF
Blank	100	111.1863	111.1863	111.1863	0.0000	No	0.0000	0.0	25.0	ND	1
14K0007-17B	50	49.1768	49.2187	49.2185	0.0002	No	0.0417	834.0	50.0	834.0	1
14K0173-01	100	74.3658	74.4097	74.4097	0.0000	No	0.0439	439.0	25.0	439.0	1
14K0173-02	100	76.7758	76.8221	76.8217	0.0004	No	0.0459	459.0	25.0	459.0	1
14K0180-01	900	167.3427	167.3460	167.3460	0.0000	No	0.0033	3.7	2.8	3.7	1
14K0186-01A	50	50.9788	51.0397	51.0395	0.0002	No	0.0607	1214.0	50.0	1214.0	1
14K0186-02	50	58.4418	58.4730	58.4730	0.0000	No	0.0312	624.0	50.0	624.0	1
14K0186-03	50	51.7134	51.7646	51.7642	0.0004	No	0.0508	1016.0	50.0	1016.0	1
14K0186-04	100	74.0173	74.0713	74.0710	0.0003	No	0.0537	537.0	25.0	537.0	1
14K0186-05	50	49.1463	49.2075	49.2072	0.0003	No	0.0609	1218.0	50.0	1218.0	1
14K0187-01	100	72.0564	72.1158	72.1154	0.0004	No	0.0590	590.0	25.0	590.0	1
14K0186-05 Dup	50	51.8304	51.8909	51.8907	0.0002	No	0.0603	1206.0	50.0	1206.0	1
LCS	100	75.2718	75.3191	75.3188	0.0003	No	0.0470	470.0	25.0	470.0	1
14K0187-02	100	76.0138	76.0720	76.0720	0.0000	No	0.0582	582.0	25.0	582.0	1
14K0187-03	50	50.7012	50.7494	50.7492	0.0002	No	0.0480	960.0	50.0	960.0	1
14K0187-04	50	51.7900	51.8228	51.8224	0.0004	No	0.0324	648.0	50.0	648.0	1
14K0187-05	50	59.1902	59.2447	59.2444	0.0003	No	0.0542	1084.0	50.0	1084.0	1
14K0187-06	50	49.5644	49.6210	49.6207	0.0003	No	0.0563	1126.0	50.0	1126.0	1
14K0198-01	500	158.8644	158.8721	158.8720	0.0001	No	0.0076	15.2	5.0	15.2	1
14K0198-02	500	168.6093	168.6177	168.6177	0.0000	No	0.0084	16.8	5.0	16.8	1
14K0218-01D	100	76.1994	76.2445	76.2444	0.0001	No	0.0450	450.0	25.0	450.0	1
14K0218-02	100	78.3705	78.4175	78.4171	0.0004	No	0.0466	466.0	25.0	466.0	1
14K0224-01A	10	30.3648	30.4065	30.4065	0.0000	No	0.0417	4170.0	250.0	4170.0	1
14K0224-01 Dup	10	30.0504	30.0925	30.0923	0.0002	No	0.0419	4190.0	250.0	4190.0	1

Calculation as follows:

$$\text{Filterable residue (TDS), mg/L} = \left( \frac{A - B}{C} \right) \times 10^6$$

Where:

A = weight of dish + residue in grams.  
 B = weight of dish in grams.  
 C = mL of sample filtered.

RL = reporting limit.  
 ND = not detected (below the reporting limit).

**Laboratory Control Sample (LCS) Summary**

QC Std I.D.	Measured Value, ppm	Theoretical Value, ppm	Percent Rec	Acceptance Limit	QC Within Control?
LCS	470.0	500	94.0%	90-110%	Yes
LCS D					

**LCS Recovery**

$$P = \left( \frac{LC}{LT} \right) \times 100$$

P = Percent recovery.

LC = Measured LCS value (ppm).

LT = Theoretical LCS value (ppm).

**Duplicate Determinations Difference Summary**

Lab Number	Sample Weight, g	Sample Dup Weight, g	% RPD	Acceptance Limit	QC Within Control?
14K0186-05	0.0609	0.0603	0.5%	≤5%	Yes
14K0224-01	0.0417	0.0419	0.2%	≤5%	Yes

**Duplicate Determination Difference**

$$\% \text{ Difference} = \frac{|A - B|}{C} \times 100$$

$$\text{where } C = \frac{A + B}{2}$$

A = Weight of the first sample in (g).

B = Weight of the second sample in (g).

C = Average weight in (g).

Jenny T.

Analyst Printed Name

Analyst Signature

Maksim G.

Reviewer Printed Name

Reviewer Signature

# Total Dissolved Solids by SM 2540 C

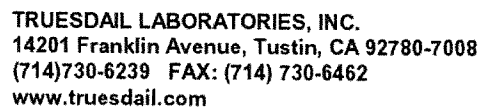
## TDS/EC CHECK

Batch: 1411159  
Date Analyzed: 11/13/2014

Laboratory Number	EC	TDS/EC Ratio: 0.55-0.90	Calculated TDS (EC*0.65)	Measured TDS / Calc TDS <1.3
14K0007-17B	1342	0.62	872.3	0.96
14K0173-01	853	0.51	554.45	0.79
14K0173-02	794	0.58	516.1	0.89
14K0180-01	5.77	0.64	3.7505	0.98
14K0186-01A	1678	0.72	1090.7	1.11
14K0186-02	1003	0.62	651.95	0.96
14K0186-03	1440	0.71	936	1.09
14K0186-04	967	0.56	628.55	0.85
14K0186-05	1620	0.75	1053	1.16
14K0187-01	967	0.61	628.55	0.94
14K0186-05 Dup	1620	0.74	1053	1.15
LCS				
14K0187-02	983	0.59	638.95	0.91
14K0187-03	1322	0.73	859.3	1.12
14K0187-04	1027	0.63	667.55	0.97
14K0187-05	1484	0.73	964.6	1.12
14K0187-06	1570	0.72	1020.5	1.10
14K0198-01	14.8	1.03	9.62	1.58
14K0198-02	14.8	1.14	9.62	1.75
14K0218-01D	860	0.52	559	0.81
14K0218-02	803	0.58	521.95	0.89
14K0224-01A	7180	0.58	4667	0.89
14K0224-01 Dup	7180	0.58	4667	0.90

*Me*

*JF*



[IM3Plant-WDR-494]

815084/ 14K 0224

COC Number

TURNAROUND TIME 10 Days

DATE 11/12/14 PAGE 1 OF 1

COMPANY		E2																COMMENTS					
PROJECT NAME		PG&E Topock																					
PHONE		(530) 229-3303						FAX		(530) 339-3303													
ADDRESS		155 Grand Ave Ste 1000 Oakland, CA 94612																					
P.O. NUMBER		652547.XX.XX.XX						TEAM		1													
SAMPLERS (SIGNATURE)																							
SAMPLE I.D.		DATE		TIME		DESCRIPTION		Cr6 (218.6) Lab Filtered		Total Metals (200.8) Cr, Mn		Specific Conductance (120.1)		TDS (SM2540C)		Turbidity (SM2130)							NUMBER OF CONTAINERS
SC-700B-WDR-494		11/12/14				Water		x	x	x	x		x									3	pH = 6 (200.8)
																						TOTAL NUMBER OF CONTAINERS	

**Please Provide a preliminary Result for the TDS ASAP**

**ALERT !!**  
**Level III QC**

CHAIN OF CUSTODY SIGNATURE RECORD					SAMPLE CONDITIONS	
Signature (Relinquished)	Printed Name	Company/Agency	Date/Time	RECEIVED	COOL <input checked="" type="checkbox"/>	WARM <input type="checkbox"/>
Signature (Received)	Printed Name	Company/Agency	Date/Time	4.10°C		
Signature (Relinquished)	Printed Name	Company/Agency	Date/Time	CUSTODY SEALED	YES <input type="checkbox"/>	NO <input type="checkbox"/>
Signature (Received)	Printed Name	Company/Agency	Date/Time	SPECIAL REQUIREMENTS:		
Signature (Relinquished)	Printed Name	Company/Agency	Date/Time			
Signature (Received)	Printed Name	Company/Agency	Date/Time			
Signature (Relinquished)	Printed Name	Company/Agency	Date/Time			
Signature (Received)	Printed Name	Company/Agency	Date/Time			

## Sean Condon

---

**From:** Shawn.Duffy@CH2M.com  
**Sent:** Monday, November 17, 2014 8:53 PM  
**To:** Sean Condon  
**Subject:** RE: Topock COC SDG 815084 - 11-17-14

Please use the time on the containers

Shawn

**From:** Sean Condon [mailto:scondon@truesdail.com]  
**Sent:** Monday, November 17, 2014 5:53 PM  
**To:** SWR/RDD Electronic Data; Duffy, Shawn/RDD  
**Subject:** Topock COC SDG 815084 - 11-17-14

The sample collection time on the containers is 15:00. No time was recorded on the COC.

Thank you,  
Sean Condon  
Project Manager  
Truesdail Laboratories, Inc.  
14201 Franklin Ave.  
Tustin, CA 92780  
(714 730-6239





## Turbidity/pH Check

Sample Number	Turbidity	pH	Date	Analyst	Need Digest (Y/N)	Time of Adjustment to pH 2	Date/Time of 2nd pH check	Comments
14K0007-17	<1	7.2	11/10/14	ES	NO	5:00	11/11/14 1:00	pH 2.2
14K0141-01	<1	7.2	11/11/14	ES	Yes	1:00		
14K0151-01	<1	<2						
14K0152-01	↓	↓	↓	↓	↓			
14K0173-01	>1	↓	↓	↓	↓			
-02	<1	↓	↓	↓	↓			
14K0193-01	↓	↓	↓	↓	↓			
14K0213-06	<1	7.2	11/12/14	ES	NO	11:00	11/13/14 2:00	pH 2.2
14K0150-02	>1	<2	↓	↓	Yes			
14K0211-01	<1	↓	↓	↓	↓			
14K0228(10-12)	<1	7.2	11/13/14	ES	NO	10:00	11/14/14 2:00	pH 2.2
14K0229(01-03)	↓	↓	↓	↓	↓	↓	↓	
14K0165-02	↓	<2	↓	↓	Yes			
14K0166-02	>1	↓	↓	↓	↓			
14K0168-02	<1	↓	↓	↓	↓			
14K0169-02	↓	↓	↓	↓	↓			
14K0218-01	>1	↓	↓	↓	↓			
-02	<1	↓	↓	↓	↓			
14K0188-02	↓	<2	11/13/14	ES	Yes			
14K0189-02	↓	↓	↓	↓	↓			
14K0190-02	↓	↓	↓	↓	↓			
14K0191-02	>1	↓	↓	↓	↓			
14K0192-02	↓	↓	↓	↓	↓			
14K0004(01-02-03-04)	<1	>2	11/17/14	mm	NO	10:00	11/18/14 10:00	pH 2.2
14K0224-01	<1	>2	11/17/14	mm	Yes	10:00		pH 2.2
14K0291-01	<1	>2	11/17/14	mm	NO	11:15	11/18/14 10:00	pH 2.2
14K0238-01	>1	<2	11/18/14	ES	Yes			
14K0240-01	<1	↓	↓	↓	↓			
14K0294-01	>1	↓	↓	↓	↓			
-02	<1	↓	↓	↓	↓			
14K0283-01	<1	<2	11/19/14	ES	Yes			
14K0286-01	↓	↓	↓	↓	↓			
14K0287-01	↓	↓	↓	↓	↓			
14K0333-01	↓	7.2	↓	↓	NO	10:00	11/20/14 10:00	pH 2.2
03	↓	↓	↓	↓	↓	↓	↓	↓
05	↓	↓	↓	↓	↓	↓	↓	↓
07	↓	↓	↓	↓	↓	↓	↓	↓
09	↓	↓	↓	↓	↓	↓	↓	↓
14K0142-01	↓	↓	↓	↓	↓	↓	↓	↓
-02	↓	↓	↓	↓	↓	↓	↓	↓
-04	↓	↓	↓	↓	↓	↓	↓	↓
14K0329-01	<1	7.2	11/19/14	ES	Yes	11:00		pH 2.2
14K0336-01	>1	<2	↓	↓	↓			
-02	↓	↓	↓	↓	↓			

## Notes:

1. Samples should be analyzed after 24 hrs of pH adjustment to pH2 for Dissolved Analytes.
2. All Total Recoverable Analytes must be pH adjusted and digested.
3. Do not use disposable pipette to measure pH; pour a little amount of sample from the bottle.

## WORK ORDER

Printed: 11/13/14 7:06:56AM

14K0224

## Truesdail Laboratories, Inc

Client: E2 Consulting Engineers, Inc.  
Project: Topock IM3Plant-WDR Weekly

Project Manager: Sean Condon  
Project Number: PGE-2152

**Report To:**

E2 Consulting Engineers, Inc.  
Christi Gitlin  
1900 Powell Street, Suite 250  
Emeryville, CA 94608  
Phone: 510-428-4728  
Fax: 510-652-5604

**Invoice To:**

E2 Consulting Engineers, Inc.  
Christi Gitlin  
1900 Powell Street, Suite 250  
Emeryville, CA 94608  
Phone :510-428-4728  
Fax: 510-652-5604

Date Due: 11/24/2014 16:30 (7 day TAT)

Received By: Michael Ngo

Date Received: 11/12/2014 19:30

Logged In By: Luda Shabunina

Date Logged In: 11/13/2014 07:05

Samples Received at: 4.1°C

Chain of Custody re	Yes	Samples intact?	Yes
Letter (if sent) matc	No	Custody seals (if an	No
Requested analyses	Yes	Analyses within hol	Yes
Samples received in	Yes		

Analysis	Due	TAT	Expires	Comments
14K0224-01 SC-700B-WDR-494 [Water] Sampled 11/12/2014 15:00 (GMT-08:00) Pacific Time (US &				
Turbidity	11/24/2014 12:00	7	11/14/2014 15:00	
TDS	11/24/2014 12:00	7	11/19/2014 15:00	
Specific Conductivity	11/24/2014 12:00	7	12/10/2014 15:00	
Mn-200.8	11/24/2014 12:00	7	05/11/2015 15:00	
Cr-200.8	11/24/2014 12:00	7	05/11/2015 15:00	
Cr VI-218.6	11/24/2014 12:00	7	12/10/2014 15:00	

ALERT!!  
Level III QC

*Sean Condon*  
Reviewed By

*11/18/14*  
Date



# TRUESDAIL LABORATORIES, INC.

EXCELLENCE IN INDEPENDENT TESTING



Established 1931

14201 FRANKLIN AVENUE  
TUSTIN, CALIFORNIA 92780-7008  
(714) 730-6239 · FAX (714) 730-6462  
www.truesdail.com

December 3, 2014

E2 Consulting Engineers, Inc.  
Mr. Shawn Duffy  
155 Grand Ave., Suite 1000  
Oakland, California 94612

Dear Mr. Duffy:

SUBJECT: CASE NARRATIVE PG&E TOPOCK IM3PLANT-WDR-495 PROJECT, GROUNDWATER  
MONITORING, TLI NO.: 815085

Truesdail Laboratories, Inc. is pleased to submit this report summarizing the Topock IM3Plant-WDR-495 project groundwater monitoring for Hexavalent and Total Chromium, Total Manganese, Turbidity, Specific Conductivity, and Total Dissolved Solids. A summary table for this sample delivery group is included in Section 2. Complete laboratory reports, quality control data and chain of custody forms for sampling period are included in Sections 3 and 4. Analytical raw data have been included under Section 5.

The samples were received and delivered with the chain of custody on November 18, 2014, intact and in chilled condition. The samples will be kept in a locked refrigerator for 30 days; thereafter it will be kept in warm storage for an additional 2 months before disposal.


Sample SC-700B-WDR-495 was analyzed as sample I.D. 14K0329 in the raw data but is reported as 815085 in all final report pages.


The straight runs for the sample and associated matrix spike on sample SC-700B-WDR-495 for Hexavalent Chromium analysis by EPA 218.6 were just outside the retention time window. Because the matrix spike recovery and all other QA/QC were within acceptable limits, the data from the straight run was reported.

No violations or nonconformance actions occurred for this data package.

If you have any questions or require additional information, please contact me at (714) 730-6239 ext. 200.

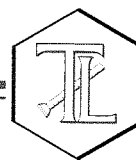
Respectfully Submitted,  
TRUESDAIL LABORATORIES, INC.

  
Mona Nassimi  
Manager, Analytical Services

  
Michael Ngo  
Quality Assurance/Quality Control Officer

# TRUESDAIL LABORATORIES, INC.

EXCELLENCE IN INDEPENDENT TESTING



Established 1931

**Client:** E2 Consulting Engineers, Inc.  
155 Grand Ave. Suite 1000  
Oakland, CA 94612

**Attention:** Shawn Duffy

**Sample:** One (1) Groundwater Sample

**Project Name:** PG&E Topock Project

**Project No.:** 652547.xx.xx.xx

14201 FRANKLIN AVENUE  
TUSTIN, CALIFORNIA 92780-7008  
(714) 730-6239 · FAX (714) 730-6462  
www.truesdail.com

**Laboratory No.:** 815085

**Date:** December 3, 2014

**Collected:** November 18, 2014

**Received:** November 18, 2014

## ANALYST LIST

METHOD	PARAMETER	ANALYST
EPA 120.1	Specific Conductivity	Jenny Tankunakorn
SM 2540C	Total Dissolved Solids	Jenny Tankunakorn
SM 2130B	Turbidity	Naheed Eidinejad
EPA 200.8	Total Metals	Tom Martinez
EPA 218.6	Hexavalent Chromium	Naheed Eidinejad

# TRUESDAIL LABORATORIES, INC.

EXCELLENCE IN INDEPENDENT TESTING



Established 1931

14201 FRANKLIN AVENUE · TUSTIN, CALIFORNIA 92780-7008  
(714) 730-6239 · FAX (714) 730-6462 · www.truesdail.com

**Client:** E2 Consulting Engineers, Inc.  
155 Grand Ave. Suite 1000  
Oakland, CA 94612

**Attention:** Shawn Duffy

**Laboratory No.:** 815085  
**Date Received:** November 18, 2014

**Project Name:** PG&E Topock Project

**Project No.:** 652547.xx.xx.xx

**P.O. No.:** PGEIM11111001

## Analytical Results Summary

Lab Sample ID	Field ID	Analysis Method	Extraction Method	Sample Date	Sample Time	Parameter	Result	Units	RL
815085-001	SC-700B-WDR-495	E120.1	NONE	11/18/2014	8:00	EC	7250	umhos/cm	2.00
815085-001	SC-700B-WDR-495	E200.8	NONE	11/18/2014	8:00	Chromium	ND	ug/L	1.0
815085-001	SC-700B-WDR-495	E200.8	NONE	11/18/2014	8:00	Manganese	5.9	ug/L	0.50
815085-001	SC-700B-WDR-495	E218.6	LABFLT	11/18/2014	8:00	Chromium, Hexavalent	ND	ug/L	0.20
815085-001	SC-700B-WDR-495	SM2130B	NONE	11/18/2014	8:00	Turbidity	ND	NTU	0.100
815085-001	SC-700B-WDR-495	SM2540C	NONE	11/18/2014	8:00	Total Dissolved Solids	4280	mg/L	250

ND: Non Detected (below reporting limit)

mg/L: Milligrams per liter.

**Note:** The following "Significant Figures" rule has been applied to all results:

Results below 0.01ppm will have two (2) significant figures.

Result above or equal to 0.01ppm will have three (3) significant figures.

Quality Control data will always have three (3) significant figures.

005

This report applies only to the sample, or samples, investigated and is not necessarily indicative of the quality or condition of apparently identical or similar products. As a mutual protection to clients, the public, and these laboratories, this report is submitted and accepted for the exclusive use of the client to whom it is addressed and upon the condition that it is not to be used, in whole or in part, in any advertising or publicity matter without prior written authorization from Truesdail Laboratories.

# TRUESDAIL LABORATORIES, INC.

EXCELLENCE IN INDEPENDENT TESTING



Established 1931

14201 FRANKLIN AVENUE  
TUSTIN, CALIFORNIA 92780-7008  
(714) 730-6239 · FAX (714) 730-6462  
www.truesdail.com

## REPORT

**Client:** E2 Consulting Engineers, Inc.

155 Grand Avenue, Suite 800

Oakland, CA 94612

Attention: Shawn Duffy

Project Name: PG&E Topock Project

Project Number: 652547.xx.xx.xx

P.O. Number: PGEIM1111100'

Release Number:

Laboratory No. 815085

Page 1 of 6

Printed 12/3/2014

Samples Received on 11/18/2014 6:45:00 PM

Field ID	Lab ID	Collected	Matrix
SC-700B-WDR-495	815085-001	11/18/2014 08:00	Water

### Specific Conductivity - EPA 120.1

Batch 1411293

Parameter	Unit	Analyzed	DF	MDL	RL	Result
815085-001 Specific Conductivity	umhos/cm	11/20/2014	1.00	0.606	2.00	7250

#### Method Blank

Parameter	Unit	DF	Result
Specific Conductivity	umhos	1.00	ND

#### Duplicate

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Specific Conductivity	umhos	1.00	2.66	2.44	8.63	0 - 10

Lab ID = 815087-001

#### Lab Control Sample

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Specific Conductivity	umhos	1.00	713	706	101	90 - 110

#### MRCCS - Secondary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Specific Conductivity	umhos	1.00	713	706	101	90 - 110

#### MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Specific Conductivity	umhos	1.00	1090	1000	109	90 - 110

#### MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Specific Conductivity	umhos	1.00	1090	1000	109	90 - 110



Client: E2 Consulting Engineers, Inc.

Project Name: PG&E Topock Project

Page 2 of 6

Project Number: 652547.xx.xx.xx

Printed 12/3/2014

**Chrome VI by EPA 218.6**

Batch 1411276

Parameter	Unit	Analyzed	DF	MDL	RL	Result
815085-001 Chromium, Hexavalent	ug/L	11/19/2014 14:59	1.00	0.00600	0.20	ND

Method Blank

Parameter	Unit	DF	Result
Chromium, Hexavalent	ug/L	1.00	ND

Duplicate

Lab ID = 815085-001

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Chromium, Hexavalent	ug/L	5.00	0.0890	0.0895	0.560	0 - 20

Low Level Calibration Verification

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	0.186	0.200	93.0	70 - 130

Lab Control Sample

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	5.19	5.00	104	90 - 110

Matrix Spike

Lab ID = 815085-001

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	5.00	5.13	5.09(5.00)	101	90 - 110

Matrix Spike

Lab ID = 815085-001

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	1.14	1.07(1.00)	107	90 - 110

MRCCS - Secondary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	5.15	5.00	103	90 - 110

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	10.2	10.0	102	95 - 105

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	10.1	10.0	101	95 - 105

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	10.2	10.0	102	95 - 105



# TRUESDAIL LABORATORIES, INC.

Report Continued

Client: E2 Consulting Engineers, Inc.

Project Name: PG&E Topock Project

Page 3 of 6

Project Number: 652547.xx.xx.xx

Printed 12/3/2014

## Metals by EPA 200.8, Total

Batch 112514A

Parameter	Unit	Analyzed	DF	MDL	RL	Result
815085-001 Chromium	ug/L	11/25/2014 16:58	1.00	0.0710	1.0	ND
Manganese	ug/L	11/25/2014 16:58	1.00	0.0600	0.50	5.9

### Method Blank

Parameter	Unit	DF	Result
Chromium	ug/L	1.00	ND
Manganese	ug/L	1.00	ND

### Duplicate

Lab ID = 815085-001

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Chromium	ug/L	1.00	ND	0	0	0 - 20
Manganese	ug/L	1.00	5.90	5.95	0.844	0 - 20

### Low Level Calibration Verification

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium	ug/L	1.00	0.586	0.500	117	
Manganese	ug/L	1.00	0.536	0.500	107	

### Lab Control Sample

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium	ug/L	1.00	49.4	50.0	98.7	85 - 115
Manganese	ug/L	1.00	53.1	50.0	106	85 - 115

### Matrix Spike

Lab ID = 815085-001

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium	ug/L	1.00	50.8	50.0(50.0)	102	75 - 125
Manganese	ug/L	1.00	52.2	56.0(50.0)	92.6	75 - 125

### Matrix Spike Duplicate

Lab ID = 815085-001

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium	ug/L	1.00	50.5	50.0(50.0)	101	75 - 125
Manganese	ug/L	1.00	52.2	56.0(50.0)	92.6	75 - 125

### MRCCS - Secondary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium	ug/L	1.00	19.2	20.0	95.8	90 - 110
Manganese	ug/L	1.00	19.3	20.0	96.5	90 - 110

### MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium	ug/L	1.00	19.6	20.0	97.9	90 - 110

This report applies only to the sample, or samples, investigated and is not necessarily indicative of the quality or condition of apparently identical or similar products. As a mutual protection to clients, the public, and these laboratories, this report is submitted and accepted for the exclusive use of the client to whom it is addressed and upon the condition that it is not to be used, in whole or in part, in any advertising or publicity matter without prior written authorization from Truesdail Laboratories.



# TRUESDAIL LABORATORIES, INC.

Report Continued

Client: E2 Consulting Engineers, Inc.

Project Name: PG&E Topock Project

Page 5 of 6

Project Number: 652547.xx.xx.xx

Printed 12/3/2014

## Interference Check Standard AB

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium	ug/L	1.00	18.9	20.0	94.4	80 - 120

## Interference Check Standard AB

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Manganese	ug/L	1.00	18.5	20.0	92.6	80 - 120

## Interference Check Standard AB

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Manganese	ug/L	1.00	18.9	20.0	94.6	80 - 120

## Total Dissolved Solids by SM 2540 C

Batch 1411278

Parameter	Unit	Analyzed	DF	MDL	RL	Result
815085-001 Total Dissolved Solids	mg/L	11/21/2014	1.00	1.76	250	4280

## Method Blank

Parameter	Unit	DF	Result
Total Dissolved Solids	mg/L	1.00	ND

## Duplicate

Lab ID = 815085-001

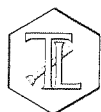
Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Total Dissolved Solids	mg/L	1.00	4170	4280	2.60	0 - 10

## Lab Control Sample

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Total Dissolved Solids	mg/L	1.00	492	500	98.4	90 - 110

This report applies only to the sample, or samples, investigated and is not necessarily indicative of the quality or condition of apparently identical or similar products. As a mutual protection to clients, the public, and these laboratories, this report is submitted and accepted for the exclusive use of the client to whom it is addressed and upon the condition that it is not to be used, in whole or in part, in any advertising or publicity matter without prior written authorization from Truesdail Laboratories.

012



# TRUESDAIL LABORATORIES, INC.

Report Continued

Client: E2 Consulting Engineers, Inc.

Project Name: PG&E Topock Project

Page 6 of 6

Project Number: 652547.xx.xx.xx

Printed 12/3/2014

## Turbidity by SM 2130 B

Batch 1411355

Parameter	Unit	Analyzed	DF	MDL	RL	Result
815085-001 Turbidity	NTU	11/19/2014	1.00	0.0140	0.100	ND

### Method Blank

Parameter	Unit	DF	Result
Turbidity	NTU	1.00	ND

### Duplicate

Lab ID = 815097-007

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Turbidity	NTU	1.00	0.109	0.104	4.69	0 - 20

### Lab Control Sample

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Turbidity	NTU	1.00	7.47	8.00	93.4	90 - 110

### Lab Control Sample Duplicate

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Turbidity	NTU	1.00	7.68	8.00	96.0	90 - 110

Respectfully submitted,

TRUESDAIL LABORATORIES, INC.



Mona Nassimi

Manager, Analytical Services

**Total Dissolved Solids by SM 2540 C****Calculations**Batch: 1411278  
Date Analyzed: 11/21/2014

Laboratory Number	Sample volume, mL	Initial weight, g	1st Final weight, g	2nd Final weight, g	Weight Difference, g	Exceeds 0.5mg? Yes/No	Residue weight, g	Filterable residue, ppm	RL, ppm	Reported Value, ppm	DF
Blank	100	71.3217	71.3220	71.3220	0.0000	No	0.0003	3.0	25.0	ND	1
14K0142-02A	100	70.3654	70.3801	70.3801	0.0000	No	0.0147	147.0	25.0	147.0	1
14K0142-04	100	78.1691	78.1978	78.1974	0.0004	No	0.0283	283.0	25.0	283.0	1
14K0288-01	100	77.4695	77.4859	77.4855	0.0004	No	0.0160	160.0	25.0	160.0	1
14K0288-02	100	67.7952	67.8303	67.8303	0.0000	No	0.0351	351.0	25.0	351.0	1
14K0329-01A	10	27.9982	28.0414	28.0410	0.0004	No	0.0428	4280.0	250.0	4280.0	1
14K0338-01B	995	175.7736	175.7805	175.7805	0.0000	No	0.0069	6.9	2.5	6.9	1
14K0338-02	490	174.1812	174.1813	174.1813	0.0000	No	0.0001	0.2	5.1	ND	1
14K0345-01C	100	74.6850	74.7260	74.7258	0.0002	No	0.0408	408.0	25.0	408.0	1
14K0345-02	100	75.7315	75.7792	75.7792	0.0000	No	0.0477	477.0	25.0	477.0	1
14K0345-03	100	69.7380	69.7860	69.7856	0.0004	No	0.0476	476.0	25.0	476.0	1
14K0329-01 Dup	10	30.3866	30.4283	30.4283	0.0000	No	0.0417	4170.0	250.0	4170.0	1
LCS	100	74.6244	74.6739	74.6736	0.0003	No	0.0492	492.0	25.0	492.0	1
14K0345-04	100	71.2858	71.3345	71.3345	0.0000	No	0.0487	487.0	25.0	487.0	1
14K0349-01	100	73.1098	73.1530	73.1530	0.0000	No	0.0432	432.0	25.0	432.0	1
14K0349-02	100	66.7747	66.8189	66.8188	0.0001	No	0.0441	441.0	25.0	441.0	1
14K0349-02 Dup	100	79.4888	79.5334	79.5331	0.0003	No	0.0443	443.0	25.0	443.0	1

Calculation as follows:

$$\text{Filterable residue (TDS), mg/L} = \left( \frac{A - B}{C} \right) \times 10^6$$

Where:

A = weight of dish + residue in grams.  
B = weight of dish in grams.  
C = mL of sample filtered.

RL = reporting limit.  
ND = not detected (below the reporting limit).

**Laboratory Control Sample (LCS) Summary**

QC Std I.D.	Measured Value, ppm	Theoretical Value, ppm	Percent Rec	Acceptance Limit	QC Within Control?
LCS	492.0	500	98.4%	90-110%	Yes
LCS D					

**LCS Recovery**

$$P = \left( \frac{LC}{LT} \right) \times 100$$

P = Percent recovery.

LC = Measured LCS value (ppm).

LT = Theoretical LCS value (ppm).

**Duplicate Determinations Difference Summary**

Lab Number	Sample Weight, g	Sample Dup Weight, g	% RPD	Acceptance Limit	QC Within Control?
14K0329-01	0.0428	0.0417	1.3%	≤5%	Yes
14K0349-02	0.0441	0.0443	0.2%	≤5%	Yes

**Duplicate Determination Difference**

$$\% \text{ Difference} = \frac{|A \text{ or } B - C|}{C} \times 100$$

$$\text{where } C = \frac{A + B}{2}$$

A = Weight of the first sample in (g).

B = Weight of the second sample in (g).

C = Average weight in (g).

Jenny T.

Analyst Printed Name

Analyst Signature

Maksim G.

Reviewer Printed Name

Reviewer Signature

# Total Dissolved Solids by SM 2540 C

## TDS/EC CHECK

Batch: 1411278

Date Analyzed: 11/21/2014

Laboratory Number	EC	TDS/EC Ratio: 0.55-0.90	Calculated TDS (EC*0.65)	Measured TDS / Calc TDS <1.3
14K0142-02A	272	0.54	176.8	0.83
14K0142-04	489	0.58	317.85	0.89
14K0288-01	291	0.55	189.15	0.85
14K0288-02	568	0.62	369.2	0.95
14K0329-01A	7250	0.59	4712.5	0.91
14K0338-01B	6.22	1.11	4.043	1.72
14K0338-02	5.88	ND	3.822	ND
14K0345-01C	742	0.55	482.3	0.85
14K0345-02	865	0.55	562.25	0.85
14K0345-03	872	0.55	566.8	0.84
14K0329-01 Dup	7250	0.58	4712.5	0.88
LCS				
14K0345-04	875	0.56	568.75	0.86
14K0349-01	860	0.50	559	0.77
14K0349-02	788	0.56	512.2	0.86
14K0349-02 Dup	788	0.56	512.2	0.86



**TRUESDAIL LABORATORIES, INC.**  
14201 Franklin Avenue, Tustin, CA 92780-7008  
(714) 730-6239 FAX: (714) 730-6462  
[www.truesdail.com](http://www.truesdail.com)

## CHAIN OF CUSTODY RECORD

[IM3Plant-WDR-495]

815085/  
COC Number 14K0329

TURNAROUND TIME 10 Days  
DATE 11/18/14 PAGE 1 OF 1

COMPANY				E2																COMMENTS													
PROJECT NAME				PG&E Topock																													
PHONE				(530) 229-3303					FAX					(530) 339-3303																			
ADDRESS				155 Grand Ave Ste 1000 Oakland, CA 94612																													
P.O. NUMBER				652547.XX.XX.XX					TEAM					1																			
SAMPLERS (SIGNATURE)																																	
SAMPLE I.D.				DATE		TIME		DESCRIPTION		Cr6 (218.6) Lab Filtered		Total Metals (200.8) Cr, Mn		Specific Conductance (120.1)		TDS (SM2540C)		Turbidity (SM2130)														NUMBER OF CONTAINERS	
SC-700B-WDR-495				11/18/14		800		Water		x		x		x		x		x												3		PH=6 (200.9)	
																												3		TOTAL NUMBER OF CONTAINERS			

**Please Provide a preliminary Result for the TDS ASAP**

**ALERT !!**  
**Level III QC**

CHAIN OF CUSTODY SIGNATURE RECORD					SAMPLE CONDITIONS	
Signature (Relinquished)	Printed Name	Company/ Agency	Date/ Time	RECEIVED	COOL <input checked="" type="checkbox"/>	WARM <input type="checkbox"/> 3.5°C ±
Signature (Received)	Printed Name	Company/ Agency	Date/ Time	CUSTODY SEALED YES <input type="checkbox"/> NO <input type="checkbox"/>		
Signature (Relinquished)	Printed Name	Company/ Agency	Date/ Time			
Signature (Received)	Printed Name	Company/ Agency	Date/ Time	SPECIAL REQUIREMENTS:		
Signature (Relinquished)	Printed Name	Company/ Agency	Date/ Time			
Signature (Received)	Printed Name	Company/ Agency	Date/ Time			
Signature (Relinquished)	Printed Name	Company/ Agency	Date/ Time			

037

## Method EPA 218.6 and SW 7199 Sample pH Log

[illegible]

12, 3, 1, 4



## Turbidity/pH Check

Sample Number	Turbidity	pH	Date	Analyst	Need Digest (Y/N)	Time of Adjustment to pH 2	Date/Time of 2nd pH check	Comments
14K0007-17	<1	72	11/10/14	ES	NO	5:00	11/11/14 1:00	pH <2
14K0141-01	<1	72	11/11/14	ES	YES	1:00		
14K0151-01	<1	<2	↓	↓	↓			
14K0152-01	↓	↓	↓	↓	↓			
14K0173-01	>1	↓	↓	↓	↓			
-02	<1	↓	↓	↓	↓			
14K0193-01	↓	↓	↓	↓	↓			
14K0213-06	<1	72	11/12/14	ES	NO	11:00	11/13/14 10:00	pH <2
14K0150-02	>1	<2	↓	↓	YES			
14K0211-01	<1	↓	↓	↓	↓			
14K0228(10-12)	<1	72	11/13/14	ES	NO	10:00	11/14/14 10:00	pH <2
14K0229(01-02)	↓	↓	↓	↓	↓	↓	↓	
14K0165-02	↓	<2	↓	↓	YES			
14K0166-02	>1	↓	↓	↓	↓			
14K0168-02	<1	↓	↓	↓	↓			
14K0169-02	↓	↓	↓	↓	↓			
14K0218-01	>1	↓	↓	↓	↓			
-02	<1	↓	↓	↓	↓			
14K0188-02	↓	<2	11/13/14	ES	YES			
14K0189-02	↓	↓	↓	↓	↓			
14K0190-02	↓	↓	↓	↓	↓			
14K0191-02	>1	↓	↓	↓	↓			
14K0192-02	↓	↓	↓	↓	↓			
14K0004(01-02-03-04)	<1	>2	11/17/14	TM	NO	10:00	11/18/14 10:00	pH <2
14K0224-01	<1	>2	11/17/14	TM	YES	10:00		pH <2
14K0291-01	<1	>2	11/17/14	TM	NO	11:15	11/18/14 10:00	pH <2
14K0238-01	>1	<2	11/18/14	ES	YES			
14K0240-01	<1	↓	↓	↓	↓			
14K0294-01	>1	↓	↓	↓	↓			
-02	<1	↓	↓	↓	↓			
14K0283-01	<1	<2	11/19/14	ES	YES			
14K0286-01	↓	↓	↓	↓	↓			
14K0287-01	↓	↓	↓	↓	↓			
14K0333-01	↓	72	↓	↓	NO	10:00	11/20/14 10:00	pH <2
03	↓	↓	↓	↓	↓	↓	↓	↓
05	↓	↓	↓	↓	↓	↓	↓	↓
07	↓	↓	↓	↓	↓	↓	↓	↓
09	↓	↓	↓	↓	↓	↓	↓	↓
14K0142-01	↓	↓	↓	↓	↓	↓	↓	↓
-02	↓	↓	↓	↓	↓	↓	↓	↓
-04	↓	↓	↓	↓	↓	↓	↓	↓
14K0329-01	<1	72	11/19/14	ES	YES	11:00		pH <2
14K0336-01	>1	<2	↓	↓	↓			
-02	↓	↓	↓	↓	↓			

## Notes:

1. Samples should be analyzed after 24 hrs of pH adjustment to pH2 for Dissolved Analytes.
2. All Total Recoverable Analytes must be pH adjusted and digested.
3. Do not use disposable pipette to measure pH; pour a little amount of sample from the bottle.

## WORK ORDER

Printed: 11/19/14 7:42:15AM

14K0329

Truesdail Laboratories, Inc

Client: E2 Consulting Engineers, Inc.  
Project: Topock IM3Plant-WDR Weekly

Project Manager: Sean Condon  
Project Number: PGE-2152

Report To:

E2 Consulting Engineers, Inc.  
Christi Gitlin  
1900 Powell Street, Suite 250  
Emeryville, CA 94608  
Phone: 510-428-4728  
Fax: 510-652-5604

Invoice To:

E2 Consulting Engineers, Inc.  
Christi Gitlin  
1900 Powell Street, Suite 250  
Emeryville, CA 94608  
Phone :510-428-4728  
Fax: 510-652-5604

Date Due: 12/01/2014 16:30 (7 day TAT)

Received By: Tom Martinez

Date Received: 11/18/2014 18:45

Logged In By: Luda Shabunina

Date Logged In: 11/19/2014 07:40

Samples Received at: 3.5°C

Chain of Custody re	Yes	Samples intact?	Yes
Letter (if sent) matc	No	Custody seals (if an	No
Requested analyses	Yes	Analyses within hol	Yes
Samples received in	Yes		

Analysis	Due	TAT	Expires	Comments
----------	-----	-----	---------	----------

14K0329-01 SC-700B-WDR-495 [Water] Sampled 11/18/2014 08:00  
(GMT-08:00) Pacific Time (US &

Turbidity	12/01/2014 12:00	7	11/20/2014 08:00	
TDS	12/01/2014 12:00	7	11/25/2014 08:00	
Specific Conductivity	12/01/2014 12:00	7	12/16/2014 08:00	
Mn-200.8	12/01/2014 12:00	7	05/17/2015 08:00	
Cr-200.8	12/01/2014 12:00	7	05/17/2015 08:00	
Cr VI-218.6	12/01/2014 12:00	7	12/16/2014 08:00	

ALERT !!  
Level III QC

Reviewed By

Date

Page 1 of 1  
040

# TRUESDAIL LABORATORIES, INC.

EXCELLENCE IN INDEPENDENT TESTING



Established 1931

14201 FRANKLIN AVENUE  
TUSTIN, CALIFORNIA 92780-7008  
(714) 730-6239 · FAX (714) 730-6462  
www.truesdail.com

December 12, 2014

E2 Consulting Engineers, Inc.  
Mr. Shawn Duffy  
155 Grand Ave., Suite 1000  
Oakland, California 94612

Dear Mr. Duffy:

SUBJECT: CASE NARRATIVE PG&E TOPOCK IM3PLANT-WDR-496 PROJECT, GROUNDWATER  
MONITORING, TLI NO.: 815094

Truesdail Laboratories, Inc. is pleased to submit this report summarizing the Topock IM3Plant-WDR-496 project groundwater monitoring for Hexavalent and Total Chromium, Total Manganese, Turbidity, Specific Conductivity, and Total Dissolved Solids. A summary table for this sample delivery group is included in Section 2. Complete laboratory reports, quality control data and chain of custody forms for sampling period are included in Sections 3 and 4. Analytical raw data have been included under Section 5.

The samples were received and delivered with the chain of custody on November 25, 2014, intact and in chilled condition. The samples will be kept in a locked refrigerator for 30 days; thereafter it will be kept in warm storage for an additional 2 months before disposal.


Sample SC-700B-WDR-496 was analyzed as sample I.D. 14K0413 in the raw data but is reported as 815094 in all final report pages.


The straight runs for the sample and associated matrix spike on sample SC-700B-WDR-496 for Hexavalent Chromium analysis by EPA 218.6 were just outside the retention time window. Because the matrix spike recovery and all other QA/QC were within acceptable limits, the data from the straight run was reported.

No violations or nonconformance actions occurred for this data package.

If you have any questions or require additional information, please contact me at (714) 730-6239 ext. 200.

Respectfully Submitted,  
TRUESDAIL LABORATORIES, INC.

  
to - Mona Nassimi  
Manager, Analytical Services

  
Michael Ngo  
Quality Assurance/Quality Control Officer

# TRUESDAIL LABORATORIES, INC.

EXCELLENCE IN INDEPENDENT TESTING



Established 1931

**Client:** E2 Consulting Engineers, Inc.  
155 Grand Ave. Suite 1000  
Oakland, CA 94612

**Attention:** Shawn Duffy

**Sample:** One (1) Groundwater Sample

**Project Name:** PG&E Topock Project

**Project No.:** 652547.01.IM.OP.00

14201 FRANKLIN AVENUE  
TUSTIN, CALIFORNIA 92780-7008  
(714) 730-6239 · FAX (714) 730-6462  
www.truesdail.com

**Laboratory No.:** 815094

**Date:** December 12, 2014

**Collected:** November 25, 2014

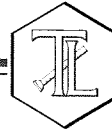
**Received:** November 25, 2014

## ANALYST LIST

METHOD	PARAMETER	ANALYST
EPA 120.1	Specific Conductivity	Jenny Tankunakorn
SM 2540C	Total Dissolved Solids	Jenny Tankunakorn
SM 2130B	Turbidity	Jennine Ta
EPA 200.8	Total Metals	Tom Martinez
EPA 218.6	Hexavalent Chromium	Naheed Eidinejad

# TRUESDAIL LABORATORIES, INC.

EXCELLENCE IN INDEPENDENT TESTING



Established 1931

14201 FRANKLIN AVENUE · TUSTIN, CALIFORNIA 92780-7008  
(714) 730-6239 · FAX (714) 730-6462 · www.truesdail.com

**Client:** E2 Consulting Engineers, Inc.  
155 Grand Ave. Suite 1000  
Oakland, CA 94612

**Laboratory No.:** 815094  
**Date Received:** November 25, 2014

**Attention:** Shawn Duffy

**Project Name:** PG&E Topock Project  
**Project No.:** 652547.01.IM.OP.00  
**P.O. No.:** 10381-7-102011

## Analytical Results Summary

Lab Sample ID	Field ID	Analysis Method	Extraction Method	Sample Date	Sample Time	Parameter	Result	Units	RL
815094-001	SC-700B-WDR-496	E120.1	NONE	11/25/2014	7:45	EC	7260	umhos/cm	2.00
815094-001	SC-700B-WDR-496	E200.8	NONE	11/25/2014	7:45	Chromium	ND	ug/L	1.0
815094-001	SC-700B-WDR-496	E200.8	NONE	11/25/2014	7:45	Manganese	2.7	ug/L	0.50
815094-001	SC-700B-WDR-496	E218.6	LABFLT	11/25/2014	7:45	Chromium, Hexavalent	ND	ug/L	0.20
815094-001	SC-700B-WDR-496	SM2130B	NONE	11/25/2014	7:45	Turbidity	0.128	NTU	0.100
815094-001	SC-700B-WDR-496	SM2540C	NONE	11/25/2014	7:45	Total Dissolved Solids	4000	mg/L	250

ND: Non Detected (below reporting limit)

mg/L: Milligrams per liter.

**Note:** The following "Significant Figures" rule has been applied to all results:  
Results below 0.01ppm will have two (2) significant figures.  
Result above or equal to 0.01ppm will have three (3) significant figures.  
Quality Control data will always have three (3) significant figures.

005

# TRUESDAIL LABORATORIES, INC.

EXCELLENCE IN INDEPENDENT TESTING



Established 1931

14201 FRANKLIN AVENUE  
TUSTIN, CALIFORNIA 92780-7008  
(714) 730-6239 · FAX (714) 730-6462  
www.truesdail.com

## REPORT

**Client:** E2 Consulting Engineers, Inc.

155 Grand Avenue, Suite 800

Oakland, CA 94612

Attention: Shawn Duffy

Project Name: PG&E Topock Project

Project Number: 652547.01.IM.OP.00

P.O. Number: 10381-7-102011

Release Number:

Laboratory No. 815094

Page 1 of 6

Printed 12/12/2014

Samples Received on 11/25/2014 6:40:00 PM

Field ID	Lab ID	Collected	Matrix
SC-700B-WDR-496	815094-001	11/25/2014 07:45	Water

### Specific Conductivity - EPA 120.1

Batch 1411397

Parameter	Unit	Analyzed	DF	MDL	RL	Result
815094-001 Specific Conductivity	umhos/cm	11/26/2014	1.00	0.606	2.00	7260

#### Method Blank

Parameter	Unit	DF	Result
Specific Conductivity	umhos	1.00	ND

#### Duplicate

Lab ID = 815101-003

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Specific Conductivity	umhos	1.00	896	895	0.112	0 - 10

#### Lab Control Sample

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Specific Conductivity	umhos	1.00	764	706	108	90 - 110

#### MRCCS - Secondary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Specific Conductivity	umhos	1.00	764	706	108	90 - 110

#### MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Specific Conductivity	umhos	1.00	937	1000	93.7	90 - 110

#### MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Specific Conductivity	umhos	1.00	937	1000	93.7	90 - 110

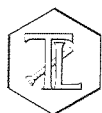
This report applies only to the sample, or samples, investigated and is not necessarily indicative of the quality or condition of apparently identical or similar products. As a mutual protection to clients, the public, and these laboratories, this report is submitted and accepted for the exclusive use of the client to whom it is addressed and upon the condition that it is not to be used, in whole or in part, in any advertising or publicity matter without prior written authorization from Truesdail Laboratories.

008


**Client: E2 Consulting Engineers, Inc.**
**Project Name: PG&E Topock Project**
**Page 2 of 6**
**Project Number: 652547.01.IM.OP.00**
**Printed 12/12/2014**
**Chrome VI by EPA 218.6**

Batch 1412035

Parameter	Unit	Analyzed	DF	MDL	RL	Result
815094-001 Chromium, Hexavalent	ug/L	12/02/2014 13:50	1.00	0.00600	0.20	ND
Method Blank						
Parameter	Unit	DF	Result			
Chromium, Hexavalent	ug/L	1.00	ND			
Duplicate					Lab ID = 815094-001	
Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Chromium, Hexavalent	ug/L	5.00	0.146	0.148	1.70	0 - 20
Low Level Calibration Verification						
Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	0.230	0.200	115	70 - 130
Lab Control Sample						
Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	5.21	5.00	104	90 - 110
Matrix Spike					Lab ID = 815094-001	
Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	5.00	5.17	5.15(5.00)	100	90 - 110
Matrix Spike					Lab ID = 815094-001	
Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	1.20	1.14(1.00)	105	90 - 110
MRCCS - Secondary						
Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	5.24	5.00	105	90 - 110
MRCVS - Primary						
Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	10.4	10.0	104	95 - 105


**Client: E2 Consulting Engineers, Inc.**
**Project Name: PG&E Topock Project**
**Page 3 of 6**
**Project Number: 652547.01.IM.OP.00**
**Printed 12/12/2014**
**Metals by EPA 200.8, Total**

Batch 120314B

Parameter	Unit	Analyzed	DF	MDL	RL	Result
815094-001 Chromium	ug/L	12/03/2014 16:04	1.00	0.0710	1.0	ND
Manganese	ug/L	12/03/2014 16:04	1.00	0.0600	0.50	2.7

**Method Blank**

Parameter	Unit	DF	Result
Chromium	ug/L	1.00	ND
Manganese	ug/L	1.00	ND

**Duplicate**

Lab ID = 815094-001

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Chromium	ug/L	1.00	ND	0	0	0 - 20
Manganese	ug/L	1.00	2.56	2.67	4.28	0 - 20

**Low Level Calibration Verification**

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium	ug/L	1.00	0.472	0.500	94.4	70 - 130
Manganese	ug/L	1.00	0.168	0.200	84.0	70 - 130

**Lab Control Sample**

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium	ug/L	1.00	49.2	50.0	98.3	85 - 115
Manganese	ug/L	1.00	49.4	50.0	98.7	85 - 115

**Matrix Spike**

Lab ID = 815094-001

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium	ug/L	1.00	49.2	50.0(50.0)	98.5	75 - 125
Manganese	ug/L	1.00	51.0	52.7(50.0)	96.6	75 - 125

**Matrix Spike Duplicate**

Lab ID = 815094-001

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium	ug/L	1.00	49.6	50.0(50.0)	99.1	75 - 125
Manganese	ug/L	1.00	51.1	52.7(50.0)	96.9	75 - 125

**MRCCS - Secondary**

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium	ug/L	1.00	20.1	20.0	100	90 - 110
Manganese	ug/L	1.00	20.1	20.0	101	90 - 110

**MRCVS - Primary**

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium	ug/L	1.00	20.2	20.0	101	90 - 110
Manganese	ug/L	1.00	20.0	20.0	100	90 - 110

This report applies only to the sample, or samples, investigated and is not necessarily indicative of the quality or condition of apparently identical or similar products. As a mutual protection to clients, the public, and these laboratories, this report is submitted and accepted for the exclusive use of the client to whom it is addressed and upon the condition that it is not to be used, in whole or in part, in any advertising or publicity matter without prior written authorization from Truesdail Laboratories.



# TRUESDAIL LABORATORIES, INC.

Report Continued

Client: E2 Consulting Engineers, Inc.

Project Name: PG&E Topock Project

Page 5 of 6

Project Number: 652547.01.IM.OP.00

Printed 12/12/2014

## Total Dissolved Solids by SM 2540 C

Batch 1411398

Parameter	Unit	Analyzed	DF	MDL	RL	Result
815094-001 Total Dissolved Solids	mg/L	12/01/2014	1.00	1.76	250	4000

### Method Blank

Parameter	Unit	DF	Result
Total Dissolved Solids	mg/L	1.00	ND

### Duplicate

Lab ID = 815101-004

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Total Dissolved Solids	mg/L	1.00	501	489	2.42	0 - 10

### Lab Control Sample

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Total Dissolved Solids	mg/L	1.00	492	500	98.4	90 - 110

## Turbidity by SM 2130 B

Batch 1411444

Parameter	Unit	Analyzed	DF	MDL	RL	Result
815094-001 Turbidity	NTU	11/26/2014	1.00	0.0140	0.100	0.128

### Method Blank

Parameter	Unit	DF	Result
Turbidity	NTU	1.00	ND

### Duplicate

Lab ID = 815101-002

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Turbidity	NTU	1.00	ND	0	0	0 - 20

### Lab Control Sample

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Turbidity	NTU	1.00	8.33	8.00	104	90 - 110

### Lab Control Sample Duplicate

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Turbidity	NTU	1.00	8.05	8.00	101	90 - 110



**TRUESDAIL LABORATORIES, INC.**

*Report Continued*

**Client: E2 Consulting Engineers, Inc.**

**Project Name: PG&E Topock Project**


**Page 6 of 6**

**Project Number: 652547.01.IM.OP.00**

**Printed 12/12/2014**

Respectfully submitted,

**TRUESDAIL LABORATORIES, INC.**

*for*   
Mona Nassimi  
Manager, Analytical Services

**Total Dissolved Solids by SM 2540 C****Calculations**Batch: 1411398  
Date Analyzed: 12/1/2014

Laboratory Number	Sample volume, mL	Initial weight, g	1st Final weight, g	2nd Final weight, g	Weight Difference, g	Exceeds 0.5mg? Yes/No	Residue weight, g	Filterable residue, ppm	RL, ppm	Reported Value, ppm	DF
Blank	100	77.7603	77.7604	77.7604	0.0000	No	0.0001	1.0	25.0	ND	1
14K0199-02A	100	71.9313	71.9541	71.9537	0.0004	No	0.0224	224.0	25.0	224.0	1
14K0199-04	100	67.0059	67.0510	67.0510	0.0000	No	0.0451	451.0	25.0	451.0	1
14K0381-01A	200	110.9383	110.9459	110.9455	0.0004	No	0.0072	36.0	12.5	36.0	1
14K0394-01B	100	76.6592	76.7008	76.7007	0.0001	No	0.0415	415.0	25.0	415.0	1
14K0394-02	100	74.5032	74.5482	74.5480	0.0002	No	0.0448	448.0	25.0	448.0	1
14K0413-01A	10	29.5584	29.5984	29.5984	0.0000	No	0.0400	4000.0	250.0	4000.0	1
14K0430-01B	100	66.6892	66.7389	66.7385	0.0004	No	0.0493	493.0	25.0	493.0	1
14K0430-02	100	68.5353	68.5862	68.5859	0.0003	No	0.0506	506.0	25.0	506.0	1
14K0430-03	100	75.1436	75.1943	75.1939	0.0004	No	0.0503	503.0	25.0	503.0	1
14K0430-04	100	72.7467	72.7957	72.7956	0.0001	No	0.0489	489.0	25.0	489.0	1
14K0430-04 Dup	100	78.3503	78.4004	78.4004	0.0000	No	0.0501	501.0	25.0	501.0	1
LCS	100	74.7173	74.7667	74.7665	0.0002	No	0.0492	492.0	25.0	492.0	1
14K0431-01A	100	74.5766	74.6237	74.6237	0.0000	No	0.0471	471.0	25.0	471.0	1
14K0431-02	100	74.8582	74.9071	74.9070	0.0001	No	0.0488	488.0	25.0	488.0	1
14K0441-01A	100	77.4876	77.5305	77.5305	0.0000	No	0.0429	429.0	25.0	429.0	1
14L0011-01	400	121.4860	121.4864	121.4861	0.0003	No	0.0001	0.2	6.3	ND	1
14L0011-02	490	168.6123	168.6162	168.6162	0.0000	No	0.0039	8.0	5.1	8.0	1
14L0035-01	100	79.4321	79.4755	79.4755	0.0000	No	0.0434	434.0	25.0	434.0	1
14L0035-02	100	68.7412	68.7874	68.7872	0.0002	No	0.0460	460.0	25.0	460.0	1
14K0431-02 Dup	100	79.1380	79.1872	79.1871	0.0001	No	0.0491	491.0	25.0	491.0	1

Calculation as follows:

$$\text{Filterable residue (TDS), mg/L} = \left( \frac{A - B}{C} \right) \times 10^6$$

Where:

A = weight of dish + residue in grams.  
B = weight of dish in grams.  
C = mL of sample filtered.

RL = reporting limit.  
ND = not detected (below the reporting limit)

**Laboratory Control Sample (LCS) Summary**

QC Std I.D.	Measured Value, ppm	Theoretical Value, ppm	Percent Rec	Acceptance Limit	QC Within Control?
LCS	492.0	500	98.4%	90-110%	Yes
LCS D					

**LCS Recovery**

$$P = \left( \frac{LC}{LT} \right) \times 100$$

P = Percent recovery.

LC = Measured LCS value (ppm).

LT = Theoretical LCS value (ppm).

**Duplicate Determinations Difference Summary**

Lab Number	Sample Weight, g	Sample Dup Weight, g	% RPD	Acceptance Limit	QC Within Control?
14K0430-04	0.0489	0.0501	1.2%	≤5%	Yes
14K0431-02	0.0488	0.0491	0.3%	≤5%	Yes

**Duplicate Determination Difference**

$$\% \text{ Difference} = \frac{|A \text{ or } B - C|}{C} \times 100$$

$$\text{where } C = \frac{A + B}{2}$$

A = Weight of the first sample in (g).

B = Weight of the second sample in (g).

C = Average weight in (g).

Jenny T.

Analyst Printed Name

Analyst Signature

Maksim G.

Reviewer Printed Name

Reviewer Signature

# Total Dissolved Solids by SM 2540 C

## TDS/EC CHECK

Batch: 1411398  
Date Analyzed: 12/1/2014

Laboratory Number	EC	TDS/EC Ratio: 0.55-0.90	Calculated TDS (EC*0.65)	Measured TDS / Calc TDS <1.3
14K0199-02A	395	0.57	256.75	0.87
14K0199-04	744	0.61	483.6	0.93
14K0381-01A	67.3	0.53	43.745	0.82
14K0394-01B	852	0.49	553.8	0.75
14K0394-02	789	0.57	512.85	0.87
14K0413-01A	7260	0.55	4719	0.85
14K0430-01B	877	0.56	570.05	0.86
14K0430-02	899	0.56	584.35	0.87
14K0430-03	896	0.56	582.4	0.86
14K0430-04	897	0.55	583.05	0.84
14K0430-04 Dup	897	0.56	583.05	0.86
LCS				
14K0431-01A	877	0.54	570.05	0.83
14K0431-02	799	0.61	519.35	0.94
14K0441-01A	624	0.69	405.6	1.06
14L0011-01	10	ND	6.5	ND
14L0011-02	10	0.80	6.5	1.22
14L0035-01	810	0.54	526.5	0.82
14L0035-02	758	0.61	492.7	0.93
14K0431-02 Dup	799	0.61	519.35	0.95

*Handwritten signature*

015094/14K0413



TRUESDAIL LABORATORIES, INC.  
14201 Franklin Avenue, Tustin, CA 92780-7008  
(714)730-6239 FAX: (714) 730-6462  
www.truesdail.com

# CHAIN OF CUSTODY RECORD

[IM3Plant-WDR-496]

COC Number

TURNAROUND TIME

10 Days

DATE 11/25/14

PAGE 1 OF 1

COMPANY E2				<div style="display: flex; flex-direction: column; align-items: center;"> <div style="writing-mode: vertical-rl; transform: rotate(180deg);">Cr6 (218.6) Lab Filtered</div> <div style="writing-mode: vertical-rl; transform: rotate(180deg);">Total Metals (200.8) Cr, Mn</div> <div style="writing-mode: vertical-rl; transform: rotate(180deg);">Specific Conductance (120.1)</div> <div style="writing-mode: vertical-rl; transform: rotate(180deg);">TDS (SM2540C)</div> <div style="writing-mode: vertical-rl; transform: rotate(180deg);">Turbidity (SM2130)</div> <div style="writing-mode: vertical-rl; transform: rotate(180deg);">NUMBER OF CONTAINERS</div> </div>												COMMENTS							
PROJECT NAME PG&E Topock																							
PHONE (530) 229-3303 FAX (530) 339-3303																							
ADDRESS 155 Grand Ave Ste 1000 Oakland, CA 94612																							
P.O. NUMBER 652547.XX.XX.XX TEAM 1																							
SAMPLERS (SIGNATURE) <i>Chris Lear</i>																							
SAMPLE I.D.				DATE		TIME		DESCRIPTION		Cr6 (218.6)		Total Metals		Specific Conductance		TDS		Turbidity		NUMBER OF CONTAINERS		COMMENTS	
SC-700B-WDR-496				11/25/14		7:45		Water		x		x		x		x		x		3		PH=7 (200.9)	
																				3		TOTAL NUMBER OF CONTAINERS	

Please Provide a preliminary Result for the TDS ASAP

CHAIN OF CUSTODY SIGNATURE RECORD					SAMPLE CONDITIONS	
Signature (Relinquished)	Printed Name	Company/Agency	Date/Time	RECEIVED	COOL <input checked="" type="checkbox"/>	WARM <input type="checkbox"/> 40°F
<i>Chris Lear</i>	CHRIS LEAR	CH2MHILL	11-25-14 14:00			
Signature (Received)	Printed Name	Company/Agency	Date/Time	CUSTODY SEALED	YES <input type="checkbox"/>	NO <input type="checkbox"/>
<i>Shan Ngo</i>	THANH NGO	TRUESDAIL	11-25-14 14:00			
Signature (Relinquished)	Printed Name	Company/Agency	Date/Time	SPECIAL REQUIREMENTS:		
<i>Shan Ngo</i>	THANH NGO		11-25-14 18:40			
Signature (Received)	Printed Name	Company/Agency	Date/Time			
<i>Tom Martinez</i>	TOM MARTINEZ	Truesdail Labs Inc.	11-25-14 18:40			
Signature (Relinquished)	Printed Name	Company/Agency	Date/Time			
Signature (Received)	Printed Name	Company/Agency	Date/Time			

036

## Method EPA 218.6 and SW 7199 Sample pH Log

[illegible]

12/3/14



TRUESDAIL LABORATORIES, INC.  
Metals

Turbidity/pH Check

Sample Number	Turbidity	pH	Date	Analyst	Need Digest (Y/N)	Time of Adjustment to pH 2	Date/Time of 2nd pH check	Comments
14K0376-03	>1	<2	11/19/14	ES	YES			
14K0268-01	<1	>2	11/20/14	ES	NO	10:00	11/21/14 07:00	pH <2
-02	↓	↓	↓	↓	↓	↓	↓	↓
14K0360(10-12)	<1	↓	↓	↓	↓	↓	↓	↓
14K0311-01	<1	<2	↓	↓	YES			
14K0388-01	>1	↓	↓	↓	↓			
14K0349(01)	↓	↓	↓	↓	↓			
-02	<1	↓	↓	↓	↓			
14K0376-01-03	↓	>2	↓	↓	NO	2:00	11/21/14 07:00	pH <2
14K0281-02	<1	<2	11/21/14	ES	YES			
14K0307-02	>1	↓	↓	↓	↓			
14K0308-02	↓	↓	↓	↓	↓			
14K0309-02	<1	↓	↓	↓	↓			
14K0310-02	↓	↓	↓	↓	↓			
14K0378-01	>1	↓	↓	↓	↓			
14K0382-01	<1	>2	↓	↓	NO	4:00		
14K0381-01	<1	>2	11/24/14	ES	NO	10:00		
14K0324-01	<1	<2	↓	↓	YES			
14K0394-01-02	>1	<2	11/25/14	ES	YES			
14K0320-01	>1	<2	↓	↓	↓			
14K0321-01	>1	<2	↓	↓	↓			
14K0412-01-02	<1	>2	11/26/14	↓	NO	10:45		
14K0414-01-02-03	↓	↓	↓	↓	↓			
14K0413-01	<1	>2	11/26/14	ES	YES	1:30		pH <2
14K0416-01	↓	↓	↓	↓	NO	1:30		
14K0436-02	>1	<2	11/28/14	ES	YES			
14K0439(10-11-12)	<1	>2	12/01/14	ES	NO	10:15		
14L0024-01	<1	>2	12/1/14	ES	NO	12:00		
14L0003-01	<1	<2	↓	↓	YES			
14L0027-01	>1	↓	↓	↓	↓			
14L0030-01	<1	↓	↓	↓	↓			
14L0035-01	>1	↓	↓	↓	↓			
-02	<1	↓	↓	↓	↓			
14L0015-02	>1	<2	12/2/14	ES	YES			
14L0051-01	↓	↓	↓	↓	↓			
14L0046-06	<1	>2	↓	↓	NO	11:00		
14L0012-01	<1	<2	12/2/14	ES	YES			
14L0014-02	↓	↓	↓	↓	↓			
14L0019-02	↓	↓	↓	↓	↓			
14L0020-02	↓	↓	↓	↓	↓			
14L0021-01	↓	↓	↓	↓	↓			
14L0022-02	↓	↓	↓	↓	↓			
14L0050(01-02)	>1	↓	↓	↓	↓			
14L0057-01	↓	↓	↓	↓	↓			

Notes:

1. Samples should be analyzed after 24 hrs of pH adjustment to pH2 for Dissolved Analytes.
2. All Total Recoverable Analytes must be pH adjusted and digested.
3. Do not use disposable pipette to measure pH; pour a little amount of sample from the bottle.

## WORK ORDER

Printed: 12/12/2014 9:27:46AM

14K0413

## Truesdail Laboratories, Inc

Client: E2 Consulting Engineers, Inc.  
Project: Topock IM3Plant-WDR Weekly

Project Manager: Sean Condon  
Project Number: PGE-2571

Report To:

E2 Consulting Engineers, Inc.  
Christi Gitlin  
1900 Powell Street, Suite 250  
Emeryville, CA 94608  
Phone: 510-428-4728  
Fax: 510-652-5604

Invoice To:

E2 Consulting Engineers, Inc.  
Christy Gitlin  
1900 Powell Street, Suite 250  
Emeryville, CA 94608  
Phone :510-428-4728  
Fax: 510-652-5604

Date Due: 12/08/2014 16:30 (7 day TAT)

Received By: Tom Martinez

Date Received: 11/25/2014 18:40

Logged In By: Shelly Brady

Date Logged In: 11/26/2014 09:35

Samples Received at: 4°C

Chain of Custody re	Yes	Samples intact?	Yes
Letter (if sent) matc	No	Custody seals (if an	No
Requested analyses	Yes	Analyses within hol	Yes
Samples received in	Yes		

Analysis	Due	TAT	Expires	Comments
14K0413-01 SC-700B-WDR-496 [Water] Sampled 11/25/2014 07:45 (GMT-08:00) Pacific Time (US &				Added via Quick Log & Label by LB 11/26/2014 09:35
Turbidity	12/08/2014 12:00	7	11/27/2014 07:45	
TDS	12/08/2014 12:00	7	12/02/2014 07:45	
Specific Conductivity	12/08/2014 12:00	7	12/23/2014 07:45	
Mn-200.8	12/08/2014 12:00	7	05/24/2015 07:45	
Cr-200.8	12/08/2014 12:00	7	05/24/2015 07:45	
Cr VI-218.6	12/08/2014 12:00	7	12/23/2014 07:45	

Reviewed By

Date

# TRUESDAIL LABORATORIES, INC.

EXCELLENCE IN INDEPENDENT TESTING



Established 1931

14201 FRANKLIN AVENUE  
TUSTIN, CALIFORNIA 92780-7008  
(714) 730-6239 · FAX (714) 730-6462  
www.truesdail.com

January 6, 2015

E2 Consulting Engineers, Inc.  
Mr. Shawn Duffy  
155 Grand Ave., Suite 1000  
Oakland, California 94612

Dear Mr. Duffy:

SUBJECT: CASE NARRATIVE PG&E TOPOCK IM3PLANT-WDR-497 PROJECT, GROUNDWATER  
MONITORING,  
TLI No.: 815099

Truesdail Laboratories, Inc. is pleased to submit this report summarizing the Topock IM3Plant-WDR-497 project groundwater monitoring. A summary table for this sample delivery group is included in Section 2. Complete laboratory reports, quality control data and chain of custody forms for sampling period are included in Sections 3 and 4. Analytical raw data have been included under Section 5.

The samples were received and delivered with the chain of custody on December 2, 2014, intact and in chilled condition. The samples will be kept in a locked refrigerator for 30 days; thereafter it will be kept in warm storage for an additional 2 months before disposal.

Samples were analyzed and recorded in the raw data as SDG 14L0071 but are reported as SDG 815099 in all final report pages.

The straight runs for the sample and associated matrix spike on sample SC-700B-WDR-497 for Hexavalent Chromium analysis by EPA 218.6 were just outside the retention time window. Because the matrix spike recovery and all other QA/QC were within acceptable limits, the data from the straight run was reported.

Total Iron by EPA 200.7 was detected at the reporting limit of 20.0 ug/L in the method blank. The method blank was re-analyzed for confirmation and yielded a result of ND<20.0 ug/L. The sample results were both below the reporting limit, therefore, the data was accepted.

No other violations or nonconformance actions occurred for this data package.

If you have any questions or require additional information, please contact me at (714) 730-6239 ext. 200.

Respectfully Submitted,  
TRUESDAIL LABORATORIES, INC.

Sean Condon  
Project Manager, Analytical Services

Michael Ngo  
Quality Assurance/Quality Control Officer

# TRUESDAIL LABORATORIES, INC.

EXCELLENCE IN INDEPENDENT TESTING



Established 1931

**Client:** E2 Consulting Engineers, Inc.  
155 Grand Ave. Suite 1000  
Oakland, CA 94612

**Attention:** Shawn Duffy

**Sample:** Two (2) Groundwaters

**Project Name:** PG&E Topock Project

**Project No.:** 652547.01.IM.OP.00

14201 FRANKLIN AVENUE  
TUSTIN, CALIFORNIA 92780-7008  
(714) 730-6239 · FAX (714) 730-6462  
www.truesdail.com

**Laboratory No.:** 815099

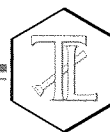
**Date:** January 6, 2015

**Collected:** December 2, 2014

**Received:** December 2, 2014

## ANALYST LIST

METHOD	PARAMETER	ANALYST
EPA 120.1	Specific Conductivity	Jenny Tankunakorn
SM 2540C	Total Dissolved Solids	Jenny Tankunakorn
SM 2320B	Total Alkalinity	Alex Luna
SM 4500-Si D	Soluble Silica	Jenny Tankunakorn
SM 4500-P B,E	Total Phosphorus	Jenny Tankunakorn
SM 5310C	Total Organic Carbon	Jenny Tankunakorn
SM 2130B	Turbidity	Jennine Ta
EPA 300.0	Anions	Giawad Ghenniwa
SM 4500-NH3 D	Ammonia	Maksim Gorbunov
SM 4500-NO2 B	Nitrite as N	Jenny Tankunakorn
EPA 200.7	Metals by ICP	Ethel Suico
EPA 200.8	Metals by ICP/MS	Tom Martinez
EPA 218.6	Hexavalent Chromium	Naheed Eidinejad



**Client:** E2 Consulting Engineers, Inc.  
155 Grand Ave. Suite 1000  
Oakland, CA 94612

**Laboratory No.:** 815099  
**Date Received:** December 2, 2014

**Attention:** Shawn Duffy

**Project Name:** PG&E Topock Project  
**Project No.:** 652547.01.IM.OP.00  
**P.O. No.:** 10381-7-102011

## Analytical Results Summary

Lab Sample ID	Field ID	Analysis Method	Extraction Method	Sample Date	Sample Time	Parameter	Result	Units	RL
815099-001	SC-700B-WDR-497	E120.1	NONE	12/2/2014	13:52	EC	7300	umhos/cm	2.00
815099-001	SC-700B-WDR-497	E200.7	NONE	12/2/2014	13:52	Aluminum	ND	ug/L	50.0
815099-001	SC-700B-WDR-497	E200.7	NONE	12/2/2014	13:52	BORON	878	ug/L	50.0
815099-001	SC-700B-WDR-497	E200.7	NONE	12/2/2014	13:52	Iron	ND	ug/L	20.0
815099-001	SC-700B-WDR-497	E200.7	NONE	12/2/2014	13:52	Zinc	ND	ug/L	20.0
815099-001	SC-700B-WDR-497	E200.8	NONE	12/2/2014	13:52	Antimony	ND	ug/L	2.0
815099-001	SC-700B-WDR-497	E200.8	NONE	12/2/2014	13:52	Arsenic	ND	ug/L	0.50
815099-001	SC-700B-WDR-497	E200.8	NONE	12/2/2014	13:52	Barium	13.8	ug/L	5.0
815099-001	SC-700B-WDR-497	E200.8	NONE	12/2/2014	13:52	Chromium	ND	ug/L	1.0
815099-001	SC-700B-WDR-497	E200.8	NONE	12/2/2014	13:52	Copper	ND	ug/L	1.0
815099-001	SC-700B-WDR-497	E200.8	NONE	12/2/2014	13:52	Lead	ND	ug/L	1.0
815099-001	SC-700B-WDR-497	E200.8	NONE	12/2/2014	13:52	Manganese	3.9	ug/L	0.50
815099-001	SC-700B-WDR-497	E200.8	NONE	12/2/2014	13:52	Molybdenum	22.2	ug/L	2.0
815099-001	SC-700B-WDR-497	E200.8	NONE	12/2/2014	13:52	Nickel	ND	ug/L	2.0
815099-001	SC-700B-WDR-497	E218.6	LABFLT	12/2/2014	13:52	Chromium, Hexavalent	0.20	ug/L	0.20
815099-001	SC-700B-WDR-497	E300	NONE	12/2/2014	13:52	Fluoride	2.03	mg/L	0.500
815099-001	SC-700B-WDR-497	E300	NONE	12/2/2014	13:52	Nitrate as N	2.49	mg/L	0.500
815099-001	SC-700B-WDR-497	E300	NONE	12/2/2014	13:52	Sulfate	495	mg/L	25.0
815099-001	SC-700B-WDR-497	SM2130B	NONE	12/2/2014	13:52	Turbidity	0.155	NTU	0.100
815099-001	SC-700B-WDR-497	SM2540C	NONE	12/2/2014	13:52	Total Dissolved Solids	4390	mg/L	250
815099-001	SC-700B-WDR-497	SM4500NH3D	NONE	12/2/2014	13:52	Ammonia-N	ND	mg/L	0.500
815099-001	SC-700B-WDR-497	SM4500NO2B	NONE	12/2/2014	13:52	Nitrite as N	ND	mg/L	0.0050

005



Lab Sample ID	Field ID	Analysis Method	Extraction Method	Sample Date	Sample Time	Parameter	Result	Units	RL
815099-002	SC-100B-WDR-497	E120.1	NONE	12/2/2014	13:52	EC	7300	umhos/cm	2.00
815099-002	SC-100B-WDR-497	E200.7	NONE	12/2/2014	13:52	Aluminum	ND	ug/L	50.0
815099-002	SC-100B-WDR-497	E200.7	NONE	12/2/2014	13:52	BORON	903	ug/L	50.0
815099-002	SC-100B-WDR-497	E200.7	LABFLT	12/2/2014	13:52	Iron	ND	ug/L	20.0
815099-002	SC-100B-WDR-497	E200.7	NONE	12/2/2014	13:52	Iron	ND	ug/L	20.0
815099-002	SC-100B-WDR-497	E200.7	NONE	12/2/2014	13:52	Zinc	ND	ug/L	20.0
815099-002	SC-100B-WDR-497	E200.8	NONE	12/2/2014	13:52	Antimony	ND	ug/L	2.0
815099-002	SC-100B-WDR-497	E200.8	NONE	12/2/2014	13:52	Arsenic	3.4	ug/L	0.50
815099-002	SC-100B-WDR-497	E200.8	NONE	12/2/2014	13:52	Barium	27.9	ug/L	5.0
815099-002	SC-100B-WDR-497	E200.8	NONE	12/2/2014	13:52	Chromium	598	ug/L	1.0
815099-002	SC-100B-WDR-497	E200.8	NONE	12/2/2014	13:52	Copper	ND	ug/L	1.0
815099-002	SC-100B-WDR-497	E200.8	NONE	12/2/2014	13:52	Lead	ND	ug/L	1.0
815099-002	SC-100B-WDR-497	E200.8	LABFLT	12/2/2014	13:52	Manganese	9.7	ug/L	0.50
815099-002	SC-100B-WDR-497	E200.8	NONE	12/2/2014	13:52	Manganese	9.1	ug/L	0.50
815099-002	SC-100B-WDR-497	E200.8	NONE	12/2/2014	13:52	Molybdenum	19.7	ug/L	2.0
815099-002	SC-100B-WDR-497	E200.8	NONE	12/2/2014	13:52	Nickel	ND	ug/L	2.0
815099-002	SC-100B-WDR-497	E218.6	LABFLT	12/2/2014	13:52	Chromium, Hexavalent	587	ug/L	5.0
815099-002	SC-100B-WDR-497	E300	NONE	12/2/2014	13:52	Fluoride	2.23	mg/L	0.500
815099-002	SC-100B-WDR-497	E300	NONE	12/2/2014	13:52	Nitrate as N	2.42	mg/L	0.500
815099-002	SC-100B-WDR-497	E300	NONE	12/2/2014	13:52	Sulfate	490	mg/L	25.0
815099-002	SC-100B-WDR-497	SM2130B	NONE	12/2/2014	13:52	Turbidity	0.253	NTU	0.100
815099-002	SC-100B-WDR-497	SM2320B	NONE	12/2/2014	13:52	Alkalinity	162	mg/L	5.00
815099-002	SC-100B-WDR-497	SM2320B	NONE	12/2/2014	13:52	Alkalinity, Bicarbonate (As CaCO3)	162	mg/L	5.00
815099-002	SC-100B-WDR-497	SM2320B	NONE	12/2/2014	13:52	Alkalinity, Carbonate (As CaCO3)	ND	mg/L	5.00
815099-002	SC-100B-WDR-497	SM2540C	NONE	12/2/2014	13:52	Total Dissolved Solids	4410	mg/L	250
815099-002	SC-100B-WDR-497	SM4500NH3D	NONE	12/2/2014	13:52	Ammonia-N	ND	mg/L	0.500
815099-002	SC-100B-WDR-497	SM4500NO2B	NONE	12/2/2014	13:52	Nitrite as N	ND	mg/L	0.0050
815099-002	SC-100B-WDR-497	SM4500-PB_E	NONE	12/2/2014	13:52	Total Phosphorous-P	ND	mg/L	0.0200
815099-002	SC-100B-WDR-497	SM4500SI	LABFLT	12/2/2014	13:52	Soluble Silica	16.5	mg/L	1.00
815099-002	SC-100B-WDR-497	SM5310C	NONE	12/2/2014	13:52	Total Organic Carbon	0.578	mg/L	0.300

ND: Non Detected (below reporting limit)

mg/L: Milligrams per liter.

Note: The following "Significant Figures" rule has been applied to all results:

Results below 0.01ppm will have two (2) significant figures.

Result above or equal to 0.01ppm will have three (3) significant figures.

Quality Control data will always have three (3) significant figures.

# TRUESDAIL LABORATORIES, INC.

EXCELLENCE IN INDEPENDENT TESTING



Established 1931

14201 FRANKLIN AVENUE  
TUSTIN, CALIFORNIA 92780-7008  
(714) 730-6239 • FAX (714) 730-6462  
www.truesdail.com

## REPORT

**Client:** E2 Consulting Engineers, Inc.

155 Grand Avenue, Suite 800

Oakland, CA 94612

Attention: Shawn Duffy

Project Name: PG&E Topock Project

Project Number: 652547.01.IM.OP.00

P.O. Number: 10381-7-102011

Release Number:

Laboratory No. 815099

Page 1 of 37

Printed 1/6/2015

Samples Received on 12/2/2014 7:25:00 PM

Field ID	Lab ID	Collected	Matrix
SC-700B-WDR-497	815099-001	12/02/2014 13:52	Water
SC-100B-WDR-497	815099-002	12/02/2014 13:52	Water

### Anions By I.C. - EPA 300.0

Batch 1412141

Parameter	Unit	Analyzed	DF	MDL	RL	Result
815099-001 Fluoride	mg/L	12/03/2014 12:47	5.00	0.0600	0.500	2.03
Nitrate as Nitrogen	mg/L	12/03/2014 12:47	5.00	0.0415	0.500	2.49
815099-002 Fluoride	mg/L	12/03/2014 12:58	5.00	0.0600	0.500	2.23
Nitrate as Nitrogen	mg/L	12/03/2014 12:58	5.00	0.0415	0.500	2.42

### Method Blank

Parameter	Unit	DF	Result
Fluoride	mg/L	1.00	ND
Nitrate as Nitrogen	mg/L	1.00	ND

Lab ID = 815111-003

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Fluoride	mg/L	1.00	ND	0.280	0	0 - 20

Lab ID = 815112-001

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Nitrate as Nitrogen	mg/L	1.00	1.49	1.50	0.535	0 - 20

### Lab Control Sample

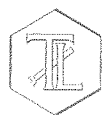
Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Fluoride	mg/L	1.00	4.14	4.00	104	90 - 110
Nitrate as Nitrogen	mg/L	1.00	3.97	4.00	99.3	90 - 110

Lab ID = 815111-003

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Fluoride	mg/L	1.00	2.26	2.28(2.00)	99.2	85 - 115

This report applies only to the sample, or samples, investigated and is not necessarily indicative of the quality or condition of apparently identical or similar products. As a mutual protection to clients, the public, and these laboratories, this report is submitted and accepted for the exclusive use of the client to whom it is addressed and upon the condition that it is not to be used, in whole or in part, in any advertising or publicity matter without prior written authorization from Truesdail Laboratories.

016



Client: E2 Consulting Engineers, Inc.

Project Name: PG&E Topock Project

Page 3 of 37

Project Number: 652547.01.IM.OP.00

Printed 1/6/2015

**Anions By I.C. - EPA 300.0**

Batch 1412177

Parameter	Unit	Analyzed	DF	MDL	RL	Result
815099-001 Sulfate	mg/L	12/04/2014 00:05	50.0	1.54	25.0	495
815099-002 Sulfate	mg/L	12/04/2014 00:16	50.0	1.54	25.0	490

**Method Blank**

Parameter	Unit	DF	Result
Chloride	mg/L	1.00	ND
Sulfate	mg/L	1.00	ND

**Duplicate**

Lab ID = 815113-002

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Chloride	mg/L	50.0	135	140	3.35	0 - 20

**Duplicate**

Lab ID = 815114-001

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Sulfate	mg/L	5.00	46.2	46.1	0.228	0 - 20

**Lab Control Sample**

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chloride	mg/L	1.00	4.04	4.00	101	90 - 110
Sulfate	mg/L	1.00	20.1	20.0	100	90 - 110

**Matrix Spike**

Lab ID = 815113-002

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chloride	mg/L	50.0	341	340(200)	100	85 - 115

**Matrix Spike**

Lab ID = 815114-001

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Sulfate	mg/L	5.00	149	146(100)	103	85 - 115

**MRCCS - Secondary**

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chloride	mg/L	1.00	3.97	4.00	99.2	90 - 110
Sulfate	mg/L	1.00	20.0	20.0	100	90 - 110

**MRCVS - Primary**

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chloride	mg/L	1.00	2.98	3.00	99.3	90 - 110

**MRCVS - Primary**

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chloride	mg/L	1.00	2.96	3.00	98.8	90 - 110



Client: E2 Consulting Engineers, Inc.

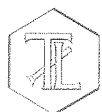
Project Name: PG&E Topock Project

Page 5 of 37

Project Number: 652547.01.IM.OP.00

Printed 1/6/2015

Nitrite SM 4500-NO2 B		Batch 1412056				
Parameter	Unit	Analyzed	DF	MDL	RL	Result
815099-001 Nitrite as Nitrogen	mg/L	12/03/2014 12:48	1.00	0.000630	0.0050	ND
815099-002 Nitrite as Nitrogen	mg/L	12/03/2014 12:49	1.00	0.000630	0.0050	ND
Method Blank						
Parameter	Unit	DF	Result			
Nitrite as Nitrogen	mg/L	1.00	ND			
Duplicate				Lab ID = 815099-001		
Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Nitrite as Nitrogen	mg/L	1.00	ND	0	0	0 - 20
Lab Control Sample						
Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Nitrite as Nitrogen	mg/L	1.00	0.0206	0.0226	91.2	90 - 110
Matrix Spike				Lab ID = 815099-001		
Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Nitrite as Nitrogen	mg/L	1.00	0.0207	0.0226(0.0226)	91.6	85 - 115
MRCCS - Secondary						
Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Nitrite as Nitrogen	mg/L	1.00	0.0206	0.0226	91.2	90 - 110
MRCVS - Primary						
Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Nitrite as Nitrogen	mg/L	1.00	0.0193	0.0200	96.5	90 - 110
MRCVS - Primary						
Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Nitrite as Nitrogen	mg/L	1.00	0.0193	0.0200	96.5	90 - 110



Client: E2 Consulting Engineers, Inc.

Project Name: PG&E Topock Project

Page 6 of 37

Project Number: 652547.01.IM.OP.00

Printed 1/6/2015

**Alkalinity by SM 2320B**

Batch 1412276

Parameter	Unit	Analyzed	DF	MDL	RL	Result
815099-002 Alkalinity as CaCO <sub>3</sub>	mg/L	12/11/2014	1.00	1.68	5.00	162
Bicarbonate (Calculated)	mg/L	12/11/2014	1.00	1.68	5.00	162
Carbonate (Calculated)	mg/L	12/11/2014	1.00	1.68	5.00	ND

**Method Blank**

Parameter	Unit	DF	Result
Alkalinity as CaCO <sub>3</sub>	mg/L	1.00	ND

**Duplicate**

Lab ID = 815110-017

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Alkalinity as CaCO <sub>3</sub>	mg/L	1.00	114	111	2.67	20 - 20

**Lab Control Sample**

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Alkalinity as CaCO <sub>3</sub>	mg/L	1.00	99.0	100	99.0	90 - 110

**Lab Control Sample Duplicate**

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Alkalinity as CaCO <sub>3</sub>	mg/L	1.00	100	100	100	90 - 110

**Matrix Spike**

Lab ID = 815110-021

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Alkalinity as CaCO <sub>3</sub>	mg/L	1.00	220	229(100)	91.0	75 - 125

**Matrix Spike Duplicate**

Lab ID = 815110-021

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Alkalinity as CaCO <sub>3</sub>	mg/L	1.00	215	229(100)	86.0	75 - 125



Client: E2 Consulting Engineers, Inc.

Project Name: PG&E Topock Project

Page 7 of 37

Project Number: 652547.01.IM.OP.00

Printed 1/6/2015

**Specific Conductivity - EPA 120.1**

Batch 1412032

Parameter	Unit	Analyzed	DF	MDL	RL	Result
815099-001 Specific Conductivity	umhos/cm	12/03/2014	1.00	0.606	2.00	7300
815099-002 Specific Conductivity	umhos/cm	12/03/2014	1.00	0.606	2.00	7300

**Method Blank**

Parameter	Unit	DF	Result
Specific Conductivity	umhos	1.00	ND

**Duplicate**

Lab ID = 815108-004

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Specific Conductivity	umhos	1.00	36.6	36.1	1.38	0 - 10

**Lab Control Sample**

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Specific Conductivity	umhos	1.00	712	706	101	90 - 110

**MRCCS - Secondary**

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Specific Conductivity	umhos	1.00	712	706	101	90 - 110

**MRCVS - Primary**

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Specific Conductivity	umhos	1.00	993	1000	99.3	90 - 110

**MRCVS - Primary**

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Specific Conductivity	umhos	1.00	993	1000	99.3	90 - 110



Client: E2 Consulting Engineers, Inc.

Project Name: PG&E Topock Project

Page 8 of 37

Project Number: 652547.01.IM.OP.00

Printed 1/6/2015

**Chrome VI by EPA 218.6**

Batch 1412120

Parameter	Unit	Analyzed	DF	MDL	RL	Result
815099-001 Chromium, Hexavalent	ug/L	12/05/2014 13:03	1.00	0.00600	0.20	0.20
815099-002 Chromium, Hexavalent	ug/L	12/05/2014 13:14	25.0	0.150	5.0	587

**Method Blank**

Parameter	Unit	DF	Result
Chromium, Hexavalent	ug/L	1.00	ND

**Duplicate**

Lab ID = 815098-001

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	4.22	4.25	0.580	0 - 20

**Low Level Calibration Verification**

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	0.221	0.200	110	70 - 130

**Lab Control Sample**

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	5.10	5.00	102	90 - 110

**Matrix Spike**

Lab ID = 815098-001

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	9.34	9.25(5.00)	102	90 - 110

**Matrix Spike**

Lab ID = 815098-002

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	50.0	1500	1480(750)	102	90 - 110

**Matrix Spike**

Lab ID = 815099-001

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	1.25	1.20(1.00)	105	90 - 110

**Matrix Spike**

Lab ID = 815099-001

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	5.00	5.31	5.20(5.00)	102	90 - 110

**Matrix Spike**

Lab ID = 815099-002

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	25.0	1210	1210(625)	100	90 - 110

**MRCCS - Secondary**

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	5.13	5.00	102	90 - 110



Client: E2 Consulting Engineers, Inc.

Project Name: PG&E Topock Project

Page 10 of 37

Project Number: 652547.01.IM.OP.00

Printed 1/6/2015

Metals by EPA 200.7, Total		Batch 120314B-Th2				
Parameter	Unit	Analyzed	DF	MDL	RL	Result
815099-001 Aluminum	ug/L	12/03/2014 18:47	1.00	7.20	50.0	ND
Boron	ug/L	12/03/2014 18:47	1.00	4.10	50.0	878
Zinc	ug/L	12/03/2014 18:47	1.00	5.10	20.0	ND
815099-002 Aluminum	ug/L	12/03/2014 18:53	1.00	7.20	50.0	ND
Boron	ug/L	12/03/2014 18:53	1.00	4.10	50.0	903
Zinc	ug/L	12/03/2014 18:53	1.00	5.10	20.0	ND

Method Blank

Parameter	Unit	DF	Result
Aluminum	ug/L	1.00	ND
Zinc	ug/L	1.00	ND
Boron	ug/L	1.00	ND

Duplicate

Lab ID = 815104-006

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Aluminum	ug/L	1.00	5550	5500	0.941	0 - 20
Zinc	ug/L	1.00	196	192	2.01	0 - 20
Boron	ug/L	1.00	10300	10200	1.36	0 - 20

Lab Control Sample

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Aluminum	ug/L	1.00	2080	2000	104	85 - 115
Zinc	ug/L	1.00	2000	2000	99.9	85 - 115
Boron	ug/L	1.00	1970	2000	98.5	85 - 115

Matrix Spike

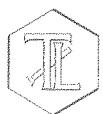
Lab ID = 815104-006

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Aluminum	ug/L	1.00	7230	7500(2000)	86.4	75 - 125
Zinc	ug/L	1.00	2260	2190(2000)	103	75 - 125
Boron	ug/L	1.00	12000	12200(2000)	89.5	75 - 125

Matrix Spike Duplicate

Lab ID = 815104-006

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Aluminum	ug/L	1.00	7310	7500(2000)	90.4	75 - 125
Zinc	ug/L	1.00	2270	2190(2000)	104	75 - 125
Boron	ug/L	1.00	12300	12200(2000)	104	75 - 125



Client: E2 Consulting Engineers, Inc.

Project Name: PG&E Topock Project

Page 13 of 37

Project Number: 652547.01.IM.OP.00

Printed 1/6/2015

Metals by EPA 200.7, Total		Batch 120414B-Th2				
Parameter	Unit	Analyzed	DF	MDL	RL	Result
815099-001 Iron	ug/L	12/04/2014 15:19	1.00	3.00	20.0	ND
815099-002 Iron	ug/L	12/04/2014 15:37	1.00	3.00	20.0	ND

Method Blank						
Parameter	Unit	DF	Result			
Iron	ug/L	1.00	20.0			
Duplicate				Lab ID = 815104-006		
Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Iron	ug/L	1.00	5550	5460	1.56	0 - 20
Lab Control Sample						
Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Iron	ug/L	1.00	2140	2000	107	85 - 115
Matrix Spike				Lab ID = 815104-006		
Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Iron	ug/L	1.00	7610	7460(2000)	107	75 - 125
Matrix Spike Duplicate				Lab ID = 815104-006		
Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Iron	ug/L	1.00	7460	7460(2000)	100	75 - 125
MRCCS - Secondary						
Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Iron	ug/L	1.00	5060	5000	101	95 - 105
MRCVS - Primary						
Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Iron	ug/L	1.00	5040	5000	101	90 - 110
MRCVS - Primary						
Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Iron	ug/L	1.00	5080	5000	102	90 - 110
Interference Check Standard A						
Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Iron	ug/L	1.00	2230	2000	112	80 - 120
Interference Check Standard A						
Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Iron	ug/L	1.00	2100	2000	105	80 - 120



Client: E2 Consulting Engineers, Inc.

Project Name: PG&amp;E Topock Project

Page 15 of 37

Project Number: 652547.01.IM.OP.00

Printed 1/6/2015

Metals by EPA 200.8, Total		Batch 120414A				
Parameter	Unit	Analyzed	DF	MDL	RL	Result
815099-001 Antimony	ug/L	12/04/2014 13:40	1.00	0.0350	2.0	ND
Arsenic	ug/L	12/04/2014 13:40	1.00	0.0500	0.50	ND
Barium	ug/L	12/04/2014 13:40	1.00	0.297	2.0	13.8
Chromium	ug/L	12/04/2014 13:40	1.00	0.0710	1.0	ND
Lead	ug/L	12/04/2014 13:40	1.00	0.143	1.0	ND
Manganese	ug/L	12/04/2014 13:40	1.00	0.0600	0.50	3.9
Molybdenum	ug/L	12/04/2014 13:40	1.00	0.0500	2.0	22.2
Nickel	ug/L	12/04/2014 13:40	1.00	0.240	2.0	ND
815099-002 Antimony	ug/L	12/04/2014 14:19	1.00	0.0350	2.0	ND
Arsenic	ug/L	12/04/2014 14:19	1.00	0.0500	0.50	3.4
Barium	ug/L	12/04/2014 14:19	1.00	0.297	2.0	27.9
Chromium	ug/L	12/04/2014 14:37	10.0	0.710	2.0	598
Lead	ug/L	12/04/2014 14:19	1.00	0.143	1.0	ND
Manganese	ug/L	12/04/2014 14:19	1.00	0.0600	0.50	9.1
Molybdenum	ug/L	12/04/2014 14:19	1.00	0.0500	2.0	19.7
Nickel	ug/L	12/04/2014 14:19	1.00	0.240	2.0	ND

## Method Blank

Parameter	Unit	DF	Result
Arsenic	ug/L	1.00	ND
Barium	ug/L	1.00	ND
Chromium	ug/L	1.00	ND
Nickel	ug/L	1.00	ND
Antimony	ug/L	1.00	ND
Lead	ug/L	1.00	ND
Manganese	ug/L	1.00	ND
Molybdenum	ug/L	1.00	ND



Client: E2 Consulting Engineers, Inc.

Project Name: PG&E Topock Project

Page 16 of 37

Project Number: 652547.01.IM.OP.00

Printed 1/6/2015

○ Duplicate

Lab ID = 815099-001

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Arsenic	ug/L	1.00	ND	0	0	0 - 20
Barium	ug/L	1.00	13.4	13.8	3.16	0 - 20
Chromium	ug/L	1.00	ND	0	0	0 - 20
Nickel	ug/L	1.00	1.63	1.52	6.74	0 - 20
Antimony	ug/L	1.00	ND	0	0	0 - 20
Lead	ug/L	1.00	ND	0	0	0 - 20
Manganese	ug/L	1.00	4.02	3.90	2.90	0 - 20
Molybdenum	ug/L	1.00	20.7	22.2	7.09	0 - 20

○ Low Level Calibration Verification

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Arsenic	ug/L	1.00	0.525	0.500	105	70 - 130
Barium	ug/L	1.00	0.826	1.00	82.6	70 - 130
Chromium	ug/L	1.00	0.177	0.200	88.5	70 - 130
Nickel	ug/L	1.00	0.971	1.00	97.1	70 - 130
Antimony	ug/L	1.00	0.477	0.500	95.4	70 - 130
Lead	ug/L	1.00	0.468	0.500	93.6	70 - 130
Manganese	ug/L	1.00	0.179	0.200	89.5	70 - 130
Molybdenum	ug/L	1.00	0.467	0.500	93.4	70 - 130

○ Lab Control Sample

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Arsenic	ug/L	1.00	48.1	50.0	96.3	85 - 115
Barium	ug/L	1.00	47.9	50.0	95.7	85 - 115
Chromium	ug/L	1.00	50.0	50.0	100	85 - 115
Nickel	ug/L	1.00	49.2	50.0	98.3	85 - 115
Antimony	ug/L	1.00	48.4	50.0	96.8	85 - 115
Lead	ug/L	1.00	47.9	50.0	95.8	85 - 115
Manganese	ug/L	1.00	50.5	50.0	101	85 - 115
Molybdenum	ug/L	1.00	49.6	50.0	99.1	85 - 115



Client: E2 Consulting Engineers, Inc.

Project Name: PG&E Topock Project

Page 17 of 37

Project Number: 652547.01.IM.OP.00

Printed 1/6/2015

Matrix Spike

Lab ID = 815099-001

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Arsenic	ug/L	1.00	50.8	50.0(50.0)	102	75 - 125
Barium	ug/L	1.00	62.1	63.8(50.0)	96.6	75 - 125
Chromium	ug/L	1.00	49.2	50.0(50.0)	98.4	75 - 125
Nickel	ug/L	1.00	47.2	51.5(50.0)	91.3	75 - 125
Antimony	ug/L	1.00	50.2	50.0(50.0)	100	75 - 125
Lead	ug/L	1.00	45.0	50.0(50.0)	90.0	75 - 125
Manganese	ug/L	1.00	53.5	53.9(50.0)	99.2	75 - 125
Molybdenum	ug/L	1.00	70.2	72.2(50.0)	96.0	75 - 125

Matrix Spike Duplicate

Lab ID = 815099-001

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Arsenic	ug/L	1.00	50.2	50.0(50.0)	100	75 - 125
Barium	ug/L	1.00	62.1	63.8(50.0)	96.6	75 - 125
Chromium	ug/L	1.00	48.6	50.0(50.0)	97.3	75 - 125
Nickel	ug/L	1.00	46.3	51.5(50.0)	89.6	75 - 125
Antimony	ug/L	1.00	50.3	50.0(50.0)	100	75 - 125
Lead	ug/L	1.00	44.8	50.0(50.0)	89.7	75 - 125
Manganese	ug/L	1.00	52.8	53.9(50.0)	97.8	75 - 125
Molybdenum	ug/L	1.00	70.9	72.2(50.0)	97.4	75 - 125

MRCSS - Secondary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Arsenic	ug/L	1.00	20.2	20.0	101	90 - 110
Barium	ug/L	1.00	19.8	20.0	99.1	90 - 110
Chromium	ug/L	1.00	19.9	20.0	99.5	90 - 110
Nickel	ug/L	1.00	19.7	20.0	98.3	90 - 110
Antimony	ug/L	1.00	20.6	20.0	103	90 - 110
Lead	ug/L	1.00	20.2	20.0	101	90 - 110
Manganese	ug/L	1.00	20.0	20.0	100.	90 - 110
Molybdenum	ug/L	1.00	21.0	20.0	105	90 - 110

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Arsenic	ug/L	1.00	20.7	20.0	104	90 - 110

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Arsenic	ug/L	1.00	20.9	20.0	104	90 - 110



Client: E2 Consulting Engineers, Inc.

Project Name: PG&amp;E Topock Project

Page 23 of 37

Project Number: 652547.01.IM.OP.00

Printed 1/6/2015

## Interference Check Standard AB

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Antimony	ug/L	1.00	ND	0		

## Interference Check Standard AB

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Antimony	ug/L	1.00	ND	0		
Lead	ug/L	1.00	ND	0		

## Interference Check Standard AB

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Lead	ug/L	1.00	ND	0		

## Interference Check Standard AB

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Manganese	ug/L	1.00	20.0	20.0	99.8	80 - 120

## Interference Check Standard AB

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Manganese	ug/L	1.00	20.0	20.0	99.8	80 - 120

## Interference Check Standard AB

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Molybdenum	ug/L	1.00	ND	0		

## Interference Check Standard AB

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Molybdenum	ug/L	1.00	ND	0		

## Serial Dilution

Lab ID = 815099-002

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Barium	ug/L	5.00	27.5	27.9	1.31	0 - 10
Chromium	ug/L	50.0	575	598	3.88	0 - 10



Client: E2 Consulting Engineers, Inc.

Project Name: PG&E Topock Project  
Project Number: 652547.01.IM.OP.00

Page 24 of 37  
Printed 1/6/2015

Metals by EPA 200.8, Total		Batch 120914A				
Parameter	Unit	Analyzed	DF	MDL	RL	Result
815099-001 Copper	ug/L	12/09/2014 14:13	1.00	0.190	1.0	ND
815099-002 Copper	ug/L	12/09/2014 14:42	1.00	0.190	1.0	ND
Method Blank						
Parameter	Unit	DF	Result			
Copper	ug/L	1.00	ND			
Duplicate				Lab ID = 815099-001		
Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Copper	ug/L	1.00	ND	0	0	0 - 20
Low Level Calibration Verification						
Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Copper	ug/L	1.00	0.461	0.500	92.2	70 - 130
Lab Control Sample						
Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Copper	ug/L	1.00	48.2	50.0	96.5	85 - 115
Matrix Spike				Lab ID = 815099-001		
Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Copper	ug/L	1.00	44.8	50.0(50.0)	89.7	75 - 125
Matrix Spike Duplicate				Lab ID = 815099-001		
Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Copper	ug/L	1.00	44.9	50.0(50.0)	89.8	75 - 125
MRCCS - Secondary						
Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Copper	ug/L	1.00	19.4	20.0	96.9	90 - 110
MRCVS - Primary						
Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Copper	ug/L	1.00	20.9	20.0	104	90 - 110
Interference Check Standard A						
Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Copper	ug/L	1.00	ND	0		
Interference Check Standard A						
Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Copper	ug/L	1.00	ND	0		



Client: E2 Consulting Engineers, Inc.

Project Name: PG&E Topock Project

Page 25 of 37

Project Number: 652547.01.IM.OP.00

Printed 1/6/2015

Interference Check Standard AB

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Copper	ug/L	1.00	20.6	20.0	103	80 - 120

Interference Check Standard AB

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Copper	ug/L	1.00	21.6	20.0	108	80 - 120

Reactive Silica by SM4500-Si D

Batch 1412208

Parameter	Unit	Analyzed	DF	MDL	RL	Result
815099-002 Silica	mg/L	12/11/2014	25.0	0.252	1.00	16.5

Method Blank

Parameter	Unit	DF	Result
Silica	mg/L	1.00	ND

Duplicate

Lab ID = 815099-002

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Silica	mg/L	25.0	17.1	16.5	3.38	0 - 20

Lab Control Sample

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Silica	mg/L	1.00	0.192	0.206	93.2	90 - 110

Matrix Spike

Lab ID = 815099-002

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Silica	mg/L	25.0	21.3	21.6(5.15)	94.0	75 - 125

MRCCS - Secondary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Silica	mg/L	1.00	0.192	0.206	93.2	90 - 110

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Silica	mg/L	1.00	0.422	0.400	106	90 - 110

Client: **E2 Consulting Engineers, Inc.**

Project Name: PG&amp;E Topock Project

Page 26 of 37

Project Number: 652547.01.IM.OP.00

Printed 1/6/2015

**Total Dissolved Solids by SM 2540 C**

Batch 1412075

Parameter	Unit	Analyzed	DF	MDL	RL	Result
815099-001 Total Dissolved Solids	mg/L	12/04/2014	1.00	1.76	250	4390
815099-002 Total Dissolved Solids	mg/L	12/04/2014	1.00	1.76	250	4410

**Method Blank**

Parameter	Unit	DF	Result
Total Dissolved Solids	mg/L	1.00	ND

**Duplicate**

Lab ID = 815109-003

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Total Dissolved Solids	mg/L	1.00	516	510	1.17	0 - 10

**Lab Control Sample**

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Total Dissolved Solids	mg/L	1.00	496	500	99.2	90 - 110



Client: E2 Consulting Engineers, Inc.

Project Name: PG&E Topock Project  
Project Number: 652547.01.IM.OP.00

Page 27 of 37  
Printed 1/6/2015

**Total Organic Carbon (T/DOC) SM 5310 C**

Batch 1412057

Parameter	Unit	Analyzed	DF	MDL	RL	Result
815099-002 Total Organic Carbon	mg/L	12/03/2014 12:38	1.00	0.0877	0.300	0.578

Method Blank

Parameter	Unit	DF	Result
Total Organic Carbon	mg/L	1.00	ND

Duplicate

Lab ID = 815099-002

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Total Organic Carbon	mg/L	1.00	0.569	0.578	1.50	0 - 20

Lab Control Sample

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Total Organic Carbon	mg/L	1.00	10.1	10.8	93.6	90 - 110

Matrix Spike

Lab ID = 815099-002

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Total Organic Carbon	mg/L	1.00	9.76	11.4(10.8)	85.0	75 - 125

MRCSS - Secondary

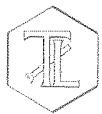
Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Total Organic Carbon	mg/L	1.00	9.95	10.8	92.1	85 - 115

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Total Organic Carbon	mg/L	1.00	9.84	10.0	98.4	90 - 110

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Total Organic Carbon	mg/L	1.00	9.24	10.0	92.4	90 - 110



Client: E2 Consulting Engineers, Inc.

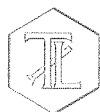
Project Name: PG&E Topock Project

Page 28 of 37

Project Number: 652547.01.IM.OP.00

Printed 1/6/2015

Total Phosphate, SM 4500-PB,E			Batch 1412058				
Parameter		Unit	Analyzed	DF	MDL	RL	Result
815099-002 Phosphate, Total As P		mg/L	12/04/2014	1.00	0.00460	0.0200	ND
Method Blank							
Parameter	Unit	DF	Result				
Phosphate, Total As P	mg/L	1.00	ND				
Duplicate		Lab ID = 815122-001					
Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range	
Phosphate, Total As P	mg/L	1.00	0.0642	0.0577	10.7	0 - 20	
Lab Control Sample							
Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range	
Phosphate, Total As P	mg/L	1.00	0.0695	0.0652	106	90 - 110	
Matrix Spike		Lab ID = 815099-002					
Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range	
Phosphate, Total As P	mg/L	1.00	0.0682	0.0652(0.0652)	105	75 - 125	
MRCCS - Secondary							
Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range	
Phosphate, Total As P	mg/L	1.00	0.0695	0.0652	106	90 - 110	
MRCVS - Primary							
Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range	
Phosphate, Total As P	mg/L	1.00	0.0660	0.0660	100	90 - 110	



Client: E2 Consulting Engineers, Inc.

Project Name: PG&E Topock Project

Page 29 of 37

Project Number: 652547.01.IM.OP.00

Printed 1/6/2015

**Ammonia Nitrogen by SM4500-NH3D**

Batch 12NH314A

Parameter	Unit	Analyzed	DF	MDL	RL	Result
815099-001 Ammonia as N	mg/L	12/30/2014	1.00	0.0318	0.500	ND
815099-002 Ammonia as N	mg/L	12/30/2014	1.00	0.0318	0.500	ND

**Method Blank**

Parameter	Unit	DF	Result
Ammonia as N	mg/L	1.00	ND

**Lab Control Sample**

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Ammonia as N	mg/L	1.00	8.01	8.00	100	90 - 110

**Lab Control Sample Duplicate**

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Ammonia as N	mg/L	1.00	8.61	8.00	108	90 - 110

**Matrix Spike**

Lab ID = 815099-001

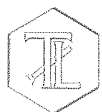
Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Ammonia as N	mg/L	1.00	10.4	10.0(10.0)	104	75 - 125

**MRCCS - Secondary**

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Ammonia as N	mg/L	1.00	6.56	6.00	109	90 - 110

**MRCVS - Primary**

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Ammonia as N	mg/L	1.00	5.44	6.00	90.7	90 - 110



Client: E2 Consulting Engineers, Inc.

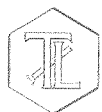
Project Name: PG&E Topock Project

Page 30 of 37

Project Number: 652547.01.IM.OP.00

Printed 1/6/2015

Metals by EPA 200.8, Dissolved		Batch 120414A				
Parameter	Unit	Analyzed	DF	MDL	RL	Result
815099-002 Manganese	ug/L	12/04/2014 17:05	1.00	0.0600	0.50	9.7
Method Blank						
Parameter	Unit	DF	Result			
Chromium	ug/L	1.00	ND			
Manganese	ug/L	1.00	ND			
Duplicate					Lab ID = 815098-001	
Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Chromium	ug/L	1.00	4.54	4.89	7.34	0 - 20
Manganese	ug/L	2.00	65.5	68.4	4.36	0 - 20
Low Level Calibration Verification						
Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium	ug/L	1.00	0.177	0.200	88.5	70 - 130
Manganese	ug/L	1.00	0.179	0.200	89.5	70 - 130
Lab Control Sample						
Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium	ug/L	1.00	49.8	50.0	99.7	85 - 115
Manganese	ug/L	1.00	50.7	50.0	101	85 - 115
Matrix Spike					Lab ID = 815098-001	
Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium	ug/L	1.00	56.4	54.9(50.0)	103	75 - 125
Manganese	ug/L	2.00	113	118(50.0)	88.9	75 - 125
Matrix Spike Duplicate					Lab ID = 815098-001	
Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium	ug/L	1.00	55.1	54.9(50.0)	100	75 - 125
Manganese	ug/L	2.00	115	118(50.0)	93.2	75 - 125
MRCCS - Secondary						
Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium	ug/L	1.00	19.9	20.0	99.5	90 - 110
Manganese	ug/L	1.00	20.0	20.0	100.	90 - 110
MRCVS - Primary						
Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium	ug/L	1.00	19.5	20.0	97.7	90 - 110



Client: E2 Consulting Engineers, Inc.

Project Name: PG&E Topock Project

Page 33 of 37

Project Number: 652547.01.IM.OP.00

Printed 1/6/2015

# Metals by 200.7, Dissolved

Batch 120514A-Th2

Parameter	Unit	Analyzed	DF	MDL	RL	Result
815099-002 Iron	ug/L	12/05/2014 18:15	1.00	3.00	20.0	ND

## Method Blank

Parameter	Unit	DF	Result
Calcium	ug/L	1.00	ND
Iron	ug/L	1.00	ND
Sodium	ug/L	1.00	ND
Magnesium	ug/L	1.00	ND

## Duplicate

Lab ID = 815098-002

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Calcium	ug/L	100	232000	212000	9.22	0 - 20
Iron	ug/L	1.00	ND	0	0	0 - 20
Sodium	ug/L	500	1630000	1580000	3.36	0 - 20
Magnesium	ug/L	10.0	33100	34600	4.37	0 - 20

## Lab Control Sample

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Calcium	ug/L	1.00	2010	2000	100	85 - 115
Iron	ug/L	1.00	2010	2000	101	85 - 115
Sodium	ug/L	1.00	1910	2000	95.5	85 - 115
Magnesium	ug/L	1.00	1980	2000	99.0	85 - 115

## Matrix Spike

Lab ID = 815098-002

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Calcium	ug/L	100	442000	412000(200000)	115	75 - 125
Iron	ug/L	1.00	1760	2000(2000)	88.2	75 - 125
Sodium	ug/L	500	2380000	2580000(1000000)	79.6	75 - 125
Magnesium	ug/L	10.0	52300	54600(20000)	88.6	75 - 125

## Matrix Spike Duplicate

Lab ID = 815098-002

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Iron	ug/L	1.00	1870	2000(2000)	93.6	75 - 125

## MRCCS - Secondary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Calcium	ug/L	1.00	4960	5000	99.2	95 - 105
Iron	ug/L	1.00	5160	5000	103	95 - 105
Sodium	ug/L	1.00	4830	5000	96.7	95 - 105
Magnesium	ug/L	1.00	5220	5000	104	95 - 105

This report applies only to the sample, or samples, investigated and is not necessarily indicative of the quality or condition of apparently identical or similar products. As a mutual protection to clients, the public, and these laboratories, this report is submitted and accepted for the exclusive use of the client to whom it is addressed and upon the condition that it is not to be used, in whole or in part, in any advertising or publicity matter without prior written authorization from Truesdail Laboratories.



Client: E2 Consulting Engineers, Inc.

Project Name: PG&E Topock Project

Page 37 of 37

Project Number: 652547.01.IM.OP.00

Printed 1/6/2015

Interference Check Standard AB

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Sodium	ug/L	1.00	1880	2000	94.0	80 - 120
Magnesium	ug/L	1.00	1990	2000	99.7	80 - 120

Interference Check Standard AB

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Magnesium	ug/L	1.00	1970	2000	98.6	80 - 120

Turbidity by SM 2130 B

Batch 1412054

Parameter	Unit	Analyzed	DF	MDL	RL	Result
815099-001 Turbidity	NTU	12/03/2014	1.00	0.0140	0.100	0.155
815099-002 Turbidity	NTU	12/03/2014	1.00	0.0140	0.100	0.253

Method Blank

Parameter	Unit	DF	Result
Turbidity	NTU	1.00	ND

Duplicate

Lab ID = 815111-003

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Turbidity	NTU	1.00	0.107	0.115	7.21	0 - 20

Lab Control Sample

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Turbidity	NTU	1.00	7.95	8.00	99.4	90 - 110

Lab Control Sample Duplicate

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Turbidity	NTU	1.00	7.82	8.00	97.8	90 - 110

Respectfully submitted,

TRUESDAIL LABORATORIES, INC.

Sean Condon  
Project Manager

**Total Dissolved Solids by SM 2540 C****Calculations**Batch: 1412075  
Date Analyzed: 12/4/2014

Laboratory Number	Sample volume, mL	Initial weight, g	1st Final weight, g	2nd Final weight, g	Weight Difference, g	Exceeds 0.5mg? Yes/No	Residue weight, g	Filterable residue, ppm	RL, ppm	Reported Value, ppm	DF
Blank	100	110.7251	110.7251	110.7251	0.0000	No	0.0000	0.0	25.0	ND	1
14L0056-01E	200	110.3605	110.3883	110.3881	0.0002	No	0.0276	138.0	12.5	138.0	1
14L0056-02	200	112.8592	112.8700	112.8700	0.0000	No	0.0108	54.0	12.5	54.0	1
14L0066-09C	100	75.2556	75.3135	75.3133	0.0002	No	0.0577	577.0	25.0	577.0	1
14L0070-01B	20	28.9669	29.0184	29.0180	0.0004	No	0.0511	2555.0	125.0	2555.0	1
14L0070-02	10	29.3768	29.4250	29.4249	0.0001	No	0.0481	4810.0	250.0	4810.0	1
14L0071-01D	10	30.2464	30.2905	30.2903	0.0002	No	0.0439	4390.0	250.0	4390.0	1
14L0071-02	10	28.8159	28.8603	28.8600	0.0003	No	0.0441	4410.0	250.0	4410.0	1
14L0116-01C	100	75.7255	75.7781	75.7781	0.0000	No	0.0526	526.0	25.0	526.0	1
14L0116-02	100	67.9468	67.9997	67.9995	0.0002	No	0.0527	527.0	25.0	527.0	1
14L0116-03	100	78.7781	78.8293	78.8291	0.0002	No	0.0510	510.0	25.0	510.0	1
14L0116-03 Dup	100	75.2521	75.3040	75.3037	0.0003	No	0.0516	516.0	25.0	516.0	1
LCS	100	78.2284	78.2782	78.2780	0.0002	No	0.0496	496.0	25.0	496.0	1
14L0116-04	100	66.7353	66.7882	66.7879	0.0003	No	0.0526	526.0	25.0	526.0	1
14L0119-01D	100	66.7703	66.8125	66.8125	0.0000	No	0.0422	422.0	25.0	422.0	1
14L0119-02	100	74.6235	74.6636	74.6635	0.0001	No	0.0400	400.0	25.0	400.0	1
14L0136-01B	100	75.7497	75.7735	75.7733	0.0002	No	0.0236	236.0	25.0	236.0	1
14L0142-01B	200	122.3281	122.3400	122.3396	0.0004	No	0.0115	57.5	12.5	57.5	1
14L0142-02	200	112.9989	113.0109	113.0109	0.0000	No	0.0120	60.0	12.5	60.0	1
14L0006-02A	100	70.3637	70.3873	70.3873	0.0000	No	0.0236	236.0	25.0	236.0	1
14L0006-04	100	67.7961	67.8411	67.8411	0.0000	No	0.0450	450.0	25.0	450.0	1
14L0136-01 Dup	100	69.7346	69.7597	69.7597	0.0000	No	0.0251	251.0	25.0	251.0	1

Calculation as follows:

$$\text{Filterable residue (TDS), mg/L} = \left( \frac{A - B}{C} \right) \times 10^6$$

Where:

A = weight of dish + residue in grams.  
B = weight of dish in grams.  
C = mL of sample filtered.

RL = reporting limit.  
ND = not detected (below the reporting limit)

**Laboratory Control Sample (LCS) Summary**

QC Std I.D.	Measured Value, ppm	Theoretical Value, ppm	Percent Rec	Acceptance Limit	QC Within Control?
LCS	496.0	500	99.2%	90-110%	Yes
LCSD					

**LCS Recovery**

$$P = \left( \frac{LC}{LT} \right) \times 100$$

P = Percent recovery.

LC = Measured LCS value (ppm).

LT = Theoretical LCS value (ppm).

**Duplicate Determinations Difference Summary**

Lab Number	Sample Weight, g	Sample Dup Weight, g	% RPD	Acceptance Limit	QC Within Control?
14L0116-03	0.0510	0.0516	0.6%	≤5%	Yes
14L0136-01	0.0236	0.0251	3.1%	≤5%	Yes

**Duplicate Determination Difference**

$$\% \text{ Difference} = \frac{|A \text{ or } B - C|}{C} \times 100$$

$$\text{where } C = \frac{A + B}{2}$$

A = Weight of the first sample in (g).

B = Weight of the second sample in (g).

C = Average weight in (g).

Jenny T.

Analyst Printed Name

Analyst Signature

Maksim G.

Reviewer Printed Name

Reviewer Signature

# Total Dissolved Solids by SM 2540 C

## TDS/EC CHECK

Batch: 1412075  
Date Analyzed: 12/4/2014

Laboratory Number	EC	TDS/EC Ratio: 0.55-0.90	Calculated TDS (EC*0.65)	Measured TDS / Calc TDS <1.3
14L0056-01E	151	0.91	98.15	1.41
14L0056-02	72.5	0.74	47.125	1.15
14L0066-09C	912	0.63	592.8	0.97
14L0070-01B	4230	0.60	2749.5	0.93
14L0070-02	8110	0.59	5271.5	0.91
14L0071-01D	7300	0.60	4745	0.93
14L0071-02	7300	0.60	4745	0.93
14L0116-01C	939	0.56	610.35	0.86
14L0116-02	932	0.57	605.8	0.87
14L0116-03	929	0.55	603.85	0.84
14L0116-03 Dup	929	0.56	603.85	0.85
LCS				
14L0116-04	929	0.57	603.85	0.87
14L0119-01D	782	0.54	508.3	0.83
14L0119-02	744	0.54	483.6	0.83
14L0136-01B	374	0.63	243.1	0.97
14L0142-01B	72	0.80	46.8	1.23
14L0142-02	70	0.86	45.5	1.32
14L0006-02A	422	0.56	274.3	0.86
14L0006-04	750	0.60	487.5	0.92
14L0136-01 Dup	374	0.67	243.1	1.03



## Alkalinity by SM 2320B

Analytical Batch:	1412276
Matrix:	WATER
Date of Analysis:	12/11/2014

[illegible]

**Calculations as follows:**

T or P =

$$\left( \frac{A \times N \times 50000}{mL \text{ sample}} \right)$$

**Where:**

T = Total Alkalinity, mg CaCO<sub>3</sub>/L

P = Phenolphthalein Alkalinity, mg CaCO<sub>3</sub>/L

A = mL standard acid used

**N** = normality of standard acid

**Low Alkalinity:** = 
$$\frac{(2 \times B - C) \times N \times 50000}{\text{mL sample}}$$
  
as mg/L CaCO<sub>3</sub>

Where: B = mL titrant to first recorded pH

**C** = Total mL titrant to reach pH 0.3 unit lower

N = Normality of standard acid

LCS = Laboratory Control Standard/Duplicate

MS/MSD = Matrix Spike/Duplicate

ND = Not Detected (below the reporting limit)

## Blank Summary

Reporting Limit, RL	Measured Value, ppm	Accept Limit	QC Within Control?
5 ppm	0	<5	Yes

### Laboratory Control Sample (LCS/LCSD) Summary

QC Std I.D.	Measured Value, ppm	Theoretical Value, ppm	% Recovery	Acceptance Limit	QC Within Control?
LCS	99	100	99.0%	90-110	Yes
LCSD	100	100	100.0%	90-110	Yes

### Duplicate Determination Difference Summary

Lab Number I.D.	Measured Value, ppm	Dup Value, ppm	RPD	Acceptance Limit	QC Within Control?
14L0085-	111	114	2.7%	≤20%	Yes

### Sample Matrix Spike (MS/MSD) Summary

Lab Number	Conc of Unspk spl	Dil Factor	Added Spk Conc	MS/MSD Amt	Measrd Conc of Spk Spl	Theor Conc of Spk Spl	MS/MSD % Rec	MS Accept Limit	QC Within Control?	RPD	RPD Accept Limit	QC Within Control?
14L0085-21	129	1	100	100	220	229.00	91%	75-125	Yes	1.1%	≤20%	Yes
	129	1	100	100	215	229.00	86%		Yes			

Alex L.

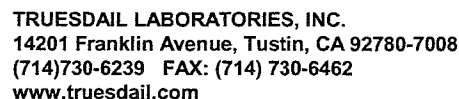
Analyst Printed Name

Analyst Signature

Maksim Gorbunov

Reviewer Printed Name

Reviewer Signature \_\_\_\_\_



**[IM3Plant-WDR-497]**

DATE 12/02/14 PAGE 1 OF 1

LETTER  
LEVEL QC

Signature (Relinquished)	<i>gm. Ari</i>	Printed Name	GEORGE GLOWA	Company/ Agency	E-2	Date/ Time	12-02-14 14:15
Signature (Received)	<i>Thanh Ngo</i>	Printed Name	THANH NGO	Company/ Agency	TRUESDALE	Date/ Time	12-2-14 14:15
Signature (Relinquished)	<i>Thanh Ngo</i>	Printed Name	THANH NGO	Company/ Agency		Date/ Time	12-2-14 19:25
Signature (Received)	<i>Leo Brady</i>	Printed Name	LEO BRADY	Company/ Agency	TLI	Date/ Time	12-2-14 19:25
Signature (Relinquished)		Printed Name		Company/ Agency		Date/ Time	
Signature (Received)		Printed Name		Company/ Agency		Date/ Time	

The metals include: Cr, Al, Sb, As, Ba, B, Cu, Pb, Mn, Mo, Ni, Fe, Zn

## Method EPA 218.6 and SW 7199 Sample pH Log

NE  
12/12/11



Turbidity/pH Check

Sample Number	Turbidity	pH	Date	Analyst	Need Digest (Y/N)	Time of Adjustment to pH 2	Date/Time of 2nd pH check	Comments
14L0058 (01-02)	>1	<2	12/2/14	ES	Yes			
14L0059 (01-04)	↓	↓	↓	↓	↓			
14L0013-01	<1	<2	12/2/14	ES	Yes			
14L0017-02	>1	<2	12/3/14	TM	Yes			
14L0065-06	>1	<2		↓	Yes			
14L0074-01, 02	<1	>2		TM	No	10:05		
14L0073-01	>1	>2		↓	Yes			
14L0076-01	<1	>2	↓	↓	No	10:05		
14L0070-01-02	<1	>2		↓	Yes			
14L0071-01, -02	<1	>2	↓	↓	↓			
14L0077-01, -02, -03	>1	<2	↓	↓	↓			
14L0078-01	>1	<2	↓	↓	↓			
14L0080 (01-04)	>1	<2	12/3/14	ES	Yes			
14L0069-01	>1	<2	12/3/14	TM	Yes			
14L0079 (01-08)	>1	<2	↓	↓	↓			
14L0070 (01-02)	<1	>2	12/3/14	ES	Yes	12:00		Filtered then decanted
14L0071-02	↓	↓	↓	↓	↓	↓		
14L0016-02	<1	<2	12/4/14	ES	Yes			
14L0083 (01-11)	>1	<2			Yes			
14L0099-01	<1	<2						
14L0119-01	>1							
14L0119-02	<1							
14L0127-01	↓							
14L0128-01	↓							
14L0129-01	↓							
14L0094 (01-06)	<1	>2	↓	↓	No	9:30		
14L0132 (01-04)	>1	<1	12/4/14	TM	Yes			
14L0134-01, -02, -03	↓	↓	↓	↓	↓			
14L0137-01, -11, -12	<1	>2	↓	↓	No	11:00		
14L0111-02	<1	>2	12/5/14	ES	Yes			
14L0112-01	↓							
14L0113-01	↓							
14L0115-02	↓							
14L0138 (01-04)	>1							
14L0144 (01-03)	↓							
14L0146 (01)	↓							
14L0147 (01-02)	↓							
14L0148 (01-03)	↓							
14L0150 (01-02)	↓							
14L0162-01	<1							
14L0163-01	↓							
14L0086 (01-02)	<1	>2	12/5/14	ES	No	5:00		
14L0007 (01-04)	↓	↓	↓	↓	↓	↓		
14L0085 (17, 24)	↓	↓	↓	↓	↓	↓		

Notes:

1. Samples should be analyzed after 24 hrs of pH adjustment to pH2 for Dissolved Analytes.
2. All Total Recoverable Analytes must be pH adjusted and digested.
3. Do not use disposable pipette to measure pH; pour a little amount of sample from the bottle.

14L0071

## Truesdail Laboratories, Inc

Client: E2 Consulting Engineers, Inc.  
Project: Topock IM3Plant-WDR

Project Manager: Sean Condon  
Project Number: PGE-2152

Report To:

E2 Consulting Engineers, Inc.  
Christy Gitlin  
1900 Powell Street, Suite 250  
Emeryville, CA 94608  
Phone: 510-428-4728  
Fax: 510-652-5604

Invoice To:

E2 Consulting Engineers, Inc.  
Christy Gitlin  
1900 Powell Street, Suite 250  
Emeryville, CA 94608  
Phone :510-428-4728  
Fax: 510-652-5604

Date Due: 12/12/2014 16:30 (7 day TAT)

Received By: Leo Brady

Date Received: 12/02/2014 19:25

Logged In By: Luda Shabunina

Date Logged In: 12/03/2014 07:43

Samples Received at: 4.1°C

Chain of Custody re Yes Samples intact? Yes

Letter (if sent) matc No Custody seals (if an No

Requested analyses Yes Analyses within hol Yes

Samples received in Yes

Analysis	Due	TAT	Expires	Comments
----------	-----	-----	---------	----------

14L0071-01 SC-700B-WDR-497 [Water] Sampled 12/02/2014 13:52  
(GMT-08:00) Pacific Time (US &

IC-SO4	12/12/2014 12:00	7	12/30/2014 13:52	
Al-200.7	12/12/2014 12:00	7	05/31/2015 13:52	
Zn-200.7	12/12/2014 12:00	7	05/31/2015 13:52	
Turbidity	12/12/2014 12:00	7	12/04/2014 13:52	
TDS	12/12/2014 12:00	7	12/09/2014 13:52	
Specific Conductivity	12/12/2014 12:00	7	12/30/2014 13:52	
Sb-200.8	12/12/2014 12:00	7	05/31/2015 13:52	
Pb-200.8	12/12/2014 12:00	7	05/31/2015 13:52	
Nitrite	12/12/2014 12:00	7	12/04/2014 13:52	
Ni-200.8	12/12/2014 12:00	7	05/31/2015 13:52	
Mn-200.8	12/12/2014 12:00	7	05/31/2015 13:52	
IC-NO3	12/12/2014 12:00	7	12/04/2014 13:52	
IC-F	12/12/2014 12:00	7	12/30/2014 13:52	
Fe-200.7	12/12/2014 12:00	7	05/31/2015 13:52	
Cu-200.8	12/12/2014 12:00	7	05/31/2015 13:52	
Cr-200.8	12/12/2014 12:00	7	05/31/2015 13:52	
Cr VI-218.6	12/12/2014 12:00	7	12/30/2014 13:52	
Ba-200.8	12/12/2014 12:00	7	05/31/2015 13:52	
B-200.7	12/12/2014 12:00	7	05/31/2015 13:52	
As-200.8	12/12/2014 12:00	7	05/31/2015 13:52	
Ammonia E	12/12/2014 12:00	7	12/30/2014 13:52	

14L0071

## Truesdail Laboratories, Inc

Client: E2 Consulting Engineers, Inc.  
Project: Topock IM3Plant-WDR

Project Manager: Sean Condon  
Project Number: PGE-2152

Analysis	Due	TAT	Expires	Comments
14L0071-01 SC-700B-WDR-497 [Water] Sampled 12/02/2014 13:52 (GMT-08:00) Pacific Time (US &				
Mo-200.8	12/12/2014 12:00	7	05/31/2015 13:52	
14L0071-02 SC-100B-WDR-497 [Water] Sampled 12/02/2014 13:52 (GMT-08:00) Pacific Time (US &				
As-200.8	12/12/2014 12:00	7	05/31/2015 13:52	
Ammonia E	12/12/2014 12:00	7	12/30/2014 13:52	
Al-200.7	12/12/2014 12:00	7	05/31/2015 13:52	
Nitrite	12/12/2014 12:00	7	12/04/2014 13:52	
TDS	12/12/2014 12:00	7	12/09/2014 13:52	
Specific Conductivity	12/12/2014 12:00	7	12/30/2014 13:52	
Silica	12/12/2014 12:00	7	12/30/2014 13:52	
Ni-200.8	12/12/2014 12:00	7	05/31/2015 13:52	
Mo-200.8	12/12/2014 12:00	7	05/31/2015 13:52	
Mn-200.8-diss	12/12/2014 12:00	7	05/31/2015 13:52	
Mn-200.8	12/12/2014 12:00	7	05/31/2015 13:52	
Zn-200.7	12/12/2014 12:00	7	05/31/2015 13:52	
Turbidity	12/12/2014 12:00	7	12/04/2014 13:52	
Sb-200.8	12/12/2014 12:00	7	05/31/2015 13:52	
Alkalinity	12/12/2014 12:00	7	12/16/2014 13:52	
Pb-200.8	12/12/2014 12:00	7	05/31/2015 13:52	
TOC	12/12/2014 12:00	7	12/30/2014 13:52	
IC-SO4	12/12/2014 12:00	7	12/30/2014 13:52	
IC-NO3	12/12/2014 12:00	7	12/04/2014 13:52	
IC-F	12/12/2014 12:00	7	12/30/2014 13:52	
Fe-200.7-diss	12/12/2014 12:00	7	05/31/2015 13:52	
Fe-200.7	12/12/2014 12:00	7	05/31/2015 13:52	
Cu-200.8	12/12/2014 12:00	7	05/31/2015 13:52	
Cr-200.8	12/12/2014 12:00	7	05/31/2015 13:52	
Cr VI-218.6	12/12/2014 12:00	7	12/30/2014 13:52	
Ba-200.8	12/12/2014 12:00	7	05/31/2015 13:52	
B-200.7	12/12/2014 12:00	7	05/31/2015 13:52	
Phosphorus	12/12/2014 12:00	7	12/30/2014 13:52	

Reviewed By

Date



# TRUESDAIL LABORATORIES, INC.

EXCELLENCE IN INDEPENDENT TESTING



Established 1931

14201 FRANKLIN AVENUE  
TUSTIN, CALIFORNIA 92780-7008  
(714) 730-6239 · FAX (714) 730-6462  
www.truesdail.com

January 5, 2015

E2 Consulting Engineers, Inc.  
Mr. Shawn Duffy  
155 Grand Ave., Suite 1000  
Oakland, California 94612

Dear Mr. Duffy:

SUBJECT: CASE NARRATIVE PG&E TOPOCK IM3PLANT-WDR-498 PROJECT, GROUNDWATER  
MONITORING, TLI No.: 815102

Truesdail Laboratories, Inc. is pleased to submit this report summarizing the Topock IM3Plant-WDR-498 project groundwater monitoring for Hexavalent and Total Chromium, Total Manganese, Turbidity, Specific Conductivity, and Total Dissolved Solids. A summary table for this sample delivery group is included in Section 2. Complete laboratory reports, quality control data and chain of custody forms for sampling period are included in Sections 3 and 4. Analytical raw data have been included under Section 5.

The samples were received and delivered with the chain of custody on December 9, 2014, intact and in chilled condition. The samples will be kept in a locked refrigerator for 30 days; thereafter it will be kept in warm storage for an additional 2 months before disposal.


Sample SC-700B-WDR-498 was analyzed as sample I.D. 14L0250 in the raw data but is reported as 815102 in all final report pages.


The straight runs for the sample and associated matrix spike on sample SC-700B-WDR-498 for Hexavalent Chromium analysis by EPA 218.6 were just outside the retention time window. Because the matrix spike recovery and all other QA/QC were within acceptable limits, the data from the straight run was reported.

No violations or nonconformance actions occurred for this data package.

If you have any questions or require additional information, please contact me at (714) 730-6239 ext. 200.

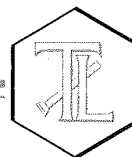
Respectfully Submitted,  
TRUESDAIL LABORATORIES, INC.

  
for Mona Nassimi  
Manager, Analytical Services

  
Michael Ngo  
Quality Assurance/Quality Control Officer

# TRUESDAIL LABORATORIES, INC.

EXCELLENCE IN INDEPENDENT TESTING



Established 1931

**Client:** E2 Consulting Engineers, Inc.  
155 Grand Ave. Suite 1000  
Oakland, CA 94612

**Attention:** Shawn Duffy

**Sample:** One (1) Groundwater Sample

**Project Name:** PG&E Topock Project

**Project No.:** 652547.01.IM.OP.00

14201 FRANKLIN AVENUE  
TUSTIN, CALIFORNIA 92780-7008  
(714) 730-6239 · FAX (714) 730-6462  
www.truesdail.com

**Laboratory No.:** 815102

**Date:** January 5, 2015

**Collected:** December 9, 2014

**Received:** December 9, 2014

## ANALYST LIST

METHOD	PARAMETER	ANALYST
EPA 120.1	Specific Conductivity	Jenny Tankunakorn
SM 2540C	Total Dissolved Solids	Jenny Tankunakorn
SM 2130B	Turbidity	Naheed Eidinejad
EPA 200.8	Total Metals	Tom Martinez
EPA 218.6	Hexavalent Chromium	Naheed Eidinejad



**Client:** E2 Consulting Engineers, Inc.  
155 Grand Ave. Suite 1000  
Oakland, CA 94612

**Attention:** Shawn Duffy

**Laboratory No.:** 815102  
**Date Received:** December 9, 2014

**Project Name:** PG&E Topock Project  
**Project No.:** 652547.01.IM.OP.00  
**P.O. No.:** 10381-7-102011

## Analytical Results Summary

Lab Sample ID	Field ID	Analysis Method	Extraction Method	Sample Date	Sample Time	Parameter	Result	Units	RL
815102-001	SC-700B-WDR-498	E120.1	NONE	12/9/2014	12:30	EC	7240	umhos/cm	2.00
815102-001	SC-700B-WDR-498	E200.8	NONE	12/9/2014	12:30	Chromium	ND	ug/L	1.0
815102-001	SC-700B-WDR-498	E200.8	NONE	12/9/2014	12:30	Manganese	6.8	ug/L	0.50
815102-001	SC-700B-WDR-498	E218.6	LABFLT	12/9/2014	12:30	Chromium, Hexavalent	ND	ug/L	0.20
815102-001	SC-700B-WDR-498	SM2130B	NONE	12/9/2014	12:30	Turbidity	ND	NTU	0.100
815102-001	SC-700B-WDR-498	SM2540C	NONE	12/9/2014	12:30	Total Dissolved Solids	4270	mg/L	250

ND: Non Detected (below reporting limit)

mg/L: Milligrams per liter.

**Note:** The following "Significant Figures" rule has been applied to all results:  
Results below 0.01ppm will have two (2) significant figures.  
Result above or equal to 0.01ppm will have three (3) significant figures.  
Quality Control data will always have three (3) significant figures.

# TRUESDAIL LABORATORIES, INC.

EXCELLENCE IN INDEPENDENT TESTING



Established 1931

14201 FRANKLIN AVENUE  
TUSTIN, CALIFORNIA 92780-7008  
(714) 730-6239 · FAX (714) 730-6462  
www.truesdail.com

## REPORT

**Client:** E2 Consulting Engineers, Inc.

155 Grand Avenue, Suite 800

Oakland, CA 94612

Attention: Shawn Duffy

Project Name: PG&E Topock Project

Project Number: 652547.01.IM.OP.00

P.O. Number: 10381-7-102011

Release Number:

Laboratory No. 815102

Page 1 of 6

Printed 1/5/2015

Samples Received on 12/9/2014 6:45:00 PM

Field ID	Lab ID	Collected	Matrix
SC-700B-WDR-498	815102-001	12/09/2014 12:30	Water

### Specific Conductivity - EPA 120.1

Batch 1412192

Parameter	Unit	Analyzed	DF	MDL	RL	Result
815102-001 Specific Conductivity	umhos/cm	12/15/2014	1.00	0.606	2.00	7240

#### Method Blank

Parameter	Unit	DF	Result
Specific Conductivity	umhos	1.00	ND

#### Duplicate

Lab ID = 815115-001

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Specific Conductivity	umhos	1.00	96.4	96.1	0.312	0 - 10

#### Lab Control Sample

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Specific Conductivity	umhos	1.00	719	706	102	90 - 110

#### MRCCS - Secondary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Specific Conductivity	umhos	1.00	719	706	102	90 - 110

#### MRCVS - Primary

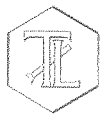
Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Specific Conductivity	umhos	1.00	1040	1000	104	90 - 110

#### MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Specific Conductivity	umhos	1.00	1040	1000	104	90 - 110

This report applies only to the sample, or samples, investigated and is not necessarily indicative of the quality or condition of apparently identical or similar products. As a mutual protection to clients, the public, and these laboratories, this report is submitted and accepted for the exclusive use of the client to whom it is addressed and upon the condition that it is not to be used, in whole or in part, in any advertising or publicity matter without prior written authorization from Truesdail Laboratories.

008



Client: E2 Consulting Engineers, Inc.

Project Name: PG&E Topock Project

Page 2 of 6

Project Number: 652547.01.IM.OP.00

Printed 1/5/2015

**Chrome VI by EPA 218.6**

Batch 1412284

Parameter	Unit	Analyzed	DF	MDL	RL	Result
815102-001 Chromium, Hexavalent	ug/L	12/12/2014	1.00	0.00600	0.20	ND
Method Blank						
Parameter	Unit	DF	Result			
Chromium, Hexavalent	ug/L	1.00	ND			
Duplicate					Lab ID = 815102-001	
Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Chromium, Hexavalent	ug/L	5.00	0.0900	0.0905	0.554	0 - 20
Low Level Calibration Verification						
Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	0.202	0.200	101	70 - 130
Lab Control Sample						
Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	5.10	5.00	102	90 - 110
Matrix Spike					Lab ID = 815102-001	
Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	5.00	5.18	5.09(5.00)	102	90 - 110
Matrix Spike					Lab ID = 815102-001	
Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	1.16	1.09(1.00)	107	90 - 110
MRCCS - Secondary						
Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	5.12	5.00	102	90 - 110
MRCVS - Primary						
Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	9.96	10.0	99.6	95 - 105



Client: E2 Consulting Engineers, Inc.

Project Name: PG&E Topock Project

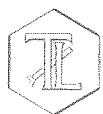
Page 3 of 6

Project Number: 652547.01.IM.OP.00

Printed 1/5/2015

Metals by EPA 200.8, Total		Batch 121114A				
Parameter	Unit	Analyzed	DF	MDL	RL	Result
815102-001 Chromium	ug/L	12/11/2014 13:25	1.00	0.0710	1.0	ND
Manganese	ug/L	12/11/2014 13:25	1.00	0.0600	0.50	6.8
Method Blank						
Parameter	Unit	DF	Result			
Chromium	ug/L	1.00	ND			
Manganese	ug/L	1.00	ND			
Duplicate					Lab ID = 815102-001	
Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Chromium	ug/L	1.00	ND	0	0	0 - 20
Manganese	ug/L	1.00	5.71	6.75	16.7	0 - 20
Low Level Calibration Verification						
Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium	ug/L	1.00	0.505	0.500	101	70 - 130
Manganese	ug/L	1.00	0.478	0.500	95.6	70 - 130
Lab Control Sample						
Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium	ug/L	1.00	50.1	50.0	100	85 - 115
Manganese	ug/L	1.00	48.8	50.0	97.6	85 - 115
Matrix Spike					Lab ID = 815102-001	
Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium	ug/L	1.00	49.4	50.0(50.0)	98.8	75 - 125
Manganese	ug/L	1.00	52.7	56.8(50.0)	91.9	75 - 125
Matrix Spike Duplicate					Lab ID = 815102-001	
Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium	ug/L	1.00	48.9	50.0(50.0)	97.9	75 - 125
Manganese	ug/L	1.00	52.5	56.8(50.0)	91.5	75 - 125
MRCCS - Secondary						
Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium	ug/L	1.00	19.7	20.0	98.3	90 - 110
Manganese	ug/L	1.00	19.9	20.0	99.4	90 - 110
MRCVS - Primary						
Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium	ug/L	1.00	18.9	20.0	94.7	90 - 110
Manganese	ug/L	1.00	18.6	20.0	93.1	90 - 110

This report applies only to the sample, or samples, investigated and is not necessarily indicative of the quality or condition of apparently identical or similar products. As a mutual protection to clients, the public, and these laboratories, this report is submitted and accepted for the exclusive use of the client to whom it is addressed and upon the condition that it is not to be used, in whole or in part, in any advertising or publicity matter without prior written authorization from Truesdail Laboratories.



Client: E2 Consulting Engineers, Inc.

Project Name: PG&E Topock Project

Page 5 of 6

Project Number: 652547.01.IM.OP.00

Printed 1/5/2015

**Total Dissolved Solids by SM 2540 C**

Batch 1412209

Parameter	Unit	Analyzed	DF	MDL	RL	Result
815102-001 Total Dissolved Solids	mg/L	12/10/2014	1.00	1.76	250	4270

Method Blank

Parameter	Unit	DF	Result
Total Dissolved Solids	mg/L	1.00	ND

Duplicate

Lab ID = 815102-001

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Total Dissolved Solids	mg/L	1.00	4250	4270	0.469	0 - 10

Lab Control Sample

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Total Dissolved Solids	mg/L	1.00	538	500	108	90 - 110

**Turbidity by SM 2130 B**

Batch 1412305

Parameter	Unit	Analyzed	DF	MDL	RL	Result
815102-001 Turbidity	NTU	12/10/2014	1.00	0.0140	0.100	ND

Method Blank

Parameter	Unit	DF	Result
Turbidity	NTU	1.00	ND

Duplicate

Lab ID = 815116-001

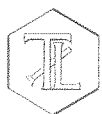
Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Turbidity	NTU	1.00	ND	0	0	0 - 20

Lab Control Sample

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Turbidity	NTU	1.00	7.37	8.00	92.1	90 - 110

Lab Control Sample Duplicate

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Turbidity	NTU	1.00	7.72	8.00	96.5	90 - 110



TRUESDAIL LABORATORIES, INC.

*Report Continued*

**Client: E2 Consulting Engineers, Inc.**

**Project Name: PG&E Topock Project**

**Page 6 of 6**

**Project Number: 652547.01.IM.OP.00**

**Printed 1/5/2015**

Respectfully submitted,

**TRUESDAIL LABORATORIES, INC.**

*for* 

**Mona Nassimi**

**Manager, Analytical Services**

**Total Dissolved Solids by SM 2540 C****Calculations**Batch: 1412209  
Date Analyzed: 12/10/2014

Laboratory Number	Sample volume, mL	Initial weight, g	1st Final weight, g	2nd Final weight, g	Weight Difference, g	Exceeds 0.5mg? Yes/No	Residue weight, g	Filterable residue, ppm	RL, ppm	Reported Value, ppm	DF
Blank	100	66.8011	66.8012	66.8012	0.0000	No	0.0001	1.0	25.0	ND	1
14L0007-01A	50	51.8276	51.8731	51.8729	0.0002	No	0.0453	906.0	50.0	906.0	1
14L0007-02	100	78.3681	78.4217	78.4217	0.0000	No	0.0536	536.0	25.0	536.0	1
14L0007-03	100	74.3598	74.4191	74.4188	0.0003	No	0.0590	590.0	25.0	590.0	1
14L0007-04	50	50.7475	50.7788	50.7788	0.0000	No	0.0313	626.0	50.0	626.0	1
14L0009-02	100	79.4858	79.5035	79.5035	0.0000	No	0.0177	177.0	25.0	177.0	1
14L0009-04	100	76.0118	76.0405	76.0402	0.0003	No	0.0284	284.0	25.0	284.0	1
14L0085-17C	50	60.1727	60.2137	60.2136	0.0001	No	0.0409	818.0	50.0	818.0	1
14L0169-01A	100	75.2665	75.3099	75.3099	0.0000	No	0.0434	434.0	25.0	434.0	1
14L0212-01C	100	77.4698	77.5189	77.5188	0.0001	No	0.0490	490.0	25.0	490.0	1
14L0216-01A	100	73.1050	73.1479	73.1479	0.0000	No	0.0429	429.0	25.0	429.0	1
14L0216-01 Dup	100	76.7707	76.8100	76.8100	0.0000	No	0.0393	393.0	25.0	393.0	1
LCS	100	74.8593	74.9131	74.9131	0.0000	No	0.0538	538.0	25.0	538.0	1
14L0216-02	100	74.0074	74.0528	74.0526	0.0002	No	0.0452	452.0	25.0	452.0	1
14L0250-01A	10	28.7485	28.7913	28.7912	0.0001	No	0.0427	4270.0	250.0	4270.0	1
14L0263-01A	100	72.0473	72.1089	72.1089	0.0000	No	0.0616	616.0	25.0	616.0	1
14L0269-01C	100	74.6820	74.7309	74.7309	0.0000	No	0.0489	489.0	25.0	489.0	1
14L0269-02	100	69.7869	69.8378	69.8377	0.0001	No	0.0508	508.0	25.0	508.0	1
14L0269-04	100	74.4984	74.5477	74.5477	0.0000	No	0.0493	493.0	25.0	493.0	1
14L0269-05	100	74.6856	74.7365	74.7365	0.0000	No	0.0509	509.0	25.0	509.0	1
14L0274-01	100	68.7380	68.7790	68.7790	0.0000	No	0.0410	410.0	25.0	410.0	1
14L0274-02	100	62.6087	62.6555	62.6555	0.0000	No	0.0468	468.0	25.0	468.0	1
14L0250-01A Du	10	30.3845	30.4270	30.4270	0.0000	No	0.0425	4250.0	250.0	4250.0	1

Calculation as follows:

$$\text{Filterable residue (TDS), mg/L} = \left( \frac{A - B}{C} \right) \times 10^6$$

Where:

A = weight of dish + residue in grams.  
B = weight of dish in grams.  
C = mL of sample filtered.

RL = reporting limit.  
ND = not detected (below the reporting limit)

**Laboratory Control Sample (LCS) Summary**

QC Std I.D.	Measured Value, ppm	Theoretical Value, ppm	Percent Rec	Acceptance Limit	QC Within Control?
LCS	538.0	500	107.6%	90-110%	Yes
LCSD					

**LCS Recovery**

$$P = \left( \frac{LC}{LT} \right) \times 100$$

P = Percent recovery.

LC = Measured LCS value (ppm).

LT = Theoretical LCS value (ppm).

**Duplicate Determinations Difference Summary**

Lab Number	Sample Weight, g	Sample Dup Weight, g	% RPD	Acceptance Limit	QC Within Control?
14L0216-01	0.0429	0.0393	4.4%	≤5%	Yes
14L0250-01A	0.0427	0.0425	0.2%	≤5%	Yes

**Duplicate Determination Difference**

$$\% \text{ Difference} = \frac{|A \text{ or } B - C|}{C} \times 100$$

$$\text{where } C = \frac{A + B}{2}$$

A = Weight of the first sample in (g).

B = Weight of the second sample in (g).

C = Average weight in (g).

Jenny T.

Analyst Printed Name

Analyst Signature

Maksim G.

Reviewer Printed Name

Reviewer Signature

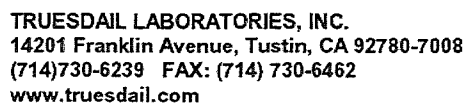
# Total Dissolved Solids by SM 2540 C

## TDS/EC CHECK

Batch: 1412209  
Date Analyzed: 12/10/2014

Laboratory Number	EC	TDS/EC Ratio: 0.55-0.90	Calculated TDS (EC*0.65)	Measured TDS / Calc TDS <1.3
14L0007-01A	1507	0.60	979.55	0.92
14L0007-02	922	0.58	599.3	0.89
14L0007-03	1000	0.59	650	0.91
14L0007-04	1085	0.58	705.25	0.89
14L0009-02	333	0.53	216.45	0.82
14L0009-04	521	0.55	338.65	0.84
14L0085-17C	1296	0.63	842.4	0.97
14L0169-01A	753	0.58	489.45	0.89
14L0212-01C	702	0.70	456.3	1.07
14L0216-01A	855	0.50	555.75	0.77
14L0216-01 Dup	855	0.46	555.75	0.71
LCS				
14L0216-02	798	0.57	518.7	0.87
14L0250-01A	7240	0.59	4706	0.91
14L0263-01A	964	0.64	626.6	0.98
14L0269-01C	900	0.54	585	0.84
14L0269-02	908	0.56	590.2	0.86
14L0269-04	906	0.54	588.9	0.84
14L0269-05	909	0.56	590.85	0.86
14L0274-01	850	0.48	552.5	0.74
14L0274-02	792	0.59	514.8	0.91
14L0250-01A Dup	7240	0.59	4706	0.90





[IM3Plant-WDR-498]

815102 / 1420250  
COC Number

COC Number

TURNAROUND TIME 10 Days

DATE 12/09/14 PAGE 1 OF 1

**Please Provide a preliminary Result for the TDS ASAP**

**ALERT !!**  
**Level III QC**

CHAIN OF CUSTODY SIGNATURE RECORD				SAMPLE CONDITIONS	
Signature (Relinquished)	Printed Name	Company/ Agency	Date/ Time	RECEIVED	COOL <input checked="" type="checkbox"/> WARM <input type="checkbox"/>
Signature (Received)	Printed Name	Company/ Agency	Date/ Time	CUSTODY SEALED YES <input type="checkbox"/> NO <input type="checkbox"/>	
Signature (Relinquished)	Printed Name	Company/ Agency	Date/ Time	SPECIAL REQUIREMENTS:	
Signature (Received)	Printed Name	Company/ Agency	Date/ Time		
Signature (Relinquished)	Printed Name	Company/ Agency	Date/ Time		
Signature (Received)	Printed Name	Company/ Agency	Date/ Time		
Signature (Relinquished)	Printed Name	Company/ Agency	Date/ Time		
Signature (Received)	Printed Name	Company/ Agency	Date/ Time		

034

## Hexavalent Chromium

## Method EPA 218.6 and SW 7199 Sample pH Log

1/2

*[Handwritten signature]*



Turbidity/pH Check

Sample Number	Turbidity	pH	Date	Analyst	Need Digest (Y/N)	Time of Adjustment to pH 2	Date/Time of 2nd pH check	Comments
14L0152(01-03)	<1	72	12/5/14	ES	No	5:00		
14L0161(01-03)	↓	↓	↓	↓	↓	↓		
14L0167-02	<1	<2	↓	↓	Yes			
14L0105-02	>1	↓	↓	↓	↓			
14L0108-02	<1	↓	↓	↓	↓			
14L0109-02	↓	↓	↓	↓	↓			
14L0195-01	↓	↓	↓	↓	↓			
14L0201(01-04)	<1	<2	12/6/14	SC	No			
14L0145(01-05)	>1	<2	12/9/14	ES	Yes			
14L0009-01-02-04	><1	>2	12/10/14	TM	No	11:00		
14L0183-01	>1	<2	↓	↓	Yes			
14L0184-01	>1	<2	↓	↓	Yes			
14L0209-06	>1	<2	↓	↓	Yes			
14L0210-06	<1	<2	↓	↓	Yes			
14L0216-01-02	>1	<2	↓	↓	Yes			
14L0228-01-02-03-04	>1	<2	↓	↓	Yes			
14L0253-01-02	<1	>2	↓	↓	No	11:00		
14L0216(01-02)	<1	<2	12/10/14	ES	Yes			17471
14L0262-01-02-03-04	TM	12/10/14						
14L0262-01-02-03	<1	>2	12/10/14	TM	No	12:45		
14L0263-02-03-04	<1	>2	12/10/14	TM	Yes			
14L0250-01	<1	>2	12/10/14	TM	Yes No	13:50		
14L0274-01-02	>1	<2	12/10/14	TM	Yes			
14L0285-10-11-12	<1	>2	↓	↓	No	10:00		
14L0290-01-02-03	<1	<2	12/11/14	TM	Yes			
14L0236-05	<1	ES <2	12/12/14	ES	Yes			
14L0238-02	>1	↓	↓	↓	↓			
14L0239-02	↓	↓	↓	↓	↓			
14L0240-02	↓	↓	↓	↓	↓			
14L0241-02	<1	↓	↓	↓	↓			
14L0242-02	↓	↓	↓	↓	↓			
14L0276-02	>1	↓	↓	↓	↓			
14L0277-02	<1	↓	↓	↓	↓			
14L0278-02	<1	↓	↓	↓	↓			
14L0296-05	<1	↓	↓	↓	↓			
14L0301-02	↓	↓	↓	↓	↓			
14L0321-01-02-03-04	>1	<2	12/15/14	TM	Yes			
14L0332-01-02-03-04	>1	<2	12/15/14	TM	Yes			
14L0306-01	>1	<2	12/16/14	ES	Yes			
14L0307-01	<1	↓	↓	↓	↓			
14L0359-01	↓	↓	↓	↓	↓			
14L0364(01-03)	↓	72	↓	↓	No	1:00		
14L0319-02	<1	<2	12/17/14	ES	Yes			
14L0340-02	↓	↓	↓	↓	↓			

Notes:

1. Samples should be analyzed after 24 hrs of pH adjustment to pH2 for Dissolved Analytes.
2. All Total Recoverable Analytes must be pH adjusted and digested.
3. Do not use disposable pipette to measure pH; pour a little amount of sample from the bottle.

## WORK ORDER

Printed: 12/10/14 7:13:59AM

14L0250

Truesdail Laboratories, Inc

Client: E2 Consulting Engineers, Inc.  
Project: Topock IM3Plant-WDR Weekly

Project Manager: Sean Condon  
Project Number: PGE-2571

Report To:

E2 Consulting Engineers, Inc.  
Christy Gitlin  
1900 Powell Street, Suite 250  
Emeryville, CA 94608  
Phone: 510-428-4728  
Fax: 510-652-5604

Invoice To:

E2 Consulting Engineers, Inc.  
Christy Gitlin  
1900 Powell Street, Suite 250  
Emeryville, CA 94608  
Phone :510-428-4728  
Fax: 510-652-5604

Date Due: 12/19/2014 16:30 (7 day TAT)

Received By: Michael Ngo

Date Received: 12/09/2014 18:45

Logged In By: Luda Shabunina

Date Logged In: 12/10/2014 07:12

Samples Received at: 4.1°C  
Chain of Custody re Yes Samples intact? Yes  
Letter (if sent) matc No Custody seals (if an No  
Requested analyses Yes Analyses within hol Yes  
Samples received in Yes

Analysis	Due	TAT	Expires	Comments
----------	-----	-----	---------	----------

14L0250-01 SC-700B-WDR-498 [Water] Sampled 12/09/2014 12:30  
(GMT-08:00) Pacific Time (US &

Turbidity	12/19/2014 12:00	7	12/11/2014 12:30	
TDS	12/19/2014 12:00	7	12/16/2014 12:30	
Specific Conductivity	12/19/2014 12:00	7	01/06/2015 12:30	
Mn-200.8	12/19/2014 12:00	7	06/07/2015 12:30	
Cr-200.8	12/19/2014 12:00	7	06/07/2015 12:30	
Cr VI-218.6	12/19/2014 12:00	7	01/06/2015 12:30	

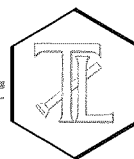
ALERT!!  
Level III QC

*Sean Condon*  
Reviewed By

12/11/14  
Date

# TRUESDAIL LABORATORIES, INC.

EXCELLENCE IN INDEPENDENT TESTING



Established 1931

14201 FRANKLIN AVENUE  
TUSTIN, CALIFORNIA 92780-7008  
(714) 730-6239 · FAX (714) 730-6462  
www.truesdail.com

January 5, 2015

E2 Consulting Engineers, Inc.  
Mr. Shawn Duffy  
155 Grand Ave., Suite 1000  
Oakland, California 94612

Dear Mr. Duffy:

SUBJECT: CASE NARRATIVE PG&E TOPOCK IM3PLANT-WDR-499 PROJECT, GROUNDWATER  
MONITORING, TLI NO.: 815103

Truesdail Laboratories, Inc. is pleased to submit this report summarizing the Topock IM3Plant-WDR-499 project groundwater monitoring for Hexavalent and Total Chromium, Total Manganese, Turbidity, Specific Conductivity, and Total Dissolved Solids. A summary table for this sample delivery group is included in Section 2. Complete laboratory reports, quality control data and chain of custody forms for sampling period are included in Sections 3 and 4. Analytical raw data have been included under Section 5.

The samples were received and delivered with the chain of custody on December 16, 2014, intact and in chilled condition. The samples will be kept in a locked refrigerator for 30 days; thereafter it will be kept in warm storage for an additional 2 months before disposal.


Sample SC-700B-WDR-499 was analyzed as sample I.D. 14L0380 in the raw data but is reported as 815103 in all final report pages.


The straight runs for the sample and associated matrix spike on sample SC-700B-WDR-499 for Hexavalent Chromium analysis by EPA 218.6 were just outside the retention time window. Because the matrix spike recovery and all other QA/QC were within acceptable limits, the data from the straight run was reported.

No violations or nonconformance actions occurred for this data package.

If you have any questions or require additional information, please contact me at (714) 730-6239 ext. 200.

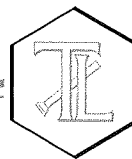
Respectfully Submitted,  
TRUESDAIL LABORATORIES, INC.

  
Mona Nassimi  
Manager, Analytical Services

  
Michael Ngo  
Quality Assurance/Quality Control Officer

# TRUESDAIL LABORATORIES, INC.

EXCELLENCE IN INDEPENDENT TESTING



Established 1931

**Client:** E2 Consulting Engineers, Inc.  
155 Grand Ave. Suite 1000  
Oakland, CA 94612

**Attention:** Shawn Duffy

**Sample:** One (1) Groundwater Sample

**Project Name:** PG&E Topock Project

**Project No.:** 652547.01.IM.OP.00

14201 FRANKLIN AVENUE  
TUSTIN, CALIFORNIA 92780-7008  
(714) 730-6239 · FAX (714) 730-6462  
[www.truesdail.com](http://www.truesdail.com)

**Laboratory No.:** 815103

**Date:** January 5, 2015

**Collected:** December 16, 2014

**Received:** December 16, 2014

## ANALYST LIST

METHOD	PARAMETER	ANALYST
EPA 120.1	Specific Conductivity	Jenny Tankunakorn
SM 2540C	Total Dissolved Solids	Jenny Tankunakorn
SM 2130B	Turbidity	Naheed Eidinejad
EPA 200.8	Total Metals	Tom Martinez
EPA 218.6	Hexavalent Chromium	Naheed Eidinejad



**Client:** E2 Consulting Engineers, Inc.  
155 Grand Ave. Suite 1000  
Oakland, CA 94612  
**Attention:** Shawn Duffy

**Laboratory No.:** 815103  
**Date Received:** December 16, 2014

**Project Name:** PG&E Topock Project  
**Project No.:** 652547.01.IM.OP.00  
**P.O. No.:** 10381-7-102011

## Analytical Results Summary

Lab Sample ID	Field ID	Analysis Method	Extraction Method	Sample Date	Sample Time	Parameter	Result	Units	RL
815103-001	SC-700B-WDR-499	E120.1	NONE	12/16/2014	12:30	EC	7320	umhos/cm	2.00
815103-001	SC-700B-WDR-499	E200.8	NONE	12/16/2014	12:30	Chromium	ND	ug/L	1.0
815103-001	SC-700B-WDR-499	E200.8	NONE	12/16/2014	12:30	Manganese	9.6	ug/L	0.50
815103-001	SC-700B-WDR-499	E218.6	LABFLT	12/16/2014	12:30	Chromium, Hexavalent	ND	ug/L	0.20
815103-001	SC-700B-WDR-499	SM2130B	NONE	12/16/2014	12:30	Turbidity	ND	NTU	0.100
815103-001	SC-700B-WDR-499	SM2540C	NONE	12/16/2014	12:30	Total Dissolved Solids	4350	mg/L	250

ND: Non Detected (below reporting limit)

mg/L: Milligrams per liter.

**Note:** The following "Significant Figures" rule has been applied to all results:

Results below 0.01ppm will have two (2) significant figures.

Result above or equal to 0.01ppm will have three (3) significant figures.

Quality Control data will always have three (3) significant figures.

# TRUESDAIL LABORATORIES, INC.

EXCELLENCE IN INDEPENDENT TESTING



Established 1931

14201 FRANKLIN AVENUE  
TUSTIN, CALIFORNIA 92780-7008  
(714) 730-6239 • FAX (714) 730-6462  
www.truesdail.com

## REPORT

**Client:** E2 Consulting Engineers, Inc.

155 Grand Avenue, Suite 800

Oakland, CA 94612

Attention: Shawn Duffy

Project Name: PG&E Topock Project

Project Number: 652547.01.IM.OP.00

P.O. Number: 10381-7-102011

Release Number:

Laboratory No. 815103

Page 1 of 6

Printed 1/5/2015

Samples Received on 12/16/2014 6:50:00 PM

Field ID	Lab ID	Collected	Matrix
SC-700B-WDR-499	815103-001	12/16/2014 12:30	Water

### Specific Conductivity - EPA 120.1

Batch 1412344

Parameter	Unit	Analyzed	DF	MDL	RL	Result
815103-001 Specific Conductivity	umhos/cm	12/17/2014	1.00	0.606	2.00	7320

#### Method Blank

Parameter	Unit	DF	Result
Specific Conductivity	umhos	1.00	ND

#### Duplicate

Lab ID = 815117-003

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Specific Conductivity	umhos	1.00	19.4	19.5	0.514	0 - 10

#### Lab Control Sample

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Specific Conductivity	umhos	1.00	702	706	99.4	90 - 110

#### MRCCS - Secondary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Specific Conductivity	umhos	1.00	702	706	99.4	90 - 110

#### MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Specific Conductivity	umhos	1.00	1060	1000	106	90 - 110

#### MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Specific Conductivity	umhos	1.00	1060	1000	106	90 - 110

This report applies only to the sample, or samples, investigated and is not necessarily indicative of the quality or condition of apparently identical or similar products. As a mutual protection to clients, the public, and these laboratories, this report is submitted and accepted for the exclusive use of the client to whom it is addressed and upon the condition that it is not to be used, in whole or in part, in any advertising or publicity matter without prior written authorization from Truesdail Laboratories.

008



Client: E2 Consulting Engineers, Inc.

Project Name: PG&E Topock Project  
Project Number: 652547.01.IM.OP.00

Page 2 of 6  
Printed 1/5/2015

**Chrome VI by EPA 218.6**

Batch 1412458

Parameter	Unit	Analyzed	DF	MDL	RL	Result
815103-001 Chromium, Hexavalent	ug/L	12/22/2014 13:37	1.00	0.00600	0.20	ND

Method Blank

Parameter	Unit	DF	Result
Chromium, Hexavalent	ug/L	1.00	ND

Duplicate

Lab ID = 815103-001

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Chromium, Hexavalent	ug/L	5.00	0.0700	0.0705	0.712	0 - 20

Low Level Calibration Verification

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	0.207	0.200	104	70 - 130

Lab Control Sample

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	5.09	5.00	102	90 - 110

Matrix Spike

Lab ID = 815103-001

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	5.00	5.02	5.07(5.00)	98.9	90 - 110

Matrix Spike

Lab ID = 815103-001

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	1.08	1.07(1.00)	101	90 - 110

MRCCS - Secondary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	5.11	5.00	102	90 - 110

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	9.90	10.0	99.0	95 - 105

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	10.1	10.0	101	95 - 105



Client: E2 Consulting Engineers, Inc.

Project Name: PG&E Topock Project  
Project Number: 652547.01.IM.OP.00

Page 3 of 6  
Printed 1/5/2015

**Metals by EPA 200.8, Total**

Batch 122214A

Parameter	Unit	Analyzed	DF	MDL	RL	Result
815103-001 Chromium	ug/L	12/22/2014 16:08	1.00	0.0710	1.0	ND
Manganese	ug/L	12/22/2014 16:08	1.00	0.0600	0.50	9.6

Method Blank

Parameter	Unit	DF	Result
Chromium	ug/L	1.00	ND
Manganese	ug/L	1.00	ND

Duplicate

Lab ID = 815103-001

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Chromium	ug/L	1.00	ND	0	0	0 - 20
Manganese	ug/L	1.00	9.98	9.59	3.94	0 - 20

Low Level Calibration Verification

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium	ug/L	1.00	0.410	0.500	82.0	70 - 130
Manganese	ug/L	1.00	0.511	0.500	102	70 - 130

Lab Control Sample

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium	ug/L	1.00	51.4	50.0	103	85 - 115
Manganese	ug/L	1.00	52.3	50.0	105	85 - 115

Matrix Spike

Lab ID = 815103-001

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium	ug/L	1.00	50.4	50.0(50.0)	101	75 - 125
Manganese	ug/L	1.00	62.2	59.6(50.0)	105	75 - 125

Matrix Spike Duplicate

Lab ID = 815103-001

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium	ug/L	1.00	47.1	50.0(50.0)	94.1	75 - 125
Manganese	ug/L	1.00	57.8	59.6(50.0)	96.4	75 - 125

MRCCS - Secondary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium	ug/L	1.00	21.2	20.0	106	90 - 110
Manganese	ug/L	1.00	20.7	20.0	104	90 - 110

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium	ug/L	1.00	19.8	20.0	99.2	90 - 110

This report applies only to the sample, or samples, investigated and is not necessarily indicative of the quality or condition of apparently identical or similar products. As a mutual protection to clients, the public, and these laboratories, this report is submitted and accepted for the exclusive use of the client to whom it is addressed and upon the condition that it is not to be used, in whole or in part, in any advertising or publicity matter without prior written authorization from Truesdail Laboratories.



Client: E2 Consulting Engineers, Inc.

Project Name: PG&E Topock Project

Page 5 of 6

Project Number: 652547.01.IM.OP.00

Printed 1/5/2015

Interference Check Standard AB

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Manganese	ug/L	1.00	20.7	20.0	103	80 - 120

**Total Dissolved Solids by SM 2540 C**

Batch 1412365

Parameter	Unit	Analyzed	DF	MDL	RL	Result
815103-001 Total Dissolved Solids	mg/L	12/17/2014	1.00	1.76	250	4350

Method Blank

Parameter	Unit	DF	Result
Total Dissolved Solids	mg/L	1.00	ND

Duplicate

Lab ID = 815103-001

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Total Dissolved Solids	mg/L	1.00	4330	4350	0.461	0 - 10

Lab Control Sample

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Total Dissolved Solids	mg/L	1.00	493	500	98.6	90 - 110

**Turbidity by SM 2130 B**

Batch 1412416

Parameter	Unit	Analyzed	DF	MDL	RL	Result
815103-001 Turbidity	NTU	12/18/2014	1.00	0.0140	0.100	ND

Method Blank

Parameter	Unit	DF	Result
Turbidity	NTU	1.00	ND

Duplicate

Lab ID = 815118-004

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Turbidity	NTU	1.00	0.173	0.177	2.28	0 - 20

Lab Control Sample

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Turbidity	NTU	1.00	7.44	8.00	93.0	90 - 110

Lab Control Sample Duplicate

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Turbidity	NTU	1.00	7.47	8.00	93.4	90 - 110



TRUESDAIL LABORATORIES, INC.

*Report Continued*

**Client: E2 Consulting Engineers, Inc.**

**Project Name: PG&E Topock Project**

**Page 6 of 6**

**Project Number: 652547.01.IM.OP.00**

**Printed 1/5/2015**

Respectfully submitted,

**TRUESDAIL LABORATORIES, INC.**

**Mona Nassimi**

**Manager, Analytical Services**

**Total Dissolved Solids by SM 2540 C****Calculations**Batch: 1412365  
Date Analyzed: 12/17/2014

Laboratory Number	Sample volume, mL	Initial weight, g	1st Final weight, g	2nd Final weight, g	Weight Difference, g	Exceeds 0.5mg? Yes/No	Residue weight, g	Filterable residue, ppm	RL, ppm	Reported Value, ppm	DF
Blank	100	74.1917	74.1925	74.1925	0.0000	No	0.0008	8.0	25.0	ND	1
14L0364-01J	50	48.5159	48.5723	48.5722	0.0001	No	0.0563	1126.0	50.0	1126.0	1
14L0364-02	50	50.5356	50.5803	50.5802	0.0001	No	0.0446	892.0	50.0	892.0	1
14L0364-03	50	50.3225	50.3711	50.3711	0.0000	No	0.0486	972.0	50.0	972.0	1
14L0367-01A	460	177.1343	177.1356	177.1355	0.0001	No	0.0012	2.6	5.4	ND	1
14L0367-02	490	195.5691	195.5695	195.5695	0.0000	No	0.0004	0.8	5.1	ND	1
14L0378-01E	100	68.7160	68.7325	68.7324	0.0001	No	0.0164	164.0	25.0	164.0	1
14L0378-02	100	75.3972	75.4111	75.4109	0.0002	No	0.0137	137.0	25.0	137.0	1
14L0380-01A	10	28.4727	28.5165	28.5162	0.0003	No	0.0435	4350.0	250.0	4350.0	1
14L0383-01B	20	116.4823	116.5217	116.5217	0.0000	No	0.0394	1970.0	125.0	1970.0	1
14L0383-01B	20	108.2148	108.2539	108.2539	0.0000	No	0.0391	1955.0	125.0	1955.0	1
14L0380-01 Dup	10	30.5001	30.5436	30.5434	0.0002	No	0.0433	4330.0	250.0	4330.0	1
LCS	100	76.1514	76.2008	76.2007	0.0001	No	0.0493	493.0	25.0	493.0	1
14L0402-01A	990	179.9904	179.9908	179.9908	0.0000	No	0.0004	0.4	2.5	ND	1
14L0407-01C	100	79.1370	79.2015	79.2012	0.0003	No	0.0642	642.0	25.0	642.0	1
14L0407-02	100	78.8950	78.9481	78.9480	0.0001	No	0.0530	530.0	25.0	530.0	1
14L0407-03	100	79.4301	79.4614	79.4610	0.0004	No	0.0309	309.0	25.0	309.0	1
14L0407-04	100	78.3466	78.4115	78.4113	0.0002	No	0.0647	647.0	25.0	647.0	1
14L0408-01D	100	75.1375	75.1813	75.1813	0.0000	No	0.0438	438.0	25.0	438.0	1
14L0408-02C	100	78.2853	78.3265	78.3264	0.0001	No	0.0411	411.0	25.0	411.0	1
14L0408-02 Dup	100	74.4428	74.4840	74.4840	0.0000	No	0.0412	412.0	25.0	412.0	1

Calculation as follows:

Filterable residue (TDS), mg/L =

$$\left( \frac{A - B}{C} \right) \times 10^6$$

Where:

A = weight of dish + residue in grams.  
B = weight of dish in grams.  
C = mL of sample filtered.RL = reporting limit.  
ND = not detected (below the reporting limit)**Laboratory Control Sample (LCS) Summary**

QC Std I.D.	Measured Value, ppm	Theoretical Value, ppm	Percent Rec	Acceptance Limit	QC Within Control?
LCS	493.0	500	98.6%	90-110%	Yes
LCSD					

**LCS Recovery**

$$P = \left( \frac{LC}{LT} \right) \times 100$$

P = Percent recovery.

LC = Measured LCS value (ppm).

LT = Theoretical LCS value (ppm).

**Duplicate Determinations Difference Summary**

Lab Number	Sample Weight, g	Sample Dup Weight, g	% RPD	Acceptance Limit	QC Within Control?
14L0380-01	0.0435	0.0433	0.2%	≤5%	Yes
14L0408-02	0.0411	0.0412	0.1%	≤5%	Yes

**Duplicate Determination Difference**

$$\% \text{ Difference} = \frac{|A \text{ or } B - C|}{C} \times 100$$

$$\text{where } C = \frac{A + B}{2}$$

A = Weight of the first sample in (g).

B = Weight of the second sample in (g).

C = Average weight in (g).

Jenny T.

Analyst Printed Name

Analyst Signature

Maksim G.

Reviewer Printed Name

Reviewer Signature

# Total Dissolved Solids by SM 2540 C

## TDS/EC CHECK

Batch: 1412365  
Date Analyzed: 12/17/2014

Laboratory Number	EC	TDS/EC Ratio: 0.55-0.90	Calculated TDS (EC*0.65)	Measured TDS / Calc TDS <1.3
14L0364-01J	1828	0.62	1188.2	0.95
14L0364-02	1447	0.62	940.55	0.95
14L0364-03	1512	0.64	982.8	0.99
14L0367-01A	13.3	ND	8.645	ND
14L0367-02	12.4	ND	8.06	ND
14L0378-01E	265	0.62	172.25	0.95
14L0378-02	185	0.74	120.25	1.14
14L0380-01A	7321	0.59	4758.65	0.91
14L0383-01B				
14L0383-01B				
14L0380-01 Dup	7321	0.59	4758.65	0.91
LCS				
14L0402-01A	13.8	ND	8.97	ND
14L0407-01C	1083	0.59	703.95	0.91
14L0407-02	898	0.59	583.7	0.91
14L0407-03	483	0.64	313.95	0.98
14L0407-04	1090	0.59	708.5	0.91
14L0408-01D	806	0.54	523.9	0.84
14L0408-02C	762	0.54	495.3	0.83
14L0408-02 Dup	762	0.54	495.3	0.83

*Me*  
*Star*



TRUESDAIL LABORATORIES, INC.  
14201 Franklin Avenue, Tustin, CA 92780-7008  
(714)730-6239 FAX: (714) 730-6462  
www.truesdail.com

## CHAIN OF CUSTODY RECORD

[IM3Plant-WDR-499]

815103 / 1420380

COC Number

TURNAROUND TIME 10 Days

DATE 12/16/14 PAGE 1 OF 1

COMPANY	E2			<div>Cr6 (218.6) Lab Filtered</div> <div>Total Metals (200.8) Cr, Mn</div> <div>Specific Conductance (120.1)</div> <div>TDS (SM2540C)</div> <div>Turbidity (SM2130)</div> <div>NUMBER OF CONTAINERS</div>												COMMENTS			
PROJECT NAME	PG&E Topock																		
PHONE	(530) 229-3303		FAX														(530) 339-3303		
ADDRESS	155 Grand Ave Ste 1000 Oakland, CA 94612																		
P.O. NUMBER	652547.xx.xx.xx		TEAM														1		
SAMPLERS (SIGNATURE)																			
SAMPLE I.D.	DATE	TIME	DESCRIPTION	Cr6	Total Metals	Specific Conductance	TDS	Turbidity											
SC-700B-WDR-499	12/16/14	12:30	Water	x	x	x	x	x										3	pu-6 (200.9)
																	3	TOTAL NUMBER OF CONTAINERS	

Please Provide a preliminary Result for the TDS ASAP

ALERT !!  
Level III QC

CHAIN OF CUSTODY SIGNATURE RECORD				SAMPLE CONDITIONS	
Signature (Relinquished)	Printed Name	Company/ Agency	Date/ Time	RECEIVED	COOL <input checked="" type="checkbox"/> WARM <input type="checkbox"/>
	CHRIS LENOIR	CH2M HILL	12-16-14 1440		1.0°C °F
Signature (Received)	Printed Name	Company/ Agency	Date/ Time	CUSTODY SEALED YES <input type="checkbox"/> NO <input type="checkbox"/>	
	THANH	TRUESDAIL	12-16-14 1440		
Signature (Relinquished)	Printed Name	Company/ Agency	Date/ Time	SPECIAL REQUIREMENTS:	
	THANH		12-16-14 1850		
Signature (Received)	Printed Name	Company/ Agency	Date/ Time		
	DAN MARTIN	Truesdail	12/16/14 1850		
Signature (Relinquished)	Printed Name	Company/ Agency	Date/ Time		
	DAN MARTIN				
Signature (Received)	Printed Name	Company/ Agency	Date/ Time		
	DAN MARTIN				

038

# Hexavalent Chromium

## Method EPA 218.6 and SW 7199 Sample pH Log

Date	Lab Number	Initial pH	Buffer Added (mL)	Final pH	Time Buffered	Initials
10/28/14	14J0416-01	8.03	0.5 mL / 25 mL	4.5	23:23	ML
10/29/14	14J0415-01	7.00	100 mL / 2 mL	9.5	7:40	NE
11/05/14	14K0083-01	6.00	2 mL / 100 mL	9.5	7:30	NE
↓	↓ -02	↓	↓	↓	↓	↓
↓	14K0084-01	7.00	2 mL / 100 mL	9.5	7:30	NE
↓	↓ -02	↓	↓	↓	↓	↓
11/13/14	14K0224-01	6.00	2 mL / 100 mL	9.5	7:10	NE
11/14/14	14H0004-1	7.00	25 mL / 1.5 mL	9.5	7:00	NE
↓	↓ -2	↓	↓	↓	↓	↓
↓	↓ -3	↓	↓	↓	↓	↓
↓	↓ -4	↓	↓	↓	↓	↓
11/19/14	14K0329-01	6.00	2 mL / 100 mL	9.5	7:15	NE
11/19/14	14K0288-01	7.00	1.5 mL / 25 mL	9.5	7:30	NE
↓	↓ -02	↓	↓	↓	↓	↓
11/24/14	14C0384-01	7.00	1.5 mL / 25 mL	9.5	8:00	NE
↓	↓ -02	↓	↓	↓	↓	↓
11/26/14	<del>14K00418</del>					
11/26/14	14K0413-01	6.00	2 mL / 100 mL	9.5	7:30	NE
12/3/14	14L0070-01	6.00	2 mL / 100 mL	9.5	8:00	NE
↓	↓ -02	↓	↓	↓	↓	↓
↓	14L0071-01	↓	↓	↓	↓	↓
↓	↓ -02	↓	↓	↓	↓	↓
12/11/14	14L0250-01	6.00	2 mL / 100 mL	9.5	7:40	NE
12/16/14	14L0364-01	7.00	1.5 mL / 25 mL	9.5	15:00	NR
↓	↓ -02	↓	↓	↓	↓	↓
↓	↓ -03	↓	↓	↓	↓	↓
12/17/14	14L0380-01	6.00	2 mL / 100 mL	9.5	10:00	NE
12/19/14	14L0370-01	7.00	1.5 mL / 25 mL	9.5	8:30	NE
12/19/14	14L0460-01	7.00	1.5 mL / 25 mL	9.5	10:00	NR
↓	↓ -02	↓	↓	↓	↓	↓
↓	↓ -03	↓	↓	↓	↓	↓

NE

NE  
12/24/14



TRUESDAIL LABORATORIES, INC.  
Metals

Turbidity/pH Check

Sample Number	Turbidity	pH	Date	Analyst	Need Digest (Y/N)	Time of Adjustment to pH 2	Date/Time of 2nd pH check	Comments
14L0341-02	<1	<2	12/17/14	ES	Yes			
14L0342-02	↓	↓	↓	↓	↓			
14L0343-02	↓	↓	↓	↓	↓			
14L0354-01	↓	↓	↓	↓	↓			
14L0355-02	↓	↓	↓	↓	↓			
14L0356-02	↓	↓	↓	↓	↓			
14L0357-02	↓	↓	↓	↓	↓			
14L0358-02	↓	↓	↓	↓	↓			
14L0368-01-02	>1	↓	↓	↓	↓			
14L0369-01	↓	↓	↓	↓	↓			
14L0376-02	<1	↓	↓	↓	↓			
14L0377-01	>1	↓	↓	↓	↓			
14L0378-01-02	↓	↓	↓	↓	↓			
14L0381-02, -01, -03, -04	>1	<2	12/17/14	TM	yes			
14L0382-01	>1	<2	↓	↓	↓			
14L0383-01	<1	>2	↓	↓	NO yes	TM 12/17/14		
14L0388-01, -02, -05	<1	>2	12/19/14	TM	NO	11:45		
↓ -07, -08	↓	↓	↓	↓	↓	↓		
14L0390-01, -03, -03	>1	<2	12/12/14	TM	yes			
↓ -04, -05, -06	↓	↓	↓	↓	↓			
TM 12/18/14 14L0408-01, -02	>1	<2	12/18/14	TM	yes			
14L0408-1	>1	<2	12/18	ES 12/18/14				
14L0418 (10-12)	<1	>2	12/18/14	ES	NO	12:00		
14L0419-01	<1	>2	12/18/14	TM	NO	12:00		
14L0430-01	>1	<2	12/18/14	ES	yes			
14L0431 (01-12)	↓	↓	↓	↓	↓			
14L0432 (01-02)	↓	↓	↓	↓	↓			
14L0433-01	↓	↓	↓	↓	↓			
14L0437	<1	>2	12/18/14	ES	NO	3:00		
14L0445-01	<1	<2	12/19/14	ES	yes			
14L0448 (01-03)	↓	>2	↓	↓	NO	10:00		
14L0466-01	<1	>2	12/19/14	ES	NO	2:00		
14L0451-01	<1	<2	12/23/14	ES	yes			
14L0452-01	>1	↓	↓	↓	↓			
14L0483 (01-02)	↓	↓	↓	↓	↓			
14L0423-02	<1	<2	12/23/14	ES	yes			
14L0424-01	↓	↓	↓	↓	↓			
14L0497 (01-03)	<1	>2	12/23/14	ES	NO	4:00		
14L0504-01	↓	↓	↓	↓	↓			
14L0507- (01-03)	↓	↓	↓	↓	↓			yellowish color
14L0510-01	<1	>2	12/24/14	TM	yes	10:00		
14L0532-01, -02	>1	<2	12/26/14	TM	yes			
14L0540-10, -11, -12	<1	>2	12/26/14	TM	NO	10:00		

Notes:

1. Samples should be analyzed after 24 hrs of pH adjustment to pH2 for Dissolved Analytes.
2. All Total Recoverable Analytes must be pH adjusted and digested.
3. Do not use disposable pipette to measure pH; pour a little amount of sample from the bottle.

## WORK ORDER

Printed: 12/17/14 9:36:28AM

14L0380

## Truesdail Laboratories, Inc

Client: E2 Consulting Engineers, Inc.  
Project: Topock IM3Plant-WDR Weekly

Project Manager: Sean Condon  
Project Number: PGE-2571

**Report To:**

E2 Consulting Engineers, Inc.  
Christy Gitlin  
1900 Powell Street, Suite 250  
Emeryville, CA 94608  
Phone: 510-428-4728  
Fax: 510-652-5604

**Invoice To:**

E2 Consulting Engineers, Inc.  
Christy Gitlin  
1900 Powell Street, Suite 250  
Emeryville, CA 94608  
Phone :510-428-4728  
Fax: 510-652-5604

Date Due: 12/29/2014 16:30 (7 day TAT)

Received By: Tom Martinez

Date Received: 12/16/2014 18:50

Logged In By: Luda Shabunina

Date Logged In: 12/17/2014 09:35

Samples Received at: 4°C

Chain of Custody re	Yes	Samples intact?	Yes
Letter (if sent) matc	No	Custody seals (if an	No
Requested analyses	Yes	Analyses within hol	Yes
Samples received in	Yes		

Analysis	Due	TAT	Expires	Comments
----------	-----	-----	---------	----------

14L0380-01 SC-700B-WDR-499 [Water] Sampled 12/16/2014 12:30  
(GMT-08:00) Pacific Time (US &

Turbidity	12/29/2014 12:00	7	12/18/2014 12:30	
TDS	12/29/2014 12:00	7	12/23/2014 12:30	
Specific Conductivity	12/29/2014 12:00	7	01/13/2015 12:30	
Mn-200.8	12/29/2014 12:00	7	06/14/2015 12:30	
Cr-200.8	12/29/2014 12:00	7	06/14/2015 12:30	
Cr VI-218.6	12/29/2014 12:00	7	01/13/2015 12:30	

ALERT!!  
Level III QC

Reviewed By

Date

12/17/14

Page 1 of 1  
044

# TRUESDAIL LABORATORIES, INC.

EXCELLENCE IN INDEPENDENT TESTING



Established 1931

14201 FRANKLIN AVENUE  
TUSTIN, CALIFORNIA 92780-7008  
(714) 730-6239 · FAX (714) 730-6462  
www.truesdail.com

January 6, 2015

E2 Consulting Engineers, Inc.  
Mr. Shawn Duffy  
155 Grand Ave., Suite 1000  
Oakland, California 94612

Dear Mr. Duffy:

SUBJECT: CASE NARRATIVE PG&E TOPOCK IM3PLANT-WDR-500 PROJECT, GROUNDWATER  
MONITORING, TLI No.: 815105

Truesdail Laboratories, Inc. is pleased to submit this report summarizing the Topock IM3Plant-WDR-500 project groundwater monitoring for Hexavalent and Total Chromium, Total Manganese, Turbidity, Specific Conductivity, and Total Dissolved Solids. A summary table for this sample delivery group is included in Section 2. Complete laboratory reports, quality control data and chain of custody forms for sampling period are included in Sections 3 and 4. Analytical raw data have been included under Section 5.

The samples were received and delivered with the chain of custody on December 23, 2014, intact and in chilled condition. The samples will be kept in a locked refrigerator for 30 days; thereafter it will be kept in warm storage for an additional 2 months before disposal.

Sample SC-700B-WDR-500 was analyzed as sample I.D. 14L0510 in the raw data but is reported as 815105 in all final report pages.

The straight runs for the sample and associated matrix spike on sample SC-700B-WDR-500 for Hexavalent Chromium analysis by EPA 218.6 were just outside the retention time window. Because the matrix spike recovery and all other QA/QC were within acceptable limits, the data from the straight run was reported.

No violations or nonconformance actions occurred for this data package.

If you have any questions or require additional information, please contact me at (714) 730-6239 ext. 200.

Respectfully Submitted,  
TRUESDAIL LABORATORIES, INC.

Sean Condon  
Project Manager, Analytical Services

Michael Ngo  
Quality Assurance/Quality Control Officer

# TRUESDAIL LABORATORIES, INC.

EXCELLENCE IN INDEPENDENT TESTING



Established 1931

**Client:** E2 Consulting Engineers, Inc.  
155 Grand Ave. Suite 1000  
Oakland, CA 94612

**Attention:** Shawn Duffy

**Sample:** One (1) Groundwater Sample

**Project Name:** PG&E Topock Project

**Project No.:** 652547.01.IM.OP.00

14201 FRANKLIN AVENUE  
TUSTIN, CALIFORNIA 92780-7008  
(714) 730-6239 · FAX (714) 730-6462  
www.truesdail.com

**Laboratory No.:** 815105

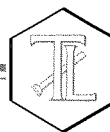
**Date:** January 6, 2015

**Collected:** December 23, 2014

**Received:** December 23, 2014

## ANALYST LIST

METHOD	PARAMETER	ANALYST
EPA 120.1	Specific Conductivity	Jenny Tankunakorn
SM 2540C	Total Dissolved Solids	Jenny Tankunakorn
SM 2130B	Turbidity	Naheed Eidinejad
EPA 200.8	Total Metals	Tom Martinez
EPA 218.6	Hexavalent Chromium	Naheed Eidinejad



**Client:** E2 Consulting Engineers, Inc.  
155 Grand Ave. Suite 1000  
Oakland, CA 94612

**Attention:** Shawn Duffy

**Project Name:** PG&E Topock Project  
**Project No.:** 652547.01.IM.OP.00  
**P.O. No.:** 10381-7-102011

**Laboratory No.:** 815105  
**Date Received:** December 23, 2014

## Analytical Results Summary

Lab Sample ID	Field ID	Analysis Method	Extraction Method	Sample Date	Sample Time	Parameter	Result	Units	RL
815105-001	SC-700B-WDR-500	E120.1	NONE	12/23/2014	7:30	EC	7230	umhos/cm	2.00
815105-001	SC-700B-WDR-500	E200.8	NONE	12/23/2014	7:30	Chromium	ND	ug/L	1.0
815105-001	SC-700B-WDR-500	E200.8	NONE	12/23/2014	7:30	Manganese	4.3	ug/L	0.50
815105-001	SC-700B-WDR-500	E218.6	LABFLT	12/23/2014	7:30	Chromium, Hexavalent	ND	ug/L	0.20
815105-001	SC-700B-WDR-500	SM2130B	NONE	12/23/2014	7:30	Turbidity	ND	NTU	0.100
815105-001	SC-700B-WDR-500	SM2540C	NONE	12/23/2014	7:30	Total Dissolved Solids	4250	mg/L	250

ND: Non Detected (below reporting limit)

mg/L: Milligrams per liter.

**Note:** The following "Significant Figures" rule has been applied to all results:  
Results below 0.01ppm will have two (2) significant figures.  
Result above or equal to 0.01ppm will have three (3) significant figures.  
Quality Control data will always have three (3) significant figures.

# TRUESDAIL LABORATORIES, INC.

EXCELLENCE IN INDEPENDENT TESTING



Established 1931

14201 FRANKLIN AVENUE  
TUSTIN, CALIFORNIA 92780-7008  
(714) 730-6239 · FAX (714) 730-6462  
www.truesdail.com

## REPORT

**Client:** E2 Consulting Engineers, Inc.

155 Grand Avenue, Suite 800

Oakland, CA 94612

Attention: Shawn Duffy

Project Name: PG&E Topock Project

Project Number: 652547.01.IM.OP.00

P.O. Number: 10381-7-102011

Release Number:

Laboratory No. 815105

Page 1 of 6

Printed 1/6/2015

Samples Received on 12/23/2014 6:38:00 PM

Field ID	Lab ID	Collected	Matrix
SC-700B-WDR-500	815105-001	12/23/2014 07:30	Water

### Specific Conductivity - EPA 120.1

Batch 1412475

Parameter	Unit	Analyzed	DF	MDL	RL	Result
815105-001 Specific Conductivity	umhos/cm	12/24/2014	1.00	0.606	2.00	7230

#### Method Blank

Parameter	Unit	DF	Result
Specific Conductivity	umhos	1.00	ND

#### Duplicate

Lab ID = 815119-001

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Specific Conductivity	umhos	1.00	34.9	34.7	0.575	0 - 10

#### Lab Control Sample

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Specific Conductivity	umhos	1.00	739	706	105	90 - 110

#### MRCCS - Secondary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Specific Conductivity	umhos	1.00	7.39	706	1.05	90 - 110

#### MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Specific Conductivity	umhos	1.00	1080	1000	108	90 - 110

#### MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Specific Conductivity	umhos	1.00	1080	1000	108	90 - 110

This report applies only to the sample, or samples, investigated and is not necessarily indicative of the quality or condition of apparently identical or similar products. As a mutual protection to clients, the public, and these laboratories, this report is submitted and accepted for the exclusive use of the client to whom it is addressed and upon the condition that it is not to be used, in whole or in part, in any advertising or publicity matter without prior written authorization from Truesdail Laboratories.

008



Client: E2 Consulting Engineers, Inc.

Project Name: PG&E Topock Project

Page 2 of 6

Project Number: 652547.01.IM.OP.00

Printed 1/6/2015

**Chrome VI by EPA 218.6**

Batch 1412587

Parameter	Unit	Analyzed	DF	MDL	RL	Result
815105-001 Chromium, Hexavalent	ug/L	12/30/2014 12:03	1.00	0.00600	0.20	ND

**Method Blank**

Parameter	Unit	DF	Result
Chromium, Hexavalent	ug/L	1.00	ND

Duplicate Lab ID = 815105-001

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Chromium, Hexavalent	ug/L	5.00	0.120	0.120	0	0 - 20

**Low Level Calibration Verification**

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	0.214	0.200	107	70 - 130

**Lab Control Sample**

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	5.14	5.00	103	90 - 110

Matrix Spike Lab ID = 815105-001

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	5.00	5.00	5.12(5.00)	97.6	90 - 110

Matrix Spike Lab ID = 815105-001

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	1.18	1.12(1.00)	106	90 - 110

**MRCCS - Secondary**

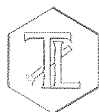
Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	5.15	5.00	103	90 - 110

**MRCVS - Primary**

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	9.86	10.0	98.6	95 - 105

**MRCVS - Primary**

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	10.1	10.0	101	95 - 105



Client: E2 Consulting Engineers, Inc.

Project Name: PG&E Topock Project

Page 3 of 6

Project Number: 652547.01.IM.OP.00

Printed 1/6/2015

Metals by EPA 200.8, Total		Batch 123114A				
Parameter	Unit	Analyzed	DF	MDL	RL	Result
815105-001 Chromium	ug/L	12/31/2014 15:48	1.00	0.0710	1.0	ND
Manganese	ug/L	12/31/2014 15:48	1.00	0.0600	0.50	4.3

Method Blank

Parameter	Unit	DF	Result
Chromium	ug/L	1.00	ND
Manganese	ug/L	1.00	ND

Duplicate

Lab ID = 815105-001

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Chromium	ug/L	1.00	ND	0	0	0 - 20
Manganese	ug/L	1.00	4.13	4.26	3.08	0 - 20

Low Level Calibration Verification

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium	ug/L	1.00	0.581	0.500	116	70 - 130
Manganese	ug/L	1.00	0.544	0.500	109	70 - 130

Lab Control Sample

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium	ug/L	1.00	49.8	50.0	99.5	85 - 115
Manganese	ug/L	1.00	49.6	50.0	99.1	85 - 115

Matrix Spike

Lab ID = 815105-001

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium	ug/L	1.00	50.2	50.0(50.0)	100	75 - 125
Manganese	ug/L	1.00	57.0	54.3(50.0)	106	75 - 125

Matrix Spike Duplicate

Lab ID = 815105-001

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium	ug/L	1.00	50.3	50.0(50.0)	101	75 - 125
Manganese	ug/L	1.00	58.5	54.3(50.0)	108	75 - 125

MRCCS - Secondary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium	ug/L	1.00	20.0	20.0	100	90 - 110
Manganese	ug/L	1.00	20.0	20.0	100	90 - 110

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium	ug/L	1.00	19.2	20.0	96.1	90 - 110



Client: E2 Consulting Engineers, Inc.

Project Name: PG&E Topock Project

Page 5 of 6

Project Number: 652547.01.IM.OP.00

Printed 1/6/2015

Interference Check Standard AB

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium	ug/L	1.00	19.9	20.0	99.7	80 - 120

Interference Check Standard AB

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Manganese	ug/L	1.00	20.3	20.0	102	80 - 120

Interference Check Standard AB

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Manganese	ug/L	1.00	20.3	20.0	102	80 - 120

Total Dissolved Solids by SM 2540 C

Batch 1412485

Parameter	Unit	Analyzed	DF	MDL	RL	Result
815105-001 Total Dissolved Solids	mg/L	12/23/2014	1.00	1.76	250	4250

Method Blank

Parameter	Unit	DF	Result
Total Dissolved Solids	mg/L	1.00	ND

Duplicate

Lab ID = 815120-001

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Total Dissolved Solids	mg/L	1.00	680	682	0.294	0 - 10

Lab Control Sample

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Total Dissolved Solids	mg/L	1.00	514	500	103	90 - 110



Report Continued

Client: E2 Consulting Engineers, Inc.

Project Name: PG&amp;E Topock Project

Page 6 of 6

Project Number: 652547.01.IM.OP.00

Printed 1/6/2015

**Turbidity by SM 2130 B**

Batch 1412542

Parameter	Unit	Analyzed	DF	MDL	RL	Result
815105-001 Turbidity	NTU	12/24/2014	1.00	0.0140	0.100	ND

## Method Blank

Parameter	Unit	DF	Result
Turbidity	NTU	1.00	ND

## Duplicate

Lab ID = 815121-013

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Turbidity	NTU	1.00	ND	0.103	0	0 - 20

## Lab Control Sample

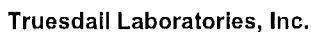
Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Turbidity	NTU	1.00	7.47	8.00	93.4	90 - 110

## Lab Control Sample Duplicate

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Turbidity	NTU	1.00	7.86	8.00	98.2	90 - 110

Respectfully submitted,

**TRUESDAIL LABORATORIES, INC.**Sean Condon  
Project Manager



## Calculations

Batch: 1412485

Date Analyzed: 12/23/2014

**Calculation as follows:**

Filterable residue (TDS), mg/L =

$$\left(\frac{A-B}{C}\right) \times 10^6$$

Where:

A = weight of dish + residue in grams.  
B = weight of dish in grams.  
C = mL of sample filtered.

RL= reporting limit.  
ND = not detected (below the reporting limit)

### Laboratory Control Sample (LCS) Summary

QC Std I.D.	Measurd Value, ppm	Theoretical Value, ppm	Percent Rec	Acceptance Limit	QC Within Control?
LCS	514.0	500	102.8%	90-110%	Yes
LCSD					

## LCS Recovery

$$P = \left( \frac{LC}{LT} \right) \times 100$$

$P$  = Percent recovery.

LC= Measured LCS value (ppm).

$LT$  = Theoretical LCS value (ppm).

### Duplicate Determinations Difference Summary

Lab Number	Sample Weight, g	Sample Dup Weight, g	% RPD	Acceptance Limit	QC Within Control?
14L0478-01	0.0341	0.0340	0.1%	≤5%	Yes

### Duplicate Determination Difference

$$\% \text{ Difference} = \frac{|A \text{ or } B - C|}{C} \times 100$$

where  $C = \frac{A+B}{2}$

A = Weight of the first sample in (g).

B = Weight of the second sample in (g).

C = Average weight in (g).

Jenny T.

Analyst Printed Name

**Analyst Signature**

Maksim G.

Reviewer Printed Name

Reviewer Signature





TRUESDAIL LABORATORIES, INC.  
14201 Franklin Avenue, Tustin, CA 92780-7008  
(714)730-6239 FAX: (714) 730-6462  
www.truesdail.com

## CHAIN OF CUSTODY RECORD

[IM3Plant-WDR-500]

COC Number

TURNAROUND TIME

10 Days

DATE 12/23/14

PAGE 1 OF 1

COMPANY E2				<div>Cr6 (218.6) Lab Filtered</div> <div>Total Metals (200.8) Cr, Mn</div> <div>Specific Conductance (120.1)</div> <div>TDS (SM2540C)</div> <div>Turbidity (SM2130)</div> <div>NUMBER OF CONTAINERS</div>												COMMENTS										
PROJECT NAME PG&E Topock																										
PHONE (530) 229-3303 FAX (530) 339-3303																										
ADDRESS 155 Grand Ave Ste 1000 Oakland, CA 94612																										
P.O. NUMBER 652547.XX.XX.XX TEAM 1																										
SAMPLERS (SIGNATURE) <i>Chris Lenz</i>																										
SAMPLE I.D.				DATE		TIME		DESCRIPTION																		
SC-700B-WDR-500				12/23/14		07:30		Water		X	X	X	X		X										3	pH = 6 (200.9)
																								3	TOTAL NUMBER OF CONTAINERS	

Please Provide a preliminary Result for the TDS ASAP

ALERT !!  
Level III QC

CHAIN OF CUSTODY SIGNATURE RECORD					SAMPLE CONDITIONS		
Signature (Relinquished)	<i>Chris Lenz</i>	Printed Name	CHRIS LENZ	Company/ Agency	CH2M HILL	Date/ Time	12-23-14 13:50
Signature (Received)	<i>Thanh Ngo</i>	Printed Name	THANH NGO	Company/ Agency	TRUESDAIL	Date/ Time	12-23-14 13:50
Signature (Relinquished)	<i>Thanh Ngo</i>	Printed Name	THANH	Company/ Agency		Date/ Time	12-23-14 18:35
Signature (Received)	<i>Tom Hawthorne</i>	Printed Name	TOM HAWTHORNE	Company/ Agency	Truesdail	Date/ Time	12/23/14 18:35
Signature (Relinquished)		Printed Name		Company/ Agency		Date/ Time	
Signature (Received)		Printed Name		Company/ Agency		Date/ Time	
SPECIAL REQUIREMENTS:							

RECEIVED	COOL <input checked="" type="checkbox"/>	WARM <input type="checkbox"/>	6-DC F
CUSTODY SEALED	YES <input type="checkbox"/>	NO <input type="checkbox"/>	

037

## Method EPA 218.6 and SW 7199 Sample pH Log

C:\My Documents\Templates\Hexavalent Chromium\Cr6+ pH Log

038



TRUESDAIL LABORATORIES, INC.  
Metals

Turbidity/pH Check

Sample Number	Turbidity	pH	Date	Analyst	Need Digest (Y/N)	Time of Adjustment to pH 2	Date/Time of 2nd pH check	Comments
14L0341-02	<1	<2	12/17/14	ES	Yes			
14L0342-02	↓	↓	↓	↓	↓			
14L0343-02	↓	↓	↓	↓	↓			
14L0354-01	↓	↓	↓	↓	↓			
14L0355-02	↓	↓	↓	↓	↓			
14L0356-02	↓	↓	↓	↓	↓			
14L0357-02	↓	↓	↓	↓	↓			
14L0358-02	↓	↓	↓	↓	↓			
14L0368-01-02	>1	↓	↓	↓	↓			
14L0369-01	↓	↓	↓	↓	↓			
14L0376-02	<1	↓	↓	↓	↓			
14L0377-01	>1	↓	↓	↓	↓			
14L0378-01-02	↓	↓	↓	↓	↓			
14L0381-02, -01, -03, -04	>1	<2	12/17/14	TM	yes			
14L0382-01	>1	<2	↓	↓	↓			
14L0380-01	<1	>2	↓	↓	NO yes	TM 12/17/14		
14L0388-01, -02, -03	<1	>2	12/19/14	TM	NO	11:45		
↓ -04, -05	↓	↓	↓	↓	↓	↓		
14L0390-01, -02, -03	>1	<2	12/12/14	TM	yes			
↓ -04, -05, -06	↓	↓	↓	↓	↓			
TM 12/18/14 14L0408-01, -02	>2>1	<2	12/18/14	TM	yes			
14L0408-1	>1	<2	12/18	ES 12/18/14				
14L0418 (01-12)	<1	>2	12/18/14	ES	NO	12:00		
14L0419-01	<1	>2	12/18/14	TM	NO	12:00		
14L0430-01	>1	<2	12/18/14	ES	yes			
14L0431 (01-12)	↓	↓	↓	↓	↓			
14L0432 (01-12)	↓	↓	↓	↓	↓			
14L0433-01	↓	↓	↓	↓	↓			
14L0437	<1	>2	12/18/14	ES	NO	3:00		
14L0445-01	<1	<2	12/19/14	ES	yes			
14L0448 (01-03)	↓	>2	↓	↓	NO	10:00		
14L0466-01	<1	>2	12/19/14	ES	NO	2:00		
14L0451-01	<1	<2	12/23/14	ES	yes			
14L0452-01	>1	↓	↓	↓	↓			
14L0483 (01-02)	↓	↓	↓	↓	↓			
14L0423-02	<1	<2	12/23/14	ES	yes			
14L0424-01	↓	↓	↓	↓	↓			
14L0497 (01-03)	<1	>2	12/23/14	ES	NO	4:00		
14L0504-01	↓	↓	↓	↓	↓	↓		
14L0507- (01-03)	↓	↓	↓	↓	↓			yellowish color
14L0510-01	<1	>2	12/24/14	TM	yes	10:00		
14L0532-01, -02	>1	<2	12/26/14	TM	yes			
14L0540-10, -11, -12	<1	>2	12/26/14	TM	NO	10:00		

Notes:

1. Samples should be analyzed after 24 hrs of pH adjustment to pH2 for Dissolved Analytes.
2. All Total Recoverable Analytes must be pH adjusted and digested.
3. Do not use disposable pipette to measure pH; pour a little amount of sample from the bottle.

14L0510

## Truesdail Laboratories, Inc

Client: E2 Consulting Engineers, Inc.  
Project: Topock IM3Plant-WDR Weekly

Project Manager: Sean Condon  
Project Number: PGE-2571

Report To:

E2 Consulting Engineers, Inc.  
Christy Gitlin  
1900 Powell Street, Suite 250  
Emeryville, CA 94608  
Phone: 510-428-4728  
Fax: 510-652-5604

Invoice To:

E2 Consulting Engineers, Inc.  
Christy Gitlin  
1900 Powell Street, Suite 250  
Emeryville, CA 94608  
Phone :510-428-4728  
Fax: 510-652-5604

Date Due: 01/06/2015 16:30 (7 day TAT)

Received By: Tom Martinez

Date Received: 12/23/2014 18:35

Logged In By: Luda Shabunina

Date Logged In: 12/24/2014 09:30

Samples Received at: 6°C

Chain of Custody re Yes Samples intact? Yes

Letter (if sent) matc No Custody seals (if an No

Requested analyses Yes Analyses within hol Yes

Samples received in Yes

Analysis	Due	TAT	Expires	Comments
----------	-----	-----	---------	----------

14L0510-01 SC-700B-WDR-500 [Water] Sampled 12/23/2014 07:30  
(GMT-08:00) Pacific Time (US &

Turbidity	01/06/2015 12:00	7	12/25/2014 07:30	
TDS	01/06/2015 12:00	7	12/30/2014 07:30	
Specific Conductivity	01/06/2015 12:00	7	01/20/2015 07:30	
Mn-200.8	01/06/2015 12:00	7	06/21/2015 07:30	
Cr-200.8	01/06/2015 12:00	7	06/21/2015 07:30	
Cr VI-218.6	01/06/2015 12:00	7	01/20/2015 07:30	

ALERT!!

Level III QC

*Sm Carl*  
Reviewed By

12/29/14  
Date

# TRUESDAIL LABORATORIES, INC.

EXCELLENCE IN INDEPENDENT TESTING



Established 1931

14201 FRANKLIN AVENUE  
TUSTIN, CALIFORNIA 92780-7008  
(714) 730-6239 · FAX (714) 730-6462  
www.truesdail.com

January 6, 2015

E2 Consulting Engineers, Inc.  
Mr. Shawn Duffy  
155 Grand Ave., Suite 1000  
Oakland, California 94612

Dear Mr. Duffy:

SUBJECT: CASE NARRATIVE PG&E TOPOCK IM3PLANT-WDR-501 PROJECT, GROUNDWATER  
MONITORING, TLI NO.: 815106

Truesdail Laboratories, Inc. is pleased to submit this report summarizing the Topock IM3Plant-WDR-501 project groundwater monitoring for Hexavalent and Total Chromium, Total Manganese, Turbidity, Specific Conductivity, and Total Dissolved Solids. A summary table for this sample delivery group is included in Section 2. Complete laboratory reports, quality control data and chain of custody forms for sampling period are included in Sections 3 and 4. Analytical raw data have been included under Section 5.

The samples were received and delivered with the chain of custody on December 30, 2014, intact and in chilled condition. The samples will be kept in a locked refrigerator for 30 days; thereafter it will be kept in warm storage for an additional 2 months before disposal.

Sample SC-700B-WDR-501 was analyzed as sample I.D. 14L0563 in the raw data but is reported as 815106 in all final report pages.

The straight runs for the sample and associated matrix spike on sample SC-700B-WDR-501 for Hexavalent Chromium analysis by EPA 218.6 were just outside the retention time window. Because the matrix spike recovery and all other QA/QC were within acceptable limits, the data from the straight run was reported.

No violations or nonconformance actions occurred for this data package.

If you have any questions or require additional information, please contact me at (714) 730-6239 ext. 200.

Respectfully Submitted,  
TRUESDAIL LABORATORIES, INC.

Sean Condon  
Project Manager, Analytical Services

Michael Ngo  
Quality Assurance/Quality Control Officer

# TRUESDAIL LABORATORIES, INC.

EXCELLENCE IN INDEPENDENT TESTING



Established 1931

**Client:** E2 Consulting Engineers, Inc.  
155 Grand Ave. Suite 1000  
Oakland, CA 94612

**Attention:** Shawn Duffy

**Sample:** One (1) Groundwater Sample

**Project Name:** PG&E Topock Project

**Project No.:** 652547.01.IM.OP.00

14201 FRANKLIN AVENUE  
TUSTIN, CALIFORNIA 92780-7008  
(714) 730-6239 · FAX (714) 730-6462  
www.truesdail.com

**Laboratory No.:** 815106

**Date:** January 6, 2015

**Collected:** December 30, 2014

**Received:** December 30, 2014

## ANALYST LIST

METHOD	PARAMETER	ANALYST
EPA 120.1	Specific Conductivity	Jenny Tankunakorn
SM 2540C	Total Dissolved Solids	Jenny Tankunakorn
SM 2130B	Turbidity	Naheed Eidinejad
EPA 200.8	Total Metals	Tom Martinez
EPA 218.6	Hexavalent Chromium	Naheed Eidinejad



**Client:** E2 Consulting Engineers, Inc.  
155 Grand Ave. Suite 1000  
Oakland, CA 94612

**Attention:** Shawn Duffy

**Laboratory No.:** 815106  
**Date Received:** December 30, 2014

**Project Name:** PG&E Topock Project  
**Project No.:** 652547.01.IM.OP.00  
**P.O. No.:** 10381-7-102011

## Analytical Results Summary

Lab Sample ID	Field ID	Analysis Method	Extraction Method	Sample Date	Sample Time	Parameter	Result	Units	RL
815106-001	SC-700B-WDR-501	E120.1	NONE	12/30/2014	7:30	EC	7160	umhos/cm	2.00
815106-001	SC-700B-WDR-501	E200.8	NONE	12/30/2014	7:30	Chromium	ND	ug/L	1.0
815106-001	SC-700B-WDR-501	E200.8	NONE	12/30/2014	7:30	Manganese	99.5	ug/L	2.5
815106-001	SC-700B-WDR-501	E218.6	LABFLT	12/30/2014	7:30	Chromium, Hexavalent	ND	ug/L	0.20
815106-001	SC-700B-WDR-501	SM2130B	NONE	12/30/2014	7:30	Turbidity	ND	NTU	0.100
815106-001	SC-700B-WDR-501	SM2540C	NONE	12/30/2014	7:30	Total Dissolved Solids	4400	mg/L	250

ND: Non Detected (below reporting limit)

mg/L: Milligrams per liter.

**Note:** The following "Significant Figures" rule has been applied to all results:  
Results below 0.01ppm will have two (2) significant figures.  
Result above or equal to 0.01ppm will have three (3) significant figures.  
Quality Control data will always have three (3) significant figures.

# TRUESDAIL LABORATORIES, INC.

EXCELLENCE IN INDEPENDENT TESTING



Established 1931

14201 FRANKLIN AVENUE  
TUSTIN, CALIFORNIA 92780-7008  
(714) 730-6239 · FAX (714) 730-6462  
www.truesdail.com

## REPORT

**Client:** E2 Consulting Engineers, Inc.

155 Grand Avenue, Suite 800

Oakland, CA 94612

Attention: Shawn Duffy

Project Name: PG&E Topock Project

Project Number: 652547.01.IM.OP.00

P.O. Number: 10381-7-102011

Release Number:

Laboratory No. 815106

Page 1 of 7

Printed 1/6/2015

Samples Received on 12/30/2014 6:30:00 PM

Field ID	Lab ID	Collected	Matrix
SC-700B-WDR-501	815106-001	12/30/2014 07:30	Water

### Specific Conductivity - EPA 120.1

Batch 1501002

Parameter	Unit	Analyzed	DF	MDL	RL	Result
815106-001 Specific Conductivity	umhos/cm	01/02/2015	1.00	0.606	2.00	7160

#### Method Blank

Parameter	Unit	DF	Result
Specific Conductivity	umhos	1.00	ND

#### Duplicate

Lab ID = 815123-001

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Specific Conductivity	umhos	1.00	856	848	0.939	0 - 10

#### Lab Control Sample

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Specific Conductivity	umhos	1.00	702	706	99.4	90 - 110

#### MRCCS - Secondary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Specific Conductivity	umhos	1.00	702	706	99.4	90 - 110

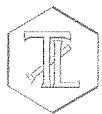
#### MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Specific Conductivity	umhos	1.00	985	1000	98.5	90 - 110

#### MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Specific Conductivity	umhos	1.00	985	1000	98.5	90 - 110

This report applies only to the sample, or samples, investigated and is not necessarily indicative of the quality or condition of apparently identical or similar products. As a mutual protection to clients, the public, and these laboratories, this report is submitted and accepted for the exclusive use of the client to whom it is addressed and upon the condition that it is not to be used, in whole or in part, in any advertising or publicity matter without prior written authorization from Truesdail Laboratories.



Client: E2 Consulting Engineers, Inc.

Project Name: PG&E Topock Project

Page 2 of 7

Project Number: 652547.01.IM.OP.00

Printed 1/6/2015

**Chrome VI by EPA 218.6**

Batch 1412612

Parameter	Unit	Analyzed	DF	MDL	RL	Result
815106-001 Chromium, Hexavalent	ug/L	12/31/2014 09:46	1.00	0.00600	0.20	ND

**Method Blank**

Parameter	Unit	DF	Result
Chromium, Hexavalent	ug/L	1.00	ND

**Duplicate**

Lab ID = 815106-001

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Chromium, Hexavalent	ug/L	5.00	0.0150	0.0160	6.45	0 - 20

**Low Level Calibration Verification**

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	0.186	0.200	92.9	70 - 130

**Lab Control Sample**

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	5.01	5.00	100	90 - 110

**Matrix Spike**

Lab ID = 815106-001

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	5.00	4.79	5.02(5.00)	95.4	90 - 110

**Matrix Spike**

Lab ID = 815106-001

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	1.06	1.02(1.00)	104	90 - 110

**MRCCS - Secondary**

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	5.15	5.00	103	90 - 110

**MRCVS - Primary**

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	9.92	10.0	99.2	95 - 105

**MRCVS - Primary**

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	10.0	10.0	100	95 - 105



Client: E2 Consulting Engineers, Inc.

Project Name: PG&E Topock Project

Page 3 of 7

Project Number: 652547.01.IM.OP.00

Printed 1/6/2015

**Metals by EPA 200.8, Total**

Batch 010215A

Parameter	Unit	Analyzed	DF	MDL	RL	Result
815106-001 Chromium	ug/L	01/02/2015 14:51	1.00	0.0710	1.0	ND

**Method Blank**

Parameter	Unit	DF	Result
Chromium	ug/L	1.00	ND

**Duplicate**

Lab ID = 815106-001

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Chromium	ug/L	1.00	ND	0	0	0 - 20

**Low Level Calibration Verification**

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium	ug/L	1.00	0.566	0.500	113	70 - 130

**Lab Control Sample**

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium	ug/L	1.00	49.4	50.0	98.7	85 - 115

**Matrix Spike**

Lab ID = 815106-001

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium	ug/L	1.00	51.9	50.0(50.0)	104	75 - 125

**Matrix Spike Duplicate**

Lab ID = 815106-001

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium	ug/L	1.00	50.7	50.0(50.0)	101	75 - 125

**MRCCS - Secondary**

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium	ug/L	1.00	21.0	20.0	105	90 - 110

**MRCVS - Primary**

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium	ug/L	1.00	20.3	20.0	101	90 - 110

**MRCVS - Primary**

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium	ug/L	1.00	20.1	20.0	101	90 - 110

**MRCVS - Primary**

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium	ug/L	1.00	20.4	20.0	102	90 - 110



Client: E2 Consulting Engineers, Inc.

Project Name: PG&E Topock Project

Page 5 of 7

Project Number: 652547.01.IM.OP.00

Printed 1/6/2015

**Metals by EPA 200.8, Total**

Batch 010515A

Parameter	Unit	Analyzed	DF	MDL	RL	Result
815106-001 Manganese	ug/L	01/05/2015 14:50	5.00	0.300	2.5	99.5

**Method Blank**

Parameter	Unit	DF	Result
Manganese	ug/L	1.00	ND

**Duplicate**

Lab ID = 815106-001

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Manganese	ug/L	5.00	106	99.5	6.87	0 - 20

**Low Level Calibration Verification**

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Manganese	ug/L	1.00	0.520	0.500	104	70 - 130

**Lab Control Sample**

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Manganese	ug/L	1.00	51.7	50.0	103	85 - 115

**Matrix Spike**

Lab ID = 815106-001

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Manganese	ug/L	5.00	155	150(50.0)	110	75 - 125

**Matrix Spike Duplicate**

Lab ID = 815106-001

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Manganese	ug/L	5.00	145	150(50.0)	90.8	75 - 125

**MRCCS - Secondary**

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Manganese	ug/L	1.00	19.9	20.0	99.5	90 - 110

**MRCVS - Primary**

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Manganese	ug/L	1.00	20.2	20.0	101	90 - 110

**MRCVS - Primary**

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Manganese	ug/L	1.00	19.7	20.0	98.6	90 - 110

**Interference Check Standard A**

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Manganese	ug/L	1.00	ND	0		



Client: E2 Consulting Engineers, Inc.

Project Name: PG&E Topock Project

Page 6 of 7

Project Number: 652547.01.IM.OP.00

Printed 1/6/2015

Interference Check Standard A

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Manganese	ug/L	1.00	ND	0		

Interference Check Standard AB

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Manganese	ug/L	1.00	20.2	20.0	101	80 - 120

Interference Check Standard AB

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Manganese	ug/L	1.00	20.0	20.0	100.	80 - 120

Serial Dilution

Lab ID = 815106-001

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Manganese	ug/L	25.0	98.2	99.5	1.33	0 - 10

Total Dissolved Solids by SM 2540 C

Batch 1501003

Parameter	Unit	Analyzed	DF	MDL	RL	Result
815106-001 Total Dissolved Solids	mg/L	01/02/2015	1.00	1.76	250	4400

Method Blank

Parameter	Unit	DF	Result
Total Dissolved Solids	mg/L	1.00	ND

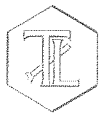
Duplicate

Lab ID = 815106-001

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Total Dissolved Solids	mg/L	1.00	4290	4400	2.53	0 - 10

Lab Control Sample

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Total Dissolved Solids	mg/L	1.00	512	500	102	90 - 110



Client: E2 Consulting Engineers, Inc.

Project Name: PG&amp;E Topock Project

Page 7 of 7

Project Number: 652547.01.IM.OP.00

Printed 1/6/2015

**Turbidity by SM 2130 B**

Batch 1412614

Parameter	Unit	Analyzed	DF	MDL	RL	Result
815106-001 Turbidity	NTU	12/31/2014	1.00	0.0140	0.100	ND

## Method Blank

Parameter	Unit	DF	Result
Turbidity	NTU	1.00	ND

Duplicate

Lab ID = 815124-008

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Turbidity	NTU	1.00	0.106	0.108	1.87	0 - 20

## Lab Control Sample

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Turbidity	NTU	1.00	8.59	8.00	107	90 - 110

Lab Control Sample Duplicate

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Turbidity	NTU	1.00	8.36	8.00	104	90 - 110

Respectfully submitted,

**TRUESDAIL LABORATORIES, INC.**Sean Condon  
Project Manager

### Total Dissolved Solids by SM 2540 C

## Calculations

Batch: 1501003

Date Analyzed: 1/2/2015

[illegible]

**Calculation as follows:**

$$\text{Filterable residue (TDS), mg/L} = \left( \frac{A - B}{C} \right) \times 10^6$$

**Where:**

A = weight of dish + residue in grams.  
B = weight of dish in grams.  
C = mL of sample filtered.

RL= reporting limit.  
ND = not detected (below the reporting limit)

### Laboratory Control Sample (LCS) Summary

QC Std I.D.	Measurd Value, ppm	Theoretical Value, ppm	Percent Rec	Acceptance Limit	QC Within Control?
LCS	512.0	500	102.4%	90-110%	Yes
LCSD					

## LCS Recovery

$$P = \left( \frac{LC}{LT} \right) \times 100$$

$P$  = Percent recovery.

LC= Measured LCS value (ppm).

$LT$  = Theoretical LCS value (ppm).

### Duplicate Determinations Difference Summary

Lab Number	Sample Weight, g	Sample Dup Weight, g	% RPD	Acceptance Limit	QC Within Control?
14L0563-01	0.0440	0.0429	1.3%	≤5%	Yes

### Duplicate Determination Difference

$$\% \text{ Difference} = \frac{|A \text{ or } B - C|}{C} \times 100$$

where  $C = \frac{A+B}{2}$

A = Weight of the first sample in (g).

B = Weight of the second sample in (g).

C = Average weight in (g).

Jenny T.

Analyst Printed Name

Analyst Signature

Maksim G.

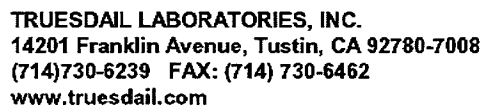
Reviewer Printed Name

Reviewer Signature \_\_\_\_\_

**TDS/EC CHECK**

Batch:	1501003
Date Analyzed:	1/2/2015

[illegible]



14L 0563

COC Number

TURNAROUND TIME            5   Days

DATE **12/30/14** PAGE **1** OF **1**

**[IM3Plant-WDR-501]**

**Please Provide a preliminary Result for the TDS ASAP**

ALERT !!  
Level III QC

# RUSH

CHAIN OF CUSTODY SIGNATURE RECORD					SAMPLE CONDITIONS	
Signature (Relinquished)	Printed Name	Company/ Agency	Date/ Time	RECEIVED	COOL <input checked="" type="checkbox"/>	WARM <input type="checkbox"/> <u>4.0 °F</u>
Signature (Received)	Printed Name	Company/ Agency	Date/ Time	CUSTODY SEALED	YES <input type="checkbox"/>	NO <input type="checkbox"/>
Signature (Relinquished)	Printed Name	Company/ Agency	Date/ Time	SPECIAL REQUIREMENTS:		
Signature (Received)	Printed Name	Company/ Agency	Date/ Time			
Signature (Relinquished)	Printed Name	Company/ Agency	Date/ Time			
Signature (Received)	Printed Name	Company/ Agency	Date/ Time			
Signature (Relinquished)	Printed Name	Company/ Agency	Date/ Time			
Signature (Received)	Printed Name	Company/ Agency	Date/ Time			



[illegible]

1. Samples should be analyzed after 24 hrs of pH adjustment to pH2 for Dissolved Analytes.
2. All Total Recoverable Analytes must be pH adjusted and digested.
3. Do not use disposable pipette to measure pH; pour a little amount of sample from the bottle.

14L0563

## Truesdail Laboratories, Inc

Client: E2 Consulting Engineers, Inc.  
Project: Topock IM3Plant-WDR Weekly

Project Manager: Sean Condon  
Project Number: PGE-2571

Report To:

E2 Consulting Engineers, Inc.  
Christy Gitlin  
1900 Powell Street, Suite 250  
Emeryville, CA 94608  
Phone: 510-428-4728  
Fax: 510-652-5604

Invoice To:

E2 Consulting Engineers, Inc.  
Christy Gitlin  
1900 Powell Street, Suite 250  
Emeryville, CA 94608  
Phone :510-428-4728  
Fax: 510-652-5604

Date Due: 01/08/2015 16:30 (5 day TAT)

Received By: Tom Martinez

Logged In By: Leo Brady

Date Received: 12/30/2014 18:30

Date Logged In: 12/31/2014 06:59

Samples Received at: 4°C

Chain of Custody re Yes Samples intact? Yes

Letter (if sent) matc No Custody seals (if an No

Requested analyses Yes Analyses within hol Yes

Samples received in Yes

Analysis	Due	TAT	Expires	Comments
----------	-----	-----	---------	----------

14L0563-01 SC-700B-WDR-501 [Water] Sampled 12/30/2014 07:30  
(GMT-08:00) Pacific Time (US &

Turbidity	01/08/2015 13:00	5	01/01/2015 07:30	
TDS	01/08/2015 13:00	5	01/06/2015 07:30	
Specific Conductivity	01/08/2015 13:00	5	01/27/2015 07:30	
Mn-200.8	01/08/2015 13:00	5	06/28/2015 07:30	
Cr-200.8	01/08/2015 13:00	5	06/28/2015 07:30	
Cr VI-218.6	01/08/2015 13:00	5	01/27/2015 07:30	

ALERT!!  
Level III QC

RUSH

Reviewed By

Date



# 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
SC-700B-	10/7/14	07:55	10/7/14	800	METER #2	10/7/14	0415	-56.5	CHRIS LENTZ	6.7

Notes:

2	SC-701	10/7/14	07:55	10/7/14	800	METER #2	10/7/14	0415	-56.5	CHRIS LENTZ	7.6
---	--------	---------	-------	---------	-----	----------	---------	------	-------	-------------	-----

Notes:

3	SC-100B	10/7/14	07:55	10/7/14	800	METER #2	10/7/14	0415	-56.5	CHRIS LENTZ	7.4
---	---------	---------	-------	---------	-----	----------	---------	------	-------	-------------	-----

Notes:

4	SC-700B	10/14/14	13:55	10/14/14	14:00	HQ 440 METER #2	10/14/14	03:36	-58.29	CHRIS LENTZ	7.14
---	---------	----------	-------	----------	-------	-----------------	----------	-------	--------	-------------	------

Notes:

5	SC-700B	10-21-14	10:00	10-21-14	10:02	HQ 440 METER	10-21-14	4:19	-58.17	HOW HELPS	7.10
---	---------	----------	-------	----------	-------	--------------	----------	------	--------	-----------	------

Notes:

6	SC-700B	10/28/14	1530	10/28/14	1535	HQ 440	10/28/14	04:12	-57.95	CHRIS LENTZ	7.03
---	---------	----------	------	----------	------	--------	----------	-------	--------	-------------	------

Notes:

7										
---	--	--	--	--	--	--	--	--	--	--

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
SC-700C	11-4-14	13:13	11-4-14	13:19	HQ440d	11-4-14	4:20	-57.93	Ryan Phelps	7.17

Notes:

SC-100B	11-4-14	<del>13:44</del> 13:40	11-4-14	13:44	HQ440d	11-4-14	4:20	-57.93	Ryan Phelps	7.34
---------	---------	---------------------------	---------	-------	--------	---------	------	--------	-------------	------

Notes:

SC-700B	11-12-14	1500	11-12-14	1507	HQ4400	11-12-14	0422	-58.42	G. GORLA	7.09
---------	----------	------	----------	------	--------	----------	------	--------	----------	------

Notes:

SC-700B	11-18-14	0755	11-18-14	8:00	HQ440	11-18-14	04:09	-58.08	CHRIS LENTZ	7.11
---------	----------	------	----------	------	-------	----------	-------	--------	-------------	------

Notes:

--	--	--	--	--	--	--	--	--	--	--

Notes:

--	--	--	--	--	--	--	--	--	--	--

Notes:

--	--	--	--	--	--	--	--	--	--	--

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
SC-700C	11-4-14	13:13	11-4-14	13:19	HQ 440d	11-4-14	4:20	-57.93	Ryan Phelps	7.17

Notes:

2 SC-100B	11-4-14	<del>13:44</del> 13:40	11-4-14	13:44	HQ 440d	11-4-14	4:20	-57.93	Ryan Phelps	7.34
-----------	---------	---------------------------	---------	-------	---------	---------	------	--------	-------------	------

Notes:

3 SC-700B	11/25/14	7:40	11/25/14	7:45	HQ 440d	11/25/14	00:55	-58.40	CHRIS LEMZ	6.89
-----------	----------	------	----------	------	---------	----------	-------	--------	------------	------

Notes:

4 SC-700B	12-02-14	13:42	12-02-14	13:45	HQ 4400	12-02-14	00:20	-58.07	G. GLORIA	7.04
-----------	----------	-------	----------	-------	---------	----------	-------	--------	-----------	------

Notes:

5 SC-100B	12-02-14	13:35	12-02-14	13:46	HQ 4400	12-02-14	00:20	-58.07	G. GLORIA	7.35
-----------	----------	-------	----------	-------	---------	----------	-------	--------	-----------	------

Notes:

6 SC-700B	12-9-14	12:25	12-9-14	12:30	HQ 4400	12-9-14	04:29	-57.84	CHRIS LEMZ	7.25
-----------	---------	-------	---------	-------	---------	---------	-------	--------	------------	------

Notes:

7 SC-700B	12/16/14	12:25	12/16/14	12:30	HQ 4400	12/16/14	03:37	-57.34	CHRIS LEMZ	7.07
-----------	----------	-------	----------	-------	---------	----------	-------	--------	------------	------

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
SC-700 B	12/23/14	0725	12/23/14	0730	HQ4400	12/23/14	0413	-58.24	CHRIS LENTZ	7.01

Notes:

2	SC-700B	12/30/14	07:00	12/30/14	07:30	HQ4400	12/30/14	0410	-58.48	CHRIS LENTZ	7.46
---	---------	----------	-------	----------	-------	--------	----------	------	--------	-------------	------

Notes:

3										
---	--	--	--	--	--	--	--	--	--	--

Notes:

4										
---	--	--	--	--	--	--	--	--	--	--

Notes:

5										
---	--	--	--	--	--	--	--	--	--	--

Notes:

6										
---	--	--	--	--	--	--	--	--	--	--

Notes:

7										
---	--	--	--	--	--	--	--	--	--	--

Notes:

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