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January 15, 2015

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Colorado River Basin Region
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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,

**Curt Russell** 

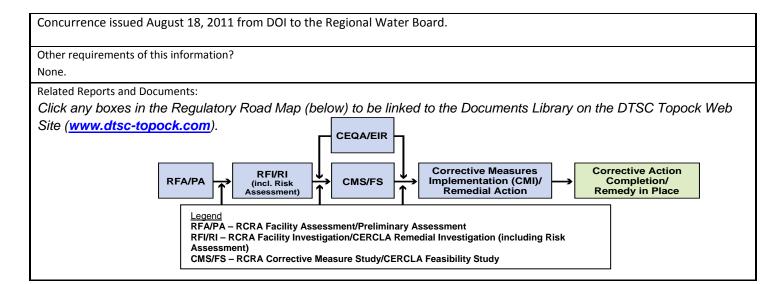
**Topock Site Manager** 

#### **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 L	Executive Abstract
Document Title:	Date of Document: January 15, 2015
Topock IM-3 Fourth Quarter 2014 Monitoring, Semiannual	Who Created this Document?: (i.e. PG&E, DTSC, DOI, Other)
July - December 2014 and Annual January – December 2014	PG&E
Operation and Maintenance Report	Document ID Number:
Submitting Agency/Authored by: U.S. Department of the	PGE2015011B
Interior and Regional Water Quality Control Board	
Final Document? X Yes No	
Priority Status: HIGH MED LOW	Action Required:
Is this time critical?	☐ Information Only ☐ Review & Comment
Type of Document:	Return to:
☐ Draft ☐ Report ☐ Letter ☐ Memo	
	By Date:
Other / Explain:	Other / Explain:
What does this information pertain to?	Is this a Regulatory Requirement?
Resource Conservation and Recovery Act (RCRA) Facility	⊠ Yes
Assessment (RFA)/Preliminary Assessment (PA)	☐ No
RCRA Facility Investigation (RFI)/Remedial Investigation (RI)	If no, why is the document needed?
(including Risk Assessment)	. ,
Corrective Measures Study (CMS)/Feasibility Study (FS)	
Corrective Measures Implementation (CMI)/Remedial Action	
California Environmental Quality Act (CEQA)/Environmental	
Impact Report (EIR)	
☐ Interim Measures	
Other / Explain:	Other Justification/s:
What is the consequence of NOT doing this item? What is the	
consequence of DOING this item?	Permit Other / Explain:
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.	
Brief Summary of attached document:	
,	
This report covers the Interim Measures No. 3 (IM-3) groundwa	ter treatment system monitoring activities during the Fourth
	ties during the July 1, 2014 to December 31, 2014 semiannual and
the January 1, 2014 to December 31, 2014 annual periods. The	- · · · · · · · · · · · · · · · · · · ·
·	d CW-4M/D will be submitted under separate cover, as part of the
Compliance Monitoring Program.	a ever min, b will be submitted under separate cover, as part of the
Written by: PG&E	
Recommendations:	
This report is for your information only.	
How is this information related to the Final Remedy or Regulatory Requ	uirements?
The Topock IM-3 Fourth Quarter 2014 Monitoring, Semiannual J	July - December 2014 and Annual January – December 2014
Operation and Maintenance Report is related to the Interim Me	·
treatment system as authorized by the U.S. Department of the I	
Appropriate Requirements (ARARs) as documented in Attachme	
Colorado River Basin Regional Water Quality Control Board (Reg	-



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

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#### **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

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### **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 Laboratories, Inc.

WDR Waste Discharge Requirements

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### 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.

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### **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.

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### **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

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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.

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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.

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### **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

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### 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-2Sb	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:

### 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.

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

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

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.

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### 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.

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### **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.

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### 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:	behumin	
Name:	Curt Russell	
Company:	Pacific Gas and Electric Company	
Title:	Topock Site Manager	
Date:	January 15, 2015	

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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

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<sup>&</sup>lt;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.

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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	See Table 4
	November 4, 2014	
	December 2, 2014	
Effluent	October 7, 2014	See Table 5
	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	
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:

EN0107151050BAO TABLES-3

<sup>&</sup>lt;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										Мо	nthly												
Analytes Units <sup>b</sup>	TDS mg/L	Turbidity NTU	Specific Conductance µmhos/cm	Field <sup>c</sup> pH pH units	Chromium µg/L	Hexavalent Chromium µg/L	Aluminium µg/L	Ammonia (as N) mg/L	Antimony µg/L	Arsenic	Barium µg/L	Boron mg/L	Copper	Fluorid mg/L	le Lead µg/L	Manganese µg/L	Molybdenum μg/L	Nickel µg/L	Nitrate (as N) mg/L		Sulfate mg/L	lron μg/L	Zinc µg/L
Sample ID Date	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	. •	0.0600	0.0500	0.240	0.0415	•	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 N	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 N	ND (1.00)	1.72	ND (1.00)	8.20	21.0	ND (2.00)	2.43	ND (0.0050	) 499 I	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 N	ND (1.00)	2.23	ND (1.00)	9.10	19.7	ND (2.00)	2.42	ND (0.0050	) 490 I	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>&</sup>lt;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).

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

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

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

	ve. 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
Limits <sup>b</sup>	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												Monthl	у							
	Analytes Units <sup>c</sup>	TDS mg/L	Turbidity NTU	Specific Conductance µmhos/cm	Field <sup>e</sup> pH pH units	Chromium µg/L	Hexavalent Chromium µg/L	Aluminium µg/L	mg/L	Antimony µg/L	Arsenic µg/L	Barium µg/L	mg/L	μg/L	Fluoride mg/L	μg/L	μg/L	Molybdenum μg/L	Nickel µg/L	Nitrate (as N) mg/L	mg/L	Sulfate mg/L	μg/L	Zinc μg/L
	MDLd	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	Date																							
SC-700B-WDR-489 1	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	0/14/2014	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	0/21/2014	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	0/28/2014	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 1	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	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 1	1/12/2014	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 1	1/18/2014	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 1	1/25/2014	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 1	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	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 1	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	2/16/2014	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	2/23/2014	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	2/30/2014	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							

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### 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

RL = project reporting limit µg/L = micrograms per liter

µmhos/cm = micromhos per centimeter

NTU = nephelometric turbidity units

- <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).
- b In addition to the listed effluent limits, the ARARs state that the effluent shall not contain heavy metals, chemicals, pesticides or other constituents in concentrations toxic to human health.
- <sup>c</sup> Units reported in this table are those units required in the ARARs.
- d MDL listed is the target MDL by analysis method; however, the MDL may change for each sample analysis due to the dilution required by the matrix to meet the method QC requirements. The target MDL for each method/analyte combination is calculated annually.
- 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.

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# 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 Frequenc	у										Quarter	ly										
Analytes	TDS	Specific Conductance	Field <sup>c</sup> pH		Hexavalent Chromium		Arsenic	Barium	Beryllium	Cadmium	Cobalt	Copper	Fluoride	Lead	Molybdenun	n Mercury	Nickel	Selenium	Silver	Thallium	Vanadium	Zinc
Units <sup>D</sup>	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
Sample ID Date	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) N	ND (0.0020) N	ID (0.0020)	0.0383	ND (0.0020)	ND (0.0050	) ND (0.005	0.0150	8.72	ND (0.005	0) 0.0876	ND (0.0020)	0.00820	0.0191	ND (0.0050	) ND (0.002	0) 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

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<sup>&</sup>lt;sup>a</sup> Sampling location for all reverse osmosis samples is tap on pipe T-701 (see attached P&ID PR-10-04).

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

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

TABLE 7

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

Sludge Monitoring Results<sup>a</sup>

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

Sampling Frequency									(	Quarterly										Annually
Analytes Units <sup>b</sup> MDL Sample ID Date	Chromium mg/kg 0.0140	Hexavalent Chromium mg/kg 0.0500	Antimony mg/kg 0.0694	Arsenic mg/kg 0.0188	Barium mg/kg 0.0106	Beryllium mg/kg 0.00072	Cadmium mg/kg 0.0025	Cobalt mg/kg 0.0020	Copper mg/kg 0.0264	Fluoride mg/kg 0.0209	Lead mg/kg 0.0040	Molybdenum mg/kg 0.0216	Mercury mg/kg 0.00040	Nickel mg/kg 0.0040	Selenium mg/kg 0.0064	Silver mg/kg 0.0032	Thallium mg/kg 0.0456	Vanadium mg/kg 0.0056	Zinc mg/kg 0.0102	Bioassay % Survival at 750 mg/L <sup>c</sup>
SC-Sludge-WDR-489 10/7/2014	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	100 100
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>&</sup>lt;sup>a</sup> Sampling location for all sludge samples is the sludge collection bin (see attached P&ID TP-PR-10-10-06).

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

<sup>&</sup>lt;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	В	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	В	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	В	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	РВ	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	В	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	В	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	•	Ryan Phelps	11/4/2014	1:00:00 PM	TLI	SM4500NH3D	NH3N	11/8/2014	Maksim Gorbunov
SC-700B	SC-700B-WDR-493	Ryan Pheips	11/4/2014	1.00.00 PM	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	В	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

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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

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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
hase 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

MO =

### NOTES:

ALKB = alkalinity bicarb as CaCO3

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

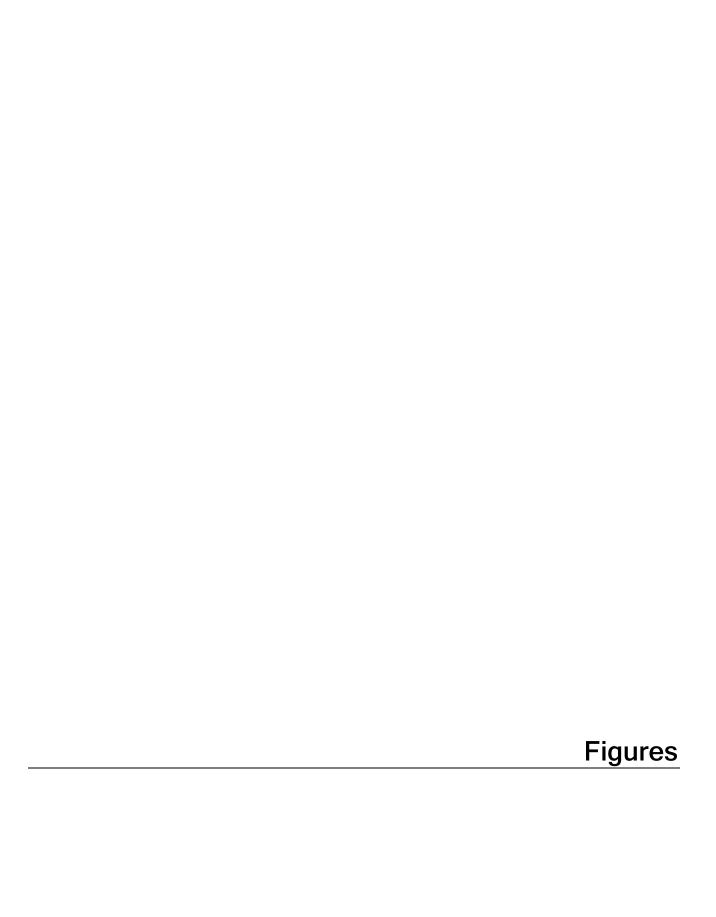
SC-100B = Sampling location for all influent samples is tap on pipe from extraction wells into tank T-100 (see attached P&ID TP-PR-10-10-04).

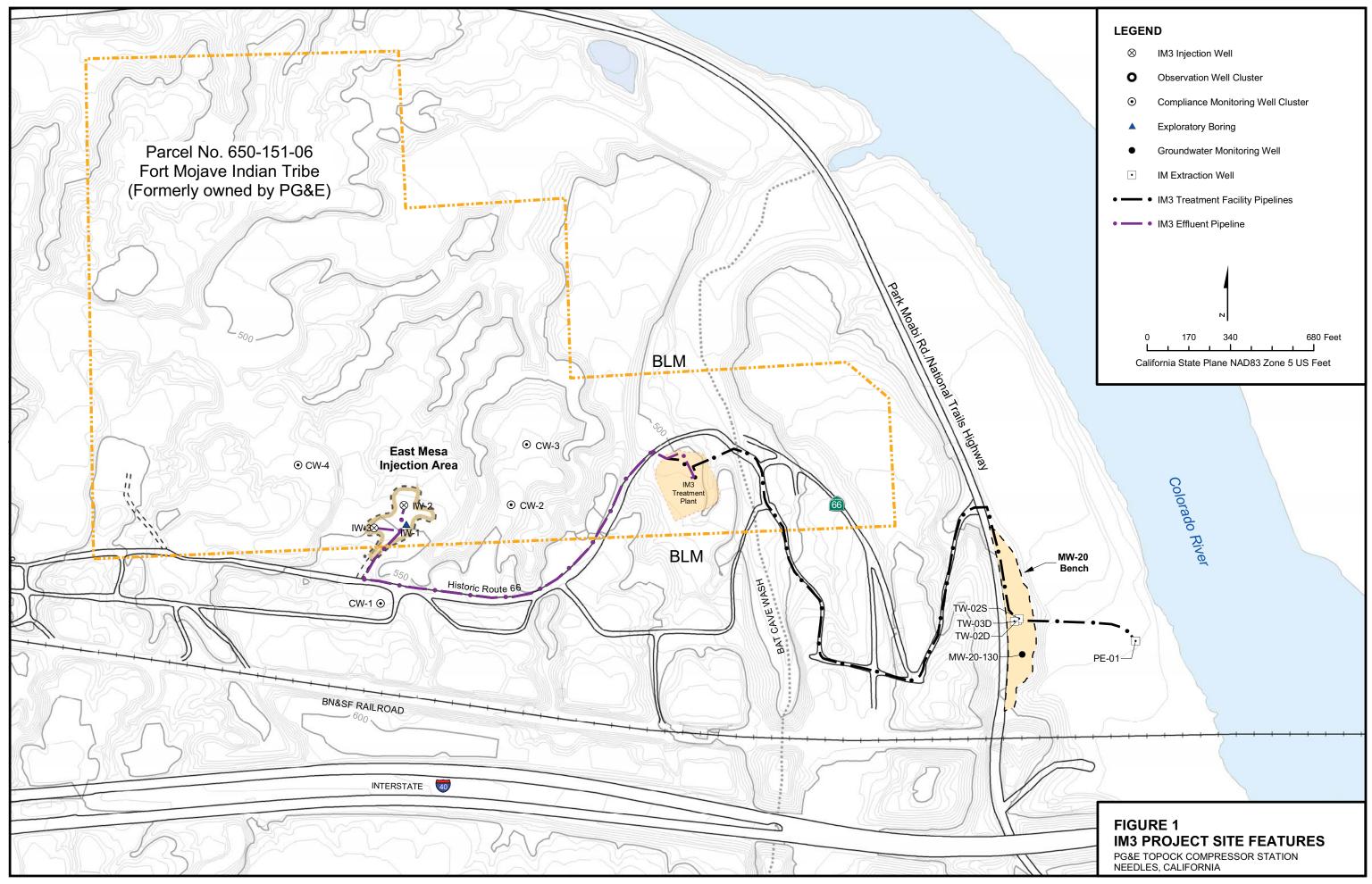
SC-701 = Sampling location for all reverse osmosis samples is tap on pipe T-701 (see attached P&ID PR-10-04).

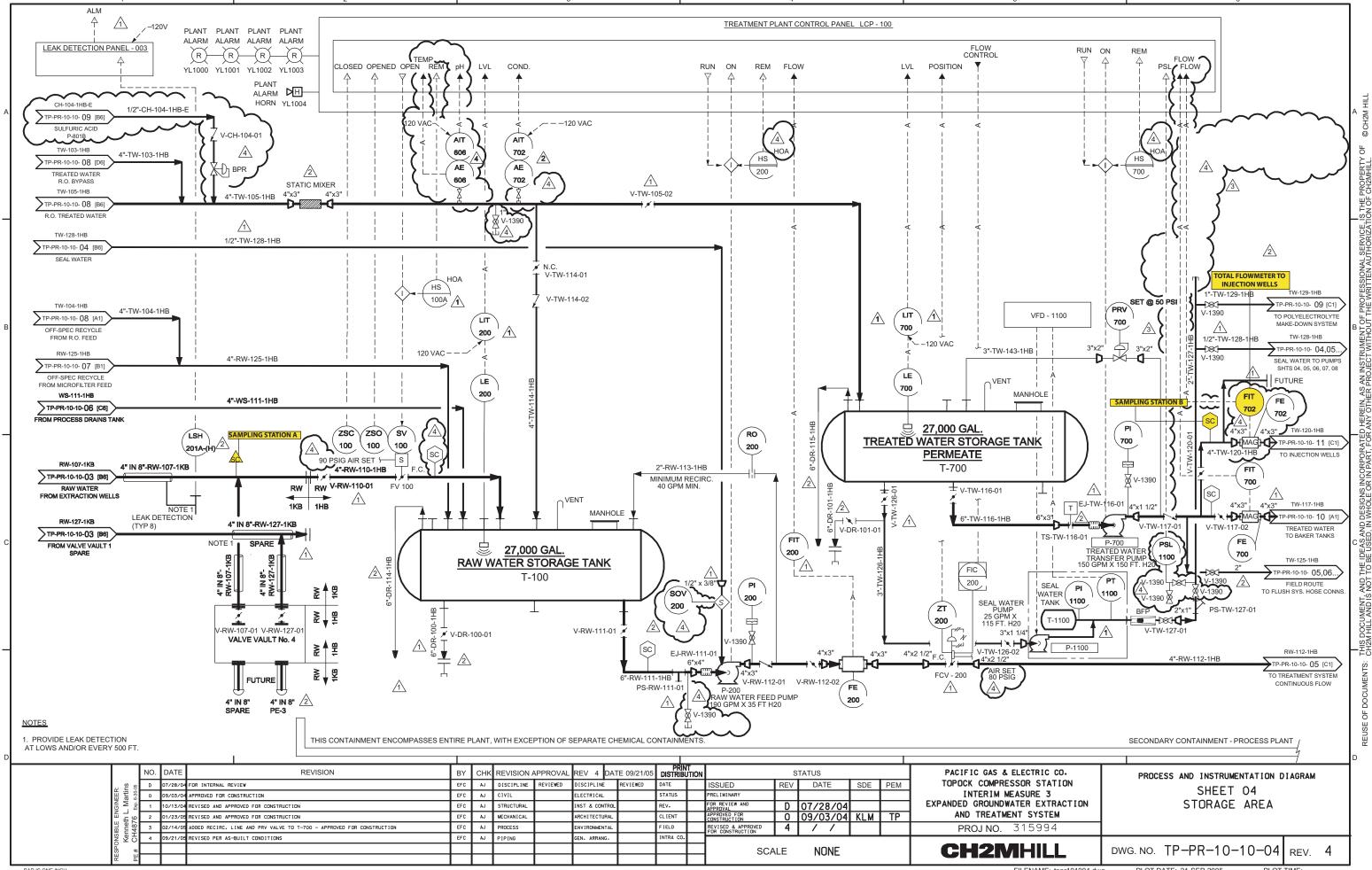
molyhdenum

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.

ALND =	aikaiiility, bicaib as CaCOS	IVIO =	morybuenum
ALKC =	alkalinity, carb as CaCO3	MOIST =	moisture
AL =	aluminum	NH3N =	ammonia (as N)
Ag =	silver	NI =	nickel
AS =	arsenic	NO2N =	nitrite (as N)
B =	boron	NO3N =	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	SO4 =	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		







BAR IS ONE INCH ON ORIGINAL DRAWING.

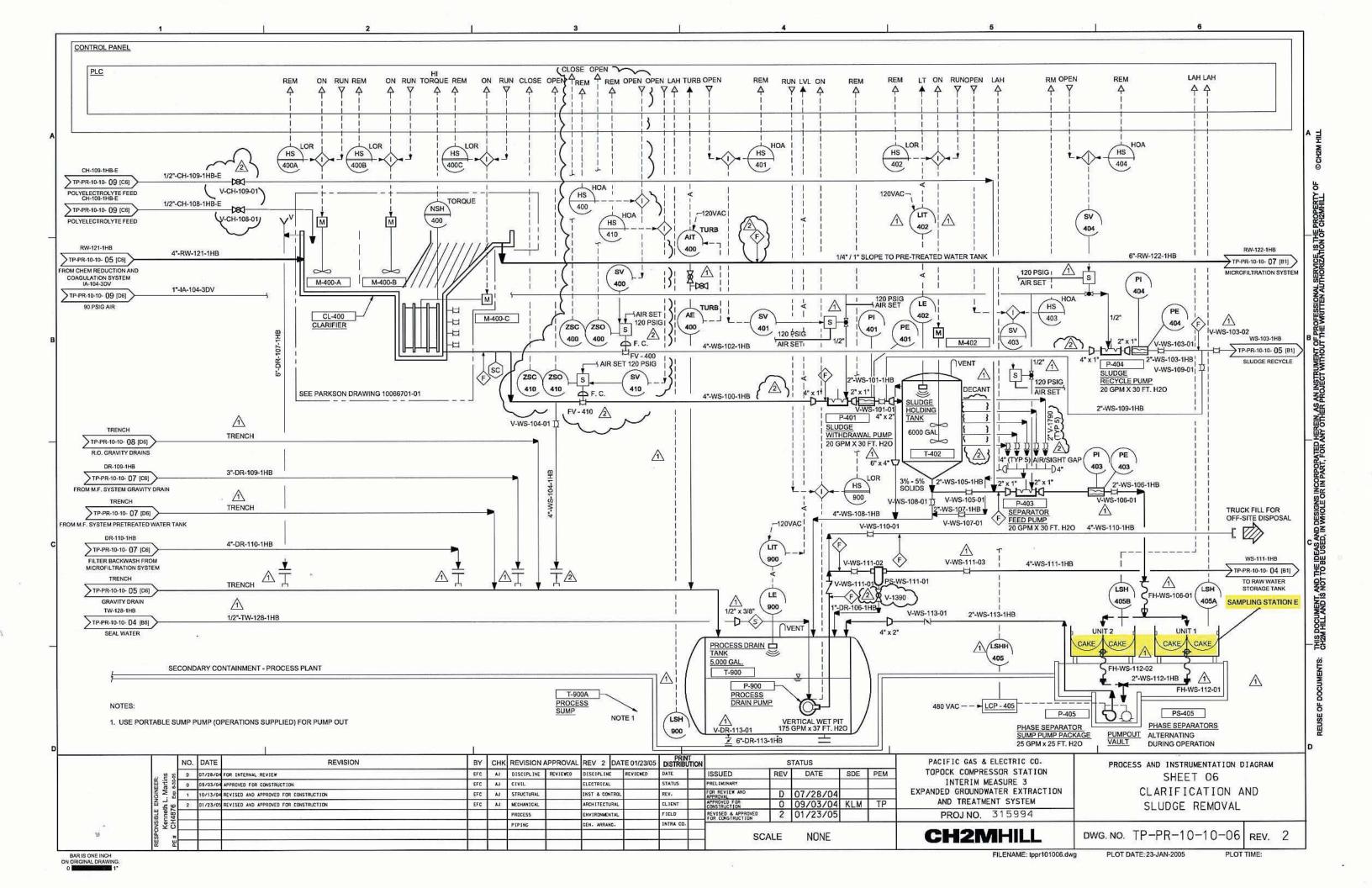
FILENAME: PR-10-03.dgn PLOT DATE: 11/19/2009

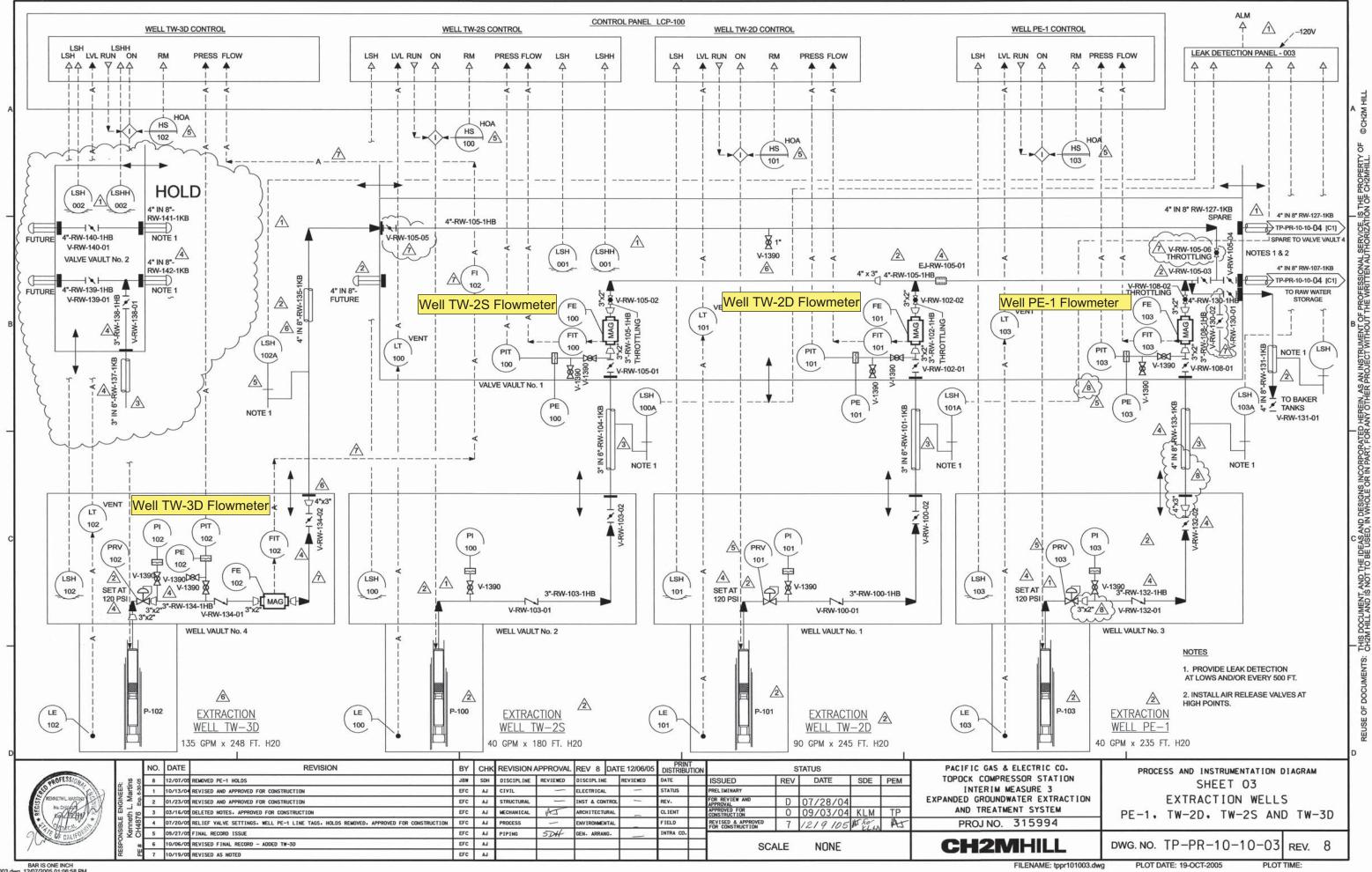
PLOT TIME: 10:27:54 AM

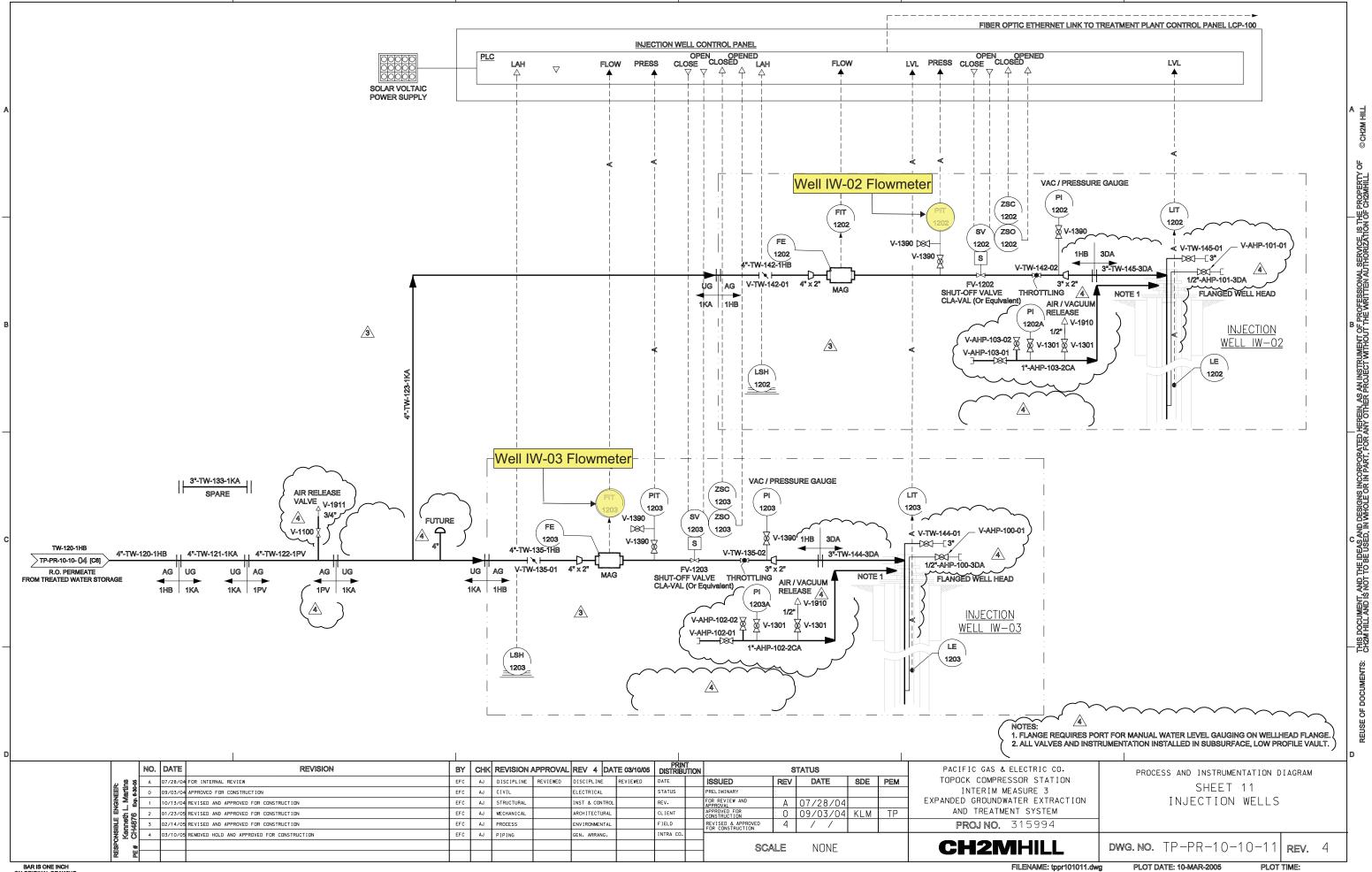
TO SEAL WATER TRUNK LINE PR-10-03 (HS 701 1 1/2" TW-154-1HB THIS DOCUMENT, AND THE IDEAS AND DESIGNS INCORPORATED HEREIN AS AN INSTRUMENT OF PROFESSIONAL SERVICE. IS THE PROPERTY CHZM HILL AND IS NOT TO BE USED, IN WHOLE OR IN PART, FOR ANY OTHER PROJECT WITHOUT THE WRITTEN AUTHORIZATION OF CHZMHILL. LOCATED IN CHEMICAL STORAGE AREA LOCATED NEAR EXISTING RO PR-10-03 -1/2" CH-112-1HB TO PRIMARY RO FROM P-2301 HCI ACID PUMP /-1/2" CH-114-1HB HYDRO-CHLORIC ACID (HCI) HCI ACID TOTE PUMP SKID SEE CROWN ANTISCALANT FEED PUMP SKID SEE CROWN SECONDARY RO PRIMARY RO ANTI-SCALANT CHEMICAL DRUM ANTI-SCALANT CHEMICAL DRUM 1A-102-3DV 1"-1A-108-3DV TP-PR-10-10-09(06) 90 PSIG AIR 1/4" CH-115-1HB FROM P-2402 120VAC 1 1/2" TW-152-1HB TO PRIMARY RO FROM P-2401 ANTI-SCALANT FEED PUMP RECYCLE COND COND 701 701 ST STAGE RO CONCENTATE V-1390 1 1/2"-TW-148-1HB PR-10-03 2"x1 1/2" NO SECONDARY REVERSE OSMOSIS SKID SEE CROWN SOLUTION DWG: PS-0689-08 1 1/2" TW-149-1HB T-2601 SECONDARY 1" TW-146-1HB SECONDAR RO FEED TANK SEE CROWN RO FEED PUMP SEE <sub>x</sub> 701 (NOTE 3) TO T-603 TANK (LE) CROWN DWG PS-0689-07 V-1390 1 1/2" TW-151-1HB SAMPI ING 701 <u></u> ∩ VENT STATION D PR-10-03 O CONCENTRATE 701 CLOSE FROM PRIMARY RO FLOWMETER Oběv 5 T-701 FE 8000 GAL. 701 SEAL WATER TS-TW-111-01 र्केट्ट Т 6"x1 1/2" ▼ 3"x1" 3"x1" V-TW-112-01 V-TW-112-03 **RECORD DRAWINGS** SOV V-TW-112-03 701 J PORCELLA 6"-TW-111-1HB P-107 THESE RECORD DRAWINGS HAVE BEEN PREPARED, IN PART, ON THE BASIS OF INFORMATION COMPILED BY OTHERS, THEY ARE △ 1/2"x3/8" SEAL WATER RO CONCENTRATE TP-PR-10-10-08 [B6] NOT INTENDED TO REPRESENT IN DETAIL THE EXACT LOCATION, TRANSFER PUMP 80 GPM X 85 FT H20 TYPE OF COMPONENT NOR MANNER OF CONSTRUCTION. THE ENGINEER WILL NOT BE RESPONSIBLE FOR ANY ERRORS OR 1" TW-147-1HB OMISSIONS WHICH HAVE BEEN INCORPORATED INTO THE RECORD DRAWINGS. TW-112-1RB TP-PR-10-10 [C1] TO TRENCH DRAIN RO CONCENTRATE REVISION BY CHK PRINT DISTRIBUTION DATE REVISION APPROVAL REV 0 DATE 10/02/09 STATUS PACIFIC GAS & ELECTRIC CO. PROCESS AND INSTRUMENTATION DIAGRAM REV DATE TOPOCK COMPRESSOR STATION A 2/12/09 INTERNAL REVIEW DISCIPLINE REVIEWED DISCIPLINE REVIEWED ISSUED SDE PEM REVERSE OSMOSIS SYSTEM 2/12/09 JP INTERIM MEASURE 3 ORIGINALLY STAMPED /12/09 CLIENT REVIEW ELECTRICAL STATUS PREL [M] NARY R REVIEW AND SHEET TWO OF TWO 4/01/09 FOR REVIEW AND APPROVA PLANT PERFORMANCE IMPROVEMENTS 4/01/09 AND SIGNED BY: PPROVED FOR ONSTRUCTION JOHN PORCELLA 1/17/09 FINAL RECORD ISSUE JR MECHAN1CAL ARCH | TECTURAL LIENT CALIFORNIA PE NO. C70145 PROCESS FIELD **PROJ NO.** 362032 0 10/02/09 ON 04-01-2009 INTRA CO PIPING SJ GEN. ARRANG. **CH2M**HILL DWG. NO. PR-10-04 SCALE NONE REV. 0 BAR IS ONE INCH ON ORIGINAL DRAWING. FILENAME: PR-10-04.dgn PLOT DATE: 11/19/2009 PLOT TIME: 10:28:26 AM

COND

RUN ON FLOW







BAR IS ONE INCH ON ORIGINAL DRAWING

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

#### **APPENDIX A**

# 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.

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• 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.

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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.

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- 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.

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- 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.

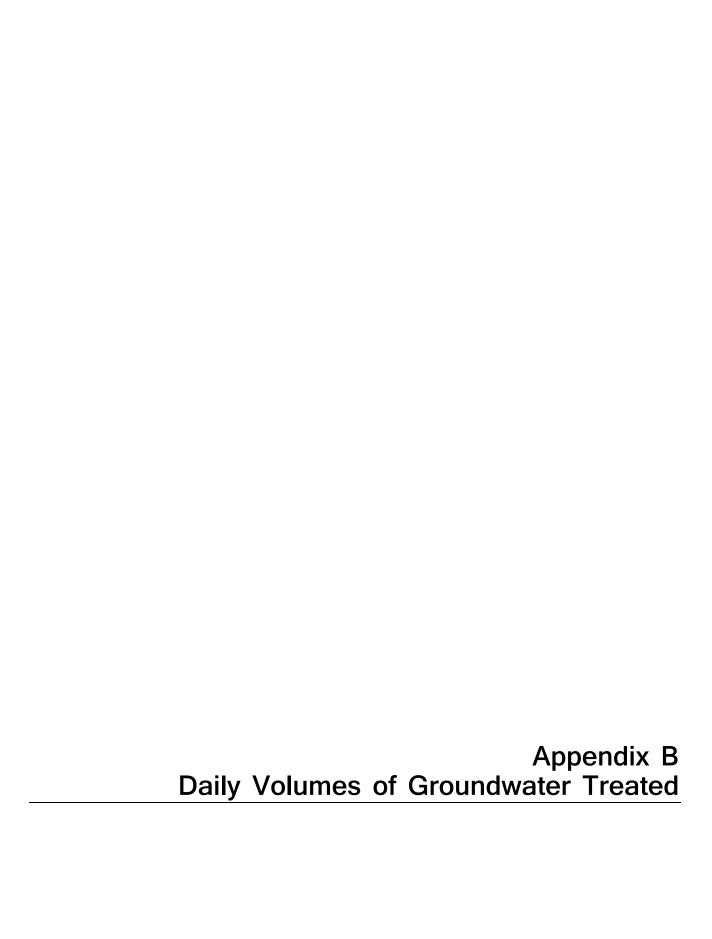
The IM-3 facility treated approximately 5,947,448 gallons of extracted groundwater during December 2014. The IM-3 facility treated 3,600 gallons of injection well backwashing/re-development water and 140 gallons

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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.

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				Extrac	tion Well Sys	tem		Inje	ection Well Sys	stem	RO Brine
Month	Day	Year	TW-2S (gallons)	TW-2D (gallons)	TW-3D (gallons)	PE-1 (gallons)	Total (gallons)	IW-02 (gallons)	IW-03 (gallons)	Total (gallons)	(gallons)
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
Total Monthl	y Volumes	s (gallons)	0	0	4,528,924	1,252,475	5,781,399	4,586,049	1,179,200	5,765,249	11,669
	-	n Rates (gpm)	0.0	0.0	101.5	28.1	129.5	102.7	26.4	129.1	0.3

a. 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.

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

c. The difference between influent flow rate and the sum of the effluent and reverse osmosis concentrate flow rates during 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.

				Extrac	tion Well Sys	tem		Inje	ection Well Sy	stem	RO Brine
			TW-2S	TW-2D	TW-3D	PE-1	Total	IW-02	IW-03	Total	
Month	Day	Year	(gallons)	(gallons)	(gallons)	(gallons)	(gallons)	(gallons)	(gallons)	(gallons)	(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
otal Monthly	/ Volumes	s (gallons)	0	0	4,068,464	1,112,189	5,180,653	5,143,548	33,768	5,177,316	8,874
		n Rates (gpm)	0.0	0.0	91.1	24.9	116.1	115.2	0.8	116.0	0.2

a. 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.

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

c. The difference between influent flow rate and the sum of the effluent and reverse osmosis concentrate flow rates during 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.

				Extrac	tion Well Sys	tem		Inje	ection Well Sy	stem	RO Brine
Month	Day	Year	TW-2S (gallons)	TW-2D (gallons)	TW-3D (gallons)	PE-1 (gallons)	Total (gallons)	IW-02 (gallons)	IW-03 (gallons)	Total (gallons)	(gallons)
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
Total Monthly	Volumes	(gallons)	0	158,349	4,247,803	1,168,521	5,574,674	5,332,794	360,371	5,693,165	18,310
•	erage Pump/Injection Rates (gpm)		0.0	3.7	98.3	27.0	129.0	123.4	8.3	131.8	0.4

a. 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.

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

c. The difference between influent flow rate and the sum of the effluent and reverse osmosis concentrate flow rates during 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.

				Extrac	tion Well Sys	tem		Inje	ection Well Sy	stem	RO Brine
Month	Day	Year	TW-2S (gallons)	TW-2D (gallons)	TW-3D (gallons)	PE-1 (gallons)	Total (gallons)	IW-02 (gallons)	IW-03 (gallons)	Total (gallons)	(gallons)
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
Total Monthly	/ Volumes	s (gallons)	0	0	4,787,741	1,229,181	6,016,923	5,975,057	3,410	5,978,467	31,825
-		n Rates (gpm)	0.0	0.0	107.3	27.5	134.8	133.8	0.1	133.9	0.7

a. 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.

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

c. The difference between influent flow rate and the sum of the effluent and reverse osmosis concentrate flow rates during 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.

				Extraction Well System					ection Well Sy	stem	RO Brine
Month	Day	Year	TW-2S (gallons)	TW-2D (gallons)	TW-3D (gallons)	PE-1 (gallons)	Total (gallons)	IW-02 (gallons)	IW-03 (gallons)	Total (gallons)	(gallons)
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
Total Monthly	Volumes	(gallons)	0	0	4,503,146	1,202,562	5,705,708	4,673,436	986,324	5,659,761	17,470
Average Pump		,	0.0	0.0	104.2	27.8	132.1	108.2	22.8	131.0	0.4

a. 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.

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

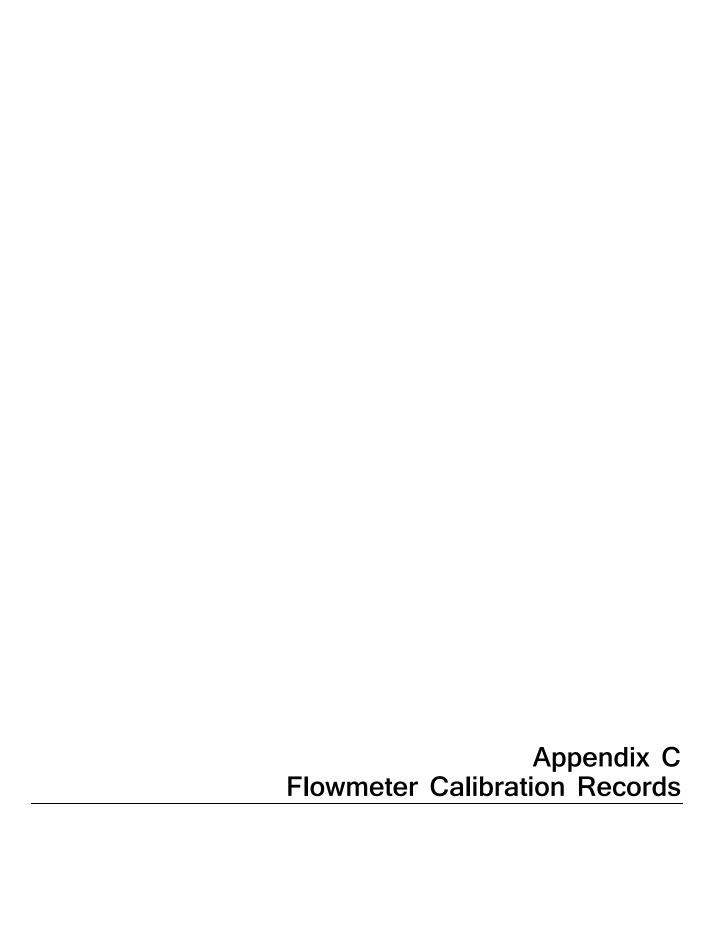
c. The difference between influent flow rate and the sum of the effluent and reverse osmosis concentrate flow rates during November 2014 is approximately 0.5 percent. This percentage difference includes instrument noise in the system, but is within the accuracy of the flow meters. A well is considered to be offline if the daily reported flow is 140 gallons per day or less.

				Extraction Well System					ection Well Sys	stem	RO Brine
			TW-2S	TW-2D	TW-3D	PE-1	Total	IW-02	IW-03	Total	
Month	Day	Year	(gallons)	(gallons)	(gallons)	(gallons)	(gallons)	(gallons)	(gallons)	(gallons)	(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
Total Monthly	Volumes	s (gallons)	0	3,593	4,683,355	1,260,500	5,947,448	5,863,941	38,406	5,902,346	27,841
Average Pump	verage Pump/Injection Rates (gpm)		0.0	0.1	104.9	28.2	133.2	131.4	0.9	132.2	0.6

a. 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.

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

c. The difference between influent flow rate and the sum of the effluent and reverse osmosis concentrate flow rates during 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.





People for Process Automation

## Flow Calibration with Adjustment

30171212-1304705

WWRA-006931-F Purchase order number US-19068473-30 / Endress+Hauser Flowtec Order Nº/Manufacturer 23P50-AL1A1AA022AW Order code **PROMAG 23 P 2"** Transmitter/Sensor

6C036F16000

AT-1201 FIT location determined onsite

FCP-6.F	
Calibration rig	
155.6102 us.gal/min Calibrated full scale	( ≙ 100%)
Current 4 - 20 mA	
Calibrated output	
0.9101	
Calibration factor	
-34	NG.
Zero point	
79.7 °F	

	Flow pq	Flow (us.gal/min)	Duration	V target	V 10125. [الع.وبا]	[%] ∇ ar.*	Outp.**
	10.1	15.7	30.2	7.8942	7.8921	-0.03	5.61
l	39.5	61.5	30.2	30.956	30.950	-0.02	10.32
ļ	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
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Measured error % o.r. -0.5

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

\*\*Cajesdated value (4 - 20 nsA)

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

John Davis Operator

Water temperature

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



## Flow Calibration with Adjustment

10258091-1364709

460009101 I

Purchase criter number

US-3601523401-200 / Endress+Hauser Flowtec

Order N\*/Manufacturer

23P50-AL1A1AA022AW

Order code

PROMAG 23 P 2\*

Transmitter/Sensor

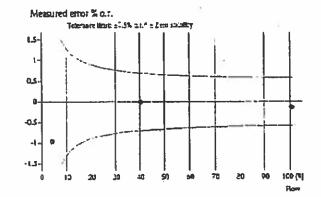
Setal No FIT-1205 FIT location determined onsite

Tag N\*

FCP-7.1.E	
Calibration rig -	
155.6102 us.gal/min	( ≙ 100%)
Calibrated full scale	
Current 4-20 mA	
Calibrated output	
0.9145	
Calibration factor	
0	
Zero point	
70.5 °F	
Water temperal tre	

	Flow	Rew (outsidate)	Duradon 	V tergil jengelj	V mem.	Δ sz.* P0	Outp.**	
	4.0	6.27	55.2	5.7720	5.7163	-0.96	4.64	
	40.2	62.5	30.2	31,439	31.439	0.00	10.43	
	40.3	62.6	30,2	31.498	31,497	0.00	10.44	
	100.7	156.7	30.2	78.760	73,656	-0.13	20.09	
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"Calculated value (4 - 20 thA)



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 ISC/IEC 17025 accredited calibration facilities in Reinach (CH), Cernay (FR), Greenwood (USA), Aurangabad (IN) and Suzhou (CN),

01-07-2013 Date of calibration

Endress+Hauser Plowtec, Division USA 2330 Endress Place Greenwood, IN 46143 John Davis Operator

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

People for Process Automation

### Flow Calibration without Adjustment

92004354-1275191

4017515743

Purchase order number

US-3601525773-100 / Endress+Hauser Inc.

Order Nº/Manufacturer

23P50-ALIA1RA022AW

Order code

PROMAG 23 P 2"

Transmitter/Sensor

6A022016000

Serial Nº

FIT-101 FIT location determined onsite

Tag Nº

	Row M	Flow ica.ps/mini	Duration (mc)	V (seget [stgst]]	V mess, Justpilj	Δ e.c.*	Curp.**
1	10.0	15.661	60.0	15.672	1 :5.677	0.03	1 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
ī	100.4	150.615	0.00	156.730	156.360	-0.24	20.03
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form of sale

FCP-8.2 US

Calibration rig

156 us.gal/min

 $( \triangle 100\%)$ 

Calibrated full scale

Current 4-20 mA

Calibrated output

0.9207

Calibration lactor

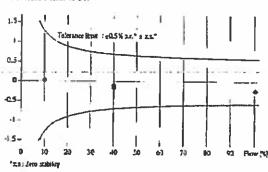
U

Zero point

72.6 °F

Water temperature

Measured error % or.



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

Encress—Hause: Rowtec operates ISO/IEC 17025 accredited calibration facilities in Relicach [CH], Cermay [FR], Greenwood (USA), Aurangabad (IN); and Suzhou [CN].

09-20-2013

Date of calibration

Endress-Hauser Inc. 10057 Porter Road La Porte, Texas 7757 I Wesley Watters

W. Watkins

<sup>\*\*</sup>Calculated calcus 14 - 20 ct.Al

People for Process Automation

### Flow Calibration without Adjustment

9200435C-1225 | 92

4017515743

Purchase order number

US-3601525789-100 / Endress+Hauser Inc.

Order Nº/Manufacturer

23P50-AL1A1RA022AW

Order code

**PROMAG 23 P 2"** 

Transmitter/Sensor

6A022116000

Serial Nº

FIT 103 FIT location determined onsite

Tag Nº

Flow P4	How pupi/pin	Duration [ext]	V carget  ucgs#	V mee. [u.u]	Δ ez:	Outp.**
10.0	15.643	0.00	15.654	15.582	-J.46	5.c0
40.1	62.618	60.0	62.665	62,440	-0.36	10.40
40.2	62.628	0.00	62.673	62.607	-0.11	10.42
100.3	156.535	60.0	156.646	155.804	-0.54	9.97
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female man

Current 4-20 mA

Calibrated output

0.9082

Catibration factor

0

Zero polat

72.3 °F

Water temperature

For detailed data concerning output specifications of the unit under test, see Technical Information [T1], chapter Performance characteristics. Tracezbility to the national standard for all test instruments used for the calibration is guaranteed.

Endress-Houser Flowing operates ISO/JEC 17025 accredited calibration facilities in Relnach (CH), Cernay (FR), Greenwood [USA]. Aniangabad (IN) and Section (CN).

09-20-2013

Date of calibration

Endrest—Hauser Inc. 10057 Porter Road La Porte, Teixas 77571 Waster Withou

W. Watkins Operator

People for Process Automation

## Flow Calibration without Adjustment

92002720-1204704

4600082515
Furchese order mamber
US-3601521707-200 / Endress+Hauser Inc.
Order N°/Manufacturer
23P50-AL1A1AA022AW
Order code
PROMAG 23 P 2°
Transmitter/Sensor
6C037016000
Serial N°

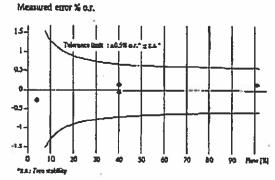
HT-1202 FIT location determined onsite

FCP-8.2 US	
Calibration rig	
155 us.gal/min	( ≙ 100%)
Calibrated full scale	13.
Current 4-20 mA	
Calibrated output	
0.9154	
Calibration factor	
0	
Zero point	
75.5 °F	

75.5 °F	
Water temperature	

	Plow [16]	Row turned	Detation	V terpet (inc.go)	(ur.pd)	اع اعد	Outp.**	
-	4.0	6.12	60.0	6.1222	6.1053	-0,28	4.63	
ı	40.1	02.2	60.0	02.207	62.358	0.15	10.43	
1	40.2	62.2	60.0	62,283	62.243	-0.06	10.42	
ı	101.1	150.7	00.0	150.700	156,998	0.15	20.20	
I	-	-	-	-	l - i	-	-	
ı	-	-	-	-	-	-	] - [	
ı	-	9 <u> </u>	-	-	-	-	-	
١	-	-	-	+1	-	-	-	
1	-	-	-	-	-	-	-	
١	-	-	12	27		~	-	
	"out all rate				·			

""Chinhad value (4 - 20 mA)



For detailed data concerning output specifications of the unit under test, see Technical information [II], chapter Performance characteristics. Traceability to the national standard for all test instruments used for the calibration is guaranteed.

Endress+Hauser Flowing operates ISO/IEC 17025 accredited calibration facilities in Releach [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 7757 I Wedge Witte

W. Watkins

 $( \triangleq 100\%)$ 

## Endress+Hauser

People for Process Automation

## Flow Calibration without Adjustment

92004152-1304708

4017515743

Purchase order number

US-3601525789-300 / Endress-Hauser Inc.

Order Nº/Manufacturer

23P50-AL1A1AA022AW

Order code

PROMAG 23 P 2"

Transmitter/Sensor

6C037216000

Serial No

FIT-1204 FIT location determined onsite

	Row [독]	Flow  us gai/min	Duration [eq	V target [un.gvl]	V meas. [us.gal]	Δ ατ.* [%]	Cutp.**
	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	0.47
	40.2	62.630	60.0	62.671	63.033	0.58	10.46
	100.4	156.630	50.0	156.742	155.931	-0,52	19.98
	-		-	-	-	-	-
	-	-	2	-	-	2	-
1	-	· -	-	-	- 1	-	-
1	-	-	- 5		-	*	1-1
1	~	-	- 1	-	i -	-	- j
1	*	- 4	-	-	-	-	.  -

<sup>&</sup>quot;out.; of rate "\*Calculated value (4 - 20 mA)

FCP-8.2 US

Calibration rig

156 us.gal/min

Calibrated full scale

Current 4 - 20 mA

Calibrated output

0.9184

Calibration factor

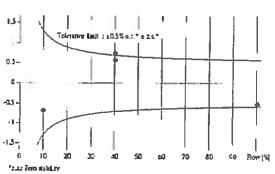
20

Zero polat

72.4 °F

Water temperature

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 |SO/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

## Flow Calibration with Adjustment

92002717 1385273

#### 4600082515

Purchase order number

US-3601521707-300 / Endress+Hauser Inc.

Order Nº/Manufacturer

#### 23P80-AL1A1AA022AW

Order code

#### PROMAG 23 P 3"

Transmitter/Sensor

#### 7700F316000

## - FIT location determined onsite

Flow Fi	Flow (us.gal/min)	Duration (sed)	V torget [us.gal]	V meas, (us.gal)	Δ vi.*	Outp.**
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
1111	-	-	•	-	-	-
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i II -	91		-	-	-	-
1 -	-	-	-	-	_	_ [
-	-	-	-	-	-	
1	40	-	-	-	-	-

fourt: of rate

Endress+Hauser 3

People for Process Automation

FCP-8.2 US	
Calibration rig	**************************************
400 us.gal/min	( ≙ 100%)
Calibrated full scale	
Current 4 - 20 mA	
Calibrated output	
1.1672	
Calibration factor	
-18	
Zero point	
75.1 °F	

Measured error % o.r. 0.5 0 -0.5

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 Flowiec operates ISO/IEC 17025 accredited calibration facilities in Reinach (CII), 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

Water temperature

<sup>\*\*</sup>Calculated value: [4 - 20 mA]

**People for Process Automation** 

## Flow Calibration without Adjustment

92002718-1275190

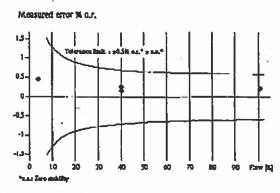
4600082515
Purchase order number
US-3601521707-100 / Endress+Hauser Inc.
Order N\*/Manufecturer
23P50-AL1AIRA022AW
Order code
PROMAG 23 P 2\*\*
Transmitter/Sensor
6A021F16000
Sentel N\*

FIT location determined onsite

FCP-8.2 US	
Cambration rig	
155 us.gal/min	( ≙ 100%)
Calibrated full scale	<u></u>
Current 4-20 mA	
Calibrated output	
0.9178	
Calibration factor	
0 .	**
Zero point	
75.3 °F	
Water temperature	

How (14)	Flow heapt/mini	Duration.	V target (vs.pd)	V sage.	A au'	Outp.**
4.0	6.14	0.00	0.1423	5.1699	0.45	4.04
40.2	62.3	00.0	02.353	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
-	-	-	-	-	-	-
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22	-	-	-	-	-	-
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-	-	-	-	- 1	-	-
-	-	-	-	-	-	-
	•	•	•	•		'

\*\*Calculated value (4 - 30 mA)



For detailed data concerning output specifications of the unit under test, see Technical Information [II], chapter Performance characteristics.

Traccability to the national standard for all test instruments used for the calibration is guaranteed.

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

06-19-2012 Date of calibration

Endress-Hauser Inc. 10057 Porter Road La Porte, Texas 77571 Wesley Within

W. Watkins

Appendix D Fourth Quarter 2014 Laboratory Analytical Reports

**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.

Mona Nassimi

Manager, Analytical Services

Michael Ngo

Quality Assurance/Quality Control Officer

**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

Sample: Three (3) Groundwaters
Project Name: PG&E Topock Project
Project No.: 428648.IM.CS.EX.AC

**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

**EXCELLENCE IN INDEPENDENT TESTING** 



Established 1931

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

Laboratory No.: 815060

Date Received: October 1, 2014

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.: 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

005



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			
815060-002	SC-100B-WDR-489						7150	umhos/cm	2.00
		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	NŤU	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			
815060-003	SC-701-WDR-489	E200.7	NONE	10/7/2014	8:00	Zinc	25600	umhos/cm	2.00
815060-003	SC-701-WDR-489	E200.8	NONE	10/7/2014	8:00	Antimony	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		ND	ug/L	2.0
815060-003	SC-701-WDR-489	E200.8	NONE			Barium	38.3	ug/L	10.0
815060-003	SC-701-WDR-489	E200.8		10/7/2014	8:00	Beryllium	ND	ug/L	2.0
815060-003	SC-701-WDR-489		NONE	10/7/2014	8:00	Cadmium	ND	ug/L	5.0
815060-003		E200.8	NONE	10/7/2014	8:00	Chromium	ND	ug/L	5.0
	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.

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:

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

Laboratory No. 815060 Page 1 of 32

Printed 11/3/2014

Field ID				Lab ID	Col	lected	Matr	ix
SC-700B-WDR-489				815060-001	10/07	/2014 08:00	Wat	er
SC-100B-WDR-489				815060-002	10/07	/2014 08:00	Wat	er
SC-701-WDR-489				815060-003	10/07	/2014 08:00	Wat	er
Anions By I.C EPA	300.0		Batch	n 1410162				
Parameter		Unit	Ana	ılyzed	DF	MDL	RL	Result
815060-001 Fluoride		mg/L	10/08	3/2014 12:10	5.00	0.104	0.500	1.48
Nitrate as Nitr	rogen	mg/L	10/08	3/2014 12:10	5.00	0.0415	0.500	2.69
Sulfate		mg/L	10/08	3/2014 14:21	25.0	0.768	12.5	497
815060-002 Fluoride		mg/L	10/08	3/2014 12:21	5.00	0.104	0.500	1.80
Nitrate as Nitr	ogen	mg/L	10/08	3/2014 12:21	5.00	0.0415	0.500	2.70
Sulfate		mg/L	10/08	3/2014 14:32	25.0	0.768	12.5	517
815060-003 Fluoride		mg/L	10/08	3/2014 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	R	RPD	Accepta	nce Range
Fluoride	mg/L	5.00	1.79	1.80		0.334	0 - 20	3-
Nitrate as Nitrogen	mg/L	5.00	2.73	2.70		1.14	0 - 20	



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Duplicate						Lab ID = 815067-004
Parameter Chloride Sulfate Lab Control Sample	Unit mg/L mg/L	DF 25.0 25.0	Result 52.7 64.1	Expected 56.7 65.7	RPD 7.27 2.40	Acceptance Range 0 - 20 0 - 20
Parameter Chloride Fluoride Sulfate Nitrate as Nitrogen Matrix Spike	Unit mg/L mg/L mg/L mg/L	DF 1.00 1.00 1.00 1.00	Result 3.83 4.05 20.0 3.94	Expected 4.00 4.00 20.0 4.00	Recovery 95.8 101 99.9 98.6	Acceptance Range 90 - 110 90 - 110 90 - 110 90 - 110 Lab ID = 815060-002
Parameter Fluoride Nitrate as Nitrogen Matrix Spike	Unit mg/L mg/L	DF 5.00 5.00	Result 23.0 24.1	Expected/Added 21.8(20.0) 22.7(20.0)	Recovery 106 107	Acceptance Range 85 - 115 85 - 115 Lab ID = 815067-004
Parameter Chloride Sulfate MRCCS - Secondary	Unit mg/L mg/L	DF 25.0 25.0	Result 160 170	Expected/Added 157(100) 166(100)	Recovery 103 104	Acceptance Range 85 - 115 85 - 115
Parameter Chloride Fluoride Sulfate Nitrate as Nitrogen MRCVS - Primary	Unit mg/L mg/L mg/L mg/L	DF 1.00 1.00 1.00 1.00	Result 3.90 4.04 19.8 3.93	Expected 4.00 4.00 20.0 4.00	Recovery 97.6 101 99.3 98.3	Acceptance Range 90 - 110 90 - 110 90 - 110 90 - 110
Parameter Chloride MRCVS - Primary	Unit mg/L	DF 1.00	Result 2.78	Expected 3.00	Recovery 92.7	Acceptance Range 90 - 110
Parameter Chloride MRCVS - Primary	Unit mg/L	DF 1.00	Result 2.89	Expected 3.00	Recovery 96.4	Acceptance Range 90 - 110
Parameter Chloride MRCVS - Primary	. Unit mg/L	DF 1.00	Result 2.84	Expected 3.00	Recovery 94.8	Acceptance Range 90 - 110
Parameter Chloride	Unit mg/L	DF 1.00	Result 3.14	Expected 3.00	Recovery 105	Acceptance Range 90 - 110



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Nitrite SM 4500-NO2 B Parameter		l leit	A I				<b>_</b> .	
		Unit	Analyzed		DF_	MDL	RL	Result
815060-001 Nitrite as Nitroger	1	mg/L	10/08/	2014 15:42 1	.00	0.000630	0.0050	0.0052
815060-002 Nitrite as Nitroger	1	mg/L	10/08/	2014 15:47 1	.00	0.000630	0.0050 ND	
Method Blank						ų, r		
Parameter	Unit	DF	Result					
Nitrite as Nitrogen	mg/L	1.00	ND					
Duplicate							Lab ID = 8	15060-001
Parameter	Unit	DF	Result	Expected	F	RPD	Acceptar	nce Range
Nitrite as Nitrogen	mg/L	1.00	0.00520	0.00520		0	0 - 20	J
Lab Control Sample				1				
Parameter	Unit	DF	Result	Expected	F	Recovery	Acceptar	nce Range
Nitrite as Nitrogen	mg/L	1.00	0.0207	0.0226		91.6	90 - 110	J
Matrix Spike							Lab ID = 8	15060-001
Parameter	Unit	DF	Result	Expected/Adde	d F	Recovery	Acceptar	nce 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	F	Recovery	Acceptar	ce Range
Nitrite as Nitrogen	mg/L	1.00	0.0207	0.0226		91.6	90 - 110	•
MRCVS - Primary								
Parameter	Unit	DF	Result	Expected	F	Recovery	Acceptar	ice Range
Nitrite as Nitrogen	mg/L	1.00	0.0198	0.0200		99.0	90 - 110	Ū
MRCVS - Primary				e e e e e e e e e e e e e e e e e e e	, Alba			
Parameter	Unit	DF	Result	Expected	F	Recovery	Acceptar	ice Range
Nitrite as Nitrogen	mg/L	1.00	0.0198	0.0200		99.0	90 - 110	J



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Specific Conductivity - E	PA 120.1		Batch	1410051					
Parameter			Unit Analyzed		DF	MDL	RL	Result	
815060-001 Specific Conduct	ivity	umhos/	cm 10/10	/2014	1.00	0.606	306 2.00 7190		
815060-002 Specific Conduct	ivity	umhos/	cm 10/10	/2014	1.00	0.606	2.00 7150		
815060-003 Specific Conduct	ivity	umhos/	cm 10/10	/2014	1.00	0.606	2.00 25600		
Method Blank					a the st	en antejetatik		Wisher e	
Parameter Specific Conductivity	Unit umhos	DF 1.00	Result ND						
Duplicate								815060-003	
Parameter Specific Conductivity Lab Control Sample	Unit umhos	DF 1.00	Result 25800	Expected 25600	F	RPD 0.778	0 - 10	ance Range	
Parameter Specific Conductivity MRCCS - Secondary	Unit umhos	DF 1.00	Result 743	Expected 706		Recovery 105	90 - 110	_	
Parameter Specific Conductivity MRCVS - Primary	Unit umhos	DF 1.00	Result 743	Expected 706	F	Recovery 105	Accepta 90 - 110	-	
Parameter Specific Conductivity MRCVS - Primary	Unit umhos	DF 1.00	Result 1050	Expected 1000		Recovery 105	90 - 110		
Parameter Specific Conductivity	Unit umhos	DF 1.00	Result 1050	Expected 1000	F	Recovery 105	Accepta 90 - 110	ance Range	



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Chrome VI by EPA 218.6	3		Batch	1410121				
Parameter		Unit	Ana	lyzed	DF	MDL	RL	Result
815060-001 Chromium, Hexa	avalent	ug/L	10/08	/2014 13:45	1.00	0.00600	0.20	ND
815060-002 Chromium, Hexa	avalent	ug/L	10/08	/2014 13:55	25.0	0.150	5.0	586
815060-003 Chromium, Hexa	avalent	ug/L	10/08	/2014 14:56	5.00	0.0300	1.0	ND
Method Blank							H <sub>a</sub> direct dates	1.
Parameter	Unit	DF	Result					
Chromium, Hexavalent  Duplicate	ug/L	1.00	ND				Lab ID =	815065-001
Parameter Chromium, Hexavalent	Unit ug/L	DF 1.00	Result 3.63	Expected 3.67	,	RPD 1.15	Accepta 0 - 20	nce Range
Low Level Calibration	_		0.00	0.07		1.10	77 L 1 4.	
Parameter Chromium, Hexavalent Lab Control Sample	Unit ug/L	DF 1.00	Result 0.192	Expected 0.200		Recovery 96.2	70 - 130	
Parameter	Unit	DF	Result	Expected		Recovery		
Chromium, Hexavalent	ug/L	1.00	5.10	5.00		102	90 - 110	nce Range
Matrix Spike							Lab ID =	815060-001
Parameter Chromium, Hexavalent	Unit ug/L	DF 5.00	Result 4.98	Expected/A 5.11(5.00)	dded	Recovery 97.5	Accepta 90 - 110	nce Range
Matrix Spike	-			, ,			Lab ID =	815060-001
Parameter Chromium, Hexavalent	Unit ug/L	DF 1.00	Result 1.15	Expected/A 1.11(1.00)	dded	Recovery 104	Accepts 90 - 110	ince Range
Matrix Spike						w 4	Lab ID =	815060-002
Parameter Chromium, Hexavalent Matrix Spike	Unit ug/L	DF 50.0	Result 1160	Expected/A 1210(625)	dded	Recovery 92.0	90 - 110	nce Range 815060-003
Parameter	Unit	DF	Result	Expected/A	dded		Accepta	nce Range
Chromium, Hexavalent Matrix Spike	ug/L	5.00	5.31	5.58(5.00)		94.5	90 - 110 Lab ID =	815060-003
Parameter Chromium, Hexavalent Matrix Spike	Unit ug/L	DF 1.00	Result ND	Expected/A 1.00(1.00)	dded	Recovery	90 - 110	nce Range ) 815065-001
Parameter Chromium, Hexavalent	Unit ug/L	DF 1.00	Result 8.50	Expected/A 8.67(5.00)	dded	Recovery 96.5	Accepta 90 - 110	nce Range



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Metals by EPA 200.7, Tot	w.I	1 1 ! 4		101014A-Th2		l (D)	Ē.	D- "
Parameter		Unit			DF	MDL	RL	Result
815060-001 Aluminum		ug/L			.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								Page 114
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	F	RPD	Accepta	ince Range
Aluminum	ug/L	1.00	ND	o '		0	0 - 20	J
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						State of the second		
Parameter	Unit	DF	Result	Expected	F	Recovery	Accepta	ınce Range
Aluminum	ug/L	1.00	2070	2000		103	85 - 115	5
Iron	ug/L	1.00	2140	2000		107	85 - 115	5
Zinc	ug/L	1.00	2000	2000		100	85 - 115	5
Boron	ug/L	1.00	2030	2000		102	85 - 115	<b>i</b>
Matrix Spike							Lab ID =	815060-001
Parameter	Unit	DF	Result	Expected/Adde	d F	Recovery	Accepta	ince Range
Aluminum	ug/L	1.00	1760	2000(2000)		88.2	75 - 125	5
Iron	ug/L	1.00	1970	2020(2000)		97.3	75 - 125	5
Zinc	ug/L	1.00	2210	2000(2000)		111	75 - 125	5



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Matrix Spike Duplicat	e					Lab ID = 815060-001
Parameter	Unit	DF	Result	Expected/Added 2000(2000)	Recovery	Acceptance Range
Aluminum	ug/L	1.00	1730		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 MRCCS - Secondary	ug/L	1.00	2950	2950(2000)	100	75 - 125
Parameter	Unit	DF	Result	Expected 5000 5000	Recovery	Acceptance Range
Aluminum	ug/L	1.00	5030		101	95 - 105
Iron	ug/L	1.00	5040		101	95 - 105
Zinc	ug/L	1.00	5050	5000	101	95 - 105
Boron MRCVS - Primary	ug/L	1.00	4990	5000	99.8	95 - 105
Parameter Aluminum MRCVS - Primary	Unit	DF	Result	Expected	Recovery	Acceptance Range
	ug/L	1.00	5290	5000	106	90 - 110
Parameter Aluminum MRCVS - Primary	Unit ug/L	DF 1.00	Result 5220	Expected 5000	Recovery 104	Acceptance Range 90 - 110
Parameter Iron MRCVS - Primary	Unit	DF	Result	Expected	Recovery	Acceptance Range
	ug/L	1.00	5430	5000	109	90 - 110
Parameter Iron MRCVS - Primary	Unit	DF	Result	Expected	Recovery	Acceptance Range
	ug/L	1.00	5260	5000	105	90 - 110
Parameter Zinc MRCVS - Primary	Unit	DF	Result	Expected	Recovery	Acceptance Range
	ug/L	1.00	5050	5000	101	90 - 110
Parameter Zinc Boron MRCVS - Primary	Unit	DF	Result	Expected	Recovery	Acceptance Range
	ug/L	1.00	5000	5000	100	90 - 110
	ug/L	1.00	5010	5000	100	90 - 110
Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Boron	ug/L	1.00	5130	5000	103	90 - 110



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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
315060-002 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
315060-003 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



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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			<u>.</u>
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
Duplicate Parameter	Unit	DF	Result	Expected	RPD	Lab ID = 815064-001 Acceptance Range
•	Unit ug/L	DF 1.00	Result ND	Expected 0	RPD 0	•
Parameter				•		Acceptance Range
Parameter Arsenic	ug/L	1.00	ND	0	0	Acceptance Range 0 - 20
Parameter Arsenic Barium	ug/L ug/L	1.00 1.00	ND 11.6	0 11.5	0 0.728	Acceptance Range 0 - 20 0 - 20
Parameter Arsenic Barium Cadmium	ug/L ug/L ug/L	1.00 1.00 1.00	ND 11.6 ND	0 11.5 0	0 0.728 0	Acceptance Range 0 - 20 0 - 20 0 - 20
Parameter Arsenic Barium Cadmium Chromium	ug/L ug/L ug/L ug/L	1.00 1.00 1.00 1.00	ND 11.6 ND ND	0 11.5 0 0	0 0.728 0 0	Acceptance Range 0 - 20 0 - 20 0 - 20 0 - 20
Parameter Arsenic Barium Cadmium Chromium Mercury	ug/L ug/L ug/L ug/L ug/L	1.00 1.00 1.00 1.00 1.00	ND 11.6 ND ND ND	0 11.5 0 0	0 0.728 0 0	Acceptance Range 0 - 20 0 - 20 0 - 20 0 - 20 0 - 20 0 - 20 0 - 20 0 - 20
Parameter Arsenic Barium Cadmium Chromium Mercury Nickel	ug/L ug/L ug/L ug/L ug/L ug/L	1.00 1.00 1.00 1.00 1.00	ND 11.6 ND ND ND ND	0 11.5 0 0 0	0 0.728 0 0 0	Acceptance Range 0 - 20 0 - 20 0 - 20 0 - 20 0 - 20 0 - 20 0 - 20
Parameter Arsenic Barium Cadmium Chromium Mercury Nickel Selenium	ug/L ug/L ug/L ug/L ug/L ug/L	1.00 1.00 1.00 1.00 1.00 1.00	ND 11.6 ND ND ND ND ND	0 11.5 0 0 0 0	0 0.728 0 0 0 0	Acceptance Range 0 - 20 0 - 20 0 - 20 0 - 20 0 - 20 0 - 20 0 - 20 0 - 20
Parameter Arsenic Barium Cadmium Chromium Mercury Nickel Selenium Antimony	ug/L ug/L ug/L ug/L ug/L ug/L ug/L	1.00 1.00 1.00 1.00 1.00 1.00 1.00	ND 11.6 ND ND ND ND ND ND	0 11.5 0 0 0 0 0	0 0.728 0 0 0 0 0	Acceptance Range 0 - 20 0 - 20 0 - 20 0 - 20 0 - 20 0 - 20 0 - 20 0 - 20 0 - 20
Parameter Arsenic Barium Cadmium Chromium Mercury Nickel Selenium Antimony Lead	ug/L ug/L ug/L ug/L ug/L ug/L ug/L ug/L	1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00	ND 11.6 ND ND ND ND ND ND	0 11.5 0 0 0 0 0 0	0 0.728 0 0 0 0 0 0	Acceptance Range 0 - 20 0 - 20 0 - 20 0 - 20 0 - 20 0 - 20 0 - 20 0 - 20 0 - 20 0 - 20 0 - 20
Parameter Arsenic Barium Cadmium Chromium Mercury Nickel Selenium Antimony Lead Silver	ug/L ug/L ug/L ug/L ug/L ug/L ug/L ug/L	1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00	ND 11.6 ND	0 11.5 0 0 0 0 0 0 0	0 0.728 0 0 0 0 0 0 0	Acceptance Range 0 - 20 0 - 20 0 - 20 0 - 20 0 - 20 0 - 20 0 - 20 0 - 20 0 - 20 0 - 20 0 - 20
Parameter Arsenic Barium Cadmium Chromium Mercury Nickel Selenium Antimony Lead Silver Thallium	ug/L ug/L ug/L ug/L ug/L ug/L ug/L ug/L	1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00	ND 11.6 ND	0 11.5 0 0 0 0 0 0 0 0	0 0.728 0 0 0 0 0 0 0	Acceptance Range 0 - 20 0 - 20 0 - 20 0 - 20 0 - 20 0 - 20 0 - 20 0 - 20 0 - 20 0 - 20 0 - 20 0 - 20 0 - 20 0 - 20



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Low Level Calibration V	erification					
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
I ale Cantral Canania						
Lab Control Sample						
Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
·	Unit ug/L	DF 2.00	Result 47.6	Expected 50.0	Recovery 95.3	
Parameter				•	•	Acceptance Range
Parameter Arsenic	ug/L	2.00	47.6	50.0	95.3	Acceptance Range 85 - 115
Parameter Arsenic Barium	ug/L ug/L	2.00 2.00	47.6 48.3	50.0 50.0	95.3 96.6	Acceptance Range 85 - 115 85 - 115
Parameter Arsenic Barium Cadmium	ug/L ug/L ug/L	2.00 2.00 2.00	47.6 48.3 48.7	50.0 50.0 50.0	95.3 96.6 97.5	Acceptance Range 85 - 115 85 - 115 85 - 115
Parameter Arsenic Barium Cadmium Chromium	ug/L ug/L ug/L ug/L	2.00 2.00 2.00 2.00	47.6 48.3 48.7 46.6	50.0 50.0 50.0 50.0	95.3 96.6 97.5 93.1	Acceptance Range 85 - 115 85 - 115 85 - 115
Parameter Arsenic Barium Cadmium Chromium Mercury	ug/L ug/L ug/L ug/L ug/L	2.00 2.00 2.00 2.00 2.00	47.6 48.3 48.7 46.6 4.58	50.0 50.0 50.0 50.0 5.00	95.3 96.6 97.5 93.1 91.5	Acceptance Range 85 - 115 85 - 115 85 - 115 85 - 115
Parameter Arsenic Barium Cadmium Chromium Mercury Nickel	ug/L ug/L ug/L ug/L ug/L ug/L	2.00 2.00 2.00 2.00 2.00 2.00	47.6 48.3 48.7 46.6 4.58 46.4	50.0 50.0 50.0 50.0 5.00 5.00	95.3 96.6 97.5 93.1 91.5 92.7	Acceptance Range 85 - 115 85 - 115 85 - 115 85 - 115 85 - 115
Parameter Arsenic Barium Cadmium Chromium Mercury Nickel Selenium	ug/L ug/L ug/L ug/L ug/L ug/L	2.00 2.00 2.00 2.00 2.00 2.00 2.00	47.6 48.3 48.7 46.6 4.58 46.4 47.2	50.0 50.0 50.0 50.0 5.00 50.0 50.0	95.3 96.6 97.5 93.1 91.5 92.7 94.4	Acceptance Range 85 - 115 85 - 115 85 - 115 85 - 115 85 - 115 85 - 115
Parameter Arsenic Barium Cadmium Chromium Mercury Nickel Selenium Antimony	ug/L ug/L ug/L ug/L ug/L ug/L ug/L	2.00 2.00 2.00 2.00 2.00 2.00 2.00 2.00	47.6 48.3 48.7 46.6 4.58 46.4 47.2 48.1	50.0 50.0 50.0 50.0 50.0 50.0 50.0 50.0	95.3 96.6 97.5 93.1 91.5 92.7 94.4 96.3	Acceptance Range 85 - 115 85 - 115 85 - 115 85 - 115 85 - 115 85 - 115 85 - 115
Parameter Arsenic Barium Cadmium Chromium Mercury Nickel Selenium Antimony Lead	ug/L ug/L ug/L ug/L ug/L ug/L ug/L ug/L	2.00 2.00 2.00 2.00 2.00 2.00 2.00 2.00	47.6 48.3 48.7 46.6 4.58 46.4 47.2 48.1 53.2	50.0 50.0 50.0 50.0 5.00 50.0 50.0 50.0 50.0	95.3 96.6 97.5 93.1 91.5 92.7 94.4 96.3 106	Acceptance Range 85 - 115 85 - 115 85 - 115 85 - 115 85 - 115 85 - 115 85 - 115
Parameter Arsenic Barium Cadmium Chromium Mercury Nickel Selenium Antimony Lead Silver	ug/L ug/L ug/L ug/L ug/L ug/L ug/L ug/L	2.00 2.00 2.00 2.00 2.00 2.00 2.00 2.00	47.6 48.3 48.7 46.6 4.58 46.4 47.2 48.1 53.2 45.2	50.0 50.0 50.0 50.0 5.00 50.0 50.0 50.0 50.0 50.0	95.3 96.6 97.5 93.1 91.5 92.7 94.4 96.3 106 90.4	Acceptance Range 85 - 115 85 - 115
Parameter Arsenic Barium Cadmium Chromium Mercury Nickel Selenium Antimony Lead Silver Thallium	ug/L ug/L ug/L ug/L ug/L ug/L ug/L ug/L	2.00 2.00 2.00 2.00 2.00 2.00 2.00 2.00	47.6 48.3 48.7 46.6 4.58 46.4 47.2 48.1 53.2 45.2 48.1	50.0 50.0 50.0 50.0 5.00 50.0 50.0 50.0 50.0 50.0	95.3 96.6 97.5 93.1 91.5 92.7 94.4 96.3 106 90.4 96.2	Acceptance Range 85 - 115 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.

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Client: E2 Consulting Engineers, Inc.	•	PG&E Topock Project 428648.IM.CS.EX.AC	Page 15 of 32 Printed 11/3/2014
Matrix Spika			Lab ID = 245064 004

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 - 12 <del>5</del>
Molybdenum	ug/L	1.00	70.2	68.9(50.0)	102	75 - 125
Matrix Spike Duplicate						Lab ID = 815064-001
Matrix Spike Duplicate Parameter	Unit	DF	Result	Expected/Added	Recovery	Lab ID = 815064-001 Acceptance Range
	Unit ug/L	DF 1.00	Result 51.4	Expected/Added 50.0(50.0)	Recovery 103	
Parameter				•	•	Acceptance Range
Parameter Arsenic	ug/L	1.00	51.4	50.0(50.0)	103	Acceptance Range 75 - 125
Parameter Arsenic Barium	ug/L ug/L	1.00 1.00	51.4 63.0	50.0(50.0) 61.5(50.0)	103 103	Acceptance Range 75 - 125 75 - 125
Parameter Arsenic Barium Cadmium	ug/L ug/L ug/L	1.00 1.00 1.00	51.4 63.0 46.6	50.0(50.0) 61.5(50.0) 50.0(50.0)	103 103 93.3	Acceptance Range 75 - 125 75 - 125 75 - 125
Parameter Arsenic Barium Cadmium Chromium	ug/L ug/L ug/L ug/L	1.00 1.00 1.00 1.00	51.4 63.0 46.6 44.2	50.0(50.0) 61.5(50.0) 50.0(50.0) 50.0(50.0)	103 103 93.3 88.5	Acceptance Range 75 - 125 75 - 125 75 - 125 75 - 125
Parameter Arsenic Barium Cadmium Chromium Mercury	ug/L ug/L ug/L ug/L ug/L	1.00 1.00 1.00 1.00 1.00	51.4 63.0 46.6 44.2 4.80	50.0(50.0) 61.5(50.0) 50.0(50.0) 50.0(50.0) 5.00(5.00)	103 103 93.3 88.5 95.9	Acceptance Range 75 - 125 75 - 125 75 - 125 75 - 125 75 - 125
Parameter Arsenic Barium Cadmium Chromium Mercury Nickel	ug/L ug/L ug/L ug/L ug/L ug/L	1.00 1.00 1.00 1.00 1.00 1.00	51.4 63.0 46.6 44.2 4.80 44.2	50.0(50.0) 61.5(50.0) 50.0(50.0) 50.0(50.0) 5.00(5.00) 50.0(50.0)	103 103 93.3 88.5 95.9 88.4	Acceptance Range 75 - 125 75 - 125 75 - 125 75 - 125 75 - 125 75 - 125
Parameter Arsenic Barium Cadmium Chromium Mercury Nickel Selenium	ug/L ug/L ug/L ug/L ug/L ug/L	1.00 1.00 1.00 1.00 1.00 1.00	51.4 63.0 46.6 44.2 4.80 44.2 49.7	50.0(50.0) 61.5(50.0) 50.0(50.0) 50.0(50.0) 5.00(5.00) 50.0(50.0)	103 103 93.3 88.5 95.9 88.4 99.5	Acceptance Range 75 - 125 75 - 125 75 - 125 75 - 125 75 - 125 75 - 125 75 - 125
Parameter Arsenic Barium Cadmium Chromium Mercury Nickel Selenium Antimony	ug/L ug/L ug/L ug/L ug/L ug/L ug/L	1.00 1.00 1.00 1.00 1.00 1.00 1.00	51.4 63.0 46.6 44.2 4.80 44.2 49.7 53.3	50.0(50.0) 61.5(50.0) 50.0(50.0) 50.0(50.0) 5.00(5.00) 50.0(50.0) 50.0(50.0)	103 103 93.3 88.5 95.9 88.4 99.5 107	Acceptance Range 75 - 125 75 - 125 75 - 125 75 - 125 75 - 125 75 - 125 75 - 125 75 - 125
Parameter Arsenic Barium Cadmium Chromium Mercury Nickel Selenium Antimony Lead	ug/L ug/L ug/L ug/L ug/L ug/L ug/L ug/L	1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00	51.4 63.0 46.6 44.2 4.80 44.2 49.7 53.3 46.4	50.0(50.0) 61.5(50.0) 50.0(50.0) 50.0(50.0) 5.00(5.00) 50.0(50.0) 50.0(50.0) 50.0(50.0)	103 103 93.3 88.5 95.9 88.4 99.5 107 92.8	Acceptance Range 75 - 125 75 - 125
Parameter Arsenic Barium Cadmium Chromium Mercury Nickel Selenium Antimony Lead Silver	ug/L ug/L ug/L ug/L ug/L ug/L ug/L ug/L	1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00	51.4 63.0 46.6 44.2 4.80 44.2 49.7 53.3 46.4 42.2	50.0(50.0) 61.5(50.0) 50.0(50.0) 50.0(50.0) 5.00(50.0) 50.0(50.0) 50.0(50.0) 50.0(50.0) 50.0(50.0)	103 103 93.3 88.5 95.9 88.4 99.5 107 92.8 84.3	Acceptance Range 75 - 125 75 - 125 75 - 125 75 - 125 75 - 125 75 - 125 75 - 125 75 - 125 75 - 125 75 - 125 75 - 125
Parameter Arsenic Barium Cadmium Chromium Mercury Nickel Selenium Antimony Lead Silver Thallium	ug/L ug/L ug/L ug/L ug/L ug/L ug/L ug/L	1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00	51.4 63.0 46.6 44.2 4.80 44.2 49.7 53.3 46.4 42.2 46.6	50.0(50.0) 61.5(50.0) 50.0(50.0) 50.0(50.0) 5.00(5.00) 50.0(50.0) 50.0(50.0) 50.0(50.0) 50.0(50.0) 50.0(50.0)	103 103 93.3 88.5 95.9 88.4 99.5 107 92.8 84.3 93.2	Acceptance Range 75 - 125 75 - 125 75 - 125 75 - 125 75 - 125 75 - 125 75 - 125 75 - 125 75 - 125 75 - 125 75 - 125 75 - 125 75 - 125 75 - 125



Client: E2 Consulting Engineers, Inc.			Project Name: Project Numbe	Page 25 of 32 Printed 11/3/2014		
Serial Dilution						Lab ID = 815060-002
Parameter Barium	Unit ug/L	DF 5.00	Result 25.6	Expected 27.2	RPD 5.90	Acceptance Range 0 - 10
Chromium Serial Dilution	ug/L	50.0	570	563	1.19	0 - 10 Lab ID = 815060-003
Parameter Molybdenum	Unit ug/L	DF 50.0	Result 90.5	Expected 87.6	RPD 3.31	Acceptance Range 0 - 10



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Parameter		Unit '	Ana	lyzed	OF	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	F	RPD	Accepta	ance Range
Cobalt	ug/L	1.00	ND	0		0	0 - 20	
Copper	ug/L	1.00	ND	0		0	0 - 20	· .
Low Level Calibration	on Verification							
Parameter	Unit	DF	Result	Expected	F	Recovery	Accepta	ance Range
Cobalt	ug/L	1.00	0.197	0.200		98.6	70 - 130	0
Copper	ug/L	1.00	0.524	0.500		105	70 - 13	0
Lab Control Sample	9							
Parameter	Unit	DF	Result	Expected	F	Recovery	Accepta	ance Range
Cobalt	ug/L	1.00	50.4	50.0		101	85 - 11	5
Copper	ug/L	1.00	51.7	50.0		103	85 - 11	5
Matrix Spike							Lab ID =	815064-001
Parameter	Unit	DF	Result	Expected/Adde	ed F	Recovery	•	ance Range
Cobalt	ug/L	1.00	50.4	50.0(50.0)		101	75 - 12	
Copper	ug/L	1.00	45.2	50.0(50.0)		90.5	75 - 12	
Matrix Spike Duplic	ate						Lab ID =	815064-001
Parameter	Unit	DF	Result	Expected/Adde	ed F	Recovery	Accepta	ance Range
Cobalt	ug/L	1.00	49.9	50.0(50.0)		99.8	75 - 12	
Copper	ug/L	1.00	45.8	50.0(50.0)		91.7	75 - 12	
MRCCS - Seconda	ry							
Parameter	Unit	DF	Result	Expected	F	Recovery	•	ance Range
Cobalt	ug/L	1.00	19.8	20.0		99.2	90 - 11	
Copper	ug/L	1.00	19.6	20.0		97.8	90 - 11	0



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Metals by EPA 200.8, To	Parameter			102114B-ICPMS1	· NADI	D1	Decuit
		Unit		lyzed DF		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	Accepta	ance Range
Beryllium	ug/L	2.00	ND	0	0	0 - 20	
Low Level Calibration	n Verification	1					
Parameter	Unit	DF	Result	Expected	Recovery	Accepta	ance Range
Beryllium	ug/L	1.00	0.198	0.200	98.8	70 - 130	כ
Lab Control Sample							
Parameter	Unit	DF	Result	Expected	Recovery	Accepta	ance Range
Beryllium	ug/L	2.00	45.9	50.0	91.9	85 - 11	5
Matrix Spike						Lab ID =	815064-001
Parameter	Unit	DF	Result	Expected/Added	Recovery	Accepta	ance Range
Beryllium	ug/L	2.00	46.0	50.0(50.0)	92.1	75 - 12	5
Matrix Spike Duplica	te					Lab ID =	815064-001
Parameter	Unit	DF	Result	Expected/Added	Recovery	Accepta	ance Range
Beryllium	ug/L	2.00	45.4	50.0(50.0)	90.9	75 - 12	5
MRCCS - Secondary	/						
Parameter	Unit	DF	Result	Expected	Recovery	Accepta	ance Range
Beryllium	ug/L	1.00	19.9	20.0	99.6	90 - 110	)
MRCVS - Primary							
Parameter	Unit	DF	Result	Expected	Recovery	Accepta	ance Range
Beryllium	ug/L	1.00	19.4	20.0	97.0	90 - 110	כ
MRCVS - Primary							
Parameter	Unit	DF	Result	Expected	Recovery	Accepta	ance Range
Beryllium	ug/L	1.00	19.0	20.0	94.8	90 - 11	כ
Interference Check S	Standard A						
Parameter	Unit	DF	Result	Expected	Recovery	Accepta	ance Range
Beryllium	ug/L	1.00	ND	0	-		,



Client: E2 Consulting En	Client: E2 Consulting Engineers, Inc		oject Name: oject Numbe	•	PG&E Topock Project 428648.IM.CS.EX.AC			Page 30 of 32 Printed 11/3/2014	
Interference Check S	Standard A						•		
Parameter Beryllium Interference Check S	Unit ug/L Standard AB	DF 1.00	Result ND	Expected 0	F	Recovery	Acceptance Range		
Parameter Beryllium Interference Check S	Unit ug/L	DF 1.00	Result ND	Expected 0		Recovery	Acceptance Range		
Parameter Beryllium	Unit ug/L	DF 1.00	Result ND	Expected 0	Recovery		Acceptance Range		
Total Dissolved Solids	by SM 2540	0 C	Batch	1410135					
Parameter		Unit	Ana	lyzed	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 Total Dissolved Solids Duplicate	Unit mg/L	DF 1.00	Result ND				- Lab ID, <del>≡</del>	815060-003	
Parameter Total Dissolved Solids Lab Control Sample	Unit mg/L	DF 1.00	Result 19100	Expected 19100		RPD 0.105	0 - 10		
Parameter	Unit	DF	Result	Expected	F	Recovery	Accepta	ance Range	

1.00

481

500

96.2

90 - 110

mg/L

**Total Dissolved Solids** 



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Batch 10NH314A Ammonia Nitrogen by SM4500-NH3D Unit MDL Parameter DF RL Result Analyzed 815060-001 Ammonia as N mg/L 10/16/2014 1.00 0.0318 0.500 ND 10/16/2014 1.00 ND 815060-002 Ammonia as N 0.0318 0.500 mg/L Method Blank Parameter Result Unit DF 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 DF Parameter Unit Result Expected Recovery Acceptance Range Ammonia as N 7.39 8.00 92.4 90 - 110 mg/L 1.00 Lab ID = 815060-001 Matrix Spike Parameter DF Result Expected/Added Unit Recovery Acceptance Range Ammonia as N mg/L 9.01 10.0(10.0) 90.1 75 - 125 1.00 MRCCS - Secondary Parameter Unit DF Result Expected Acceptance Range Recovery 6.53 6.00 Ammonia as N mg/L 1.00 109 90 - 110 MRCVS - Primary Parameter Unit DF Acceptance Range Result Expected Recovery Ammonia as N mg/L 1.00 5.58 6.00 92.9 90 - 110 MRCVS - Primary Parameter Unit DF Recovery Acceptance Range Result Expected Ammonia as N mg/L 1.00 5.60 6.00 93.3 90 - 110



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Turbidity by SM 2130 B			Batch	1410126				
Parameter	ng tha diagnostic age na an manganas,	Unit	Anal	lyzed	DF	MDL	RL	Result
815060-001 Turbidity		NTU	10/08	10/08/2014		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	F	RPD	Accepta	nce Range
Turbidity	NTU	1.00	ND	0		0	0 - 20	
Lab Control Sample			,				wie odkiałowa te (	
Parameter	Unit	DF	Result	Expected	F	Recovery	Accepta	nce Range
Turbidity	NTU	1.00	7.23	8.00		90.4	90 - 110	
Lab Control Sample D	uplicate							
Parameter	Unit	DF	Result	Expected	F	Recovery	Accepta	nce Range
Turbidity	NTU	1.00	7.53	8.00		94.1	90 - 110	

Respectfully submitted,

TRUESDAIL LABORATORIES, INC.

√ 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	11
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 Dur	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	11
4J0134-01 Dur	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 =

 $\left(\frac{A-B}{C}\right) x \mid 0^6$ 

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

Dunlicate Determinations Difference Summary

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

LCS Recovery

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

P = Percent recovery.

LC= Measured LCS value (ppm).

LT = Theoretical LCS value (ppm).

**Duplicate Determination Difference** 

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

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

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

C = Average weight in (g).

Maksim G.

Jenny T.

Analyst Printed Name

Reviewer Printed Name

### 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	







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-489]

TURNAROUND TIME 10 Days

DATE 10/07/14 PAGE 1 OF 1

																		· – <u> </u>	0,01,	140L 1 OF 1
COMPANY	CH2M HILL /E2	2					$\overline{}$	7	<u> </u>	7	7	7	<u>3</u> /	7	7	7	7		7	
PROJECT NAME	PG&E Topock	IM3						/ ċ	45.				g /							COMMENTS
PHONE	530-229-3	303	FAX 530	-339-3303				200,8			/	VILO. 8) See List 7		/ /	\*	/	/	/		/ / /
ADDRESS	155 Grand Ave	Ste 1000	<del></del>				'&/	\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\	' /	/		8/	/ /	' /.	, 804	/	_ /	<i>'</i> /	/ /	
	Oakland, CA 94		<del></del>					§/			/ ξ		ह} <b>/</b>	/≷	3/					AINE
P.O. NUMBER	428648.IM.CS.	БХ.AC	Λ			/ <sub>de</sub> 2/	\ !kisi				\g \\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\	/ ଛୁ	1/4	10/	/_	/g;	/g 88/0	/		
SAMPLERS (SIGNA	11/2		ne			71116 25 (218.6) Lab E:	EC (13)	(10,0)	7urb (2)	(2,130)	Ammo (200.7.	Anion (4500-Nuc	Anjon (300.0) F	70C (53 (300.0) F. NO.2	0/	No2 (4)	(4500-NO2B)			THE ROPE CONTRINSERS
SAMPLE I.D.		DATE	TIME	DESCRIPTION	\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\	Title	$F_{C_{i}}$	Saz	Zut.	Total A	Ama	Anio	Anio		7ofal	\\\dig{\disp}			NUN	
SC-700B-W	DR-489	10/07/14	0800		Х		Х	Х	Х	Х	Х		Х			Х			4	M=6)
SC-100B-W	/DR-489	10/07/14	0800		Х		Х	Х	Х	Х	Х		Х			Х			4	M1=6 \$ 200.7/
SC-701-W	DR-489	10/07/14 (	0800		Х	Х	Х	Х				Х			Х	$\neg$			4	7.00.8
														_						pr = 6)
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						Δ		eren jareti seca lipses economican	H	10 10					_					
				orteno			Baseline Ber	me		8 8										
				200-0-0-0-0-0-0-0-0-0-0-0-0-0-0-0-0-0-0	Suestina	6/	<i>1</i> e				Ü								12	TOTAL NUMBER OF CONTAINERS
				,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,														•		

CHAIN OF CUSTODY SIGNATURE RECORD	SAMPLE CONDITIONS
Signature (Relinquished) / No King Printed Name OHRIS LENZ Agency CHZM HI	
Signature (Received) Signature Printed Name THANH No Company/ Signature Printed Company/ Printed Company/	
(Relinquished) Edical Name THATEST No Agency	Date/ ( Ø ~ 7 - 1 4 - 1 5 SPECIAL REQUIREMENTS:
Received Name Albands Wood Agency 771	Date/ Time 10-7-14 1855  The metals include: Cr, Al, Sb, As, Ba, B, Cu, Pb, Mn,
Signature Printed Company/ (Relinquished) Name Agency	Date/ Time  Mo, Ni, Fe, Zn  Please Provide a preliminary Result for the Cr6 and
Signature Printed Company/ (Received) Name Agency	Date/ Time  Tokke a preliminary Result for the Cro and TDS ASAP.

# 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
9/3//4	1470023-001	7-00	2 ml/ 100 ml	9.5	8.00	NE
	V -02					
	1450024-01					
V	1 -02	V	1	₩	<u> </u>	<u> </u>
9/10/14	1410193-01	7.00	2ml j looml	9.5	7,30	NE
	1470235-01	7.00	2ml/100 ml	9.5	7:40	NE
9024114	14T0345-01	7.00	2ml/100ml	9.5	715	NE
0101114	14 J0004-01	7.00	2mc/100 ml	9.5	7:10	WE
10/04/4	1470021-1	1	V	U	V	$\underline{\hspace{1cm} V}$
•	1470097-1	6.00	2ml/100ml	9.5	7.55	NE
	V -2					
	MJ0098-1					
	1-2		/			
	V-3		V	V	<b>Y</b>	V
10108/14	MJ099-01	Suge				NE
•						
					·	
_						
					c :	

NZ

10/09/14

 $\mathcal{N}$ 



Turbidity/pH Check

			Turbi	dity/pH C	Check			
Sample Number	urbidity	рН	Date	Analyst	Need Digest (Y/N)	Time of Adjustment to pH 2	Date/Time of 2nd pH check	Comments
145 5081-02	21	22	10/7/14	ES	Y-25			
1450082-06	ì	1	1	1	1			
14JW86-02								
142087.02							·	
1450088-02								
145 1059 - 01-64					. /			- 2,4 TU>
147 5090-02	1				<b>V</b>			
14 50003 -(01,-02-04)	21	>2	10/8/14	Tuy	No	10:05	•	
1450104-01	<1	>2	L		1.	1		
145097-61,-02)	<1	>2	10/8/14	m	yes			
1450098-(01,-02,-08)	< 1	72	1	Ţ	yes	10:10		
	>(	< 2	10/8/14	an	4 e.5			
145 0094 (01-02)	21	72	10/8/14	Ph Es	yes	1:W		Filterather
	>/	<2	- m					, ,
1450128 (01, -02)			10/9/14		_		,	
1450120(-10,-11,-12)	<1	>2	10/9/14	Tra	NO	14:20		
1450128/01,-02)	>/	< 2			yes			
1450129 -02								
1470130-02								
1450131-06								
14 +0134-01	< (	72	1	<i>\</i>	NO 5101	61/4:20		
1470145 (0-1-9)	) 41	72	10/10/14	ES	NO SION	5:00		
1470128(-01-02)	71	12	1		yes			
1450129-02	1				1			
1450170-02								
1450171-02	1	V						
145172701-02)	71	72			V			
11170141-01	21	$\downarrow$		1	NO			
1450141-01	4	42			Yes			
1450149-02	71	1			ì			
10-0210 741	41						,	
151-02	1							-
152-01								
153-02							,	
154-01			1	V	T -			
1450116-2	71	72	10/12/14	EL	Yes			
1 - / II	>1	<u>ر ک</u>	10/14/14	m	Yes			
1450184-01	1			1				
1450185-01	1							
14T0 189-06	41	> 2	10/11/14		NO	(1:00		
1 192 145	>1	< 2	10/15/14	7m	Yes			
1450194-07			10.	-11				
1450194-02	1 1							
1450203-02								
	_ =							

- 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: Project Number:

Sean Condon 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

Logged In By:

Luda Shabunina

Date Received:

10/07/2014 18:35

Date Logged In:

**Expires** 

TAT

10/08/2014 07:22

Samples Received at:

4.2°C Chain of Custody re Yes

Letter (if sent) mate No Requested analyses

Samples intact? Yes Custody seals (if an No

Analyses within hol- Yes

Samples received in Yes

Analysis

14J0098-01	SC-700B-WDR-489	[Water]	Sampled 10/07/2014 08:00
(GMT-08:00	)) Pacific Time (US &	;	1

Due

Nitrite	10/17/2014 12:00	7	10/00/0011 00 00
Al-200.7	–	7	10/09/2014 08:00
	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

### WORK ORDER

### 14J0098

Truesdail Laboratories, Inc

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

Project Manager:

Sean Condon

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

**Project Number:** 

PGE-2152

Troject. Topock IIvisriani	I- WDR		Project Number:	PGE-2152		
Analysis	Due	ТАТ	Expires	Comments		
14J0098-01 SC-700B-WI (GMT-08:00) Pacific Time	OR-489 [Water] Sampled e (US &	1 10/07/20	14 08:00			
Sb-200.8	10/17/2014 12:00	7	04/05/2015 08:00		• .	
14J0098-02 SC-100B-WE (GMT-08:00) Pacific Time	DR-489 [Water] Sampled e (US &	I 10/07/20	14 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			
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		<b>'.</b>	
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			

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

### 14J0098

### Truesdail Laboratories, Inc

Client: E2 Consulting Engineers, Inc.

Project: Topock IM3Plant-WDR

Project Manager:

Sean Condon

PGE-2152 Project Number:

Analysis	Due	TAT	Expires	Comments
14J0098-03 SC-701-WDR Pacific Time (US &	8-489 [Water] Sampled 1	10/07/2014	1 08:00 (GMT-08:00	)
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	

10/8/14 Date

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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.



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

**EXCELLENCE IN INDEPENDENT TESTING** 

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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

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

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

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Laboratory No.: 815061

Date Received: October 7, 2014

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.: PGEIM11111001

## **Analytical Results Summary**

Lab I.D. Sa	ample I.D. Sa	ample Time	SW 7199 Hexavalent	EPA 300.0 Fluoride	SM 2540 B % Moisture	
			Chromium <b>mg/kg</b>	mg/kg	%	
815061 SC	C-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.



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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.: PGEIM11111001 Laboratory No.: 815061

Date Received: October 7, 2014

### **Analytical Results Summary**

METALS ANALYSIS: Total Metal Analyses as Requested

Lab I.D.	Sample ID	Date of Analysis: Time Coll.		Antimony SW 6010B 10/13/14 mg/kg	Arsenic SW 6010B 10/13/14 mg/kg	Barium SW 6010B 10/13/14 mg/kg	Beryllium SW 6020A 10/22/14 mg/kg	Cadmium SW 6010B 10/13/14 mg/kg	Chromium SW 6010B 10/13/14 mg/kg	Cobalt SW 6010B 10/13/14 mg/kg	Copper SW 6010B 10/31/14 mg/kg	Lead SW 6010B 10/31/14 mg/kg
815061	SC-Sludge-WDF	R-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 SW 6010B 10/13/14 mg/kg	Mercury SW 6020A 11/04/14 mg/kg	Molybdenum SW 6010B 10/13/14 mg/kg	Nickel SW 6010B 10/13/14 mg/kg	Selenium SW 6010B 10/13/14 mg/kg	Silver SW 6010B 10/13/14 mg/kg	Thallium SW 6010B 10/13/14 mg/kg	Vanadium SW 6010B 10/13/14 mg/kg	Zinc SW 6010B 10/13/14 mg/kg	
815061	SC-Sludge-WDF	R-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

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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**

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

**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
Con	c of	Added	Measure	d Theoretica	al	

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.

Hona Nassimi, Manager Analytical Services

**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

Sample: One (1) Soil Sample Project Name: PG&E Topock Project

Project No.: 428648.IM.CS.EX.AC P.O. No.: PGEIM11111001 REPORT

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**

 TLI I.D.
 Field I.D.
 Sample Time
 Units
 Results

 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, Manager
Analytical Services

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Established 1931

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### 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**

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

**QA/QC Summary** 

Relative

	QC STE	11.11.1	Number	Concentra	ition	Concentration		on l		Percent Difference	limits	Control	
	Duplio	ate 1	4J0098-2	1.80			1.79	0.33%	≤ 20%	Yes			
QC Std I.D.	Lab Number	Conc.of unspiked sample	Dilution Factor	Added Spike Conc.	M Amo	IS ount	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	0.0	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

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

Laboratory No.: 815061

Reported: November 7, 2014 Collected: October 7, 2014 Received: October 7, 2014 Analyzed: See Below

### REPORT

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

Client: E2 Consulting Engineers, Inc.

155 Grand Ave. Suite 1000

### **Analytical Results**

SAMPLE ID:	SC-Sludge-WDR-489	Time Co	llected:	10:00		LAB ID	: 815061	
		Reported					Date	Time
Parameter	Method	Value	DF	Units	RL	Batch	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.

Mona Nassimi, Manager Analytical Services

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Established 1931

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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**

			DIGES	TED 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%

INTERFERENCE CHECK STANDARD (ICS A+B #1)	INTERFERENCE CHECK STANDARD (ICS A+B #2)

Parameter	Method	Units	ICS	ICS	%	Control	ICS	ICS	%	Control
			Obs.	Theo.	Rec.	Limits	Obs.	Theo.	Rec.	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 DUPLIC				
Parameter	Method	Units	LCS	LCS	%	Control	SAMPLE	SAMPLE	DUP	%	Precision Control
			Obs.	Theo.	Rec.	Limits	ID	RESULT	RESULT	RPD	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
Challium	SW 6010B	mg/kg	2.07	2.00	103%	85-115%	14J0099-01	ND	ND	0.00%	≤20
(K)anadium	SW 6010B	mg/kg	2.23	2.00	112%	85-115%	14J0099-01	42.0	40.3	4.19%	≤20
Zinc	SW 6010B	ma/ka	2.00	2.00	100%	85-115%	14J0099-01	32.9	31.0	5.88%	≤20



Accuracy

#### **MATRIX SPIKE**

											,
	_			Sample		Spike	Total Amt.	Theo.	MS	%	Control
Sample ID	Parameter	Method	Units	Result	DF	Level	of Spike	Value	Obs.	Rec.	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%

179

203

137

144

145

210

208

98.1%

91.7%

80.0%

84.4%

84.7%

98.2%

103%

Accuracy

75-125%

75-125%

75-125%

75-125%

75-125%

75-125%

75-125%

9.22%

11.4%

25.5%

12.5%

8.97%

11.1%

8.24%



SW 6010B

#### Report Continued

				Sample		Spike	Total Amt.	Theo.	MS	%	Control	%
Sample ID	Parameter	Method	Units	Result	DF	Level	of Spike	Value	Obs.	Rec.	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%

2.00

2.00

2.00

2.00

2.00

2.00

2.00

11.1

46.2

0.00

0.00

0.00

42.0

32.9

mg/kg

mg/kg

mg/kg

mg/kg

mg/kg

mg/kg

mg/kg

85.4

85.4

85.4

85.4

85.4

85.4

85.4

171

171

171

171

171

171

171

ND: Not detected, or below limit of detection.

DF: Dilution Factor

14J0099-01 Molybdenum

14J0099-01 Nickel

14J0099-01 Silver

14J0099-01 Zinc

14J0099-01 Selenium

14J0099-01 Thallium

14J0099-01 Vanadium

MATRIX SPIKE DUPLICATE

Respectfully submitted, TRUESDAIL LABORATORIES, INC.

182

217

171

171

171

213

204

Mona Nassimi, Manager Analytical Services



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

### **Dry Weight Calculations**

		Diy w	eigni Calcul	ali0113			
						Calculated:	
						Sample I.D.	
	Sample Result Wet Weight	Dilution Factor	% Moisture	Sample Result Dry* Weight	Reported Value	Reporting Limit Wet Weight	Reporting Limit Dry Weight
	mg/kg		%	mg/kg	mg/kg	mg/kg	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
							ì.
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 = [Sample<sub>ww</sub> / (100-%Moisture)]\*100

where:

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

### **Dry Weight Calculations**

Date Calculated: 11/7/2014

	Sample			Sample		Reporting	Donorting
	Result			Result		Limit	Reporting
	Wet	Dilution	% Moisture	Dry*	Reported	Wet	Limit
	Weight	Factor	// moistare	Weight	Value	wet Weight	Dry
	mg/kg	i actor	%	mg/kg	mg/kg	mg/kg	Weight
Sample Duplicate: 14J0099-01			,		nig/kg	mg/kg	mg/kg
Antimony	19.84	2.00	54.8	43.8695	43.9	E 404E	40.4
Arsenic	1,964	2.00	54.8	4.3427	43.9 ND	5.4915 1.5690	12.1
Barium	29.63	2.00	54.8	65.5169			5.00
Beryllium	ND	20.0	54.8	ND	65.5	1.5690	10.0
Cadmium	3.918	2.00	54.8		ND	0.7845	1.73
Chromium	1310	10.0		8.6633	8.66	0.7845	1.73
Cobalt	2.041	2.00	54.8	2896.6280	2900	3.9225	8.67
Copper	60.71		54.8	4.5130	ND	0.7845	10.0
Lead		2.00	54.8	134.2399	134	3.1380	6.94
Manganese	0.9302	2.00	54.8	2.0568	ND	0.7845	5.00
	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
Matrix Spike: 14J0099-01							
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	2.20
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	10.5
Copper	164.8	2.00	54.8	364.4002	364	3.7829	
Lead	72.36	2.00	54.8	160.0000	160	0.9457	8.36
Manganese	292.3	2.00	54.8	646.3239	646	3.7829	5.00
Mercury	0.322550	10.0	54.8	0.713212	0.713		8.36
Molybdenum	106.8	2.00	54.8			0.09948	0.220
Nickel	118.1	2.00	54.8	236.1526	236	3.7829	10.0
Selenium	85.08	2.00		261.1388	261	0.9457	5.00
Silver	90.72	2.00	54.8	188.1260	188	0.9457	5.00
Thallium			54.8	200.5970	200	0.9457	5.00
Vanadium	87.59	2.00	54.8	193.6761	194	4.7286	10.5
Zinc	122.7	2.00	54.8	271.3101	271	0.9457	5.00
ZIIIO	120.2	2.00	54.8	265.7822	266	1.8914	10.0

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

where:

Sampleww = 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: 14J00	099-01						
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 =  $[Sample_{ww} / (100-\%Moisture)]*100$ 

where:

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

RI	JESE	)AIL	LAE	3OR	ATO	RIES,	INC.

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### TOTAL SOLIDS BY SM 2540 B

Date of Analysis: 10/13/14

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

Lab No.	Dish Number	Weight of dish, g	Wt of wet sample, g	Wt of wet sample+ dish, g	Wt of dried residue+dish,g	Wt of dried residue, g	% Total Solids	% Moisture
14J0099-01	1	1.2563	2.1667	3.4230	2.2362	0.9799	45.225	54.775
14J0099-01D	2	1.2458	2.1144	3.3602	2.2298	0.9840	46.538	53.462
								Table 1
			-					
				Wild S				
				10000000000000000000000000000000000000				
				4 7 70 75		The fact of the second	V. 41 (1995) 1999	

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

% Total Solids =

(A-B)\*100 =

Weight of dried residue x 100
Weight of wet sample

Where:

A = Weight of dried Residue + Dish, g

B = Weight of dish, g

C = Weight of wet sample + Dish, g

Naheed

Analyst Name

Analyst Signature

Maksim

Reviewer Name

Reviewer Signature

815061/14/0099



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-489]

TURNAROUND TIME 10 Days

DATE 10/07/14 PAGE 1 OF

										_								· – <u>-</u> -	0,017		- 17 AGE	'	OF <u>1</u>
COMPANY	CH2M HILL / E	2									$\overline{}$	/		$\overline{}$	1	$\overline{}$	7	1	$\overline{}$		7		
PROJECT NAME	PG&E Topock	IM3																		//		COMME	ENTS
PHONE	530-229-3	303	FAX _530	)-339-3303			/	/	. (includes 1.			/	/	/	/	/	/	/		/ /			
ADDRESS	155 Grand Ave	Ste 1000					' /	/ /		' /	' /		/ /	/ /	/		' /	/	/ /	88	/		
	Oakland, CA 9	4612					/4		§//	_ /													
P.O. NUMBER	428648.IM.CS.	EX.AC				12/4	\_A_0,			) N					/	/	/	/		ĮŠ			
SAMPLERS (SIGNA	ATURE	**************************************			1	Bioge (300.0) F	Metal Schr Acute	Cr6 (72, 10B) Title 2	(86)	10010B) Mp	$^{\prime}$ $/$	$^{\prime}$ $/$	$^{\prime}$ $/$	$^{\prime}$ $/$			' /			MEROF CONTAINERS			
SAMPLE I.D.		DATE	TIME	DESCRIPTION	Anic	$R_{io_{g}}$	'/sex	, 1/8	/ Ket		/			/	/	/		/					
SC-Sludge	-WDR-489	10/07/14	10'00	Sludge	Х		x	х	х									,	4				·
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																							<del></del>
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Simulation /	9 // /b			DY SIGNATUR		ECO	RD											SA	MPLE	E CONDITIO	 ONS	***	
Signature /	IIA	Printed	A	- Company	/ -				Dat	0/	16 -		,	7									

A				
	/ CHAIN OF CUSTO	DY SIGNATURE RECORD		SAMPLE CONDITIONS
Signature ///	Printed Aug.			J SAMPLE COMBITIONS
(Relinquished)	Name CHICLS	LENZ Agency CH2m Hil	Date/ 16 - 7 - 14 Time 14:00	RECEIVED COOL WARM 1 4,6% SF
Signature (Received)	Name THANH	NO Agency July (DAIL	Date/ 10-7-14 Time 4110	CUSTODY SEALED YES NO NO
Signature	Printed			CUSTODY SEALED YES NO D
(Relinquished)	Mak Name THANH	Company/ Agency	Date/ 10-17-74/	SPECIAL REQUIREMENTS:
Signature (Received)	Printed Alexon	// Company/	Date/	
	Marie 11/0001	Ache Woodgency TU	Time 107/4 1835	
Signature	Printed	Company/	Date/	
(Relinquished)	Name	Agency	Time	
Signature	Printed	Company/	Date/	
(Received)	Name	Agency	Time	

#### WORK ORDER

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

#### 14J0099

#### Truesdail Laboratories, Inc

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

Project Manager: Project Number:

Sean Condon 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

Logged In By:

Luda Shabunina

Date Received:

10/07/2014 18:35

Date Logged In:

10/08/2014 08:01

Samples Received at:

4.6°C Chain of Custody re Yes

Letter (if sent) mate No

Samples intact? Yes Custody seals (if an No

Analyses within hol-Yes

Requested analyses Samples received in Yes

**Analysis** Due

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

IC-F Anions Leaching Ext

Be-6010

Cd-6010

Co-6010

Cr-6010

Ag-6010

Se-6010

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TAT

As-6010 10/24/2014 12:00 Ba-6010 10/24/2014 12:00

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10/24/2014 12:00 Cr VI-7199 10/24/2014 12:00 10/24/2014 12:00 10/24/2014 12:00

Hg-6020 10/24/2014 12:00 Zn-6010 10/24/2014 12:00 Mn-6010 10/24/2014 12:00

Mo-6010 10/24/2014 12:00 Ni-6010 10/24/2014 12:00 Pb-6010 10/24/2014 12:00 Sb-6010 10/24/2014 12:00

TI-6010 10/24/2014 12:00 TS/Moisture/TVS 10/24/2014 12:00 V-6010

10/24/2014 12:00

10/24/2014 12:00

**Expires** 

10/21/2014 10:00

04/05/2015 10:00

04/05/2015 10:00

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10/08/2014 10:00

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10/14/2014 10:00

04/05/2015 10:00

Comments

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

04/05/2015 10:00



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.

to, Mona Nassimi

Manager, Analytical Services

Michael Z

Michael Ngo

Quality Assurance/Quality Control Officer

**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



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



Established 1931

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

Laboratory No.: 815064

Date Received: October 14, 2014

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.: PGEIM11111001

## **Analytical Results Summary**

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

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.

**EXCELLENCE IN INDEPENDENT TESTING** 



Established 1931

Page 1 of 16

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

Laboratory No. 815064

### 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: PGEIM11111001

Release Number:

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

Printed 11/2/2014

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			

Specific Conductivity - E	PA 120.1		Batcl	า 1410227				
Parameter	a y dalyina diya daribi	Unit	Ana	alyzed	DF	MDL	RL	Result
815064-001 Specific Conduct	ivity	umhos/	cm 10/16	6/2014	1.00	0.606	2.00	7170
Method Blank								
Parameter	Unit	DF	Result					
Specific Conductivity	umhos	1.00	ND					
Duplicate							Lab ID =	815074-002
Parameter	Unit	DF	Result	Expected	F	RPD	Accepta	ance Range
Specific Conductivity	umhos	1.00	931	927		0.430	0 - 10	
Lab Control Sample								
Parameter	Unit	DF	Result	Expected	F	Recovery	Accepta	ance Range
Specific Conductivity	umhos	1.00	730	706		103	90 - 110	)
MRCCS - Secondary								
Parameter	Unit	DF	Result	Expected	F	Recovery	Accepta	ance Range
Specific Conductivity	umhos	1.00	730	706		103	90 - 110	)
MRCVS - Primary								
Parameter	Unit	DF	Result	Expected	F	Recovery	Accepta	ance Range
Specific Conductivity	umhos	1.00	1090	1000		109	90 - 110	)
MRCVS - Primary								
Parameter	Unit	DF	Result	Expected	F	Recovery	Accepta	ance Range
Specific Conductivity	umhos	1.00	1090	1000		109	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

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

Page 2 of 16 Printed 11/2/2014

Chrome VI by EPA 218.6			Batch	1410255				
Parameter		Unit	Ana	lyzed C	F MDL	RL	Result	
815064-001 Chromium, Hexa	valent	ug/L	10/15	5/2014 13:26 1.	0.00600	0.20	ND	
Method Blank								
Parameter Chromium, Hexavalent	Unit ug/L	DF 1.00	Result ND					
Duplicate						Lab ID =	815064-001	
Parameter Chromium, Hexavalent Low Level Calibration	Unit ug/L	DF 5.00	Result 0.129	Expected 0.124	RPD 3.95	Accepta 0 - 20	ance Range	
			D = !!	F t d			_	
Parameter Chromium, Hexavalent Lab Control Sample	Unit ug/L	DF 1.00	Result 0.205	Expected 0.200	Recovery 103	70 - 130	ance Range )	
Parameter Chromium, Hexavalent Matrix Spike	Unit ug/L	DF 1.00	Result 5.10	Expected 5.00	Recovery 102	Acceptance Rang 90 - 110 Lab ID = 815064-00		
Parameter Chromium, Hexavalent Matrix Spike	Unit ug/L	DF 5.00	Result 5.00	Expected/Added 5.12(5.00)	Recovery 97.6	90 - 110	nce Range ) 815064-001	
Parameter Chromium, Hexavalent MRCCS - Secondary	Unit ug/L	DF 1.00	Result 1.13	Expected/Added 1.12(1.00)	Recovery 101	Accepta 90 - 110	ince Range )	
Parameter Chromium, Hexavalent MRCVS - Primary	Unit ug/L	DF 1.00	Result 5.10	Expected 5.00	Recovery 102	Accepta 90 - 110	ince Range )	
Parameter Chromium, Hexavalent	Unit ug/L	DF 1.00	Result 10.1	Expected 10.0	Recovery 101	Acceptà 95 - 105	ince Range	

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

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Client: E2 Consulting Engineers, Inc.

Project Name: PG&E Topock Project

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

Page 3 of 16 Printed 11/2/2014

Metals by EPA 200.8, T	otal		Batcl	h 101614A				
Parameter		Unit	Ana	alyzed	DF	MDL	RL	Result
815064-001 Chromium		ug/L	10/10	6/2014 16:44	1.00	0.0710	1.0	ND
Manganese		ug/L	10/16	6/2014 16:44	1.00	0.0600	0.50	6.1
Method Blank							0.00	<u> </u>
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 = 8	815064-001
Parameter	Unit	DF	Result	Expected	R	PD	Accenta	nce Range
Arsenic	ug/L	1.00	ND	0		0	0 - 20	nce range
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	

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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

			ojoot mambo	1. 420040.1101.00		Fillited 11/2/2014
Low Level Calibration	Verification	l				
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

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Client: E2 Consulting Eng	ineers, Inc.		Project Name: Project Number:	PG&E Topock Pro 428648.IM.CS.EX.		Page 5 of 16 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 - 12 <del>5</del>
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

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Client: E2 Consulting En	gineers, In		oject Name: oject Numbe	PG&E Topo r: 428648.IM.0	•	Printed 1	age 15 of 16 1/2/2014
Serial Dilution						Lab ID =	815060-002
Parameter Barium	Unit ug/L	DF 5.00	Result 25.6	Expected 27.2	RPD 5.90	0 - 10	ance Range
Chromium Serial Dilution	ug/L	50.0	570	563	1.19	0 - 10 Lab ID =	815060-003
Parameter Molybdenum	Unit ug/L	DF 50.0	Result 90.5	Expected 87.6	RPD 3.31	Accepta 0 - 10	ince Range
Total Dissolved Solids b		Unit	Ana	1410228 lyzed	DF MDL	RL	Result
815064-001 Total Dissolved S	Solids	mg/L	10/15	/2014	1.00 1.76	250	4340
Method Blank Parameter Total Dissolved Solids Duplicate	Unit mg/L	DF 1.00	Result ND			Lab ID =	815075-004
Parameter Total Dissolved Solids Lab Control Sample	Unit mg/L	DF 1.00	Result 385	Expected 370	RPD 3.97	Accepta 0 - 10	nce Range
Parameter Total Dissolved Solids	Unit mg/L	DF 1.00	Result 494	Expected 500	Recovery 98.8	Accepta 90 - 110	ance Range



Client: E2 Consulting Engineers, Inc.

Project Name: PG&E Topock Project

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

Printed 11/2/2014

Turbidity by SM 2130 B			Batch	1410257				
Parameter		Unit	Ana	llyzed	DF	MDL	RL	Result
815064-001 Turbidity		NTU	10/15	5/2014	1.00	0.0140	0.100	ND
Method Blank						V-0.00		
Parameter Turbidity	Unit NTU	DF 1.00	Result ND					
Duplicate							Lab ID =	815076-002
Parameter Turbidity	Unit NTU	DF 1.00	Result ND	Expected 0	F	RPD 0	Accepta 0 - 20	nce Range
Lab Control Sample								
Parameter Turbidity Lab Control Sample D	Unit NTU Juplicate	DF 1.00	Result 7.51	Expected 8.00		Recovery 93.9	Accepta 90 - 110	nce Range
Parameter Turbidity	Unit NTU	DF 1.00	Result 7.67	Expected 8.00		Recovery 95.9		nce Range

Respectfully submitted,

TRUESDAIL LABORATORIES, INC.

Mona Nassimi

Manager, Analytical Services

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### Total Dissolved Solids by SM 2540 C

#### **Calculations**

Batch: 1410228 Date Analyzed: 10/15/2014

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	71.6974	71.6974	71.6974	0.0000	No	0.0000	0.0	25.0	ND	1
14J0172-01A	100	66.7791	66.8234	66.8234	0.0000	No	0.0443	443.0	25.0	443.0	1
14J0172-02	100	78.1747	78.2167	78.2167	0.0000	No	0.0420_	420.0	25.0	420.0	11
14J0177-01D	100	69.7559	69.8075	69.8075	0.0000	No	0.0516	516.0	25.0	516.0	1
14J0177-02	100	79.4389	79.4929	79.4929	0.0000	No	0.0540	540.0	25.0	540.0	1
14J0214-02F	100	67.0103	67.0358	67.0355	0.0003	No	0.0252	252.0	25.0	252.0	1
14J0214-04F	100	75.7358	75.7730	75.7728	0.0002	No	0.0370	370.0	25.0	370.0	1
14J0217-01A	10	28.6679	28.7117	28.7113	0.0004	No	0.0434	4340.0	250.0	4340.0	1
14J0232-01B	50	58.9224	58.9547	58.9547	0.0000	No	0.0323	646.0	50.0	646.0	1
14J0232-02	100	74.6907	74.7271	74.7267	0.0004	No	0.0360	360.0	25.0	360.0	1
14J0244-01C	100	75.2629	75.3125	75.3125	0.0000	No	0.0496	496.0	25.0	496.0	1
14J0214-04 Dup	100	73.1147	73.1532	73.1532	0.0000	No	0.0385	385.0	25.0	385.0	1
LCS	100	71.9377	71.9873	71.9871	0.0002	No	0.0494	494.0	25.0	494.0	` 1
14J0244-02	100	79.1445	79.1997	79.1997	0.0000	No	0.0552	552.0	25.0	552.0	. 1
MDL Ver@5ppm	1000	164.9262	164.9331	164.9330	0.0001	No	0.0068	6.8	2.5	6.8	1
											-
14J0244-02 Dur	100	68.7532	68.8080	68.8080	0.0000	No	0.0548	548.0	25.0	548.0	1

Calculation as follows:

Filterable residue (TDS), mg/L =

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

Luboratory	Control Co	impic (Loc	o, oanma	J	
QC Std I.D.	Measurd Value, ppm	Theoretical Value, ppm	Percent Rec	Acceptance Limit	QC Within Control?
LCS	494.0	500	98.8%	90-110%	Yes
LCSD					

**Duplicate Determinations Difference Summary** 

Lab Number	Sample Weight, g	Sample Dup Weight, g	% RPD	Acceptance Limit	QC Within Control?
14J0214-04	0.0370	0.0385	2.0%	≤5%	Yes
14J0244-02	0.0552	0.0548	0.4%	≤5%	Yes

LCS Recovery

$$P = \left(\frac{LC}{LT}\right) \times 10$$

P = Percent recovery.

LC= Measured LCS value (ppm).

LT = Theoretical LCS value (ppm).

**Duplicate Determination Difference** 

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

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

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

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

C = Average weight in (g).

Maksim G.

Reviewer Printed Name

Reviewer Signature

Analyst Printed Name

Jenny T.

### Total Dissolved Solids by SM 2540 C

### TDS/EC CHECK

Batch: 1410228

Date Analyzed: 10/15/2014

Laboratory Number	tory Number EC		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

A.

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

### **CHAIN OF CUSTODY RECORD**

TURNA	ROUND	TIME
DATE	401441	

	truesdail.com	730-6462				[11/	/I3Pla	int-WI	DR-49	0]								RNARO		TIME 14		PAGE		/s OF	1
COMPANY	E2						7	7	7	7	7	7	7	7	7	7	7	7	7	7	_	7		***************************************	
PROJECT NAME	PG&E Topock																						CO	MENTS	i
PHONE	(530) 229-3303		FAX (530	) 339-3303	***************************************		/	/ /	/ /	/	/ /	/ /	/ ,	/ /	/			/ ,		/ 1	/ /				
ADDRESS	155 Grand Ave S	Ste 1000	Marianchica				<i>'</i> /.		_ /												83.				
	Oakland, CA 946	612			1	/2	,	: / 2	? /																
P.O. NUMBER	428648.IM.CS.EX.A	<i>q</i> /	TEAN	1_1_		6 Fillere	(8.00)	tance (	1	/	(08)	/	/	/ /	/ /	/ ,	/ ,	/ /	/ /	OFCONTAINE					
SAMPLERS (SIGNA	ATURE M	in fa				0.0) La			00 10 10 10 10 10 10 10 10 10 10 10 10 1	į	12 / I									6 X					
SAMPLE I.D.		DATE	TIME	DESCRIPTION	C. 8(2)	Total Most	Specific (200.8)	7DS (SM25.	/ /	Turbidity 16.		/	/	/ /	/ ,		/ ,	/ /	NUMBES						
SC-700B-WDF	₹-490	10/14/14	1400	Water	х	х	х	х		х									3		DV	=6	Czo	18. cm	<i></i>
									and American State of	0 TO THE POST OF T	t 1997 til en som til statistiken se	atamatika (Jaka Sanga Sanga Sanga		Sand of the land o	manual (Caronin Apala)	with one was super front grane.			3	тот	- Comment	era Lewes, elementario, s	LINE WITHOUT THE STATE OF	ITAINER	CAVIDADE SV E

Please Provide a preliminary Result for the TDS ASAP

HAIN OF CUSTODY SIGNATURE RECORD	
Similar Market M	SAMPLE CONDITIONS
(Relinquished) Why Way, Name CHRIS LEMZ Agency CHZm HILL	Date/ 10-14-14 Time RECEIVED COOL <b>□</b> WARM □ °F
Signature (Received) JAMPAN WWW Name Campy LD Company LD	Date/ (0-19-)9 Time (900 NO D
Signature (Relinquished) ANUTAN HOW Name (AMITON HOMAgency E. 2	Date/ W-14-/4 Time 1904, SPECIAL REQUIREMENTS:
(Received) Shaw Wgo Printed HANH NGO Agency TWANK INC.	Date/ 10 - 14 - 14 Time 1 SUO
Signature (Relinquished) Analy (Vas., Name TANA) Company/	Date/ ro - [ W-W Time / A & V
Signature (Received) And Anne Michael Name Michael Name Agency	Date/ 10/14/14 19.30
/	

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

Lab Number	Initial pH	Buffer Added (mL)	Final pH	Time Buffered	Initials
	7-00	2ml/100ml	9.5	8.00	NE
141,0024-01					
		<b>V</b>	- √	V	<u> </u>
I	7.00	2ml j looml	9.5	7:30	NE
[4]0238-01	7.00		9.5	7:40	NE
	7.00	2ml/100ml	9.5	715	NE
		2m6/100 ml	9.5	7:10	WE
1	r	ĺ V	l	$\bigvee$	$\dot{\nu}$
1	6.00	2ml/100ml	9.5	7:55	NE
		,			
V-3		<u> </u>	V	V	$\bigvee$
MJ0099-01	Stuge				NÉ
1450217-01	6.00	2ml/100ml	9.5	7.'30	NÉ
1470255-1	7.00	2 ml/ lound	9.5	8:30	NE
1 4		L V	V	J	L
		·			
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		·			
				e 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	
	1470023-01 1470024-01 1470024-01 1470028-01 1470345-01 1470021-1 1470097-1 1470098-1 1470098-1 1470098-1 1470099-01 1470099-01	147023-01 7.00  147024-01  1-02  147024-01  1-02  147023-01  7.00  147023-01  7.00  147023-01  7.00  1470021-1  1470098-1  1-2  1470098-1  1-2  1470098-01  1470098-01  1470098-01  1470098-01  1470098-01  1470098-01  1470098-01  1470098-01  1470098-01  1470098-01  1470098-01  1470098-01	1470023-01 7.00 2ml/100ml  1470024-01  1-02  1470024-01  1-02  1470232-01 7.00 2ml/100ml  1470232-01 7.00 2ml/100ml  1470345-01 7.00 2ml/100ml  1470021-1  1470021-1  1470098-1  1-2  1470098-01 Stuge  145047-01 6.00 2ml/100ml  1450255-1 7.00 2ml/100ml	1470023-01 7-00 2ml/100ml 9.5  1470024-01  1-02  147023-01 7.00 2ml/100ml 9.5  1470238-01 7.00 2ml/100ml 9.5  1470345-01 7.00 2ml/100ml 9.5  1470021-1 1 1 1  1470021-1 1 1 1  1470098-1 1 2 1  1470098-1 1 2 1  1470098-01 Stuge  1470255-1 7.00 2ml/100ml 9.5	1470023-01 7.00 2ml/100ml 9.5 8:00  1470024-01  1-02  1410193-01 7.00 2ml/100ml 9.5 7:30  1470235-01 7.00 2ml/100ml 9.5 7:40  1470345-01 7.00 2ml/100ml 9.5 7:15  1470021-1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1

NE 10/16/14 U



Turbidity/pH Check

			Turbi	dity/pH C	neck			, <u>, , , , , , , , , , , , , , , , , , </u>
Sample Number	Turbidity	рН	Date	Analyst	Need Digest (Y/N)	Time of Adjustment to pH 2	Date/Time of 2nd pH check	Comments
1450204-02	> 1	<2	10/15/14	Du	yes			
1400208-01								
1480209-02								
1450211-01		J						
1450214601,-028,-0	2) <1	> 2	10/15/14	bus	NO	10:25		
1450214(-045-046)								
1450 224-01								
1450216-01			\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \		Jes			
1450232 -(01,-02)			L L			1		
1450233-01	< (	> 2-3:01	10/15/14	pm Es	Jes	10:25		
1450233-01	41			ES	ND	10:20		
1430246(01-00)		72-12-13	Dirily					
1450250(10-13)								
1450254 (1-5)							٠	
1450295 (01-02)		₩				<b>₩</b>		
1450242(61)	41	72			145	16:30		
145 0243 (01-03)	41	12						-3 TU 7
145 6244 (01-02)		V	V	V				- 1 TU71
1450217-01	<u></u> _ 1	72	10/16/14	ES	fes	10:30		pH22
1450366-01	41	22	10/21/14	ES	tes			·
147 0310-01	71	ì		i			·	
-02	41							
1450-230-02	41							
1450332-02	1	T	₩ ·	4	al/			
1450270-01	>/	< 2	10/22/14	Tra	yer			
1450307-01								
1450337-01								
1450338-01								
1450119-01								
1450 340-01							`-	
14 JU359-4								
1450341-01			V	$ \sqrt{}$	V			
1470349-01	1	> 2	10/22/14	m	20	11:15		
1450348-(020,-026)								
1450148/041,-048	1	- V				V		<del></del>
1450364601, -02)	> 1	< 3	10/23/14	Pr	Yes			
1450372 (01,-02)	>1	< 2	10/23/14	nn	Yer			
1450369/1011,-12,-41-1	y < 1	>2			No	9:55		
-/6)			<u> </u>					
1450 277-01	۷1	42	10/27/14	ES	yes			
1430278-61	<u> </u>			<u> </u>				
45.002-01 45.002-01	71		1					
	21	r						. 11 . 0
1450 393-01	71	72	1	V	<b>&gt;</b>	1:30		pHL2

10/23/14

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

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

14J0217

#### Truesdail Laboratories, Inc

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

Project Manager: **Project Number:** 

Sean Condon 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

Logged In By:

Luda Shabunina

Date Received:

10/14/2014 19:30

Date Logged In:

10/15/2014 07:05

Samples Received at:

3.8°C

Chain of Custody re Yes Letter (if sent) matc No

Samples intact?

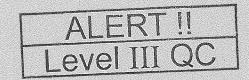
Yes

Requested analyses Yes

Custody seals (if an No Analyses within hol Yes

Samples received in Yes

Due	TAT	Expires	Comments
R-490 [Water] Sampled (US &	10/14/20	14 14:00	
10/24/2014 12:00	7	10/16/2014 14:00	
10/24/2014 12:00	7	10/21/2014 14:00	
10/24/2014 12:00	7	11/11/2014 14:00	,
10/24/2014 12:00	7	04/12/2015 14:00	
10/24/2014 12:00	7	04/12/2015 14:00	
10/24/2014 12:00	7	11/11/2014 14:00	
	R-490 [Water] Sampled (US & 10/24/2014 12:00 10/24/2014 12:00 10/24/2014 12:00 10/24/2014 12:00	R-490 [Water] Sampled 10/14/20 (US & 10/24/2014 12:00 7 10/24/2014 12:00 7 10/24/2014 12:00 7 10/24/2014 12:00 7 10/24/2014 12:00 7	R-490 [Water] Sampled 10/14/2014 14:00 (US & 10/24/2014 12:00 7 10/16/2014 14:00 10/24/2014 12:00 7 10/21/2014 14:00 10/24/2014 12:00 7 11/11/2014 14:00 10/24/2014 12:00 7 04/12/2015 14:00 10/24/2014 12:00 7 04/12/2015 14:00



10/15/14 Date



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

EXCELLENCE IN INDEPENDENT TESTING



Established 1931

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**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

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

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Laboratory No.: 815068

Date Received: October 21, 2014

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.: 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.

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

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Laboratory No. 815068

### 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: PGEIM11111001

Release Number:

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 DF MDL Analyzed 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 Lab ID = 815077-001 **Duplicate** Parameter Unit DF Result Expected **RPD** Acceptance Range Specific Conductivity umhos 1.00 ND 0 0 - 10Lab Control Sample Expected Parameter Unit DF Result Recovery Acceptance Range 706 90 - 110 Specific Conductivity umhos 1.00 772 109 MRCCS - Secondary Parameter Unit DF Result Expected Recovery Acceptance Range Specific Conductivity umhos 1.00 772 706 109 90 - 110 MRCVS - Primary Expected Parameter Unit DF Result Recovery Acceptance Range Specific Conductivity umhos 1.00 979 1000 97.9 90 - 110 MRCVS - Primary Acceptance Range Unit DF Expected Recovery Parameter Result Specific Conductivity umhos 1.00 979 1000 97.9 90 - 110

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Client: CH2MHill

Project Name: PG&E Topock Project

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

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CI	rom	e VI	by E	PA	218.6

Batch 141039	98°	tu ka ji kasistiya Sõralase ee seesa li

Parameter		Unit	Ana	ılyzed D	F MDL	RL	Result
815068-001 Chromium, Hexa	valent	ug/L	10/24	1/2014 11:11 1.0	0.00600	0.20	ND
Method Blank							
Parameter Chromium, Hexavalent Duplicate	Unit ug/L	DF 1.00	Result ND			l ab ID	045000 004
Parameter	Unit	DF	Dogult	Exmanda d	DDD		815068-001
Chromium, Hexavalent	ug/L	5.00	Result 0.172	Expected 0.166	RPD 3.55	Accepta 0 - 20	ince Range
Low Level Calibration	Verification						
Parameter Chromium, Hexavalent Lab Control Sample	Unit ug/L	DF 1.00	Result 0.184	Expected 0.200	Recovery 92.0	Accepta 70 - 130	ince Range
Parameter Chromium, Hexavalent Matrix Spike	Unit ug/L	DF 1.00	Result 5.09	Expected 5.00	Recovery 102	90 - 110	nce Range 815068-001
Parameter Chromium, Hexavalent Matrix Spike	Unit ug/L	DF 5.00	Result 5.05	Expected/Added 5.17(5.00)	Recovery 97.8	90 - 110	nce Range 815068-001
Parameter Chromium, Hexavalent MRCCS - Secondary	Unit ug/L	DF 1.00	Result 1.20	Expected/Added 1.15(1.00)	Recovery 105	Accepta 90 - 110	nce Range
Parameter Chromium, Hexavalent MRCVS - Primary	Unit ug/L	DF 1.00	Result 5.12	Expected 5.00	Recovery 102	Accepta 90 - 110	nce Range
Parameter Chromium, Hexavalent MRCVS - Primary	Unit ug/L	DF 1.00	Result 10.1	Expected 10.0	Recovery 101	Accepta 95 - 105	nce Range
Parameter Chromium, Hexavalent	Unit ug/L	DF 1.00	Result 10.2	Expected 10.0	Recovery 102	Accepta 95 - 105	nce Range



Client: CH2MHill

Project Name: PG&E Topock Project

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

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Metals by EPA 200.8, Tot Parameter		Unit	Ana	ılyzed D	F MDL	RL	Result
815068-001 Chromium		ug/L			00 0.0710	1.0	ND
Manganese		ug/L			0.0600	0.50	3.8
Method Blank				1.	0.0000	0.00	5.0
Parameter	Unit	DF	Result			,	
Chromium	ug/L	1.00	ND				
Manganese	ug/L	1.00	ND				
Duplicate	9		113			Lab ID =	815068-001
Parameter	Unit	DF	Result	Expected	RPD	Accents	ınce Range
Chromium	ug/L	1.00	ND	0	0	0 - 20	inoc rtange
Manganese	ug/L	1.00	3.98	3.84	3.68	0 - 20	
Low Level Calibration \	/erification	1					
Parameter	Unit	DF	Result	Expected	Recovery	Accepta	nce 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	Accepta	nce 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	ı
Matrix Spike						Lab ID =	815068-001
Parameter	Unit	DF	Result	Expected/Added	Recovery	Accepta	nce 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	Accepta	nce 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	Accepta	nce 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	Accepta	nce Range
Chromium	ug/L	1.00	19.4	20.0	97.1	90 - 110	_

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Client: CH2MHill

Project Name: PG&E Topock Project

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

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Interference	Check	Standard	1 AR
		Otanuan	<i>-</i> ~ ~ ~

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

Parameter		Unit	Ana	ılyzed	DF	MDL	RL	Result
815068-001 Total Dissolved	Solids	mg/L	10/22	2/2014	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	F	RPD	Accepta	ince Range
Total Dissolved Solids	mg/L	1.00	4080	4220		3.37	0 - 10	· ·
Lab Control Sample								
Parameter	Unit	DF	Result	Expected	F	Recovery	Accepta	nce Range
Total Dissolved Solids	mg/L	1.00	515	500		103	90 - 110	_
Parameter		Unit	Ana	lyzed	DF	MDL	RL	Result
		Unit NTU		lyzed 2/2014	DF 1.00	MDL 0.0140		
				<u> </u>			RL 0.100	Result 0.175
815068-001 Turbidity	Unit		10/22	<u> </u>				
815068-001 Turbidity  Method Blank	Unit NTU	NTU		<u> </u>				
815068-001 Turbidity  Method Blank  Parameter		NTU DF	10/22 Result	<u> </u>			0.100	0.175
815068-001 Turbidity  Method Blank  Parameter  Turbidity		NTU DF	10/22 Result	<u> </u>	1.00		0.100 Lab ID =	0.175 815078-001
815068-001 Turbidity  Method Blank  Parameter  Turbidity  Duplicate	NTU	DF 1.00	10/22 Result ND	2/2014	1.00	0.0140	0.100 Lab ID =	0.175 815078-001
815068-001 Turbidity  Method Blank  Parameter  Turbidity  Duplicate  Parameter	NTU Unit	DF 1.00	Result ND Result	Expected	1.00	0.0140	0.100  Lab ID =  Accepta	0.175 815078-001
815068-001 Turbidity  Method Blank  Parameter  Turbidity  Duplicate  Parameter  Turbidity	NTU Unit	DF 1.00	Result ND Result	Expected	1.00	0.0140	0.100 Lab ID = Accepta 0 - 20	0.175 815078-001 nce Range
815068-001 Turbidity  Method Blank  Parameter  Turbidity  Duplicate  Parameter  Turbidity  Lab Control Sample	NTU Unit NTU	DF 1.00 DF 1.00	Result ND Result 0.272	Expected 0.273	1.00	0.0140 RPD 0.367	0.100 Lab ID = Accepta 0 - 20	0.175 815078-001 nce Range
Method Blank Parameter Turbidity Duplicate Parameter Turbidity Lab Control Sample Parameter	NTU Unit NTU Unit NTU	DF 1.00 DF 1.00	Result ND Result 0.272	Expected 0.273 Expected	1.00	0.0140 PD 0.367	0.100  Lab ID = Accepta 0 - 20  Accepta	0.175 815078-001 nce Range
815068-001 Turbidity  Method Blank  Parameter Turbidity  Duplicate  Parameter Turbidity  Lab Control Sample  Parameter Turbidity	NTU Unit NTU Unit NTU	DF 1.00 DF 1.00	Result ND Result 0.272	Expected 0.273 Expected	1.00	0.0140 PD 0.367	0.100 Lab ID = Accepta 0 - 20 Accepta 90 - 110	0.175 815078-001 nce Range



Client: CH2MHill

Project Name: PG&E Topock Project

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

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Respectfully submitted,

TRUESDAIL LABORATORIES, INC.

fa - 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
4J0255-02 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
J0344-01A 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.	Measurd Value, ppm	Theoretical Value, ppm	Percent Rec	Acceptance Limit	QC Within Control?
LCS	515.0	500	103.0%	90-110%	Yes
LCSD					

**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

LCS Recovery

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

LC = Measured LCS value (ppm).

LT = Theoretical LCS value (ppm).

**Duplicate Determination Difference** 

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

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

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

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

C = Average weight in (g).

Maksim G.

Reviewer Printed Name

Jenny T.

Analyst Printed Name

### 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 / Cald 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	



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142
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TRUESDAIL LABORATORIES, INC. 14201 Franklin Avenue, Tustin, CA 92780-7008 (714)730-6239 FAX: (714) 730-6462

### **CHAIN OF CUSTODY RECORD**

[IM3Plant-WDR-491]

31506	8/1410344
COC Number	(14) 0544

TURNAROUND TIME

10 Days

www.	truesdail.com					Į		*** ***	J. ( 40	.1							DAT	E 1	0/21/	4	ette interessen	PAGE	1_	OF	1
COMPANY	E2					*********	7	7	7	7	$\overline{I}$	7	7	7	7	7	7	7	7	7	$\overline{T}$	7	TOTAL TOTAL CONTROL CO	***************************************	
PROJECT NAME	PG&E Topock									/													CON	IMENTS	
PHONE	(530) 229-3303		FAX <u>(530</u>	) 339-3303		,	/ ,	/ /	/ /	' _/	/ /	/ /	/ /	/ /	/ /	/ /	/ /	/ ,	/ ,	/ /	/ /	7			
ADDRESS	155 Grand Ave	Ste 1000	EMDAGRABO:				<i>/</i> .	1 July 1																	
	Oakland, CA 94	1612	Excentratos			/2		1 / 2	3/	/										N. A.					
P.O. NUMBER	652547.xx.xx.xx		TEAM	1	,	Filler	/g; 89,00	tance/	1 1	/	(g)	/ /	' 	/ /	/ /	/ /	/ /	/ /	/	CONTAINED	7				
SAMPLERS (SIGNA	ATURE				/ /	Tobi Mes. Lab Fillered	Specific (200.8)	TDS (SM2;	08 /	Turbidilly /ca.	tZhio.									ŏ /					
					6/2/8			( ) ( ) ( ) ( ) ( ) ( ) ( ) ( ) ( ) ( )		rbiotity	/	/ ,	/			/			NUMBES						
SAMPLE I.D.		DATE	TIME	DESCRIPTION	10	120	/ ঐ		L L	72									[≥]	/					
SC-700B-WDF	R-491	10/21/14	10:00	Water	х	х	х	х		х									3		ри	= j	(z	40, E	<i>J</i>
								at flathard har till til a djere er sa	en e	on and the second			· · · · · · · · · · · · · · · · · · ·		100000000000000000000000000000000000000	No.			3	тот	AL NUI	MBER	OF COI	NTAINER	S
																		**							

Please Provide a preliminary Result for the TDS ASAP



CH	IAIN OF CUSTODY SIG	SNATURE RECORD		T	The second secon	S	AMPLE C	CONDITIONS	
Signature (Relinquished)	Printed Name You I HELDS	Company/ Agency	Date/ 10-21-14 Time 15:15		RECEIVED	COOL		WARM 🗖	
Signature (Received)	Printed THANH NEW	Company/ Agency / RUESDA//	Date/ 10 21-10		CUSTODY SEA	ALED	YES	□ NO	
Signature (Relinquished) Suaw Water	Printed THANK NGO	Company/ Agency	Date/ 10-4: / 7	SF	PECIAL REQUIRE	MENTS:			
Signature (Received) Allaham Allaham	Printed Michael Mao	Company/ Agency	Date/ Time 10/2/14 193	30					
Signature (Relinquished)	Printed ) Name	Company/ Agency	Date/ Time						
Signature (Received)	Printed Name	Company/ Agency	Date/ Time						

# 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
9/3/14	1470023-001	7-00	2ml/100ml	9.5	8.00	NE
1	1 -02		Í		<u> </u>	
	141,0024-01					
V	V -02	$\bigvee$	V	V	V	V
9/10/14	1410193-01	7.00	2ml j looml	9.5	7:30	NE
8/17/14	1470235-01	7.00	2ml/100 ml	9.5	7:40	NE
91-24/14	14I0345-01	7.00	2ml/100ml	9.5	715	NE
10/01/14	14 Joog-01	7.00	2 m E/100 ml	9.5	7:10	WE
10/04/4	14.70021-1	J	ĺ	l	V	$\nu$
10108/14	14J0097-1	6.00	2ml/100ml	9.5	7:55	NE
	V -2					
	HJ0098-1					
	1 -2		,			
	$\sqrt{-3}$		V	V		$\sqrt{}$
10108/14	MJ0099-01					NE
10/15/14	1450217-01	6.00	mlilooml	9.5	7:30	NÉ
10/16/14	1470255-1	7.00	2 ml/100 hl	9.5	8:30	NÊ
$\downarrow$	1 -2	$ \nu$	V	V	V	1
10/22/14	MJ 0 344-1	6.00	201/100ml	9.5	7:40	NR
10/23/14	1470363-08	7.00	·5 ml, 50 ml	9.5	16.50	NE
<i>V</i>	1 -01	<u> </u>	V	V	1	



			Turbic	dity/pH C	heck	<del></del>			ı
Sample Number	Turbidity	рН	Date	Analyst	Need Digest (Y/N)	Time of Adjustment to pH 2	Date/Time of 2nd pH check	Comments	
1450081-02	21	22	10/7/14	ES	yes				
14JW82-06	ì	1	i						
145W86-02									-
147012-05									
1430014-02								2 2	
145 UDS9 - 01-0	4							- Z, 4 Th	7
147 5090-02	1			u					-
14 70003 -61,-03-	4) 21	>2	10/8/14	m	No	10:05			-
1450104-01	<1	>2	1			<u> </u>		Eillered	-
145097-61,-02)	41	>2	10/8/14	m	yes	1: 20		fact acids 1	8
1450098-(01,-02,-9	- · · · · · · · · · · · · · · · · · · ·	72	L		yes	10:10			-
1450116-0151018	}	< 2	10/8/14	qu	yes			= Hereath	in
i410048 (01 02		72	70/8/14	- <del>C</del> >	jus	1:00		acidify	-
-415 0120 F10 -11-12									-
1450128 (01, -02)			10/9/14						-
14 50120/-10,-11,-1	1 < 1	>2	10/9/14	Tra	NO	14:20			1
1450128/01,-02)		< 2			yes				4
1450129 -02									-
1430130-02									-
1470131-06					<u> </u>	100			-
14 50174-01	< (	72	V.	<u> </u>	NOGSIG	1 5:00			-
1470145 (0-1-	03) 41	72	10/16/14	ES		5:00			-
1430128( -01-07		12	1	ļ	tes				$\frac{1}{2}$
1450129-02	1								-
1450170-02									-
1450171-02	1	V							+
145172701-0	7) 71	72			V_				+
11170141-01	21	<u> </u>		1	NO				1
1450141-01	1	42			Yes				1
1450149-02	71	1			ļ				-
10-02101 IUI	41								+
151-02	1								-
152-01									-
153-02					<u> </u>				-
154-01			<u> </u>	V	T T				1
1450176-2	71	72	10/12/14	ES	yes				+
1450177601,-02	) >1	< 2	10/14/14	m	Yes				1
1450184-01									+
1450185-01					<u> </u>				4
1470189-06	۷(	>2	Toller	1	NO	(1:00			-
14J0189-06 14J0182-02 10187	4 71	< 2	10/15/14	pm	Tes				+
1450194-02									+
1450196-02				1 1 -				-	+
1450203-02				1 (	1 1	1	1	1	1

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

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

### **14J0344**

### Truesdail Laboratories, Inc

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

Sean Condon 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: Logged In By: Michael Ngo

Luda Shabunina

Date Received:

10/21/2014 19:30

Date Logged In:

10/22/2014 07:39

Samples Received at:

3.9°C

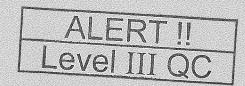
Chain of Custody re Yes Letter (if sent) matc No Samples intact?

Yes

Custody seals (if an No Analyses within hol Yes

Requested analyses Yes Samples received in Yes

Analysis	Due	TAT	Expires	Comments
14J0344-01 SC-700B-WDR-491 (GMT-08:00) Pacific Time (US &		10/21/201	4 10:00	
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	



Sman

10/22/14 Date

Page 1 of 1



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

**EXCELLENCE IN INDEPENDENT TESTING** 

Established 1931

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

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

Laboratory No.: 815071

www.truesdail.com

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

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Laboratory No.: 815071

Date Received: October 28, 2014

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.: PGEIM11111001

## **Analytical Results Summary**

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

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.

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Printed 11/17/2014

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Laboratory No. 815071

#### REPORT

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

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: PGEIM11111001

Release Number:

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

Field ID Lab ID Collected Matrix SC-700B-WDR-492 10/28/2014 15:35 815071-001 Water Batch 1410479 Specific Conductivity - EPA 120.1 Parameter Unit Analyzed DF MDL RL Result 1.00 0.606 2.00 7140 815071-001 Specific Conductivity umhos/cm 10/30/2014 Method Blank Parameter Unit DF Result Specific Conductivity umhos 1.00 ND Duplicate Lab ID = 815071-001 Parameter DF **RPD** Acceptance Range Unit Result Expected Specific Conductivity umhos 1.00 7130 7140 0.140 0 - 10Lab Control Sample Parameter Unit DF Expected Acceptance Range Result Recovery 90 - 110 Specific Conductivity umhos 1.00 741 706 105 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 1000 104 90 - 110 Specific Conductivity umhos 1.00 1040 MRCVS - Primary Acceptance Range Parameter Unit DF Result Expected Recovery 1000 90 - 110 Specific Conductivity 1040 104 umhos 1.00



Client: E2 Consulting Engineers, Inc.

Project Name: PG&E Topock Project

Page 2 of 8

Project Number: 428648.1M.CS.EX.AC

Printed 11/17/2014

Chrome VI by EPA 218.6			Batch	1410524				
Parameter		Unit	Ana	lyzed I	)F	MDL	RL	Result
815071-001 Chromium, Hexav	valent	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	•	ance Range
Chromium, Hexavalent	ug/L	5.00	0.121	0.121		0	0 - 20	
Low Level Calibration \	√erification							
Parameter	Unit	DF	Result	Expected		Recovery	Accepta	ance Range
Chromium, Hexavalent	ug/L	1.00	0.189	0.200		94.5	70 - 130	כ
Lab Control Sample								
Parameter	Unit	DF	Result	Expected		Recovery	Accepta	ance Range
Chromium, Hexavalent	ug/L	1.00	5.09	5.00		102	90 - 110	כ
Matrix Spike							Lab ID =	815071-001
Parameter	Unit	DF	Result	Expected/Adde	ed	Recovery		ance Range
Chromium, Hexavalent	ug/L	5.00	4.90	5.12(5.00)		95.7	90 - 110	כ
Matrix Spike							Lab ID =	815071-001
Parameter	Unit	DF	Result	Expected/Adde	ed	Recovery	Accepta	ance Range
Chromium, Hexavalent	ug/L	1.00	1.16	1.12(1.00)		104	90 - 11	0
MRCCS - Secondary							+ 43	
Parameter	Unit	DF	Result	Expected		Recovery	Accepta	ance Range
Chromium, Hexavalent	ug/L	1.00	5.08	5.00		102	90 - 11	0
MRCVS - Primary								
Parameter	Unit	DF	Result	Expected		Recovery	Accepta	ance Range
Chromium, Hexavalent	ug/L	1.00	10.2	10.0		102	95 - 10	5
MRCVS - Primary								
Parameter	Unit	DF	Result	Expected		Recovery	Accept	ance Range
Chromium, Hexavalent	romium, Hexavalent ug/L 1.00 10.2		•			95 - 10	5	
MRCVS - Primary								
Parameter	Parameter Unit DF Resu		Result	Expected		Recovery	Accept	ance Range
Chromium, Hexavalent	ug/L	1.00	10.3	10.0		103	95 - 10	5
								,



Client: E2 Consulting Engineers, Inc.

Project Name: PG&E Top

PG&E Topock Project

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

Batch 110314A Metals by EPA 200.8, Total Result DF MDL **RL** Unit Analyzed Parameter 11/03/2014 17:59 1.00 0.0710 1.0 ND 815071-001 Chromium ug/L Method Blank Parameter Unit DF Result Chromium ug/L 1.00 ND Lab ID = 815071-001 Duplicate **RPD** Acceptance Range Parameter Unit DF Result Expected 0 - 201.00 ND 0 0 Chromium ug/L Low Level Calibration Verification Acceptance Range Parameter Unit DF Result Expected Recovery 1.00 70 - 1300.201 0.200 100 Chromium ug/L Lab Control Sample Acceptance Range Parameter Unit DF Result Expected Recovery 97.0 85 - 115 Chromium ug/L 1.00 48.5 50.0 Lab ID = 815071-001 Matrix Spike Acceptance Range Parameter Unit DF Result Expected/Added Recovery 97.0 75 - 125 Chromium ug/L 1.00 48.5 50.0(50.0) Lab ID = 815071-001 Matrix Spike Duplicate Expected/Added Recovery Acceptance Range Unit DF Result Parameter 96.0 75 - 125 48.0 50.0(50.0) Chromium ug/L 1.00 MRCCS - Secondary DF Recovery Acceptance Range Result Expected Parameter Unit 20.1 20.0 100 90 - 110 Chromium ug/L 1.00 MRCVS - Primary Acceptance Range DF Result Expected Recovery Parameter Unit 20.0 20.0 100 90 - 110 1.00 Chromium ug/L MRCVS - Primary Acceptance Range Unit DF Result Expected Recovery Parameter 90 - 110 1.00 19.2 20.0 96.2 Chromium ug/L MRCVS - Primary Unit DF Result Expected Recovery Acceptance Range Parameter 90 - 110ug/L 1.00 19.6 20.0 97.8 Chromium



Client: E2 Consulting Engineers, Inc.

Project Name: PG&E Topock Project

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

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Metals by EPA 200.8, To	otai		Batch	110714A			V	`
Parameter		Unit	Ana	lyzed	DF	MDL	RL	Result
815071-001 Manganese	. cos	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	F	RPD	Accepta	ance Range
Manganese	ug/L	1.00	4.34	4.12		5.11	0 - 20	•
Low Level Calibration	Verification							
Parameter	Unit	DF	Result	Expected	F	Recovery	Accepta	ance Range
Manganese	ug/L	1.00	0.484	0.500		96.8	70 - 130	)
Lab Control Sample							i di Ma	
Parameter	Unit	DF	Result	Expected	F	Recovery	Accepta	ance Range
Manganese	ug/L	1.00	49.4	50.0		98.9	85 - 11	ō
Matrix Spike							Lab ID =	815071-001
Parameter	Unit	DF	Result	Expected/Adde	ed F	Recovery		ance Range
Manganese	ug/L	1.00	51.9	54.1(50.0)		95.5	75 - 12	5
Matrix Spike Duplicat	te						Lab ID =	815071-001
Parameter	Unit	DF	Result	Expected/Adde	ed F	Recovery	Accepta	ance Range
Manganese	ug/L	1.00	51.7	54.1(50.0)		95.2	75 - 12	5
MRCCS - Secondary								
Parameter	Unit	DF	Result	Expected	F	Recovery	Accepta	ance Range
Manganese	ug/L	1.00	19.5	20.0		97.6	90 - 110	ס
MRCVS - Primary								
Parameter	Unit	DF	Result	Expected	F	Recovery	Accepta	ance Range
Manganese	ug/L	1.00	20.2	20.0		101	90 - 110	כ
Interference Check S	Standard A						**	
Parameter	Unit	DF	Result	Expected	F	Recovery	Accepta	ance Range
Manganese	ug/L	1.00	ND	0				
Interference Check S	Standard A							
Parameter Unit		DF	Result	Expected	F	Recovery	Accepta	ance Range
Manganese ug/L 1.00		ND	0					



Client: E2 Consulting 5		- D-	ningt Names	DC0F Tono	ak Draia.	_4			
Client: E2 Consulting E	ngineers, in		oject Name:	PG&E Topo r: 428648.IM.C	-			age 7 of 8 1/17/2014	
		FI	oject Numbe	1. 420046.IIVI.C	.S.E∧.A∖	<b>J</b>	Printed	1/1//2014	
Interference Check S	Standard AB								
Parameter	Parameter Unit			Expected	F	Recovery	Accepta	nce Range	
Manganese ug/L		1.00	21.0	20.0		105	80 - 120	)	
Interference Check S	Standard AB								
Parameter	Unit	DF	Result	Expected	F	Recovery	Accepta	nce Range	
Manganese	1.00	20.7	20.0		103	80 - 120	)		
Total Dissolved Solids	by SM 254			1410480			and d		
Parameter		Unit	Ana	lyzed	DF	MDL	RL	Result	
815071-001 Total Dissolved	Solids	mg/L	10/30	/2014	1.00	1.76	250	3930	
Method Blank							4.500		
Parameter	Unit	DF	Result				v = 47		
Total Dissolved Solids	mg/L	1.00	ND				•		
Duplicate							Lab ID =	815071-001	
Parameter	Unit	DF	Result	Expected	F	RPD	Accepta	ance Range	
Total Dissolved Solids	mg/L	1.00	4120	3930		4.72	0 - 10		
Duplicate							Lab ID =	815072-011	
Parameter	Unit	DF	Result	Expected	F	RPD	Accepta	ance Range	
Total Dissolved Solids mg/L		1.00	1030	1020		0.976	0 - 10		
Lab Control Sample									
Parameter	Parameter Unit			Expected	F	Recovery	Accepta	ance Range	
Total Dissolved Solids	1.00	503	500		101	90 - 110	)		



Client: E2 Consulting Engineers, Inc.

Project Name:

PG&E Topock Project

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

Printed 11/17/2014

Turbidity by SM 2130 B			Batch	1410519					
Parameter		Unit	Ana	lyzed	DF	MDL	RL	Result	
815071-001 Turbidity		NTU	10/29	9/2014	1.00	0.0140	0.100	0.110	
Method Blank							stění v		
Parameter Turbidity	DF 1.00	Result ND				,			
Duplicate						Lab ID =	815083-007		
Parameter Turbidity Lab Control Sample	Unit NTU	DF 1.00	Result ND	Expected 0	F	RPD 0	Accepta 0 - 20	nce Range	
Parameter Turbidity Lab Control Sample D	Parameter Unit D		Result 8.17	Expected 8.00	F	Recovery 102	Acceptance Rang 90 - 110		
Parameter Unit Turbidity NTU		DF 1.00	Result 7.84	Expected 8.00	F	Recovery 98.0	Accepta 90 - 110	nce Range	

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 Dur	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	11
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	11

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

Dunlicate Determinations Difference Summary

Duplicate De	terminatio	ons Differen	ce Summ	ary	
Lab Number	Number Weight, g Weight,	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

Jenny T.

Analyst Printed Name

**LCS Recovery** 

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

P = Percent recovery.

LC= Measured LCS value (ppm).

LT = Theoretical LCS value (ppm).

#### **Duplicate Determination Difference**

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

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

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

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

C = Average weight in (g).

Maksim G.

Reviewer Printed Name

### 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

M H

915071 / 14 50415

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	D
DATE 10/28/14	PAGE	1

10 Days

TΕ	10/28/14	PAGE	1	OF	1
		<del></del>			

COMPANY	E2																			/ /	/ /	co	MMENTS
PROJECT NAME	PG&E Topock							/							/	/	/	/		//			
PHONE	(530) 229-3303	1	FAX (530	) 339-3303		/	/ /	/ /	/ /	/ /	/ /	/ /	/ /	/ /		' /	/ /	, /	/ /				
ADDRESS	155 Grand Ave	Ste 1000					/		_/											CONTAINERS			
	Oakland, CA 94	612	····			/ <sub>\$</sub>	15	· / 🕉					/	/	/	/	/	/		ZZ/			
P.O. NUMBER	652547.xx.xx.xx		) TEAM	1	/	Lab Fillered	(200.8)	tance/	/ /	/ /	(g) /	/ /	/ /	/ /	/	<i>'</i> /	/ /	, /	/ /	0,7			
SAMPLERS (SIGNA	TURE M	n fla	/ 1			Total Marci	8 / 5 5 / 5	TDS (SM2.	0000	Turbidily (ca.	12Mol /								NUMBEE	0 /			
		•			Cr6 (218.6.	)ta/	. / Bociff,	$\sqrt{s}$		hidi	/	/	/	/ .	/ .	/	/ ,	/	[\$\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\				
SAMPLE I.D.		DATE	TIME	DESCRIPTION	10	<u> </u>	/ 65												$\leq$	<u> </u>			
SC-700B-WDR	₹-492	10/28/14	1535	Water	х	х	х	х		х						e-entratumen			3		M	1=76	[2002]
						4.—									oteria meritari esti ma		Paring by Bank Address of V		3	TOTAL	NUMB	ER OF CO	ONTAINERS

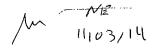
Please Provide a preliminary Result for the TDS ASAP

ALERT !!
Level III QC

// // c	HAIN OF CUSTODY SI	GNATURE RECORD	-		SAI	MPLE CONDI	TIONS	7110
Signature (Relinquished)	Printed Name CHAS LEME	Company/ CH 2mth L	Date/ 10/28/14 Time 17:10	RECEIVED	COOL	₩AI	RM 🗆	2.4°F
Signature (Received) Summer Mayor	Printed Name THANH N60	Company/ Agency (RUESDA/L	Date/ 10.28-17 Time 1710	CUSTODY SE	ALED	YES 🔲	NO 🗖	
	Printed HANA	Company/ Agency	Date/ Date/	SPECIAL REQUIRE	MENTS:			
Signature (Received)	Printed Name Marcheal B	Company/ Agency	Date/ 10/28/76 Time 2/25					
Signature (Relinquished)	Printed Name	Company/ Agency	Date/ Time					
Signature (Received)	Printed Name	Company/ Agency	Date/ Time					

# 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	1470416	8.03	D.Sml/25ml	4.5	23 123	hix
10129,14	14J0415=1	7.00	100 ml/2ml	9.5	7:40	NE
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				J		





Turbidity/pH Check

				Turbi	dity/pH C	Check		· · · · · · · · · · · · · · · · · · ·	
	Sample Number	Turbidity	рН	Date	Analyst	Need Digest (Y/N)	Time of Adjustment to pH 2	Date/Time of 2nd pH check	Comments
	1470412-01	>.1	>2	11/29/14	m	yer			
	1450414 (01,-02)	<1	>2			No	10:45		
	1450431(1-3)	41	72	11/29/14	<b>E</b> >	NO	2:m		
	14 70438-01	>/	>2	11/30/14	Pu	yes			
	1450440101-02)		72			NO	9:55		-
	(-03,-04,-05,-04	J	1					*	
	(-07)		1			1,			
	1450446-01,-02	7/	< 2			yes			
	1470744	21	72	10/23/14	£5	Yes	10:00		1462
		21					<del></del>		pH62
	145 0415-01		72	11/3/14	<u>5</u>	yes	10:W		PII
	14150008-01	>/	< 2	11/4/14	pu	Jes_			
	1450009-01			<del>                                     </del>					
	14160018-02						,		
	14/6019-01								<u> </u>
	14K0045 (01,-02)								
	1410050(01,-02,-03)						, .		
	J (-04, -05)								
	1440055601,-02,-03)								· · · · · · · · · · · · · · · · · · ·
	14K0068(1-3)	<b>51</b>	12	1114114	的	tes			
	14150078,401,021	41	> 2	11/5/14	per	NO	10:00		
	14/2079(01,-02,-03)	1				1			
	14150080-01	>/	<2			Yes	•	,	
	MK0084-01	<1	>2			Ĭ.			
	14/10084-02	1	<2	, ,		1,			
	1410012-02	>/	< 2	11/5/14		V			
	14/6013-02		<u> </u>	1,37.7	pm	yes			
72	14/60014-02								
11/5/14	141600 251- 14160025-01			7					
	14K0026-02	Ψ	<u> </u>		-4-	<del></del>			
	14K0022-02								
	14/60023-02		<u> </u>						
	1480024-02	$ \downarrow$				V			Eillen A.H.
	14K0083-(01-02)	41	72	115114	ES	. Yes	1:00		Filteredthe acidify
	14140084-02	V	1	↓	<u> </u>		V	,	V "
	14K0102 (10-12)	2(	72	4116114	ES	NŠ	11:00	****	
	IUK 0116-62-07,0	s) \	$\downarrow$	l l	.1	<u> </u>	1		
	14K0116-62-0310 14K028-01 14K029-61	V	22			jes			
	14/4/029 -61	71	1			1			
	14K00 67-02	41			1 .				
	1440075-01	1							
	14160110-01	71							
ŀ	14K0110-02	21							
	14K0120-01	1			1				:
	111/1007	J Zi	72	11/1/1	V		SIVO		
1	14K007-24	4	16	116/14	ES	No	7/10		

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.

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

#### 14J0415

## Truesdail Laboratories, Inc

Client: E2 Consulting Engineers, Inc. Project: Topock IM3Plant-WDR Weeky	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  Logged In By: Shelly Brady	Date Received: 10/28/2014 21:25 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) mate No Custody seals (if an No Requested analyses Yes Analyses within hol Yes  Samples received in Yes	

Analysis	Due	TAT	Expires	Comments	•		
14J0415-01 SC-700B-WD (GMT-08:00) Pacific Time		1 10/28/20	14 15:35				,
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			,	



Sa Ca

10/29/14 Data

**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.

Lo - Mona Nassimi

Manager, Analytical Services

Michael Ho

Michael Ngo

Quality Assurance/Quality Control Officer

**EXCELLENCE IN INDEPENDENT TESTING** 



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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

Sample: Two (2) Groundwaters
Project Name: PG&E Topock Project
Project No.: 428648.IM.CS.EX.AC

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

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£stablished 1931

14201 FRANKLIN AVENUE - TUSTIN, CALIFORNIA 92780-7008 ( ) 14) 730-6239 - FAX ( ) 14) 730-6462 - www.tuesdail.com

Laboratory No.: 815081
Date Received: November 4, 2014
Revision 1; December 8, 2014

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.: PGEIM11111001

## Analytical Results Summary

אר	stinU	Result	Parameter	Sample Time	Sample Date	Extraction Method	siaylsnA bortaM	Field ID	Lab Sample ID
2.00 50.0	mə/soyum	0417 GIV	EC Aluminum	13:00 13:00	11/4/2014	NONE NONE	E1200.7 E200.7	2C-100B-MDK-493	815081-001 815081-001
0.08	7/6n 7/6n	298 RD	BORON	13:00	11/4/2014	NONE	E200.7	SC-700B-WDR-493	100-10018
20.0	٦/6n	ND	lron	13:00	11/4/2014	NONE	F200.7	SC-700B-WDR-493	100-180818
20.0	⊣/gu	ND	oni∑	13:00	11/4/2014	NONE	F200.7	2C-700B-WDR-493	100-180318
2.0	¬/6n	ND	γnomitnA	13:00	11/4/2014	NONE	E200.8	2C-700B-WDR-493	100-180318
0.50	٦/6n	ND	Arsenic	13:00	11/4/2014	NONE	E200.8	SC-700B-WDR-493	100-180318
0.3	7/6n	8.6	muins8	13:00	11/4/2014	NONE	E200.8	2C-700B-WDR-493	100-180318
0.1	¬/ɓn	ND	Chromium	13:00	11/4/2014	NONE	€200.8	2C-700B-WDR-493	100-180318
0.1	n6رך	ND	Copper	13:00	11/4/2014	NONE	E200.8	2C-700B-WDR-493	100-180318
0.1	7/6n	ΠD	геза	13:00	11/4/2014	NONE	E200.8	2C-700B-WDR-493	100-180318
09.0	¬/6n	۲.9	Manganese	13:00	11/4/2014	NONE	E200.8	2C-700B-WDR-493	815081-001
2.0	رَّر)6n	20.5	Molybdenum	13:00	11/4/2014	NONE	E200.8	2C-700B-WDR-493	815081-001
2.0	 6n	5.5	Nickel	13:00	11/4/2014	NONE	E200.8	SC-700B-WDR-493	815081-001
02.0	່"/6n	ND	Chromium, Hexavalent	13:00	11/4/2014	TJABAJ	E218.6	SC-700B-WDP-493	815081-001
0.500	7/ճա	05.1	Fluoride	13:00	11/4/2014	NONE	E300	SC-700B-WDR-493	815081-001
0.500	7/6ш	2.46	Nitrate as N	13:00	11/4/2014	NONE	E300	SC-700B-WDP-493	100-180918
12.5	7/6w	684	Sulfate	13:00	11/4/2014	NONE NONE	E300	2C-100B-MDK-493 2C-100B-MDK-493	812081-001 812081-001
0.100	UTN	UD	Turbidity  Solids Solids	13:00	11/4/2014	NONE	SM2540C		815081-001
720 V 600	7/6ա	0914	Total Dissolved Solids	00:81 00:81	11/4/2014	NONE	2W4200NH3D 2W5240C	2C-100B-MDK-493 2C-100B-MDK-493	815081-001
0.005 0.0050	7/6w	ND ND	M-sinommA Vitrite as V	13:00	\$10Z/\$/11	NONE	SM4500NO2B	SC-700B-WDR-493	815081-001
0000:0	<b>უ/</b> ნⴍ	CINI	N CD OTHER	00:01	£1078-01	711011	G70N000HN0	00+ 1/2/4 2004 00	100 100010



Revision 1; December 8, 2014

Lab Sampla ID	E: ald ID	Analysis	Extraction	Sample	Sample	Danamatan	<b>5</b>		
Lab Sample ID	Field ID	Method	Method	Date	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.

**EXCELLENCE IN INDEPENDENT TESTING** 



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#### 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: PGEIM11111001

Release Number:

Samples Received on 11/4/2014 7:40:00 PM

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Printed 12/8/2014

Revised

Laboratory No. 815081

Field ID		Lab ID		Lab ID	Col	lected	Matrix	
SC-700B-WDR-493 SC-100B-WDR-493				815081-001 815081-002		11/04/2014 13:00 11/04/2014 13:00		er er
Anions By I.C EPA 3	800.0		Batch	1411091				
Parameter	Beeg Dearth anti-Life	Unit	Ana	lyzed	DF	MDL	RL	Result
815081-001 Fluoride		mg/L	11/05	5/2014 13:33	5.00	0.104	0.500	1.50
Nitrate as Nitr	as Nitrogen mg/L 11/05/2014 13:33 5			5.00	0.0415	0.500	2.46	
Sulfate		mg/L	11/05	5/2014 14:30	25.0	0.768	12.5	489
815081-002 Fluoride		mg/L	11/05	5/2014 13:45	5.00	0.104	0.500	1.72
Nitrate as Nitr	mg/L	11/05	5/2014 13:45	5.00	0.0415	0.500	2.43	
Sulfate		mg/L	11/05	5/2014 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	F	RPD	Accepta	nce Range
Chloride	mg/L	500	866	970		11.3	0 - 20	J
Duplicate							Lab ID =	815080-002
Parameter Sulfate	Unit mg/L	DF 100	Result 487	Expected 478	F	RPD 1.87	Accepta 0 - 20	nce Range
Junate	mg/L	100	407	410		1.07	0 - 20	



Client: E2 Consulting Eng	gineers, Ind		roject Name: roject Numbei	PG&E Topock Pro	-	Page 2 of 28 Printed 12/4/2014	
Duplicate						Lab ID = 815081-002	
Parameter Fluoride Nitrate as Nitrogen Lab Control Sample	Unit mg/L mg/L	DF 5.00 5.00	Result 1.73 2.37	Expected 1.72 2.43	RPD 0.348 2.46	Acceptance Range 0 - 20 0 - 20	
Parameter Chloride Fluoride Sulfate Nitrate as Nitrogen Matrix Spike	Unit mg/L mg/L mg/L mg/L	DF 1.00 1.00 1.00 1.00	Result 3.82 4.02 19.9 3.94	Expected 4.00 4.00 20.0 4.00	Recovery 95.4 101 99.4 98.5	Acceptance Range 90 - 110 90 - 110 90 - 110 90 - 110 Lab ID = 815080-001	
Parameter Chloride Matrix Spike	Unit mg/L	DF 500	Result 3070	Expected/Added 2970(2000)	Recovery 105	Acceptance Range 85 - 115 Lab ID = 815080-002	
Parameter Sulfate Matrix Spike	Unit mg/L	DF 100	Result 1530	Expected/Added 1480(1000)	Recovery 105	Acceptance Range 85 - 115 Lab ID = 815081-002	
Parameter Fluoride Nitrate as Nitrogen MRCCS - Secondary	Unit mg/L mg/L	DF 5.00 5.00	Result 22.1 23.3	Expected/Added 21.7(20.0) 22.4(20.0)	Recovery 102 104	Acceptance Range 85 - 115 85 - 115	
Parameter Chloride Fluoride Sulfate Nitrate as Nitrogen MRCVS - Primary	Unit mg/L mg/L mg/L mg/L	DF 1.00 1.00 1.00 1.00	Result 3.85 4.06 20.0 3.92	Expected 4.00 4.00 20.0 4.00	Recovery 96.2 102 100 98.0	Acceptance Range 90 - 110 90 - 110 90 - 110 90 - 110	
Parameter Chloride MRCVS - Primary	Unit mg/L	DF 1.00	Result 2.83	Expected 3.00	Recovery 94.4	Acceptance Range 90 - 110	
Parameter Chloride MRCVS - Primary	Unit mg/L	DF 1.00	Result 2.72	Expected 3.00	Recovery 90.6	Acceptance Range 90 - 110	
Parameter Fluoride	Unit mg/L	DF 1.00	Result 2.98	Expected 3.00	Recovery 99.4	Acceptance Range 90 - 110	



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Nitrite SM 4500-NO2 B			Batch	1411034				
Parameter	uetter, ett i	Unit	Analyzed		F	MDL	RL	Result
815081-001 Nitrite as Nitrogen		mg/L	11/05/2014		00	0.000630	0.0050	ND
815081-002 Nitrite as Nitrogen		mg/L	11/05/	<b>/</b> 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 = 8	15081-002
Parameter	Unit	DF	Result	Expected	F	RPD	Acceptar	ice Range
Nitrite as Nitrogen	mg/L	1.00	ND	0	0		0 - 20	
Lab Control Sample								
Parameter	Unit	DF	Result	Expected	R	lecovery	Acceptar	ice Range
Nitrite as Nitrogen	mg/L	1.00	0.0204	0.0226		90.3	90 - 110	
Matrix Spike							Lab ID = 8	15081-002
Parameter	Unit	DF	Result	Expected/Added	d R	Recovery	Acceptar	ice 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	R	tecovery	Acceptar	ice Range
Nitrite as Nitrogen	mg/L	1.00	0.0204	0.0226		90.3	90 - 110	
MRCVS - Primary								
Parameter	Unit	DF	Result	Expected	R	tecovery	Acceptar	ice Range
Nitrite as Nitrogen	mg/L	1.00	0.0191	0.0200		95.5	90 - 110	
MRCVS - Primary								
Parameter	Unit	DF	Result	Expected	R	lecovery	Acceptar	ice Range
Nitrite as Nitrogen	mg/L	1.00	0.0191	0.0200		95.5	90 - 110	



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Alkalinity by SM 2320B			Batch	1411190				
Parameter	Director Deleveration	Unit	Ana	ılyzed [	)F	MDL	RL	Result
815081-002 Alkalinity as CaCo	<b>D</b> 3	mg/L	11/13	3/2014 1.	00	1.68	5.00	151
Bicarbonate (Calc	culated)	mg/L	11/13	3/2014 1.	00	1.68	5.00	139
Carbonate (Calcu	lated)	mg/L	11/13	3/2014 1.	00	1.68	5.00	12.0
Method Blank				1			-	
Parameter Alkalinity as CaCO3 Duplicate	Unit mg/L	DF 1.00	Result ND				Lab ID =	815090-021
Parameter Alkalinity as CaCO3 Lab Control Sample	Unit mg/L	DF 1.00	Result 130	Expected 128	RF	PD 1.55	Acceptance Range 0 - 20	
Parameter Alkalinity as CaCO3 Lab Control Sample Du	Unit mg/L ıplicate	DF 1.00	Result 103	Expected 100		ecovery 103	Accepta 90 - 110	nce Range
Parameter Alkalinity as CaCO3 Matrix Spike	Unit mg/L	DF 1.00	Result 100	Expected 100		ecovery 100	90 - 110	nce Range 815090-017
Parameter Alkalinity as CaCO3 Matrix Spike Duplicate	Unit mg/L	DF 1.00	Result 200	Expected/Added 206(100)		ecovery 94.0	75 - 125	nce Range 815090-017
Parameter Alkalinity as CaCO3	Unit mg/L	DF 1.00	Result 199	Expected/Added		ecovery 93.0	Accepta 75 - 125	nce Range

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Client: E2 Consulting Engineers, Inc.

Project Name: PG&E Topock Project

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Specific Conductivity - E	EPA 120.1		Ba	itch 1411045				
Parameter	s Stage Pilligen — Leit er er i di	Unit	Α	ınalyzed	DF	MDL	RL	Result
815081-001 Specific Conduc	tivity	umhos	/cm 11	/07/2014	1.00	0.606	2.00	7140
815081-002 Specific Conduc	tivity	umhos/cm 11/07/2014		/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	F	RPD	Accepta	ance Range
Specific Conductivity	umhos	1.00	67.2	67.3		0.149	0 - 10	
Lab Control Sample								
Parameter	Unit	DF	Result	Expected	F	Recovery	Accepta	ance Range
Specific Conductivity	umhos	1.00	708	706		100	90 - 110	)
MRCCS - Secondary								
Parameter	Unit	DF	Result	Expected	F	Recovery	Accepta	ance Range
Specific Conductivity	umhos	1.00	708	706		100	90 - 110	)
MRCVS - Primary								
Parameter	Unit	DF	Result	Expected	F	Recovery	Accepta	ance Range
Specific Conductivity	umhos	1.00	996	1000		99.6	90 - 110	)
MRCVS - Primary								
Parameter	Unit	DF	Result	Expected	F	Recovery	Accepta	nce Range
Specific Conductivity	umhos	1.00	996	1000		99.6	90 - 110	)



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Parameter		Unit	Ana	lyzed [	DF	MDL	RL	Result
815081-001 Chromium, Hex	avalent	ug/L	11/05	5/2014 12:30 1	.00	0.00600	0.20	ND
815081-002 Chromium, Hex	avalent	ug/L	11/05	5/2014 12:41 2	5.0	0.150	5.0	560
Method Blank								
Parameter	Unit	DF	Result					
Chromium, Hexavalent	ug/L	1.00	ND					
Duplicate							Lab ID =	815080-00 <sup>-</sup>
Parameter	Unit	DF	Result	Expected	F	RPD	Accepta	nce Range
Chromium, Hexavalent	ug/L	1.00	4.00	4.01		0.187	0 - 20	J
Low Level Calibration	Verification	l						
Parameter	Unit	DF	Result	Expected	F	Recovery	Accepta	nce Range
Chromium, Hexavalent	ug/L	1.00	0.192	0.200		96.0	70 - 130	
Lab Control Sample								
Parameter	Unit	DF	Result	Expected	R	Recovery	Accepta	nce 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/Adde	d R	Recovery	Accepta	nce 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/Adde	d R	lecovery	Accepta	nce Range
Chromium, Hexavalent	ug/L	50.0	1440	1460(750)		97.5	90 - 110	_
Matrix Spike							Lab ID = 8	815081-001
Parameter	Unit	DF	Result	Expected/Added	d R	lecovery	Accepta	nce Range
Chromium, Hexavalent	ug/L	1.00	1.20	1.17(1.00)		102	90 - 110	J
Matrix Spike							Lab ID = 8	315081-001
Parameter	Unit	DF	Result	Expected/Added	d R	ecovery	Accepta	nce Range
Chromium, Hexavalent	ug/L	5.00	4.96	5.18(5.00)		95.6	90 - 110	_
Matrix Spike							Lab ID = 8	315081-002
Parameter	Unit	DF	Result	Expected/Added	d R	ecovery	Accepta	nce Range
Chromium, Hexavalent	ug/L	25.0	1170	1180(625)		98.2	90 - 110	
MRCCS - Secondary								
Parameter	Unit	DF	Result	Expected	R	ecovery	Acceptar	nce Range
Chromium, Hexavalent	ug/L	1.00	5.10	5.00		102	90 - 110	3-

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Parameter		Unit	Ana	lyzed	DF	MDL	RL	Result
815081-001 Aluminum		ug/L	11/05	5/2014 17:10	1.00	7.20	50.0	ND
Boron		ug/L	11/05	5/2014 17:10	1.00	4.10	50.0	862
Iron		ug/L	11/05	5/2014 17:10	1.00	3.00	20.0	ND
Zinc		ug/L	11/05	5/2014 17:10	1.00	5.10	20.0	ND
815081-002 Aluminum		ug/L	11/05	5/2014 18:05	1.00	7.20	50.0	ND
Boron		ug/L	11/05	5/2014 18:05 1	1.00	4.10	50.0	872
Iron		ug/L	11/05	5/2014 18:05 1	1.00	3.00	20.0	ND
Zinc		ug/L	11/05	5/2014 18:05 1	1.00	5.10	20.0	ND
Method Blank			ż.					
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	R	.PD	Accepta	ince Range
Aluminum	ug/L	1.00	ND	0		0	0 - 20	Ü
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	R	ecovery	Accepta	ince Range
Aluminum	ug/L	1.00	2030	2000		102	85 - 115	5
Iron	ug/L	1.00	2110	2000		105	85 - 115	;
Zinc	ug/L	1.00	1990	2000		99.4	85 - 115	j
Boron	ug/L	1.00	1890	2000		94.4	85 - 115	;
Matrix Spike							Lab ID =	815081-001
Parameter	Unit	DF	Result	Expected/Adde	d R	ecovery	Accepta	nce 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	

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Client: E2 Consulting Engineers, Inc. Project Na

Project Name: PG&E Topock Project

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Metals by EPA 200.8	Totalises : :::::::::::::::::::::::::::::::::	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.			roject Name: roject Numbe	Project .EX.AC	Page 13 of 28 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 V	/erification					
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 Eng	ineers, Inc		Project Name: PG&E Topock Project Project Number: 428648.IM.CS.EX.AC			Page 14 of 28 Printed 12/4/2014	
Matrix Spike						Lab ID = 815081-002	
Parameter Arsenic	Unit ug/L	DF 1.00	Result 52.7	Expected/Added 53.3(50.0)	Recovery 98.7	Acceptance Range 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 Arsenic	Unit ug/L	DF 1.00	Result 54.0	Expected/Added	Recovery 101	Acceptance Range	
Barium	ug/L ug/L	1.00	75.8	53.3(50.0)		75 - 125	
Nickel	ug/L ug/L	1.00	75.6 45.2	78.3(50.0) 50.0(50.0)	95.1	75 - 125	
Antimony	ug/L ug/L	1.00	49.8	, ,	90.5 99.6	75 - 125	
Lead	ug/L ug/L	1.00	49.6 44.4	50.0(50.0) 50.0(50.0)		75 - 125	
Manganese	ug/L ug/L	1.00	58.5	58.2(50.0)	88.8 100	75 - 125	
Molybdenum	_	1.00	67.7	, ,		75 - 125	
MRCCS - Secondary	ug/L	1.00	07.7	71.0(50.0)	93.4	75 - 125	
•	1.1	DE	D II	-	<b>.</b>		
Parameter Arsenic	Unit ug/L	DF 1.00	Result 20.3	Expected 20.0	Recovery 102	Acceptance Range	
Barium	ug/L ug/L	1.00	19.8	20.0	99.2	90 - 110	
Chromium	_	1.00	20.2	20.0		90 - 110	
Nickel	ug/L ug/L	1.00	19.9	20.0	101	90 - 110	
Antimony	ug/L ug/L	1.00	19.8	20.0	99.6 99.0	90 - 110 90 - 110	
Lead	ug/L ug/L	1.00	19.6	20.0	98.7		
Manganese	ug/L ug/L	1.00	20.1	20.0	100	90 - 110	
Molybdenum	_	1.00	19.2			90 - 110	
MRCVS - Primary	ug/L	1.00	19.2	20.0	96.0	90 - 110	
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 Engineer	ent: E2 Consulting Engineers, Inc. Project Name: PG&E Topock Project Project Number: 428648.IM.CS.EX.AC		-	Page 18 of 28 Printed 12/4/2014	
Interference Check Standard	I AB				
Parameter Ur Manganese ug/ Interference Check Standard	L 1.00	Result 20.7	Expected 20.0	Recovery 103	Acceptance Range 80 - 120
Parameter Ur Manganese ug/ Interference Check Standard	L 1.00	Result 20.8	Expected 20.0	Recovery 104	Acceptance Range 80 - 120
Parameter Ur Molybdenum ug/ Interference Check Standard	L 1.00	Result ND	Expected 0	Recovery	Acceptance Range
Parameter Ur Molybdenum ug/l		Result ND	Expected 0	Recovery	Acceptance Range
Serial Dilution					Lab ID = 815081-002
Parameter Ur Barium ug/l Chromium ug/l	5.00		Expected 28.3	RPD 8.44	Acceptance Range 0 - 10
Chromium ug/l	100	599	581	3.07	0 - 10

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Client: E2 Consulting Engineers, Inc.

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Parameter		Unit	Ana	lyzed I	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	F	RPD	Accepta	ance Range
Copper	ug/L	1.00	ND	0		0	0 - 20	
Low Level Calibration	on Verification	l						
Parameter	Unit	DF	Result	Expected	F	Recovery	Accepta	ance Range
Copper	ug/L	1.00	0.507	0.500		101	70 - 130	)
Lab Control Sample	e							
Parameter	Unit	DF	Result	Expected	F	Recovery	Accepta	ance Range
Copper	ug/L	1.00	51.1	50.0		102	85 - 115	5
Matrix Spike							Lab ID =	815081-002
Parameter	Unit	DF	Result	Expected/Adde	d F	Recovery	Accepta	nce Range
Copper	ug/L	1.00	45.7	50.0(50.0)		91.3	75 - 125	5
Matrix Spike Duplica	ate						Lab ID =	815081-002
Parameter	Unit	DF	Result	Expected/Adde	d R	Recovery	Accepta	ince Range
Copper	ug/L	1.00	44.3	50.0(50.0)		88.6	75 - 125	5
MRCCS - Secondar	ry							
Parameter	Unit	DF	Result	Expected	R	Recovery	Accepta	ince Range
Copper	ug/L	1.00	20.1	20.0		101	90 - 110	)
MRCVS - Primary								
Parameter	Unit	DF	Result	Expected	R	Recovery	Accepta	nce Range
Copper	ug/L	1.00	18.6	20.0		93.1	90 - 110	)
Interference Check	Standard A							
Parameter	Unit	DF	Result	Expected	R	lecovery	Accepta	nce Range
Copper	ug/L	1.00	ND	0				
Interference Check	Standard A							
Parameter	Unit	DF	Result	Expected	R	Recovery	Accepta	nce Range
Copper	ug/L	1.00	ND	0				,

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Client: E2 Consulting Er		Project Name: PG&E Topock Project Project Number: 428648.IM.CS.EX.AC			Page 20 of 28 Printed 12/4/2014		
Interference Check S	tandard AB						
Parameter Copper	Unit ug/L	DF 1.00	Result 20.9	Expected 20.0	Recovery 104	Accepta 80 - 120	ance Range )
Interference Check S	tandard AB						
Parameter Copper	Unit ug/L	DF 1.00	Result 21.1	Expected 20.0	Recovery 105	Accepta 80 - 120	ance Range )
Reactive Silica by SM45	00-Si D		Batch	1411131			
Parameter		Unit	Ana	lyzed	DF MDL	RL	Result
815081-002 Silica		mg/L	11/11	/2014 25.0 0.252		1.00	18.6
Method Blank		1,01					
Parameter Silica	Unit mg/L	DF 1.00	Result ND				
Duplicate						Lab ID =	815081-002
Parameter Silica Lab Control Sample	Unit mg/L	DF 25.0	Result 19.3	Expected 18.6	RPD 3.68	Accepta 0 - 20	ince Range
Parameter Silica	Unit mg/L	DF 1.00	Result 0.192	Expected 0.206	Recovery 93.2	90 - 110	
Matrix Spike						Lab ID =	815081-002
Parameter Silica MRCCS - Secondary	Unit mg/L	DF 25.0	Result 22.8	Expected/Addo 23.8(5.15)	ed Recovery 82.1	Accepta 75 - 125	ince Range
Parameter Silica MRCVS - Primary	Unit mg/L	DF 1.00	Result 0.192	Expected 0.206	Recovery 93.2	Accepta 90 - 110	ince Range
Parameter Silica	Unit mg/L	DF 1.00	Result 0.385	Expected 0.400	Recovery 96.3	Accepta 90 - 110	nce Range



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Parameter 815081-001 Total Dissolved Solids 815081-002 Total Dissolved Solids		Unit	Analyzed 11/06/2014		DF 1.00	MDL	RL	Result 4160 4350
		mg/L				1.76	250	
		mg/L 11/06/20		/2014	1.00	1.76	250	
Method Blank								
Parameter	Unit	DF	Result					
Total Dissolved Solids	mg/L	1.00	ND					
Duplicate							Lab ID =	815080-00
Parameter	Unit	DF	Result	Expected	RPD		Acceptance Range	
Total Dissolved Solids	mg/L	1.00	2540	2500		1.39	0 - 10	J
Lab Control Sample								
Parameter	Unit	DF	Result	Expected	Recovery		Acceptance Rang	
Total Dissolved Solids	mg/L	1.00	524	500		105	90 - 110	)



Client: E2 Consulting Engineers, Inc.

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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** Lab ID = 815081-002 Parameter Unit DF Result Expected **RPD** Acceptance Range Total Organic Carbon mg/L 1.00 0.552 0.567 2.72 0 - 20Lab 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 Lab ID = 815081-002 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 1.00 9.53 mg/L 10.5 90.8 85 - 115MRCVS - Primary Parameter DF Unit 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

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Total Phosphate, SM 4500-PB,E Batch 1411162

Parameter 815081-002 Phosphate, Total As P		Unit	Anal	yzed D	F	MDL	RL	Result
		mg/L	11/13	/2014 1.0	00	0.00460	0.0200	ND
Method Blank				Assets				
Parameter	Unit	DF	Result					
Phosphate, Total As P	mg/L	1.00	ND					
Duplicate							Lab ID = 815081-002	
Parameter	Unit	DF	Result	Expected	d 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 = 8	15081-002
Parameter	Unit	DF	Result	Expected/Added	l Re	ecovery	Acceptan	ice 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	Re	ecovery	Acceptan	ce Range
Phosphate, Total As P	mg/L	1.00	0.0628	0.0652	!	96.3	90 - 110	J
MRCVS - Primary								
Parameter	Unit	DF	Result	Expected	Re	ecovery	Acceptan	ce Range
Phosphate, Total As P	mg/L	1.00	0.0703	0.0660		106	90 - 110	_



Client: E2 Consulting Engineers, Inc.

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Ammonia Nitrogen by SN	/14500-NH	I3D	Batch	11NH314A				
Parameter	*.	Unit	Ana	llyzed	DF	MDL	RL	Result
815081-001 Ammonia as N		mg/L	11/08/2014		.00	0.0318	0.500	ND
815081-002 Ammonia as N		mg/L	11/08	11/08/2014		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	F	Recovery	Accepta	nce Range
Ammonia as N	mg/L	1.00	7.36	8.00		92.0	90 - 110	
Lab Control Sample Du	uplicate							
Parameter	Unit	DF	Result	Expected	F	Recovery	Acceptance Range	
Ammonia as N	mg/L	1.00	7.45	8.00		93.1	90 - 110	
Matrix Spike							Lab ID = 8	315081-001
Parameter	Unit	DF	Result	Expected/Adde	d F	Recovery	Accepta	nce 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	F	Recovery	Accepta	nce Range
Ammonia as N	mg/L	1.00	6.57	6.00		109	90 - 110	
MRCVS - Primary								
Parameter	Unit	DF	Result	Expected	F	Recovery	Acceptai	nce Range
Ammonia as N	mg/L	1.00	5.62	6.00		93.6	90 - 110	•
MRCVS - Primary								
Parameter	Unit	DF	Result	Expected	F	Recovery	Acceptar	nce Range
Ammonia as N	mg/L	1.00	5.43	6.00		90.5	90 - 110	-

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Client: E2 Consulting Engineers, Inc.

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Parameter		Unit	Ana	lyzed D	F	MDL	RL	Result
815081-002 Manganese		ug/L	11/25/2014 15:47		00	0.0600	0.50	8.9
Method Blank								
Parameter Manganese	Unit ug/L	DF 1.00	Result ND					
Duplicate							Lab ID =	815080-001
Parameter Manganese	Unit ug/L	DF 2.00	Result 64.9	Expected 67.6	F	RPD 4.02	Acceptance Rang 0 - 20	
Low Level Calibration V	erification/							
Parameter Manganese Lab Control Sample	Unit ug/L	DF 1.00	Result 0.536	Expected 0.500	F	Recovery 107	Acceptance Range	
Parameter Manganese Matrix Spike	Unit ug/L	DF 1.00	Result 50.0	Expected 50.0	F	Recovery 99.9	Acceptance Range 85 - 115 Lab ID = 815080-001	
Parameter Manganese Matrix Spike Duplicate	Unit ug/L	DF 2.00	Result 114	Expected/Added	d F	Recovery 93.9	75 - 125	nce Range 815080-001
Parameter Manganese MRCCS - Secondary	Unit ug/L	DF 2.00	Result 109	Expected/Added 118(50.0)	d F	Recovery 82.9	Acceptance Range 75 - 125	
Parameter Manganese MRCVS - Primary	Unit ug/L	DF 1.00	Result 19.3	Expected 20.0	F	Recovery 96.5	Acceptance Range 90 - 110	
Parameter Manganese MRCVS - Primary	Unit ug/L	DF 1.00	Result 19.5	Expected 20.0	F	Recovery 97.7	Acceptance Range 90 - 110	
Parameter Manganese MRCVS - Primary	Unit ug/L	DF 1.00	Result 19.0	Expected 20.0	F	Recovery 94.9	Acceptance Range 90 - 110	
Parameter Manganese	Unit ug/L	DF 1.00	Result 19.5	Expected 20.0	F	Recovery 97.3	Accepta 90 - 110	nce Range

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Client: E2 Consulting Engineers, Inc.

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Parameter		Unit	Ana	ılyzed [	F MDL	RL	Result	
815081-002 Iron		ug/L	12/03	3/2014 12:30 1.	00 3.00	20.0	ND	
Method Blank								
Parameter Iron	Unit ug/L	DF 1.00	Result ND					
Duplicate						Lab ID =	815081-002	
Parameter Iron	Unit ug/L	DF 1.00	Result ND	Expected 0	RPD 0	Accepta 0 - 20	ince Range	
Lab Control Sample								
Parameter U Iron ug		DF 1.00	Result 2190	Expected 2000	Accepta 85 - 115	ince Range		
Matrix Spike								
Parameter Iron MRCCS - Secondary	Unit ug/L	DF 1.00	Result 1970	Expected/Added 2000(2000)				
Parameter	y Unit	DE	D It			7 × 1 × 1	_	
Iron	ug/L	DF 1.00	Result 5180	Expected 5000	Recovery 104	95 - 105	nce Range	
MRCVS - Primary								
Parameter Iron	Unit ug/L	DF 1.00	Result 5210	Expected 5000	Recovery 104	Accepta 90 - 110	nce Range	
MRCVS - Primary								
Parameter Iron	Unit ug/L	DF 1.00	Result 5300	Expected 5000	Recovery 106	Accepta 90 - 110	nce Range	
Interference Check S	Standard A							
Parameter Iron	Unit ug/L	DF 1.00	Result 2190	Expected 2000	Recovery 110	Accepta 80 - 120	nce Range	
Interference Check S	Standard A							
Parameter U Iron ug.		DF 1.00	Result 2230	Expected 2000	Recovery 111	Accepta 80 - 120	nce Range	
Interference Check Standard								
Parameter Iron	Unit ug/L	DF 1.00	Result 2220	Expected 2000	Recovery 111	Acceptai 80 - 120	nce Range	



NTU

1.00

7.40

Turbidity

Report Continued

Client: E2 Consulting En	igineers, In		roject Name: roject Numbe	PG&E Topo r: 428648.IM.C	•		Page 28 of 2 Printed 12/4/2014				
Interference Check S	tandard AB										
Parameter	Unit	DF	Result	Expected	F	Recovery	Accepta	nce Range			
Iron	ug/L	1.00	2280	2000		114	80 - 120				
Turbidity by SM 2130 B			Batch	1411090							
Parameter		Unit	Ana	lyzed	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	F	RPD	Accepta	nce Range			
Turbidity	NTU	1.00	ND	0		0	0 - 20	_			
Lab Control Sample											
Parameter	Parameter Unit		Result	Expected	F	Recovery	Accepta	nce Range			
Turbidity	lity NTU 1.		8.10	8.00		101	90 - 110	J			
Lab Control Sample Duplicate											
Parameter Unit		DF	Result	Expected	R	lecovery	Accepta	nce Range			

Respectfully submitted,

TRUESDAIL LABORATORIES, INC.

92.5

90 - 110

€ - Mona Nassimi

8.00

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	, <sub>1</sub>
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
4K0083-01 Dur	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
4K0116-04 Dur	100	75.7294	75.7873	75.7872	0.0001	No	0.0578	578.0	25.0	578.0	1.

Calculation as follows:

Filterable residue (TDS), mg/L =

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	524.0	500	104.8%	90-110%	Yes
LCSD		-			

**Duplicate Determinations Difference Summary** 

Duplicate Det	emmanc	AIS DILICICI	ice Juiiiii	ary	
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

LCS Recovery

$$P = \left(\frac{LC}{LT}\right) \times 10^{\circ}$$

LC= Measured LCS value (ppm).

LT = Theoretical LCS value (ppm).

**Duplicate Determination Difference** 

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

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

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

C = Average weight in (g).

Maksim G.

Reviewer Printed Name

Jenny T.

Analyst Printed Name

#### 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 / Cald 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

J- My



# Alkalinity by SM 2320B

**Analytical Batch:** 1411190 Matrix: WATER Date of Analysis: 11/13/2014

Lab ID	Sample pH	Sample Volume (ml)	N of HCL	Titrant Volume to reach pH 8.3	P Alkalinity as CaCO3	Titrant Volume to reach pH 4.5	Total mL titrant to reach pH 0.3 unit lower	Total Alkalinity as CaCO3	RL, ppm	Total Alkalinity Reported Value	HCO3 Conc. as CaCO <sub>3</sub> (ppm)	CO3 Alkalinity as CaCO <sub>3</sub> (ppm)	OH Alkalinity as CaCO <sub>3</sub> (ppm)	Low Alkalinity as CaCO <sub>3</sub>
BLANK	4.70	50	0,02	0.00	0.0	0.00		0.0	5	ND	ND	ND	ND	3.2420111
14K0007-17	7.81	50	0.02	0.00	0.0	5.30		106.0	5	106.0	106.0	ND	ND	
14K0007-21	8.01	50	0.02	0.00	0.0	6.40	İ	128.0	5	128.0	128.0	ND	ND	
14K0007-21 DUP	8.03	50	0.02	0.00	0.0	6.50	(P1):	130.0	5	130.0	130.0	ND	ND	
14K0083-01	8.24	50	0.02	0.00	0.0	11.00		220.0	5	220.0	220.0	ND	ND	
14K0083-02	8.11	50	0.02	0.00	0.0	7.85		157.0	5	157.0	157.0	ND	ND	
14K0084-02	8.39	50	0.02	0.30	6.0	7.55		151.0	5	151.0	139.0	12	ND	
14K0116-06	8.08	50	0.02	0.00	0.0	6.45		129.0	5	129.0	129.0	ND	ND	
14K0007-17 MS	9.70	50	0.02	2.20	44.0	10.00		200.0	5	200.0	112.0	88	ND	
14K0007-17 MSD	9.58	50	0.02	2.15	43.0	9.95		199.0	5	199.0	113.0	86	ND	<u> </u>
LCS	10.66	50	0.02	2.20	44.0	5.15	1	103.0	5	103.0	15.0	88	ND	·····
LCSD	10.57	50	0.02	2.10	42.0	5.00		100.0	5	100.0	16.0	84	ND	
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Calculations as follows:

Tor P=

 $A \times N \times 50000$ mL sample

Low Alkalinity: = as mg/L CaCO3

(2 x B - C) x N x 50000

mL sample

Blank Summary

Dialik Gai	ininai y		
Reporting Limit, RL	Measured Value, ppm	Accept Limit	QC Within
	raido, ppiii		Control?
5 nnm	0	<5	Yes

Where:

T = Total Alkalinity, mg CaCO3/L

P = Phenolphthalein Alkalinity, mg CaCO3/L

A = mL standard acid used

N = normality of standard acid

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)

Laboratory Control Sample (LCS/LCSD) Summary

					<u> </u>	
	QC Std	Measured	Theoretical	% Recovery	Accetance	QC Within
	I.D.	Value, ppm	Value, ppm	% Recovery	Limit	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	Accetance Limit	QC Within Control?
14k0007-	128	130	1.6%	≤20%	Yes

Sample Matrix Spike (MS/MSD) Summary

Campio man	ix opino (	,	oumman,									
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
1410007-17	106	1	100 /2	100	199	206.00	93%	10-120	Yes		1. ≥20%	168

Alex L Analyst Printed Name

Maksim Gorbunov Reviewer Printed Name

3150811 14K0084

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-493]

**COC Number** 

V

10 Days TURNAROUND TIME DATE 11/04/14

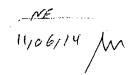
PAGE 1 OF

(/14)/30-0239 FAX: (/14) /30-0462 www.truesdail.com						L	IIVISP	riant	יטא-	K-49	3]		2"					***************************************	1/04/	14	PA	GE_	<u>1</u> °	)F <u>1</u>	
COMPANY	CH2M HILL /E2		***************************************				$\overline{}$	/	$\overline{}$	7	$\overline{}$	7	V	$\overline{}$	$\overline{}$	7	ay	De <sub>le</sub> /	<u>Q</u>	7	7	7	COMME	ite	7
PROJECT NAME	PG&E Topock II	M3										/ mo	*/				The Party	(4500.c.	ပ်/ ၁		/ /	,	JONINICI	113	
PHONE	530-229-33	03	FAX <u>530</u>	-339-3303		,	/ /	/ /	/ ,	/ ,	/ ,	List Below	/ ,	/ ,	/ & /	/ ,		, 200		/ /	. /				
ADDRESS	155 Grand Ave Oakland, CA 94					41Kalin; 1246 File	pa <sub>le</sub>				- 1	Ø /	,	70C (F.C. (300.0) F; NO.C.	8 /	(2007)	\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\	S) Calive (4		TOER OF CONTAINERS					
P.O. NUMBER	428648.IM.CS.EX.	AC-		Martin and American A	/	6) Lat	320-B	/ /	o/ /	/_/	\s\(\s\)	4500.1	(4.00	/(0:00/	( []	Metals		/ <sub>4</sub> 0/ <sub>3</sub> /		NO N					
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SAMPLE I.D.		DATE	TIME	DESCRIPTION	10	/₹	/ ¥	<u> </u>	/~	<u> </u>	/ ₹	<u> </u>	/ ₹	<u> </u>	/ ä	/ 🗞	/≥	_	[≥						
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ÇH	AIN OF CUSTODY SIG	SNATURE RECORD		SAMPLE CONDITIONS		
Signature (Relinquished)	Printed Name Ryan Phelos	Company/ Agency CH2MH(L	Date/ //- 4-/4 Time /5:/7	received cool $\square$ warm $\square$ 3.8°C **		
Signature (Received)	Printed THANH NGO	Company/ Agency TRUESDA!	Date/ 11-4:19 Time 1517	CUSTODY SEALED YES NO		
Signature (Relinquished) Sign Mile	Printed Name TIHANH NGS	Company/ Agency	Date/ ( t - U - / C) Time 1 Q U (	SPECIAL REQUIREMENTS:		
Signature (Received) Author High	Printed Michael Nao	Company/ Agency TLT	Date/ 11/4/14/9:40 14	The metals include: Cr, Al, Sb, As, Ba, B, Cu, Pb, Mn, Mo, Ni, Fe, Zn		
Signature (Relinquished)	Printed J	Company/ Agency	Date/ Time	(NO, NI, 1 G, 21)		
Signature (Received)	Printed Name	Company/ Agency	Date/ Time			

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

Date			Buffer Added (mL)	Final pH	Time Buffered	Initials
10/28/11	1470416	8.03	D.S.ML /25mL	4.5	23/23	hix
10/29/14	14J0415001	7.00	2 ml/ 100 ml	9-5	7:40	NE
11,05/14	14K0083-01	6.00	2 ml / 100 ml	9.5	7:30	NE
	1/ -02	J	) /	1	<u></u>	J
i de la companya de l	14 K 2084-01		2 ml / 100 ml	9.5	7:30	NÉ
	- 02	1 1			7	
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Turbidity/pH Check

				Turbi	dity/pH (	Check			
	Sample Number	Turbidity	рН	Date	Analyst	Need Digest (Y/N)	Time of Adjustment to pH 2	Date/Time of 2nd pH check	Comments
	1470412-01	>1	> 2	11/29/14	Ju	yes		-	·
	1450414 (01,-02)	<1	>2		T	No	10:45	10/36/01/15/01	PH 42
	1450431(1-3)	41	72	10 29 LLY	<b>(5)</b>	NO	Zm	V	V
	14 704 38-01	>/	>2	11/30/14	Tu	yes		Wala pilielal	PH L2
	1450440 +01,-02)	<1	72			NO	9:55	4	i
	(-03,-04,-05,-06								
	(-07)	$\perp$						V	V
	1450446-01,-02	>/	< 2			yes			
-	1470744	21	72	10/23/14	£ς	yes_	10:W		1462 0H22
ļ	145 6415.01	<i>2</i> 1	72	11/3/14	5	yes_	10:W		pH22
-	1416008-01	>/	< 2	11/4/14	pu	Jes			•
-	1450009-01								
-	14150018-02								
1	14/6019-01				_				
F	14K0045 (01,-02)								
L	1410050(01,-02,-03)								
F	J (-04,-05)								
	44,0055601,-02,-03	<u> </u>			<u> </u>				
	4K0068(1-3)	<i>5</i> 1	17	114114	B	Fes			
-	14150078,401,-02)	<1	> ²	11/5/14	pu	NO	10:00	Wish Mahala	PH 67
г	416079(01,-02,-03)	<u> </u>				<u> </u>	V		<u> </u>
$\Box$	1416080-01	>/	< 2			Yes			•
-	4K0084-01	<1	> 2_				10:00		PHLZ
_	14/10084-02	<u>\</u>	< 2	<u> </u>	4	<u> </u>			
⊢	14×0012-02	>/	< 2	11/5/14	pm	yes			
$\vdash$	14160013-02								
	14/10014-02								
_	14K00251-14K002501								
	1480026-02	4		$ \forall$ $\mid$	4	+			
	4K0072-02								
	4/60023-02		-		$\rightarrow$				
	440024-02	$ \frac{\vee}{}$	_\_\_	11127111	<u> </u>		1:-0)		Filtered Hain
	4K0083-(01-02)	21	72	115114	ES.		1200		Filtered thea
	4140084-02	21	1/2	1/11/1	4	No	10000	मानाम क १०:५०	11 1 2
_	14K0102 (16-12)		72	11/6/14	ES				PHIZ
	UK 0116-65-9102	1 +	¥ 22			7.65		- V	<u>, n</u>
_[	14K0116-02-03,05 4K1028-01 4K1029-61	71				J°C7			
(	111/12/27 03	41			-				
- 1	14K0067-02 14K0075-01	1						-	
	4/20110-01				_				
	4K0110-02	71							
		71	+						
	4K0120-01	41	72	11/11/1	4		5:VO	olalist on	phir
١	4K0N7-24	-	16	116/14	Es	No	フハロ	11/7/14 12/10	YNUU

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

#### WORK ORDER

Printed: 11/20/2014 4:54:53PM

#### 14K0084

#### Truesdail Laboratories, Inc

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

Project Manager: Project Number:

Sean Condon 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 Letter (if sent) matc No Samples intact? Custody seals (if an No

Yes

11/14/2014 12:00

Requested analyses Yes Samples received in Yes

Ammonia, Total

Analyses within hol Yes

Analysis	Due	TAT	Expires	Comments
14K0084-01 SC-700B-WDR-493 (GMT-08:00) Pacific Time (US &		d 11/04/20	14 13:00	
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	

12/02/2014 13:00

#### 14K0084

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Truesdail Laboratories, Inc

Client: E2 Consulting Engineers, Inc.

Project: Topock IM3Plant-WDR

Project Manager:

Sean Condon

Printed: 11/20/2014 4:54:53PM

Project Number: PGE-2152

Analysis	Due	TAT	Expires	Comments
14K0084-01 SC-700B-WDR-493 (GMT-08:00) Pacific Time (US &		11/04/20	14 13:00	
Mo-200.8	11/14/2014 12:00	7	05/03/2015 13:00	
14K0084-02 SC-100B-WDR-493 (GMT-08:00) Pacific Time (US &		11/04/20	14 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	
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

11/20/14 Date

Page 2 of 2





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.

fo - Mona Nassimi

Manager, Analytical Services

Michael Ngo

Quality Assurance/Quality Control Officer

**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

Sample: One (1) Groundwater Sample

Project Name: PG&E Topock Project Project No.: 652547.xx.xx

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



Established 1931

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

Laboratory No.: 815084

Date Received: November 12, 2014

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

# **Analytical Results Summary**

Lab Sample ID	Field ID	Analysis Method	Extraction Method	Sample Date	Sample Time	Parameter	Result	Units	RL
815084-001 815084-001 815084-001 815084-001 815084-001	SC-700B-WDR-494 SC-700B-WDR-494 SC-700B-WDR-494 SC-700B-WDR-494 SC-700B-WDR-494	E120.1 E200.8 E200.8 E218.6 SM2130B	NONE NONE NONE LABFLT NONE	11/12/2014 11/12/2014 11/12/2014 11/12/2014 11/12/2014	15:00 15:00 15:00 15:00 15:00	EC Chromium Manganese Chromium, Hexavalent Turbidity	7180 ND 5.7 ND	umhos/cm ug/L ug/L ug/L	2.00 1.0 0.50 0.20
815084-001	SC-700B-WDR-494	SM2540C	NONE	11/12/2014	15:00	Total Dissolved Solids	0.103 4170	NTU mg/L	0.100 250

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.

**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:

Samples Received on 11/12/2014 7:30:00 PM

Laboratory No. 815084

Page 1 of 6 Printed 12/3/2014

Field ID	Lab ID	Collected	Matrix
SC-700B-WDR-494	815084-001	11/12/2014 15:00	Water

Parameter	Parameter		Α	nalyzed	DF	MDL	RL	Result
815084-001 Specific Conduct	ivity	umho	umhos/cm 11/13/2014		1.00	0.606	2.00	7180
Method Blank								
Parameter Specific Conductivity	Unit umhos	DF 1.00	Result ND					
Duplicate							Lab ID =	815095-001
Parameter Specific Conductivity	Unit umhos	DF 1.00	Result 3.21	Expected 3.23	F	RPD 0.621	Accepta 0 - 10	ance Range
Lab Control Sample								
Parameter Specific Conductivity	Unit umhos	DF 1.00	Result 709	Expected 706	F	Recovery 100	Accepta 90 - 110	ance Range )
MRCCS - Secondary								
Parameter Specific Conductivity	Unit umhos	DF 1.00	Result 709	Expected 706	7	Recovery 100	Accepta 90 - 110	ince Range )
MRCVS - Primary								
Parameter Specific Conductivity	Unit umhos	DF 1.00	Result 1020	Expected 1000	R	Recovery 102	Accepta 90 - 110	ince Range )
MRCVS - Primary								
Parameter Specific Conductivity	Unit umhos	DF 1.00	Result 1020	Expected 1000	R	lecovery 102	Accepta 90 - 110	nce Range

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Client: E2 Consulting Engineers, Inc.

Project Name: PG&E Topock Project

Project Number: 652547.xx.xx.xx

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Parameter		Unit	Ana	lyzed	DF	MDL	RL	Result
815084-001 Chromium, Hexa	avalent	ug/L	11/13	3/2014 12:37 1	.00	0.00600	0.20	ND
Method Blank								
Parameter Chromium, Hexavalent Duplicate	Unit ug/L	DF 1.00	Result ND				Lob ID -	915094 004
Parameter Chromium, Hexavalent Low Level Calibration	Unit ug/L Verification	DF 5.00	Result 0.102	Expected 0.100	F	RPD 1.98		815084-001 Ince Range
Parameter Chromium, Hexavalent Lab Control Sample	Unit ug/L	DF 1.00	Result 0.205	Expected 0.200	26143 <b>F</b>	Recovery 102	Accepta 70 - 130	ince Range
Parameter Chromium, Hexavalent Matrix Spike	Unit ug/L	DF 1.00	Result 5.14	Expected 5.00	F	Recovery 103	90 - 110	nce Range 815084-001
Parameter Chromium, Hexavalent Matrix Spike	Unit ug/L	DF 5.00	Result 5.16	Expected/Adde 5.10(5.00)	d R	Recovery 101	90 - 110	nce Range 815084-001
Parameter Chromium, Hexavalent MRCCS - Secondary	Unit ug/L	DF 1.00	Result 1.15	Expected/Adde 1.11(1.00)	d R	Recovery 104		nce Range
Parameter Chromium, Hexavalent MRCVS - Primary	Unit ug/L	DF 1.00	Result 5.16	Expected 5.00	R	ecovery 103	Accepta 90 - 110	nce Range
Parameter Chromium, Hexavalent MRCVS - Primary	Unit ug/L	DF 1.00	Result 10.2	Expected 10.0	R	ecovery 102	Accepta 95 - 105	nce Range
Parameter Chromium, Hexavalent MRCVS - Primary	Unit ug/L	DF 1.00	Result 10.1	Expected 10.0	R	ecovery 101	Acceptar 95 - 105	nce Range
Parameter Chromium, Hexavalent	Unit ug/L	DF 1.00	Result 10.2	Expected 10.0		ecovery 102	Acceptar 95 - 105	nce Range

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Client: E2 Consulting Engineers, Inc.

Project Name: PG&E Topock Project

Project Number: 652547.xx.xx.xx

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Parameter		Unit	Ana	ılyzed [	)F	MDL	RL	Result
815084-001 Chromium		ug/L	11/17	7/2014 15:38 1	.00	0.0710	1.0	ND
Manganese		ug/L	11/17	7/2014 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	R	RPD	Accepta	nce Range
Chromium	ug/L	1.00	ND	0		0	0 - 20	oo range
Manganese	ug/L	1.00	5.91	5.70		3.67	0 - 20	
Low Level Calibration \	/erification	1,						
Parameter	Unit	DF	Result	Expected	R	Recovery		nce 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	R	ecovery	Accepta	nce 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 = 8	815084-001
Parameter	Unit	DF	Result	Expected/Added	i R	ecovery	Accepta	nce 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 = 8	315084-001
Parameter	Unit	DF	Result	Expected/Added	l R	ecovery	Accepta	nce 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	R	ecovery		nce Range
Chromium	ug/L	1.00	20.4	20.0		102	90 - 110	J-
Manganese	ug/L	1.00	20.8	20.0		104	90 - 110	
MRCVS - Primary								
Parameter	Unit	DF	Result	Expected	R	ecovery	Acceptar	nce Range
Chromium	ug/L	1.00	20.5	20.0		102	90 - 110	

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Client: E2 Consulting Engineers, Inc.

Project Name: PO

PG&E Topock Project

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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

- Wangasiese	ug/L	1.00	20.5	20.0	102	80 - 120
Total Dissolved Solids b	y SM 254	<b>10 C</b> Unit		h 1411159 alyzed	DF MD	DL RL Result
815084-001 Total Dissolved S	Solids	mg/L		3/2014	1.00 1.76	250 4170
Method Blank					1.00 1.70	230 4170
Parameter Total Dissolved Solids Duplicate	Unit mg/L	DF 1.00	Result ND			Lab ID = 815084-001
Parameter Total Dissolved Solids	Unit mg/L	DF 1.00	Result 4190	Expected 4170	RPD 0.478	Acceptance Range 0 - 10
Lab Control Sample						
Parameter Total Dissolved Solids	Unit mg/L	DF 1.00	Result 470	Expected 500	Recovery 94.0	Acceptance Range 90 - 110
Parameter 815084-001 Turbidity		Unit NTU	****	llyzed	DF MD	
815084-001 Turbidity		NTU	11/13	3/2014	1.00 0.0140	0.100 0.103
Method Blank						
Parameter Turbidity	Unit NTU	DF 1.00	Result ND			
Duplicate						Lab ID = 815096-004
Parameter Turbidity	Unit NTU	DF 1.00	Result 0.107	Expected 0.110	RPD 2.76	Acceptance Range 0 - 20
Lab Control Sample						
Parameter Turbidity	Unit NTU	DF 1.00	Result 7.21	Expected 8.00	Recovery 90.1	Acceptance Range 90 - 110
Lab Control Sample Du	•					
Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range

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

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Project Number: 652547.xx.xx.xx

Printed 12/3/2014

Respectfully submitted,

TRUESDAIL LABORATORIES, INC.

€ 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	<u>·</u> .
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	
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	
14K0187-01	100	72.0564	72.1158	72.1154	0.0004	No	0.0590	590.0	25.0	590.0	<del>`</del>
4K0186-05 Dur	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	<del>`</del>
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	<del>.</del>
14K0218-01D	100	76.1994	76.2445	76.2444	0.0001	No	0.0450	450.0	25.0	450.0	<u>-</u> 1
14K0218-02	100	78.3705	78.4175	78.4171	0.0004	No	0.0466	466.0	25.0	466.0	<u>-</u> 1
14K0224-01A	10	30.3648	30.4065	30.4065	0.0000	No	0.0417	4170.0	250.0	4170.0	<u></u>
4K0224-01 Dur	10	30.0504	30.0925	30.0923	0.0002	No	0.0419	4190.0	250.0	4190.0	1

Calculation as follows:

Filterable residue (TDS), mg/L =

 $\left(\frac{A-B}{C}\right) x \mid 0^6$ 

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	470.0	500	94.0%	90-110%	Yes
LCSD					

**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

LCS Recovery

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

P = Percent recovery.

LC = Measured LCS value (ppm).

LT = Theoretical LCS value (ppm).

**Duplicate Determination Difference** 

% Difference = 
$$\frac{|A \text{ or } B - C|}{C} \times 100$$
where  $C = \frac{A + B}{2}$ 

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

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

C = Average weight in (g).

Maksim G.

Reviewer Printed Name

Jenny T.

Analyst Printed Name

#### 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

Mil D-

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-494]

815084/	<i>14K</i>	02.2	4
2221			8

COC Number

10	Days

TURNAROUND TIME \_\_\_\_\_

PAGE 1 OF

																		***************************************		*************			*********	
COMPANY	E2	/					/	$\overline{}$	$\overline{I}$	7	$\overline{I}$	$\overline{}$	$\overline{}$	$\overline{}$	$\overline{}$	7	$\overline{}$	$\overline{}$	7	7	T	T		
PROJECT NAME	PG&E Topock																						COMM	ENTS
PHONE	(530) 229-3303		FAX (53)	0) 339-3303		,	/ /	/ /	/ /	/ /	/ /	/ /	/ /	/ /	/ /	/ /	/ /	/ /	/ /	/ /	/			
ADDRESS	155 Grand Ave	Ste 1000					/,		$\mathcal{L}$												SX			
	Oakland, CA 94	1612				/2	/ ১	. \2												N. X.				
P.O. NUMBER	652547.xx.xx.xx		TEA	w <u>1</u>	,	Lab Fillered	(200.8)	tance (	,	/	(g)	/ /	/ /	/ /	/	/ /	/ /	/	/ /	CONTAINE				
SAMPLERS (SIGNAT	URE M.	yon:			Cr6 (218.6.	Total Mat	inerals (2)	1DS (SM2540)	Σης/ 	Turbidity (c.)	121101				/				NUMBES	o /				
SAMPLE I.D.		DATE	TIME	DESCRIPTION	8	70#	Sper					//				/_/	/		\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\					
SC-700B-WDR-	494	11/12/14		Water	х	х	х	х		х									3		D	4 = 1	05)0	0.8)
							an a series of popularity	and the state of t		and the second second second second second second second second second second second second second second seco	AND TO BE THE STATE OF THE STAT		mo managan da Q	Medicana I o I rico carañ Car			ng di nastrata kang Tigana pandipan			тот	AL NU	IMBER	OF CONT	AINERS

Please Provide a preliminary Result for the TDS ASAP



CH	IAIN OF CUSTODY SI	GNATURE RECORD	······································	SAMPLE CONDITIONS
Signature (Relinquished)	Printed GEORGE GLORIA	Company/ E2	Date/     -   2 -   4 Time   500	RECEIVED COOL WARM 4.1°C
Signature (Received) Elal Myo	Printed THANH NGO	Company/ Agency TICUES DAIL	Date/ 1/2:14 Time / 1/20	CUSTODY SEALED YES NO
Signature (Relinquished) Chan N-91	Printed PHAIUH NGC	Company/ Agency	Date/ 11 - 12 - 14 Time 1936	SPECIAL REQUIREMENTS:
(Relinquished) (MM) (V-4)/ Signature OReceived) (MM) (Atom)	Printed Name Michael 193	Company/ Agency	Date/ Time 11/12/14 19/30	
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

# 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	1470416	8.03	D.SmL /25mL	4.5	23 128	hic
			100 ml/2ml	9-5	7:40	NE ·
1	14K0083-01		1	9.5	7:30	NB
1	1/ _02	1	1,		V	L
	14 K 20 84-01		2 ml 1 100 ml	9.5	7.30	NE
V	-02	1		1	7	
11/13/14	14K0224-01	6:00	and /100 ml	9.5	7:10	NE
1	1440004-1	7.50	25ml/.5ml	9-5	7.00	NÉ
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	V -4	V	V	1	J	J.
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M 1418,14

C:\My Documents\Templates\Hexavalent Chromium\Cr6+ pH Log



Turbidity/pH Check

				luro	idity/pH (	леск	·		
	Sample Number	Turbidity	pН	Date	Analyst	Need Digest (Y/N)	Time of Adjustment to pH 2	Date/Time of 2nd pH check	Comments
	11/16/1007-17	41	72	11/10/11	区	NO	S:W	Wil Griphi	PHIZ
	14/20141-01	41	72	ntuty	ES	· Yes	1: W		1
	14/20151-01	L1	Z2	1	1	i			
	14K0152-01	1	ı						
	14KO173-01	フリ							
	- 07	<b>∠</b> i							
	14120193-01	7		T		T			
	14/20213-06	21	72	11/12/14	ES	ND	11:00	11/13/14 2/100	PHUZ
	14/2 0190-02	フ゛	62		1	709			
	14/20211-01	41	V	1	V	T T			
	14 K U 228 (10-12)	21	プス	11/13/14	ES	NO	10:00	white other	PHIN
	14KO229(01-02	) ·[	1	Ì	i	<b>√</b>	V	Ų	
	14KO 165-02	$\downarrow$	22			Yes			
	iukolbi-02	71	١			1			
	14KO 669-02	41							
	14K0169-02	J							
	14KO218-01	71							
	-07	21	1	$\overline{\mathbf{V}}$	<u> </u>	V			
	14KO188-02	1	42	11/13/14	ES	4-65			
	14K0 189-02								
	14K0190-02	<i>ν</i>		·					
	14K0191-02	71 L							
	14KO192-02			1	- 1	1			
1	14K0004 fa,-02,-03,-09	1 <1	> 2	11/11/14	pen	Nb	10:00	प्राष्ट्रीप भावाण	
ļ	14K0224-01	<1	> 2	11/17/14	7m	<u>ges</u>	10:00		pH22
-	14/6291-01	<\	> 2	11/17/14	m	NO	11:15	ભાગાલ માજા	PHILZ
1	14/20238-01	71	22	11/18/17	ES	yes			
-	14K0240 - 01	L1			il				
-	14K02a4-01	71							
F	-12	<u> </u>	<u> </u>						
-	14 K 0283 01	<u> </u>	42	11(19114	ΕŞ	Tes			
-	14K0286-01			1		1			
ŀ	14KU 28 1-01		¥	1		No	(۵۰۰۸)	Janlan	PHLZ
$\vdash$	<del></del>		72			<i>1</i> ≥0	10:07)	1/20/19D10	Turo a
H	03 05	-	- 1 -						
$\vdash$		+ +						1	
-	D 7								
+	· · · · · · · · · · · · · · · · · · ·		1						
-	14K 0112-01 -02								
-		1	1						<del></del>
-	-04 4K 0329-01	41	77	malid	ES	725	11:00		PHZZ
H	111 0836 01	71	72 42	119119	07	100	11,00		.,
H	4K0334-01	1	1	1	1	$\rightarrow$			
L	UX	V	V	<b>y</b>		V			

- 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 Manager: Sean Condon Project: Topock IM3Plant-WDR Weeky Project Number: PGE-2152 Report To: **Invoice To:** E2 Consulting Engineers, Inc. E2 Consulting Engineers, Inc. Christi Gitlin Christi Gitlin 1900 Powell Street, Suite 250 1900 Powell Street, Suite 250 Emeryville, CA 94608 Emeryville, CA 94608 Phone: 510-428-4728 Phone:510-428-4728 Fax: 510-652-5604 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

Analysis	Due	TAT	Expires	Comments
14K0224-01 SC-700B-WI (GMT-08:00) Pacific Time		d 11/12/20	14 15:00	
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	



Samples received in Yes

11/18/14



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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

Hickael

Michael Ngo

Quality Assurance/Quality Control Officer

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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

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

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Laboratory No.: 815085

Date Received: November 18, 2014

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

# **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	ити	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.

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Page 1 of 6

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Printed 12/3/2014

Laboratory No. 815085

### 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:

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

Parameter		Unit	Ana	alyzed	DF	MDL	RL	Result
815085-001 Specific Condu	ctivity	umhos/cm 11/20/2014		1.00	0.606	2.00	7250	
Method Blank							¥1	
Parameter Specific Conductivity	Unit umhos	DF 1.00	Result ND					
Duplicate							Lab ID =	815087-001
Parameter Specific Conductivity Lab Control Sample	Unit umhos	DF 1.00	Result 2.66	Expected 2.44	F	RPD 8.63	Accepta 0 - 10	ance Range
and the second s	The second second	prilitan inge	Denis	u kaminanji k		연52 - 기가 Value - 기가		
Parameter Specific Conductivity MRCCS - Secondary	Unit umhos	DF 1.00	Result 713	Expected 706		Recovery 101	90 - 110	ance Range )
Parameter Specific Conductivity MRCVS - Primary	Unit umhos	DF 1.00	Result 713	Expected 706	<b>F</b>	Recovery 101	Accepta 90 - 110	ance Range
Parameter Specific Conductivity	Unit umhos	DF 1.00	Result 1090	Expected 1000	F	Recovery 109	Accepta 90 - 110	ance Range )
MRCVS - Primary								
Parameter Specific Conductivity	Unit umhos	DF 1.00	Result 1090	Expected 1000	F	Recovery 109	Accepta 90 - 110	ance Range )

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

Project Number: 652547.xx.xx

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Parameter		Unit	Ana	alyzed	DF	MDL	RL	Result
815085-001 Chromium, Hexa	valent	ug/L	11/19	9/2014 14:59	1.00	0.00600	0.20	ND
Method Blank					100	. :		
Parameter	Unit	DF	Result					
Chromium, Hexavalent	ug/L	1.00	ND					
Duplicate							Lab ID =	815085-001
Parameter	Unit	DF	Result	Expected	F	RPD	Accepta	ance Range
Chromium, Hexavalent	ug/L	5.00	0.0890	0.0895		0.560	0 - 20	3 -
Low Level Calibration \	Verification							
Parameter	Unit	DF	Result	Expected	R	lecovery	Accepta	ince Range
Chromium, Hexavalent	ug/L	1.00	0.186	0.200		93.0	70 - 130	•
Lab Control Sample								
Parameter	Unit	DF	Result	Expected	R	ecovery	Accepta	ince Range
Chromium, Hexavalent	ug/L	1.00	5.19	5.00		104	90 - 110	_
Matrîx Spike							Lab ID =	815085-001
Parameter	Unit	DF	Result	Expected/Adde	ed R	ecovery	Accepta	nce 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/Adde	ed R	ecovery	Accepta	nce Range
Chromium, Hexavalent	ug/L	1.00	1.14	1.07(1.00)		107	90 - 110	1
MRCCS - Secondary								
Parameter	Unit	DF	Result	Expected	R	ecovery	Accepta	nce Range
Chromium, Hexavalent	ug/L	1.00	5.15	5.00		103	90 - 110	1
MRCVS - Primary								
Parameter	Unit	DF	Result	Expected	R	ecovery	Accepta	nce Range
Chromium, Hexavalent	ug/L	1.00	10.2	10.0		102	95 - 105	
MRCVS - Primary								
Parameter	Unit	DF	Result	Expected	R	ecovery	Accepta	nce Range
Chromium, Hexavalent	ug/L	1.00	10.1	10.0		101	95 - 105	-
MRCVS - Primary								
Parameter	Unit	DF	Result	Expected	R	ecovery	Accepta	nce Range
Chromium, Hexavalent	ug/L	1.00	10.2	10.0		102	95 - 105	-

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Client: E2 Consulting Engineers, Inc.

Project Name: PG&E Topock Project

Project Number: 652547.xx.xx.xx

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Parameter		Unit	Analy	zed [	)F	MDL	RL	Result
815085-001 Chromium		ug/L	11/25/2014 16:58		.00	0.0710	1.0	ND
Manganese		ug/L	11/25/	2014 16:58 1	.00	0.0600	0.50	5.9
Method Blank				ye				
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	ı	RPD	Accepta	nce Range
Chromium	ug/L	1.00	ND	0		0	0 - 20	<b>J</b> 1
Manganese	ug/L	1.00	5.90	5.95		0.844	0 - 20	
Low Level Calibration V	erification							
Parameter	Unit	DF	Result	Expected		Recovery	Accepta	nce 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	I	Recovery	Accepta	nce 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 = 8	815085-001
Parameter	Unit	DF	Result	Expected/Adde	d F	Recovery	Accepta	nce 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 = 8	315085-001
Parameter	Unit	DF	Result	Expected/Adde	d F	Recovery	Accepta	nce 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	F	Recovery	Accepta	nce 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	F	Recovery	Acceptar	nce Range
Chromium	ug/L	1.00	19.6	20.0		97.9	90 - 110	J

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**Total Dissolved Solids** 

mg/L

1.00

492

500

Report Continued

Client: E2 Consulting E	ngineers, Ind		Project Name: Project Numbe	PG&E Topo er: 652547.xx.:	•	P Printed 1	age 5 of 6 2/3/2014
Interference Check S	Standard AB						
Parameter Chromium Interference Check S	Unit ug/L Standard AB	DF 1.00	Result 18.9	Expected 20.0	Recovery 94.4	Accepta 80 - 120	ince Range
Parameter Manganese Interference Check S	Unit ug/L Standard AB	DF 1.00	Result 18.5	Expected 20.0	Recovery 92.6	Accepta 80 - 120	ince Range
Parameter Manganese	Unit ug/L	DF 1.00	Result 18.9	Expected 20.0	Recovery 94.6	Accepta 80 - 120	nce Range
Total Dissolved Solids Parameter	by SM 2540	C Unit		1411278 lyzed	DF MDL	RL	Result
815085-001 Total Dissolved	Solids	mg/L	11/21	/2014	1.00 1.76	250	4280
Method Blank Parameter Total Dissolved Solids	Unit mg/L	DF 1.00	Result ND	ese un	Art de la	1. 2	-11 x x
Duplicate	mg/L	1.00	ND			Lab ID =	815085-001
Parameter Total Dissolved Solids Lab Control Sample	Unit mg/L	DF 1.00	Result 4170	Expected 4280	RPD 2.60	Accepta 0 - 10	nce Range
Parameter	Unit	DF	Result	Expected	Recovery	Accepta	nce Range

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012

98.4

90 - 110



Client: E2 Consulting Engineers, Inc.

Project Name: PG&E Topock Project

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Project Number: 652547.xx.xx.xx

Turbidity by SM 2130 E	3		Batch	n 1411355				
Parameter		Unit	Ana	ılyzed	DF	MDL	RL	Result
815085-001 Turbidity		NTU	11/19	9/2014	1.00	0.0140	0.100	ND
Method Blank								
Parameter Turbidity	Unit NTU	DF 1.00	Result ND					
Duplicate							Lab ID =	815097-007
Parameter Turbidity Lab Control Sample	Unit NTU	DF 1.00	Result 0.109	Expected 0.104	<b>.</b> 	RPD 4.69	Accepta 0 - 20	nce Range
Parameter Turbidity Lab Control Sample	Unit NTU Duplicate	DF 1.00	Result 7.47	Expected 8.00	F	Recovery 93.4	Accepta 90 - 110	nce Range
Parameter Turbidity	Unit NTU	DF 1.00	Result 7.68	Expected 8.00	F	Recovery 96.0	Accepta 90 - 110	nce Range

Respectfully submitted,

TRUESDAIL LABORATORIES, INC.

Manager, Analytical Services

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### 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	
14K0345-03	100	69.7380	69.7860	69.7856	0.0004	No	0.0476	476.0	25.0	476.0	1
4K0329-01 Dur	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	<u>.</u> 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
1K0349-02 Dur	100	79.4888	79.5334	79.5331	0.0003	No	0.0443	443.0	25.0	443.0	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.	Measurd Value, ppm	Theoretical Value, ppm	Percent Rec	Acceptance Limit	QC Within Control?
LCS	492.0	500	98.4%	90-110%	Yes
LCSD					

**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

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

P = Percent recovery.LC = Measured LCS value (ppm).

LT = Theoretical LCS value (ppm).

**Duplicate Determination Difference** 

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

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

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

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

C = Average weight in (g).

Maksim G.

Reviewer Printed Name

Jenny T.

Analyst Printed Name

#### Total Dissolved Solids by SM 2540 C

#### TDS/EC CHECK

Batch: 1411278

Date Analyzed: 11/21/2014

_aboratory 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

### **CHAIN OF CUSTODY RECORD**

[IM3Plant-WDR-495]

815085/			
COC Number 14K	032	29	
TURNAROUND TIME	10	Days	
DATE 11/18/14	PAGE	1	0

~																		******		************	-				***************************************
COMPANY	E2				T	***************************************	7	$\overline{}$	$\overline{}$	7	$\overline{}$	7	7	$\overline{}$	7	7	7	7	7	7	$\overline{T}$	T			
PROJECT NAME	PG&E Topock																						COM	MENTS	
PHONE	(530) 229-3303	makakeumanan sanat menggapan	FAX (530	0) 339-3303			/ ,	/ /	/ /	/ /	/ /	/ /	/ ,	/ /	/ /	/ /	/ /	/	/	/ /	/ /				
ADDRESS	155 Grand Ave	Ste 1000					' /.		$\mathcal{L}$												84.				
	Oakland, CA 94	1612				/"	1 1	120 11	•	/															
P.O. NUMBER	652547.xx.xx.xx		TEAM	A <u>1</u>		Lab Fillered	(200.8)	, ice	/ /	Turbidity Is.	(2130)	/ /	/ /	/ /	/ /	/ /	/ /	/ /	/ /	OF CONTAINE.					:
SAMPLERS (SIGNA	TURE	to fly	W	T-100-1-7-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1	Cs6 (210.5)	70 M/BO	ii (ji	7DS (SMP.E.		Jije (S)	<u> </u>								NUMBE	Xy /					
SAMPLE I.D.		DATE	TIME	DESCRIPTION	18	70g/	\\ \delta	Sã	/_/	1,mp															
SC-700B-WDF	R-495	11/18/14	800	Water	x	х	х	х		х									3		p	H=6	Ĉza	x0. g	)
A.													ann ann a Mg I Milyaba		TOTAL SERVICE STATE SERVICE	end e wije wee een een de eerste een de eerste een de eerste een de eerste een de eerste een de eerste een de e	elitate purigizatur con		3	то	TAL NL	JMBER	OF CON	ITAINER	lS

Please Provide a preliminary Result for the TDS ASAP



O CHA	IN OF CHETODY CI	SNATURE RECORD								
	IN OF COSTODY SIC	SNATURE RECURD		, ,	SAMPLE CONDITIONS					
	rinted CHRIS CENT	Company/ CH Zm H1(	Date/ Time	11/18/14	RECEIVED	COOL	U v	VARM 🔲	3.5°C ==	
10	rinted lame THANH N60	Company/ Agency Taliful A/	Date/ Time	1400	, CUSTODY SE	ALED	YES 🗖	NO		
100 11 11 11 11 11 11	rinted THANH Ko	Company/	Date/	7 7 1 1 1	<u> </u>			9*####################################	bond .	
		Agency Frue	Time	1845	SPECIAL REQUIRE	MENTS:				
oignature v P	rinted	Company/ que 1018/14	Date/	11/18/4						
	ame Tom Martiner	Agency Truesdail	Time	18:45						
	rinted	Company/	Date/							
(Relinquished) N	ame	Agency	Time							
	rinted	Company/	Date/							
(Received) N	ame	Agency	Time							

## 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	1470416	8.03	D.S.ML /25mL	4.5	23 123	hic
10/29/14	14J0415@1	7.00	100 ml/2ml	9.5	7:40	NE
11/05/14	14K0083-01	6.00	2 ml, 100 ml	9.5	7:30	NE
	./ _ 02	J				
S efficiency	14 4 2034-61		2 ml 1 100 ml	9.5	7:30	NE
V	- 02	J		- Transport	7	<u>l</u> .
11/13/14	14K0224-01	6:00	and 1100 ml	9.5	7:10	NE
11/14/14	1440004-1	7.00	25 ml 1 · 5 ml	9.5	7:00	NE
1	ı 2.				<u> </u>	
	-3					
	V-4	<del>V</del>	V	J	V	V
11/19/14	14 KO 329-01	6:00	2ml/100 nl	9.5	7:15	NE
1	14160288-01		15 N 125 M	9.5	7:30	NE
)	1 - 62	J	l		J	
11/24/14	40384-01	7.00	·5 nl/25 nl	9.5	8:00	NE
J	-02	1		<u> </u>	1	<b>↓</b>
1426111	141009118					
	14100413-4	6:00	2ml, 100 ml	9.5	7:30	NÉ
12/3/14	1440070-01	6.00	2 ml 1 100 ml	9.5	8:00	NE
	1 -02					
	1420071-01					
V	-02	<b>V</b>	J	<b>V</b>	<u> </u>	$\checkmark$
					<u> </u>	

12/3/1 U



Turbidity/pH Check

			TUTDI	dity/pH C	neck	7		
Sample Number	Turbidity	рН	Date	Analyst	Need Digest (Y/N)	Time of Adjustment to pH 2	Date/Time of 2nd pH check	Comments
11/16/1007-17	41	72	Moily	区	NO	5:W	WII GRIMMI	PHIL
14/20141-01	41	72	nluly	ES	Yes	1:00		
14/20151-01	1	22	1		1			
14K0152-01	T							
14KO173-01	フリ	•						
.02	41							
14120193-01		V	<u> </u>	<u> </u>	1		No. 1	20.2
14/2/17-06	<u> </u>	72	11/12/14	ES	ND	11500	11/13/14 0/1600	PHUZ
14/2 0190-02	フリ	22	ļ <b>l</b>		<u> 795 </u>			
14/20211-01	Z1 Z1	<u> </u>	11.01.11	<u>\frac{1}{V}</u>	10	10:00	white other	NU 13
14 K U 228 (10-12)	' ,	72	1110114	ES	No	·		PHIN
14KO229(01-02)	)	<u> </u>					<u> </u>	
14K0165-02	71	22			<u> 125</u>			
14K0169-02	41							
14K0169-02	1							
14/02/8-01	71		<del>                                     </del>					
-07	21				J			
14KO188-02	4	42	11/13/14	ES	4-es			***
14KO 189-02		1	1	1	1			
14K0190-02	1							^****
14K0191-02	71							
14KO192-02	L							
14K0004 fa,-02,-03,-09	1 > 1	> 2	11/11/14	pu	Nb	10:00	मिशिति भणः क	
1416224-01	´<1	> 2	11/17/14	7m	<u> </u>	10:00		pH 22
14/16291-01	<١	>2	11/17/14	m	NO	11:15	भाषात ७ १६७०	PH162
14160238-01	71	22	11/18/14	ES	Yes			
14K0240-01	L1			í				
14K0294-01	71							
-62	<u> </u>	<u> </u>		ΕŞ				
14K028301	<u> </u>	<u> </u>	गावाप	67	tes			
14KU287-01			1 1					
14KU 333601		72			No	10:07)	n/20/1420 10	PHLZ
		7			1	1070	into distance	i
03		1						
07					-			
0 01				1				
14K 0112-01		1						
- 62								
-04	$\downarrow$	V	V .	1		V		Ψ <u></u>
14K 0329-01	۷1	72	11/19/14	ES	785	11:10		PH ZZ
14K0376-01	71	22	1					
-02		<u> </u>	V	<b>→</b>	$\overline{}$			

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

Printed: 11/19/14 7:42:15AM

14K0329

### Truesdail Laboratories, Inc

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

Project Manager: Project Number:

Sean Condon 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: Logged In By: Tom Martinez

Date Received:

11/18/2014 18:45

Luda Shabunina

Date Logged In:

11/19/2014 07:40

Samples Received at:

Chain of Custody re Yes Letter (if sent) matc No

Samples intact?

3.5°C

Yes 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 (GMT-08:00) Pacific Time (US &		d 11/18/20	14 08:00	
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	





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

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

Sample: One (1) Groundwater Sample

**Project Name:** PG&E Topock Project **Project No.:** 652547.01.IM.OP.00

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

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Laboratory No.: 815094

Date Received: November 25, 2014

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

## **Analytical Results Summary**

		Analysis	Extraction		Sample				
Lab Sample ID	Field ID	Method	Method	Sample Date	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.

**EXCELLENCE IN INDEPENDENT TESTING** 



Established 1931

Page 1 of 6

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Printed 12/12/2014

Laboratory No. 815094

### 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:

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 - E	PA 120.1		Batcl	n 1411397						
Parameter		Unit Analyzed			DF	MDL	RL	Result		
815094-001 Specific Conduct	tivity	umhos/	cm 11/26	11/26/2014		m 11/26/2014 1.00 0.606		1.00 0.606		7260
Method Blank										
Parameter Specific Conductivity Duplicate	Unit umhos	DF 1.00	Result ND				I ah ID =	815101-003		
Parameter Specific Conductivity Lab Control Sample	Unit umhos	DF 1.00	Result 896	Expected 895	F	RPD 0.112		ance Range		
Parameter Specific Conductivity MRCCS - Secondary	Unit umhos	DF 1.00	Result 764	Expected 706	F	Recovery 108	Accepta 90 - 110	ance Range )		
Parameter Specific Conductivity MRCVS - Primary	Unit umhos	DF 1.00	Result 764	Expected 706	F	Recovery 108	Accepta 90 - 110	ance Range )		
Parameter Specific Conductivity MRCVS - Primary	Unit umhos	DF 1.00	Result 937	Expected 1000	F	Recovery 93.7	Accepta 90 - 110	ance Range )		
Parameter Specific Conductivity	Unit umhos	DF 1.00	Result 937	Expected 1000	F	Recovery 93.7	Accepta 90 - 110	ance Range )		



Client: E2 Consulting Engineers, Inc.

Project Name:

PG&E Topock Project

Page 2 of 6

009

Project Number: 652547.01.IM.OP.00

Printed 12/12/2014

Chrome VI by EPA 218.6

Batch 1412035

Parameter		Unit	Analyzed		F MDL	RL Result
815094-001 Chromium, Hexa	valent	ug/L	12/02	2/2014 13:50 1.	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 Chromium Hovevolont	Unit	DF 5.00	Result	Expected/Added	•	Acceptance Range
Chromium, Hexavalent Matrix Spike	ug/L	5.00	5.17	5.15(5.00)	100	90 - 110
•	1.1	DE *	D "		_	Lab ID = 815094-001
Parameter Chromium, Hexavalent	Unit ug/L	DF <sup>*</sup> 1.00	Result 1.20	Expected/Added	Recovery 105	Acceptance Range 90 - 110
MRCCS - Secondary	ug/L	1.00	1.20	1.14(1.00)	105	90 - 110
Parameter	Unit	DF	Dooult	Evenented	D	A 1
Chromium, Hexavalent	ug/L	1.00	Result 5.24	Expected 5.00	Recovery 105	Acceptance Range 90 - 110
MRCVS - Primary	ug/L	1.00	0.24	3.00	103	90 - 110
Parameter	Unit	DF	Dogult	Cynostad	D	A
Chromium, Hexavalent	ug/L	1.00	Result 10.4	Expected 10.0	Recovery 104	Acceptance Range 95 - 105
	~ <del>5</del> , –		10.1		107	JU - 100



Client: E2 Consulting Engineers, Inc.

Project Name: PG&E Topock Project

Project Number: 652547.01.IM.OP.00

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Metals by EPA 200.8, Tot Parameter	-	Unit		1 120314B		8.45	<b></b>	erit
					F	MDL	RL	Result
815094-001 Chromium		ug/L			00	0.0710	1.0	ND
Manganese		ug/L	12/03	3/2014 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	R	PD	Accepta	ince 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 \	/erification							
Parameter	Unit	DF	Result	Expected	R	ecovery	Accepta	nce Range
Chromium	ug/L	1.00	0.472	0.500		94.4	70 - 130	0
Manganese	ug/L	1.00	0.168	0.200		84.0	70 - 130	)
Lab Control Sample								
Parameter	Unit	DF	Result	Expected	R	ecovery	Accepta	nce 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	Re	ecovery	Accepta	nce 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 = I	815094-001
Parameter	Unit	DF	Result	Expected/Added	Re	ecovery	Accepta	nce 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	Re	ecovery	Acceptai	nce Range
Chromium	ug/L	1.00	20.1	20.0		100 Î	90 - 110	-
Manganese	ug/L	1.00	20.1	20.0		101	90 - 110	
MRCVS - Primary								
Parameter	Unit	DF	Result	Expected	Re	ecovery	Acceptar	nce 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.

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Client: E2 Consulting Engineers, Inc.

Project Name: PG&E Topock Project

Project Number: 652547.01.IM.OP.00

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Parameter		Unit	Ana	lyzed	DF	MDL	RL	Result
815094-001 Total Dissolved	Solids	mg/L		1/2014	1.00	1.76	250	4000
Method Blank		9/ –	.2,0	72011	1.00	1.70	230	4000
Parameter Total Dissolved Solids Duplicate	Unit mg/L	DF 1.00	Result ND				Lab ID =	815101-004
Parameter Total Dissolved Solids Lab Control Sample	Unit mg/L	DF 1.00	Result 501	Expected 489		RPD 2.42		ince Range
Parameter Total Dissolved Solids	Unit mg/L	DF 1.00	Result 492	Expected 500		Recovery 98.4	Accepta 90 - 110	nce Range
Turbidity by SM 2130 B Parameter		Unit		1411444 lyzed	DF	MDL	RL	Result
815094-001 Turbidity		NTU	11/26	/2014	1.00	0.0140	0.100	0.128
Method Blank								
Parameter Turbidity	Unit NTU	DF 1.00	Result ND					
Duplicate							Lab ID = 8	815101-002
Parameter Turbidity Lab Control Sample	Unit NTU	DF 1.00	Result ND	Expected 0	1	RPD 0	Accepta 0 - 20	nce Range
Parameter	Unit	DF	Result	Evenented	,	<b>D</b>		_
Turbidity	NTU	1.00	8.33	Expected 8.00		Recovery 104	90 - 110	nce Range
Lab Control Sample D	uplicate						,,0	
Parameter Turbidity	Unit NTU	DF 1.00	Result 8.05	Expected 8.00	i	Recovery 101	Acceptar 90 - 110	nce Range

012



Client: E2 Consulting Engineers, Inc.

Project Name: PG&E Topock Project Page 6 of 6

013

Project Number: 652547.01.IM.OP.00

Printed 12/12/2014

Respectfully submitted,

TRUESDAIL LABORATORIES, INC.

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	<u>_</u>
14K0381-01A	200	110.9383	110.9459	110.9455	0.0004	No	0.0072	36.0	12.5	36.0	<u>·</u>
14K0394-01B	100	76.6592	76.7008	76.7007	0.0001	No	0.0415	415.0	25.0	415.0	
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	<u></u> _
14K0430-01B	100	66.6892	66.7389	66.7385	0.0004	No	0.0493	493.0	25.0	493.0	
14K0430-02	100	68.5353	68.5862	68.5859	0.0003	No	0.0506	506.0	25.0	506.0	<u>'</u> 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	<u>-</u>
4K0430-04 Dur	100	78.3503	78.4004	78.4004	0.0000	No	0.0501	501.0	25.0	501.0	<u>-</u>
LCS	100	74.7173	74.7667	74.7665	0.0002	No	0.0492	492.0	25.0	492.0	<u>'</u>
14K0431-01A	100	74.5766	74.6237	74.6237	0.0000	No	0.0471	471.0	25.0	471.0	
14K0431-02	100	74.8582	74.9071	74.9070	0.0001	No	0.0488	488.0	25.0	488.0	<u>-</u>
14K0441-01A	100	77,4876	77.5305	77.5305	0.0000	No	0.0429	429.0	25.0	429.0	<u>'</u>
14L0011-01	400	121.4860	121.4864	121.4861	0.0003	No	0.0001	0.2	6.3	ND	<u>_</u>
14L0011-02	490	168.6123	168.6162	168.6162	0.0000	No	0.0039	8.0	5.1	8.0	<u>-</u>
14L0035-01	100	79.4321	79.4755	79.4755	0.0000	No	0.0434	434.0	25.0	434.0	<u>'</u>
14L0035-02	100	68.7412	68.7874	68.7872	0.0002	No	0.0460	460.0	25.0	460.0	<del>_</del>
								,50.0	20.0	400.0	
4K0431-02 Dur	100	79.1380	79.1872	79.1871	0.0001	No	0.0491	491.0	25.0	491.0	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.	Measurd Value, ppm	Theoretical Value, ppm	Percent Rec	Acceptance Limit	QC Within Control?
LCS	492.0	500	98.4%	90-110%	Yes
LCSD					

**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

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

LC = Measured LCS value (ppm).

LT = Theoretical LCS value (ppm).

### **Duplicate Determination Difference**

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

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

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

C = Average weight in (g).

Maksim G.

Reviewer Printed Name

Jenny T.

Analyst Printed Name

### 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	0.50	
14K0199-02A	744	0.57	256.75	0.87
14K0381-01A		0.61	483.6	0.93
	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

X.

815094/ 14K0413

P'
<u> </u>

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

### **CHAIN OF CUSTODY RECORD**

COC Number

TURNAROUND TIME	10	Days		
DATE 11/25/14	PAGE	1_	OF	_1

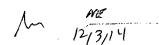
www.	truesdail.com	,				[IN	/I3Plai	nt-WE	)R-49	6]				DAT	E 11/	25/1	4	P	AGE	1 (	0F	1
PHONE ADDRESS P.O. NUMBER	E2 PG&E Topock (530) 229-3303 155 Grand Ave Oakland, CA 94 652547.xx.xx.xx	Ste 1000 1612	FAX (530	) 339-3303 1 <u>1</u>		ab Fillened		120 11		<u>-</u> /	M2138)			DAT	E 11/		OF CONTAINERS		AGE _	СОММЕ		1
SAMPLERS (SIGNA		DATE	TIME	DESCRIPTION	Cof (218 E)	7 (0.0 / 1407 7 (0.0 Met)	Specific Coo.8)	TDS (SM2Ex	<del>*</del> /	Turbidity (c.					//	NUMBER						
SC-700B-WDF	k-496	11/25/14	7:45	Water	x	X	x	х		х						3	PI	/= =	7 C	200	.5)	
																3	тота	L NUME	BER OF	CONTA	INERS	

Please Provide a preliminary Result for the TDS ASAP

√ QH	AIN OF CUSTODY SIG	CNATURE RECORD				***************************************	**************************************
	AIN OF COSTODE SI	SNATURE RECORD			9	SAMPLE CONDITIONS	
Signature ///	Printed	Company/	Date/	11-25-14			4901
(Relinquished) / M/b / Sur	Name CHRIS LEME	Agency CHZMHLL	Time	14:00	RECEIVED COOL	☑ WARM □	7 ( )#
Signature	Printed K	Company A	Date/	11-25-11		_	-
(Received) Shark (190	Name THANH NO	Agency (AUES 1) A) C	Time		CUSTODY SEALED	VEC ET NO	-
Signature	Duinted	Company/		1400	, COSTODT SEALED	YES 🔲 NO	L
(Relinquished) Ella MgB	`/ * 1 \(\A / / \) = \(\I/\)	∕-company/ PAgency	Date/	1951	ODEALL BEALINE		
Signature			Time		SPECIAL REQUIREMENTS:		
(Despired)	Printed	Company/		11/25/14			
(Received) Jew My	Name Tom Martinez	Agency Truesday Labs Inc	Time	18:40			
Signature	Printed	Company/	Date/				
(Relinquished)	Name	Agency	Time				
Signature	Printed	Company/	Date/	***************************************			
(Received)	Name	Agency	Time				
		/ ·3 / · · · · ·	111116	1			

# 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/in	1450416	8.03	D.Sml /25ml	4.5	23 123	,hix	
	14J0415=1	7.00	100 ml/2ml	9.5	7:40	NE	
11/05/14	1 .		2 ml/ 100 ml	9.5	7:30	NB	
	1/ _02	ال				<u> </u>	
	14 K 2084-61	7.00	2 ml / 100 ml	9.5	7:30	NE	
<u> </u>	- 02		J.		7		
14/3/14	14K0224-01	6:00	and /100 ml	9.5	7:10	NE	
11/14/14	1440204-1	7.50	25ml/.5ml	9-5	7:00	NE	
	2				ļ		
	-3						
V	V - 4	<i>V</i>	V	<i>Y</i>	J.	V	
11/19/14	14 KO 329-01		2ml/100ml	9.5	7'15	NE	
11/19/14	14K0283-01	7.00	15 ml 125 ml	9-5	7:30	<i>;</i> √£	
	1 - 02	<u> </u>					
1429/14	40384-01	7.00	·5 nl/25 nl	9.5	8:00	NE	
<u> </u>	-02			<u> </u>	1		
1426/11						15	NE
	14100413-61		2ml, 100 ml	9.5	7:30	NÉ	
12/3/14	1460070-01	6.00	2 ml 1 100 ml	9.5	8:00	NE	
	-02						
	1420071-01						
	_02	<u> </u>	J.	<u> </u>	<u> </u>		
				,	·		





Turbidity/pH Check

		,	TUTDI	dity/pH (	neck		·	
Sample Number	Turbidity	рН	Date	Analyst	Need Digest (Y/N)	Time of Adjustment to pH 2	Date/Time of 2nd pH check	Comments
14K0776-03	フト	12	1111914	ES	429			
144D 245-01	41	72	11/20/14	ES ES	NO_	10:00	11/2/11/ 2/1:00	PH 62
-02	Ψ	1	i	1	1	1		í
14RU760(10-12)		1			1	1		
14/6011-01	41	22			745			
141/ 7301-11	71				1			
14K 0 344-(0;)	J							
-02	2	1		4	U			
14KO 376-01-03		72	V		$N_0$	2:00	11/21/14 WILL	PHIZ
14K0281-02	41	22	11/2/114	ES	789			
14K0307-02	71	i			I			
14KO 304-02	J							
1440709-02	21							
14K0310.02	1							
14K0378.01	71	<u> </u>			<u> </u>			,
14KO382-01	<b>41</b>	72_	1	J	ND	4:00		
14K0381-01	<u> </u>	72	11/24/14		No	10:00		
141人0万24-01	41	22	1	1	Yes			
1440394-01-02	>/	< 2	11/26/14	THE	yes			
1410320-01	7 5	<2						
14/0321-01	>/	cl						
14/10412-01,-02	21	> 2	11/26/14		No	10:45		
14×0414-01,-02-03								
14 K 0413-01	21	72	11/26/14	ES	425	1:30	:	PH62
14160416-01	V	<u> </u>	l V	<u> </u>	No	1:30		
14K6436-02	>/	< Z	11/28/14	m	Yes			
14/10439 (10,-11,-12)	< 1	> 2	12/01/14	m	NO	19:15		
14/1024-0	21	72	12/1114	ES	No	12:00		
14 LODO 3-01	41	<b>2</b>	i i	<del>  </del>	yes			
1410027-01	71			· .				
1410030-01	<u> </u>				-			
146075-01	71							
14 L0015-02	71	<u> </u>	12/2/14		V			
14 LUUIS 0			12/0/19	E	Yes			
141 0051-01	<u> </u>	_\			<b>₩</b> 0	11:0)		
14 L UD12-01	21	72 22	12/2/4	ES	· Yes	11.00		
14 6 0012-07	-1	٠ ـ ـ	12/11/4	レフ	103			
1410119-02								
1410Va0-02								
146021-01				<del></del>				
1420022-02	$\downarrow$				.			
14 600 00 (01-02)	71							
14 6057-01							1	
17 200/1 0	<u> </u>			*				

### Notes:

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

Printed: 12/12/2014 9:27:46AM

### 14K0413

### Truesdail Laboratories, Inc

Client: E2 Consulting Engineers, Inc. Project Manager: Sean Condon Project: Topock IM3Plant-WDR Weeky Project Number: PGE-2571 Report To: **Invoice To:** E2 Consulting Engineers, Inc. E2 Consulting Engineers, Inc. Christi Gitlin Christy Gitlin 1900 Powell Street, Suite 250 1900 Powell Street, Suite 250 Emeryville, CA 94608 Emeryville, CA 94608 Phone: 510-428-4728 Phone:510-428-4728 Fax: 510-652-5604 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: Date Logged In: Shelly Brady 11/26/2014 09:35 Samples Received at: 4°C Chain of Custody re Yes Samples intact? Letter (if sent) mate No Custody seals (if an No

Analysis	Due	TAT	Expires	Comments
14K0413-01 SC-700B-WD (GMT-08:00) Pacific Time		d 11/25/20	014 07:45	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	

Requested analyses Yes

Samples received in Yes

Analyses within hol Yes

12/12/14 Date



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, therefor, 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

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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

Sample: Two (2) Groundwaters
Project Name: PG&E Topock Project
Project No.: 652547.01.IM.OP.00

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

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Laboratory No.: 815099

Date Received: December 2, 2014

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

## **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	12.52	EC			
815099-001	SC-700B-WDR-497	E200.7	NONE		13:52		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		12/2/2014	13:52	BORON	878	ug/L	50.0
815099-001	SC-700B-WDR-497	E200.7 E200.7	NONE	12/2/2014	13:52	lron	ND	ug/L	20.0
815099-001	SC-700B-WDR-497		NONE	12/2/2014	13:52	Zinc	ND	ug/L	20.0
815099-001		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
	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
5					. = 70-		.10	mg/L	0.0000

05



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 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
	SC-100B-WDR-497	E200.7 E200.8	NONE	12/2/2014	13:52	Antimony	ND	ug/L	2.0
815099-002		E200.8	NONE	12/2/2014	13:52	Arsenic	3.4	ug/L	0.50
815099-002	SC-100B-WDR-497 SC-100B-WDR-497	E200.8	NONE	12/2/2014	13:52	Barium	27.9	ug/L	5.0
815099-002		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		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	E200.8					587	ug/L ug/L	5.0
815099-002	SC-100B-WDR-497	E218.6	LABFLT	12/2/2014	13:52	Chromium, Hexavalent Fluoride	2.23	ug/∟ mg/L	0.500
815099-002	SC-100B-WDR-497	E300	NONE	12/2/2014	13:52		2.42	mg/L	0.500
815099-002	SC-100B-WDR-497	E300	NONE	12/2/2014	13:52	Nitrate as N	490		25.0
815099-002	SC-100B-WDR-497	E300	NONE	12/2/2014	13:52	Sulfate	0.253	mg/L NTU	0.100
815099-002	SC-100B-WDR-497	SM2130B	NONE	12/2/2014	13:52	Turbidity	162		5.00
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)	ND	mg/L	5.00
815099-002	SC-100B-WDR-497	SM2320B	NONE	12/2/2014	13:52	Alkalinity, Carbonate (As CaCO3)		mg/L	250
815099-002	SC-100B-WDR-497	SM2540C	NONE	12/2/2014	13:52	Total Dissolved Solids	4410 ND	mg/L	
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.

900

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Page 1 of 37

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Printed 1/6/2015

Laboratory No. 815099

### REPORT

E2 Consulting Engineers, Inc. Client:

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:

Samples Received on 12/2/2014 7:25:00 PM

Collected Matrix Lab ID Field ID Water 815099-001 12/02/2014 13:52 SC-700B-WDR-497 Water 12/02/2014 13:52 815099-002 SC-100B-WDR-497 Batch 1412141 Anions By I.C. - EPA 300.0 RL Result DF MDL Analyzed Unit Parameter 0.500 2.03 5.00 0.0600 12/03/2014 12:47 mg/L 815099-001 Fluoride 2.49 0.0415 0.500 5.00 12/03/2014 12:47 mg/L Nitrate as Nitrogen 0.500 2.23 0.0600 5.00 12/03/2014 12:58 mg/L 815099-002 Fluoride 2.42 0.500 5.00 0.0415 12/03/2014 12:58 mg/L Nitrate as Nitrogen Method Blank DF Result Unit Parameter 1.00 ND mg/L Fluoride ND 1.00 mg/L Nitrate as Nitrogen Lab ID = 815111-003 Duplicate **RPD** Acceptance Range DF Result Expected Unit Parameter 0 - 20 0.280 0 ND mg/L 1.00 Fluoride Lab ID = 815112-001 Duplicate **RPD** Acceptance Range DF Result Expected Unit Parameter 0 - 201.50 0.535 1.49 mg/L 1.00 Nitrate as Nitrogen Lab Control Sample Acceptance Range Expected Recovery DF Result Unit Parameter 90 - 110 104 1.00 4.14 4.00 mg/L Fluoride 90 - 110 99.3 4.00 3.97 mg/L 1.00 Nitrate as Nitrogen Lab ID = 815111-003 Matrix Spike Acceptance Range Expected/Added Recovery Unit DF Result Parameter 99.2 85 - 1152.26 2.28(2.00)1.00 mg/L Fluoride



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Anions By I.C EPA 300	.0		Bato	ch 1412177				
Parameter		Unit	An	alyzed	DF	MDL	RL	Result
815099-001 Sulfate		mg/L	12/0	04/2014 00:05	50.0	1.54	25.0	495
815099-002 Sulfate		mg/L	12/0	04/2014 00:16	50.0	1.54	25.0	490
Method Blank				· 基础 [ ] 基础				A CHARLES
Parameter Chloride Sulfate	Unit mg/L mg/L	DF 1.00 1.00	Result ND ND					
Duplicate							Lab ID =	815113-002
Parameter Chloride Duplicate	Unit mg/L	DF 50.0	Result 135	Expected 140		RPD 3.35	0 - 20	ance Range 815114-001
Parameter Sulfate Lab Control Sample	Unit mg/L	DF 5.00	Result 46.2	Expected 46.1		RPD 0.228		ance Range
Parameter Chloride Sulfate Matrix Spike	Unit mg/L mg/L	DF 1.00 1.00	Result 4.04 20.1	Expected 4.00 20.0		Recovery 101 100	90 - 110 90 - 110	
Parameter Chloride	Unit mg/L	DF 50.0	Result 341	Expected/ <i>A</i> 340(200)	Added	Recovery 100		ance Range
Matrix Spike							Lab ID =	815114-001
Parameter Sulfate MRCCS - Secondary	Unit mg/L	DF 5.00	Result 149	Expected/ <i>F</i> 146(100)	∖dded	Recovery 103	Accepta 85 - 11	
Parameter Chloride Sulfate MRCVS - Primary	Unit mg/L mg/L	DF 1.00 1.00	Result 3.97 20.0	Expected 4.00 20.0		Recovery 99.2 100	90 - 110 90 - 110	)
Parameter Chloride MRCVS - Primary	Unit mg/L	DF 1.00	Result 2.98	Expected 3.00		Recovery 99.3	90 - 110	ance Range )
Parameter Chloride	Unit mg/L	DF 1.00	Result 2.96	Expected 3.00		Recovery 98.8	Accepta 90 - 110	ance Range O



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Nitrite SM 4500-NO2 B			Batch	1412056				
Parameter		Unit	Anal	yzed I	DF	MDL	RL	Result
815099-001 Nitrite as Nitroger	1	mg/L	12/03/	/2014 12:48 1	.00	0.000630	0.0050	ND
815099-002 Nitrite as Nitroger	າ	mg/L	12/03/	/2014 12:49       1	.00	0.000630	0.0050	ND
Method Blank								
Parameter Nitrite as Nitrogen	Unit mg/L	DF 1.00	Result ND					
Duplicate							Lab ID = 8	15099-001
Parameter Nitrite as Nitrogen	Unit mg/L	DF 1.00	Result ND	Expected 0	RP 0		Acceptar 0 - 20	nce Range
Lab Control Sample								
Parameter Nitrite as Nitrogen Matrix Spike	Unit mg/L	DF 1.00	Result 0.0206	Expected 0.0226		covery 91.2	90 - 110	nce Range 315099-001
Parameter Nitrite as Nitrogen	Unit mg/L	DF 1.00	Result 0.0207	Expected/Adde 0.0226(0.0226		covery 91.6	Acceptar 85 - 115	nce Range
MRCCS - Secondary								
Parameter Nitrite as Nitrogen MRCVS - Primary	Unit mg/L	DF 1.00	Result 0.0206	Expected 0.0226		covery 91.2	Acceptar 90 - 110	nce Range
Parameter Nitrite as Nitrogen MRCVS - Primary	Unit mg/L	DF 1.00	Result 0.0193	Expected 0.0200		ecovery 96.5	Acceptai 90 - 110	nce Range
Parameter Nitrite as Nitrogen	Unit mg/L	DF 1.00	Result 0.0193	Expected 0.0200		ecovery 96.5	Acceptar 90 - 110	nce Range



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Alkalinity by SM 2320B			Batc	h 1412276				
Parameter		Unit	An	alyzed	DF	MDL	RL	Result
815099-002 Alkalinity as CaC	O3	mg/L	12/1	1/2014	1.00	1.68	5.00	162
Bicarbonate (Cal	culated)	mg/L	12/1	1/2014	1.00	1.68	5.00	162
Carbonate (Calcu	ulated)	mg/L	12/1	1/2014	1.00	1.68	5.00	ND
Method Blank		* 4 PESSE	NA AN	Cara ya (Chu				
Parameter Alkalinity as CaCO3 Duplicate	Unit mg/L	DF 1.00	Result ND				Lab ID =	815110-017
Parameter Alkalinity as CaCO3 Lab Control Sample	Unit mg/L	DF 1.00	Result 114	Expected 111	. 50	RPD 2.67	Accepta 20 - 20	ance Range
Parameter Alkalinity as CaCO3 Lab Control Sample D	Unit mg/L uplicate	DF 1.00	Result 99.0	Expected 100		Recovery 99.0	Accepta 90 - 110	ance Range )
Parameter Alkalinity as CaCO3 Matrix Spike	Unit mg/L	DF 1.00	Result 100	Expected 100	4.14 p. 1	Recovery 100	90 - 110	ance Range ) .815110-021
Parameter Alkalinity as CaCO3 Matrix Spike Duplicate	Unit mg/L	DF 1.00	Result 220	Expected/Ad 229(100)	lded	Recovery 91.0	75 - 12	ance Range 5 815110-021
Parameter Alkalinity as CaCO3	Unit mg/L	DF 1.00	Result 215	Expected/Ad 229(100)	lded	Recovery 86.0	Accepta 75 - 12	ance Range 5



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Specific Conductivity - El	PA 120.1		Bato	ch 1412032				
Parameter		Unit	Ar	alyzed	DF	MDL	RL	Result
815099-001 Specific Conducti	vity	umhos/cm 12/03/2014		1.00	0.606	2.00	7300	
815099-002 Specific Conducti	vity	umhos/	cm 12/0	3/2014	1.00	0.606	2.00	7300
Method Blank								
Parameter Specific Conductivity	Unit umhos	DF 1.00	Result ND					
Duplicate							Lab ID =	815108-004
Parameter Specific Conductivity Lab Control Sample	Unit umhos	DF 1.00	Result 36.6	Expected 36.1	F MARKAN	RPD 1.38	Accepta 0 - 10	ance Range
Parameter Specific Conductivity MRCCS - Secondary	Unit umhos	DF 1.00	Result 712	Expected 706	£134 (601)	Recovery 101	Accepta 90 - 110	ance Range )
Parameter Specific Conductivity MRCVS - Primary	Unit umhos	DF 1.00	Result 712	Expected 706	F XXXXX	Recovery 101	Accepta 90 - 110	ance Range )
Parameter Specific Conductivity MRCVS - Primary	Unit umhos	DF 1.00	Result 993	Expected 1000	F	Recovery 99.3	Accepta 90 - 110	ance Range O
Parameter Specific Conductivity	Unit umhos	DF 1.00	Result 993	Expected 1000	F	Recovery 99.3	Accepta 90 - 110	ance Rang



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Chrome VI by EPA 218.6			Batch	1412120				
Parameter		Unit	Ana	ılyzed	DF	MDL	RL	Result
815099-001 Chromium, Hexay	valent	ug/L	12/05	5/2014 13:03	1.00	0.00600	0.20	0.20
815099-002 Chromium, Hexay	valent	ug/L	12/05	5/2014 13:14	25.0	0.150	5.0	587
Method Blank	Section and a section	1 1 1		Programme Association	estylet(			
Parameter	Unit	DF	Result					
Chromium, Hexavalent Duplicate	ug/L	1.00	ND				Lab ID =	815098-001
Parameter	Unit	DF	Result	Expected		RPD	Accepta	ance Range
Chromium, Hexavalent	ug/L	1.00	4.22	4.25		0.580	0 - 20	· ·
Low Level Calibration \	√erification							
Parameter	Unit	DF	Result	Expected		Recovery	Accepta	ance Range
Chromium, Hexavalent	ug/L	1.00	0.221	0.200		110	70 - 130	)
Lab Control Sample								
Parameter	Unit	DF	Result	Expected		Recovery	Accepta	ance 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/A	dded	Recovery	Accepta	ance 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/A	dded	Recovery	Accepta	ance Range
Chromium, Hexavalent	ug/L	50.0	1500	1480(750)		102	90 - 110	)
Matrix Spike							Lab ID =	815099-001
Parameter	Unit	DF	Result	Expected/A	dded	Recovery	Accepta	ance 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/A	dded	Recovery	Accepta	ance Range
Chromium, Hexavalent	ug/L	5.00	5.31	5.20(5.00)		102	90 - 110	כ
Matrix Spike							Lab ID =	815099-002
Parameter	Unit	DF	Result	Expected/A	dded	Recovery	Accepta	ance Range
Chromium, Hexavalent	ug/L	25.0	1210	1210(625)		100	90 - 110	
MRCCS - Secondary								
Parameter	Unit	DF	Result	Expected		Recovery	Accepta	ance Range
Chromium, Hexavalent	ug/L	1.00	5.13	5.00		102	90 - 110	כ



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Metals by EPA 200.7, Tota	ıl		Batch	120314B-Th2				
Parameter		Unit	Anal	yzed	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	I	RPD	Accepta	ance 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	1	Recovery	Accepta	ance Range
Aluminum	ug/L	1.00	2080	2000		104	85 - 11	5
Zinc	ug/L	1.00	2000	2000		99.9	85 - 11	5
Boron	ug/L	1.00	1970	2000		98.5	85 - 11	5
Matrix Spike						<b>建建筑等等</b>	Lab ID =	815104-00
Parameter	Unit	DF	Result	Expected/Adde	ed 1	Recovery	Accepta	ance Rang
Aluminum	ug/L	1.00	7230	7500(2000)		86.4	75 - 12	5
Zinc	ug/L	1.00	2260	2190(2000)		103	75 - 12	5
Boron	ug/L	1.00	12000	12200(2000)		89.5	75 - 12	5
Matrix Spike Duplicate							Lab ID =	815104-00
Parameter	Unit	DF	Result	Expected/Adde	ed	Recovery	Accepta	ance Rang
Aluminum	ug/L	1.00	7310	7500(2000)		90.4	75 - 12	5
Zinc	ug/L	1.00	2270	2190(2000)		104	75 - 12	5
Boron	ug/L	1.00	12300	12200(2000)		104	75 - 12	5



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Metals by EPA 200.7, Tot Parameter		Unit	Ana	ılyzed	DF	MDL	RL	Result
815099-001 Iron			A					····
		ug/L		1/2014 15:19	1.00	3.00	20.0	ND
815099-002 Iron		ug/L		1/2014 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	•	ince Range
Iron	ug/L	1.00	5550	5460		1.56	0 - 20	
Lab Control Sample								
Parameter	Unit	DF	Result	Expected		Recovery	Accepta	ance Range
Iron	ug/L	1.00	2140	2000		107	85 - 115	5
Matrix Spike							Lab ID =	815104-006
Parameter	Unit	DF	Result	Expected/Ad	ded	Recovery	Accepta	ance Range
Iron	ug/L	1.00	7610	7460(2000)		107	75 - 125	5
Matrix Spike Duplicate							Lab ID =	815104-006
Parameter	Unit	DF	Result	Expected/Ad	ded	Recovery	Accepta	ance Range
Iron	ug/L	1.00	7460	7460(2000)		100	75 - 125	5
MRCCS - Secondary								
Parameter	Unit	DF	Result	Expected		Recovery	Accepta	ance Range
Iron	ug/L	1.00	5060	5000		101	95 - 105	5
MRCVS - Primary								
Parameter	Unit	DF	Result	Expected		Recovery	Accepta	ance Range
Iron	ug/L	1.00	5040	5000		101	90 - 110	_
MRCVS - Primary								
Parameter	Unit	DF	Result	Expected		Recovery	Accepta	ance Range
Iron	ug/L	1.00	5080	5000		102	90 - 110	_
Interference Check Sta	andard A							
Parameter	Unit	DF	Result	Expected		Recovery	Accepta	ance Range
Iron	ug/L	1.00	2230	2000		112	80 - 120	_
Interference Check Sta	-							
Parameter	Unit	DF	Result	Expected		Recovery	Accepta	ance Range
Iron	ug/L	1.00	2100	2000		105	80 - 120	_



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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
Mothed Dianic				egy Cere Sugaria	rik si silakan kan	y North August a

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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



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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	n 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	



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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
MRCCS - 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



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Interference Check St	tandard AB					
Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Antimony	ug/L	1.00	ND	0		
Interference Check St	tandard 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 S	tandard AB					
Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Lead	ug/L	1.00	ND	0		
Interference Check S	tandard AB					
Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Manganese	ug/L	1.00	20.0	20.0	99.8	80 - 120
	•					
Interference Check S	tandard AB					
•	tandard AB Unit	AN INVENI DF	Result	Expected	Recovery	Acceptance Range
Interference Check S						
Interference Check S Parameter	Unit ug/L	DF	Result	Expected	Recovery	Acceptance Range
Interference Check S Parameter Manganese	Unit ug/L	DF	Result	Expected	Recovery	Acceptance Range 80 - 120
Interference Check S Parameter Manganese Interference Check S	Unit ug/L tandard AB	DF 1.00	Result 20.0	Expected 20.0	Recovery 99.8	Acceptance Range 80 - 120
Interference Check S Parameter Manganese Interference Check S Parameter	Unit ug/L tandard AB Unit ug/L	DF 1.00 DF	Result 20.0 Result ND	Expected 20.0	Recovery 99.8	Acceptance Range 80 - 120
Interference Check S Parameter Manganese Interference Check S Parameter Molybdenum	Unit ug/L tandard AB Unit ug/L	DF 1.00 DF 1.00	Result 20.0 Result ND	Expected 20.0 Expected 0	Recovery 99.8	Acceptance Range 80 - 120
Interference Check S Parameter Manganese Interference Check S Parameter Molybdenum Interference Check S	Unit ug/L tandard AB Unit ug/L tandard AB	DF 1.00 DF 1.00	Result 20.0 Result ND	Expected 20.0  Expected 0	Recovery 99.8 Recovery	Acceptance Range 80 - 120 Acceptance Range
Interference Check S Parameter Manganese Interference Check S Parameter Molybdenum Interference Check S Parameter	Unit ug/L tandard AB Unit ug/L tandard AB Unit	DF 1.00 DF 1.00	Result 20.0 Result ND Result	Expected 20.0  Expected 0  Expected	Recovery 99.8 Recovery	Acceptance Range 80 - 120 Acceptance Range
Interference Check S Parameter Manganese Interference Check S Parameter Molybdenum Interference Check S Parameter Molybdenum Molybdenum	Unit ug/L tandard AB Unit ug/L tandard AB Unit	DF 1.00 DF 1.00	Result 20.0 Result ND Result	Expected 20.0  Expected 0  Expected	Recovery 99.8 Recovery	Acceptance Range 80 - 120 Acceptance Range Acceptance Range
Interference Check S Parameter Manganese Interference Check S Parameter Molybdenum Interference Check S Parameter Molybdenum Serial Dilution	Unit ug/L tandard AB Unit ug/L tandard AB Unit ug/L	DF 1.00 DF 1.00 DF 1.00	Result 20.0 Result ND Result ND	Expected 20.0  Expected 0  Expected 0	Recovery 99.8 Recovery	Acceptance Range 80 - 120  Acceptance Range  Acceptance Range  Lab ID = 815099-002
Interference Check S Parameter Manganese Interference Check S Parameter Molybdenum Interference Check S Parameter Molybdenum Serial Dilution Parameter	Unit ug/L tandard AB Unit ug/L tandard AB Unit ug/L Unit	DF 1.00 DF 1.00 DF 1.00	Result ND  Result ND  Result ND  Result ND	Expected 20.0  Expected 0  Expected 0  Expected 0	Recovery 99.8 Recovery Recovery	Acceptance Range 80 - 120  Acceptance Range  Acceptance Range  Lab ID = 815099-002  Acceptance Range



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Parameter	er Unit Analyzed		lyzed	DF	MDL	RL	Result	
815099-001 Copper		ug/L	12/09	0/2014 14:13 1	.00	0.190	1.0	ND
815099-002 Copper	99-002 Copper ug/L 12/09/2014 14:42		0/2014 14:42	.00	0.190	1.0	ND	
Method Blank					N. Parasis			hwa ji Nasai
Parameter	Unit	DF	Result					
Copper	ug/L	1.00	ND					
Duplicate							Lab ID =	815099-001
Parameter	Unit	DF	Result	Expected	F	RPD	Accepta	ance Range
Copper	ug/L	1.00	ND 0		0		0 - 20	_
Low Level Calibration	n Verification							
Parameter	Unit	DF	Result	ult Expected Recovery		Recovery	Acceptance Range	
Copper	ug/L	1.00	0.461	•		92.2	70 - 130	
Lab Control Sample								
Parameter	Unit	DF	Result	Expected	F	Recovery	Accepta	ance Range
Copper	ug/L	1.00	48.2	50.0		96.5	85 - 11	5
Matrix Spike							Lab ID =	815099-001
Parameter	Unit	DF	Result	Expected/Adde	d F	Recovery	Accepta	ance Range
Copper	ug/L	1.00	44.8	50.0(50.0)		89.7	75 - 12	5
Matrix Spike Duplicat	te						Lab ID =	815099-001
Parameter	Unit	DF	Result	Expected/Adde	d F	Recovery	Accepta	ance Range
Copper	ug/L	1.00	44.9	50.0(50.0)		89.8	75 - 125	5
MRCCS - Secondary	, san a san a san a san a san a san a san a san a san a san a san a san a san a san a san a san a san a san a							
Parameter	Unit	DF	Result	Expected	F	Recovery	Accepta	ance Range
Copper	ug/L	1.00	19.4	20.0		96.9	90 - 110	)
MRCVS - Primary								
Parameter	Unit	DF	Result	Expected	F	Recovery	Accepta	ance Range
Copper	ug/L	1.00	20.9	20.0		104	90 - 110	
Interference Check S	Standard A							
Parameter	Unit	DF	Result	Expected	F	Recovery	Accepta	ance Range
Copper	ug/L	1.00	ND	0				
Interference Check S	Standard A							
Parameter	Unit	DF	Result	Expected	F	Recovery	Accepta	ance Range
Copper	ug/L	1.00	ND	0		·	•	J



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Interference Check Star	ndard AB					
Parameter Copper Interference Check Star	Unit ug/L ndard AB	DF 1.00	Result 20.6	Expected 20.0	Recovery 103	Acceptance Range 80 - 120
Parameter Copper	Unit ug/L	DF 1.00	Result 21.6	Expected 20.0	Recovery 108	Acceptance Range 80 - 120

Reactive Silica by SM450	0-Si D	Batch 1412208							
Parameter	Unit Analyzed		lyzed	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 A		Accepta	Acceptance Range	
Silica	mg/L	25.0	17.1	16.5	3.38		0 - 20		
Lab Control Sample									
Parameter	Unit	DF	Result	Expected	ı	Recovery	Accepta	ance Range	
Silica	mg/L	1.00	0.192	0.206		93.2	90 - 11	0	
Matrix Spike							Lab ID =	815099-002	
Parameter	Unit	DF	Result	Expected/Add	ed	Recovery	Accept	ance Range	
Silica	mg/L	25.0	21.3	21.6(5.15)		94.0	75 - 12	5	
MRCCS - Secondary									
Parameter	Unit	DF	Result	Expected		Recovery	Accept	ance Range	
Silica	mg/L	1.00	0.192	0.206		93.2	90 - 11	0	
MRCVS - Primary									
Parameter	Unit	DF	Result	Expected		Recovery	•	ance Range	
Silica	mg/L	1.00	0.422	0.400		106	90 - 11	0	



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Parameter		Unit	Ana	alyzed	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	1/2014	1.00	1.76	250	4410
Method Blank	1 × 1		N.	editates of	YE YARA	parti i na maniji.		
Parameter Total Dissolved Solids Duplicate	Unit mg/L	DF 1.00	Result ND				Lab ID =	815109-003
Parameter Total Dissolved Solids Lab Control Sample	Unit mg/L	DF 1.00	Result 516	Expected 510		RPD 1.17	0 - 10	ance Range
Parameter Total Dissolved Solids	Unit mg/L	DF 1.00	Result 496	Expected 500	F	Recovery 99.2	Accepta 90 - 110	ance Range O



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Parameter		Unit Analyzed		alyzed	DF	MDL	RL	Result
815099-002 Total Organic Ca	rbon	mg/L	12/03	12/03/2014 12:38		0.0877	0.300	0.578
Method Blank							1 11.4	ag er al er er al are
Parameter Total Organic Carbon Duplicate	Unit mg/L	DF 1.00	Result ND				val åk ID =	815099-002
Parameter Total Organic Carbon Lab Control Sample	Unit mg/L	DF 1.00	Result 0.569	Expected 0.578	F	RPD 1.50		nce Range
Parameter Total Organic Carbon Matrix Spike	Unit mg/L	DF 1.00	Result 10.1	Expected 10.8		Recovery 93.6	90 - 110	nce Range 815099-002
Parameter Total Organic Carbon MRCCS - Secondary	Unit mg/L	DF 1.00	Result 9.76	Expected/A 11.4(10.8)	dded f	Recovery 85.0	Accepta 75 - 125	nce Range
Parameter Total Organic Carbon MRCVS - Primary	Unit mg/L	DF 1.00	Result 9.95	Expected 10.8	r s	Recovery 92.1	Accepta 85 - 115	nce Range
Parameter Total Organic Carbon MRCVS - Primary	Unit mg/L	DF 1.00	Result 9.84	Expected 10.0	(35,65)	Recovery 98.4	Accepta 90 - 110	nce Range
Parameter Total Organic Carbon	Unit mg/L	DF 1.00	Result 9.24	Expected 10.0	F	Recovery 92.4	Accepta 90 - 110	nce Range



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Total Phosphate, SM 450	0-PB,E		Batch	1412058				
Parameter		Unit	Anal	yzed	DF	MDL	RL	Result
815099-002 Phosphate, Total	l As P	mg/L	12/04/2014		1.00	0.00460	0.0200	ND
Method Blank				tertura a servici	s ipagis	personal del (s).		
Parameter Phosphate, Total As P Duplicate	Unit mg/L	DF 1.00	Result ND				∴Lab ID = 8	15122-001
Parameter Phosphate, Total As P Lab Control Sample	Unit mg/L	DF 1.00	Result 0.0642	Expected 0.0577	F Section 1	RPD 10.7	Acceptar 0 - 20	nce Range
Parameter Phosphate, Total As P Matrix Spike	Unit mg/L	DF 1.00	Result 0.0695	Expected 0.0652	F	Recovery 106	90 - 110	nce Range 15099-002
Parameter Phosphate, Total As P MRCCS - Secondary	Unit mg/L	DF 1.00	Result 0.0682	Expected/Adde 0.0652(0.0652		Recovery 105	Acceptar 75 - 125	nce Range
Parameter Phosphate, Total As P MRCVS - Primary	Unit mg/L	DF 1.00	Result 0.0695	Expected 0.0652	F	Recovery 106	Acceptar 90 - 110	nce Range
Parameter Phosphate, Total As P	Unit mg/L	DF 1.00	Result 0.0660	Expected 0.0660	F	Recovery 100	Acceptar 90 - 110	ice Range



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Ammonia Nitrogen by SN	//45UU-NH	I3D	Daton	12NH314A				
Parameter		Unit	Anal	lyzed I	DF	MDL	RL	Result
815099-001 Ammonia as N		mg/L	12/30/2014		.00	0.0318	0.500	ND
815099-002 Ammonia as N		mg/L	12/30/2014		.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	F	Recovery	Accepta	ince Range
Ammonia as N	mg/L	1.00	8.01	8.00		100	90 - 110	)
Lab Control Sample D	uplicate							
Parameter	Unit	DF	Result	Expected	F	Recovery	Accepta	ance 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/Adde	ed F	Recovery	Accepta	ance Range
Ammonia as N	mg/L	1.00	10.4	10.0(10.0)		104	75 - 12	5
MRCCS - Secondary								
Parameter	Unit	DF	Result	Expected	F	Recovery	Accepta	ance Range
Ammonia as N	mg/L	1.00	6.56	6.00		109	90 - 110	)
MRCVS - Primary								
Parameter	Unit	DF	Result	Expected	F	Recovery		ance Range
Ammonia as N	mg/L	1.00	5.44	6.00		90.7	90 - 11	0



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Parameter		Unit	Ana	alyzed I	DF	MDL	RL	Result
815099-002 Manganese		ug/L	12/04/2014 17:05		1.00	0.0600	0.50	9.7
Method Blank	restant, igilaria de resea	Teller tylpine	1.000	endiale d			Vastivitinis	
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	Accepta	ance 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 Calibratio	n Verification							
Parameter	Unit	DF	Result	Expected		Recovery	Accepta	ance 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	<b>!</b>							
Parameter	Unit	DF	Result	Expected		Recovery	Accepta	ance Range
Chromium	ug/L	1.00	49.8	50.0		99.7	85 - 11	5
Manganese	ug/L	1.00	50.7	50.0		101	85 - 11	5
Matrix Spike							Lab ID =	815098-001
Parameter	Unit	DF	Result	Expected/Adde	ed	Recovery	Accepta	ance Range
Chromium	ug/L	1.00	56.4	54.9(50.0)		103	75 - 12	5
Manganese	ug/L	2.00	113	118(50.0)		88.9	75 - 12	5
Matrix Spike Duplica	ate						Lab ID =	815098-001
Parameter	Unit	DF	Result	Expected/Adde	ed	Recovery	Accepta	ance Range
Chromium	ug/L	1.00	55.1	54.9(50.0)		100	75 - 12	5
Manganese	ug/L	2.00	115	118(50.0)		93.2	75 - 12	5
MRCCS - Secondar	ту							
Parameter	Unit	DF	Result	Expected		Recovery	Accepta	ance Range
Chromium	ug/L	1.00	19.9	20.0		99.5	90 - 110	כ
Manganese	ug/L	1.00	20.0	20.0		100.	90 - 110	)
MRCVS - Primary								
Parameter	Unit	DF	Result	Expected		Recovery	Accepta	ance Range
Chromium	ug/L	1.00	19.5	20.0		97.7	90 - 110	ם כ



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 Metals by 200.7, Dissolved
 Batch 120514A-Th2

 Parameter
 Unit
 Analyzed
 DF
 MDL
 RL
 Result

Tarameter		Onit	Anaiy	/26u	J1		114	TCSuit
815099-002 Iron		ug/L	12/05/	2014 18:15 1	.00 3.0	0	20.0	ND
Method Blank	, addition is	ara makang	sais ages a	enitrini se	ajilar Si	avilijāja		
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		Accepta	ance Range
Calcium	ug/L	100	232000	212000	9.22	<u>.</u>	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	Recov	ery/	Accepta	ance Range
Calcium	ug/L	1.00	2010	2000	100		85 - 11	5
Iron	ug/L	1.00	2010	2000	101		85 - 11	5
Sodium	ug/L	1.00	1910	2000	95.5	;	85 - 11	5
Magnesium	ug/L	1.00	1980	2000	99.0	)	85 - 11	5
Matrix Spike							Lab ID =	815098-002
Parameter	Unit	DF	Result	Expected/Adde	d Recov	/ery	Accepta	ance Range
Calcium	ug/L	100	442000	412000(20000	0) 115		75 - 12	5
Iron	ug/L	1.00	1760	2000(2000)	88.2	2	75 - 12	5
Sodium	ug/L	500	2380000	2580000(1000	OC 79.6	;	75 - 12	5
Magnesium	ug/L	10.0	52300	54600(20000)	88.6	3	75 - 12	5
Matrix Spike Duplicate							Lab ID =	815098-002
Parameter	Unit	DF	Result	Expected/Adde	d Reco	very	Accepta	ance Range
Iron	ug/L	1.00	1870	2000(2000)	93.6	3	75 - 12	5
MRCCS - Secondary								
Parameter	Unit	DF	Result	Expected	Reco	very	Accepta	ance Range
Calcium	ug/L	1.00	4960	5000	99.2	2	95 - 10	5
Iron	ug/L	1.00	5160	5000	103		95 - 10	5
Sodium	ug/L	1.00	4830	5000	96.7		95 - 10	5
Magnesium	ug/L	1.00	5220	5000	104		95 - 10	5



	Consulting	

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Interference Check St	andard AB					
Parameter Sodium	Unit ug/L	DF 1.00	Result 1880	Expected 2000	Recovery 94.0	Acceptance Range 80 - 120
Magnesium	ug/L	1.00	1990	2000	99.7	80 - 120
Interference Check St	andard AB					
Parameter Magnesium	Unit	DF 1.00	Result 1970	Expected 2000	Recovery 98.6	Acceptance Range 80 - 120
- Iviayiiesiuiii	ug/L	1.00	1970	2000	90.0	00 - 120

Turbidity by SM 2130 B			Batch	1412054				
Parameter		Unit	Ana	ılyzed	DF	MDL	RL	Result
815099-001 Turbidity		NTU	12/03	3/2014	1.00	0.0140	0.100	0.155
815099-002 Turbidity		NTU	12/03	3/2014	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	F	RPD	Accepta	nce Range
Turbidity	NTU	1.00	0.107	0.115		7.21	0 - 20	
Lab Control Sample								
Parameter	Unit	DF	Result	Expected	F	Recovery	Accepta	ince Range
Turbidity	NTU	1.00	7.95	8.00		99.4	90 - 110	)
Lab Control Sample D	uplicate							
Parameter	Unit	DF	Result	Expected	F	Recovery	Accepta	nce 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	11
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	11
14L0116-03 Duբ	100	75.2521	75.3040	75.3037	0.0003	No	0.0516	516.0	25.0	516.0	11
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	11
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 Dur	100	69.7346	69.7597	69.7597	0,0000	No	0.0251	251,0	25.0	251.0	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.

B = weight of dish in gram C = mL of sample filtered. RL= reporting limit.
ND = not detected (below the reporting limit)

Laboratory Control Sample (LCS) Summary

QC Std	Measurd Value, ppm	Theoretical Value, ppm	Percent Rec	Acceptance Limit	QC Within Control?
LCS	496.0	500	99.2%	90-110%	Yes
LCSD					

**Duplicate Determinations Difference Summary** 

Lab Number	Sample Welght, g	Sample Dup Welght, 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

LCS Recovery

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

P = Percent recovery.

LC= Measured LCS value (ppm).

LT = Theoretical LCS value (ppm).

**Duplicate Determination Difference** 

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

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

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

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

C = Average weight in (g).

Maksim G.

Reviewer Printed Name

Reviewer Signature

Jenny T.

Analyst Printed Name

maiyst Filmed Name

#### Total Dissolved Solids by SM 2540 C

#### TDS/EC CHECK

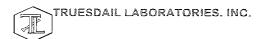
Batch: 1412075

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

Lab ID	Sample pH	Sample Volume (ml)	N of HCL	Titrant Volume to reach pH 8.3	P Alkalinity as CaCO3	Titrant Volume to reach pH 4.5	Total mL titrant to reach pH 0.3 unit lower	Total Alkalinity as CaCO3	RL, ppm	Total Alkalinity Reported Value	HCO3 Conc. as CaCO <sub>3</sub> (ppm)	CO3 Alkalinity as CaCO, (ppm)	OH Alkalinity as CaCO <sub>3</sub> (ppm)	Low Alkalinity as CaCO <sub>3</sub>
BLANK	4.87	50	0.02	0.00	0.0	0.00		0.0	5	ND	ND	ND	ND	
14L0070-01	7.97	50	0.02	0.00	0.0	11.35		227.0	5	227.0	227.0	ND	ND	
14L0070-02	8.03	50	0.02	0.00	0.0	7.15	·	143.0	5	143.0	143.0	ND	ND	
14L0071-02	7.90	50	0.02	0.00	0.0	8.10		162.0	5	162.0	162.0	ND	ND	
14L0085-17	7.60	50 ,	0.02	0.00	0.0	5.55		111.0	5	111.0	111.0	ND	ND	
14L0085-17 DUP	7.57	50	0.02	0.00	0.0	5.70		114.0	5	114.0	114.0	ND	ND	
14L0085-21	8.26	.50	0.02	0.00	0.0	6.45		129.0	5	129.0	129.0	ND	ND	
14L0195-01	8.67	50	0.02	1.25	25.0	13.70		274.0	5	274.0	224.0	50	ND	[
14L0227-20	8.20	50	0.02	0.00	0.0	6.70		134.0	5	134.0	134.0	ND	ND	
14L0263-05	8.27	50	0.02	0.00	0.0	6.85		137.0	5	137.0	137.0	ND	ND	
14L0085-21 MS	9.72	50	0.02	2.50	50.0	11.00		220.0	5	220.0	120.0	100	ND	
14L0085-21 MSD	9.57	50	0.02	2.35	47.0	10.75		215.0	5	215.0	121.0	94	ND	
LCS	10.60	50	0.02	2.20	44.0	4.95		99.0	5	99.0	11.0	88	ND	
LCSD	10.60	50	0.02	2.20	44.0	5.00		100.0	5	100.0	12.0	88	ND	

Calculations as follows:

Tor P=

 $\frac{A \times N \times 50000}{mL \ sample}$ 

as mg/L CaCO3

(2 x B - C) x N x 50000

mL sample

Blank Summary

Reporting Limit, RL	Measured Value, ppm	Accept Limit	QC Within Control?
5 ppm	0	<5	Yes

Where:

T = Total Alkalinity, mg CaCO3/L

P = Phenolphthalein Alkalinity, mg CaCO3/L

A = mL standard acid used
N = normality of standard acid

Where:

B = mL titrant to first recorded pH

C = Total mL titrant to reach pH 0.3 unit lower

N = Normality of standard acid

Low Alkalinity: =

LCS = Laboratory Control Standard/Duplicate

MS/MSD = Matrix Spike/Duplicate

ND = Not Detected (below the reporting limit)

Laboratory Control Sample (LCS/LCSD) Summary

QC Std I.D.	Measured Value, ppm	Theoretical Value, ppm	% Recovery	Accetance 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	Accetance Limit	QC Within Control?
14L0085-	111	114	2.7%	≤20%	Yes
	There are a				

Sample Matrix Spike (MS/MSD) Summary

-ampie man	op (.	,	- a									
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
1420003-21	129	1	100	100	215	229.00	86%	75-125	Yes	1.170	=2U/0 V A	165

Alex L.

Analyst Printed Name

Analyst Signature

Maksim Gorbunov
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-497]

TURNAROUND TIME	10 Days	
DATE 12/02/14	PAGE 1 O	F 1

PROJECT NAME PHONE ADDRESS P.O. NUMBER SAMPLERS (SIGNA	CH2M HILL /E2 PG&E Topock 530-229-33 155 Grand Ave Oakland, CA 94 652547.01.IM.OP.0	303 Ste 1000 4612	FAX <u>530</u>	-,339-3303		4/kalin:	EC (13) (1320-8)	(20.1)	7uh (c)	Total 1.	In Metals (200.2)	Total South See List Below	Anjo: (4500.P)		Dissol, (2) 103, SO4	Soli Soli Soli Social Social Social Soli Soli Soli Soli Soli Social Soci	dable Silica . B.	72 (4500-NO2R) (4500 )	Corp. Corp.	WEER OF COM	SATAMERS	7	сом	MENTS	
SAMPLE I.D.		DATE	TIME	DESCRIPTION	15	<u> </u>	/ <u>W</u>	<u> </u>	12	<u> </u>	\ <del>\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\</del>	/ 20	/ ₹	/∼	/ <u>ở</u>	/ 🕉	/≥	7_	<u> </u>			***			
SC-700B-V	VDR-497	12/02/14	13:52		Х		Х	Х	Х	х	х		Х				Х		当35	14		p	H=6	} 200.	7
SC-100B-V	WDR-497	12/02/14	13:S2		Х	Х	Х	Х	Х	Х	Х	X	Х	Х	X	Х	Х		102	9			1=6,	)	
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						CORRECT SENCENTS	Menoscopes	( i		WETSTANKE,	CONTRACTOR OF THE PERSON AND ADDRESS OF THE PERSON ADDRESS OF THE PERSON AND ADDRESS OF THE PERSON AND ADDRESS OF THE PERSON AND ADDRESS OF THE PERSON AND ADDRESS OF THE PERSON ADDRESS OF THE PERSON AND ADDRESS OF THE PERSON AND ADDRESS OF THE PERSON ADDRESS OF THE PERSON AND ADDRESS OF THE PERSON ADDRESS OF THE PERSON ADDRESS OF THE PERSON ADDRESS OF THE PERSON ADDRESS OF THE PERSON ADDRESS OF THE PERSON ADDRESS OF THE PERSON ADD	0		errolled (motor)											
						Green		A STATE OF THE PARTY OF THE PAR		erin en littlikklik	Malipul Roy			-arabela				-	13	Т	OTAL N	IUMBE	R OF CON	TAINERS	

СН	AIN OF CUSTODY SIG	NATURE RECORD		SAMPLE CONDITIONS
Signature (Relinquished) (M. )	Printed GEORGE GLOR 19	Company/ E-2 Agency E-2	Date/   2-02-14 Time   4-15	RECEIVED COOL WARM 4.106 9F
Signature (Received) EMAM MGO	Printed Name THAWH N60	Company/ Agency Torzs DAIL	Date/ (2-2-17) Time 145	CUSTODY SEALED YES NO
Signature (Relinquished) Sull Way	Printed Name 7-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1	Company/ Agency	Date/ 2 2 14 Time 2 2 2	SPECIAL REQUIREMENTS:
Signature (Received) BRADY	Printed Name Lea BRN	Company/ Agency	Date/ 17-2-127 Time /925	The metals include: Cr, Al, Sb, As, Ba, B, Cu, Pb, Mn, Mo, Ni, Fe, Zn
Signature (Relinquished)	Printed / Name	Company/ Agency	Date/ Time	1,1,10,21
Signature (Received)	Printed Name	Company/ Agency	Date/ Time	

# 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		V 104	D.Sml /25ml.	4.5	23 \28	hic
1 1 '	1470415=1	4	100 ml/2ml	9-5	7:40	NE
11/05/14	l		2 ml / 100 ml	9.5	7:30	NE
	1/ -02	1	1,	1/	1	
	14K2084-01	7.00	2 ml / 100 ml	9.5	7:30	NK
V	-02	J			J.	
	14/6224-01	6:00	and 1100 ml	9.5	7:10	NE
' '	1440004-1	7.50	25ml/.5ml	9-5	7:00	NB
	2					
	-3					
	V -4	<u> </u>	V	1	V	V
11/19/14	14 KO 329-01	6:00	2 inli/ 100 nl	9.5	7:15	NE
11/19/14	14K0288-01	7.00	15 Nl/25 ml	9.5	7:30	NE
. )	1 .02	L.	1		J	
11/24/14	40384-01	7:00	·5ml/25ml	9.4	8:00	NE
J	-02	1		1	1	<u> </u>
142614	141009118					~
11/26/14	14100413-61	6:00	2ml, 100 ml	9.5	7:30	- NÉ
12/3/14	1460070-01	6.00	2 ml 1 100 ml	9.5	8:00	NE
	-02					
	1420071-01				·	
	V -02	<b>V</b>	<b>√</b>	<u> </u>	<u> </u>	
12/10/14	1460250-1	6.00	2 ml/100 ml	.9.5	7:40	NE
	·					
	-					
L	<u> </u>	1				

NE 12/12/14

C:\My Documents\Templates\Hexavalent Chromium\Cr6+ pH Log



Turbidity/pH Check										
Sample Number	Turbidity	рН	Date	Analyst	Need Digest (Y/N)	Time of Adjustment to pH 2	Date/Time of 2nd pH check	Comments		
142 5058 (01-02)	71	12	72/2/14	ES	Yes					
1460059 (01-04)	V	1	L	1	1					
1460013-01	۷1	47	12/2/14	ES	Yes					
14600/7-02	>/	L 2:	12/3/14	TM	yes					
1420065-06	>/	C 2			yes					
146074-01,002	41	>2		2m	No	16:05				
1420073-01	>1	>2			yes					
1428076-01	<i>4</i> 1	>2		JL	NO	10:05				
146070-01-02	۷1	72	ľ	- W	yes		` 			
146071-01,-02	۷	>2	1							
1410677-4,-02,-03,-0		62			1/					
		<u>د ۲</u>								
14 LOUSD-601-04)	71	12	12/1/14	ES	yes					
1410069-01	>(	<2	12/3/14	Jun	yes					
146079601-7-08)	>/	<b>ر 2</b>	1	1	T		:			
1410070(01-02)		72	12/3/14	ES	yes	12:W		Filtered the		
1460071-02		بالماس	1	V	1	1		10		
	21	14N 2222	12/4/14	ES	Yes					
14600 16-02	>1	The		,	yes Yes					
14 60099-01	4	22			i					
1420119-01	71	ĭ								
-07	21									
1460127-01	ĭ						·			
126-01										
129-0	1									
1420094(01-06)	21	72		V	NO	9:30				
1410172(-01-04)	>1	41	12/4/14	m	yes					
1460134-01,-02,-03		1 . 1	1		1					
1466137-10,711,-12	<1	>2			NO	11:00				
14 LOIII-0 Z	21	72	12/5/14		1-45					
14 LU112-01		1	1	1	1					
1420113-01										
14 LO115-02	1									
14 6138 (01-04)										
14 LO 144 (01-09)	1									
1410146(01)										
1460147 (01-02)										
14 L 6148 (01-03)										
14 F 012 C01-05										
14 LOGGZ-01	<u> </u>									
1410163-01	V		- t	\\	- W					
1-160006 (01-0		72	12/5/IV	ES	NO	5:W				
14 L 0007 (01-04	1 1	1	1	1	1	1				
14600 85 (17.20	<del>!                                    </del>									

#### Notes:

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

#### WORK ORDER

14L0071

Printed: 12/5/2014 4:24:57PM

### Truesdail Laboratories, Inc

Client: E2 Consulting Engineers, Inc. Project Manager: Sean Condon Project: Topock IM3Plant-WDR Project Number: **PGE-2152** Report To: **Invoice To:** E2 Consulting Engineers, Inc. E2 Consulting Engineers, Inc. Christy Gitlin Christy Gitlin 1900 Powell Street, Suite 250 1900 Powell Street, Suite 250 Emeryville, CA 94608 Emeryville, CA 94608 Phone: 510-428-4728 Phone:510-428-4728 Fax: 510-652-5604 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) mate No Custody seals (if an No Requested analyses Yes Analyses within hol-Samples received in Yes

Due	TAT	Expires	Comments
′ [Water] Sampleo &	d 12/02/201	14 13:52	
12/12/2014 12:00	7	12/30/2014 13:52	
12/12/2014 12:00	7	05/31/2015 13:52	
12/12/2014 12:00	7	05/31/2015 13:52	
12/12/2014 12:00	7	12/04/2014 13:52	
12/12/2014 12:00	7	12/09/2014 13:52	
12/12/2014 12:00	7	12/30/2014 13:52	
12/12/2014 12:00	7	05/31/2015 13:52	
12/12/2014 12:00	7	05/31/2015 13:52	
12/12/2014 12:00	7	12/04/2014 13:52	
12/12/2014 12:00	7	05/31/2015 13:52	
12/12/2014 12:00	7	05/31/2015 13:52	
12/12/2014 12:00	7	12/04/2014 13:52	
12/12/2014 12:00	7	12/30/2014 13:52	
12/12/2014 12:00	7	05/31/2015 13:52	
12/12/2014 12:00	7	05/31/2015 13:52	
12/12/2014 12:00	7	05/31/2015 13:52	
12/12/2014 12:00	7	12/30/2014 13:52	
12/12/2014 12:00	7	05/31/2015 13:52	
12/12/2014 12:00	7	05/31/2015 13:52	
12/12/2014 12:00	7	05/31/2015 13:52	
12/12/2014 12:00	7	12/30/2014 13:52	
	[Water] Samples 12/12/2014 12:00	[Water] Sampled 12/02/2013  12/12/2014 12:00	[Water] Sampled 12/02/2014 13:52  12/12/2014 12:00

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14L0071

Truesdail Laboratories, Inc

Client: E2 Consulting Engineers, Inc.

Project: Topock IM3Plant-WDR

Project Manager: Project Number:

Sean Condon PGE-2152 Printed: 12/5/2014 4:24:57PM

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 . 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 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 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 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

12/5/14

Date



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.

Mona Nassimi

Manager, Analytical Services

Michael Ngo

Quality Assurance/Quality Control Officer

**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

Laboratory No.: 815102

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

www.truesdail.com

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

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

Laboratory No.: 815102

Date Received: December 9, 2014

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

# **Analytical Results Summary**

Lab Sample ID	Field ID	Analysis Method	Extraction Method	Sample Date	Sample Time	Parameter	Result	Units	RL
			NONE	40/0/0044	40.00	FC	7240	umhos/cm	2.00
815102-001	SC-700B-WDR-498	E120.1	NONE	12/9/2014	12:30	EC			
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	F218.6	LABFLT	12/9/2014	12:30	Chromium, Hexavalent	ND	ug/L	0.20
	SC-700B-WDR-498	SM2130B	NONE	12/9/2014	12:30	Turbidity	ND	NTU	0.100
815102-001		02				Total Dissolved Solids	4270	mg/L	250
815102-001	SC-700B-WDR-498	SM2540C	NONE	12/9/2014	12:30	rotal dissolved Solids	~+∠1 U	mg/L	200

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.

**EXCELLENCE IN INDEPENDENT TESTING** 



Established 1931

Page 1 of 6

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

Printed 1/5/2015

Laboratory No. 815102

#### 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:

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 - 10Lab 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



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009

Parameter		Unit	Anal	yzed [	F MDL	. RL	Result
815102-001 Chromium, Hexa	valent	ug/L	12/12/		00 0.00600	0.20	ND
Method Blank						\$15 FEMALE	trace.
Parameter Chromium, Hexavalent	Unit ug/L	DF 1.00	Result ND				
Duplicate						Lab ID =	815102-001
Parameter Chromium, Hexavalent	Unit ug/L	DF 5.00	Result 0.0900	Expected 0.0905	RPD 0.554	Accepta 0 - 20	ance Range
Low Level Calibration \	√erification						
Parameter Chromium, Hexavalent Lab Control Sample	Unit ug/L	DF 1.00	Result 0.202	Expected 0.200			ance Range )
Parameter Chromium, Hexavalent Matrix Spike	Unit ug/L	DF 1.00	Result 5.10	Expected 5.00	Recovery 102	90 - 110	ance Range ) 815102-001
Parameter Chromium, Hexavalent Matrix Spike	Unit ug/L	DF 5.00	Result 5.18	Expected/Adde 5.09(5.00)	d Recovery 102	90 - 11	ance Range ) 815102-001
Parameter Chromium, Hexavalent MRCCS - Secondary	Unit ug/L	DF 1.00	Result 1.16	Expected/Adde 1.09(1.00)	d Recovery 107	Accepta 90 - 11	ance Range O
Parameter Chromium, Hexavalent MRCVS - Primary	t ug/L 1.00 5.12 5.00		Expected 5.00	Recovery 102	90 - 11	ance Range 0	
Parameter Chromium, Hexavalent	Unit ug/L	DF 1.00	Result 9.96	Expected 10.0	Recovery 99.6	Accepta 95 - 10	ance Range 5



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Parameter		Unit	Ana	lyzed [	OF	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	F	RPD	Accepta	ance 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 V	erification								
Parameter	Unit	DF	Result	Expected	F	Recovery	Accepta	ance 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	F	Recovery	Accepta	ance Range	
Chromium	ug/L	1.00	50.1	50.0	100		85 - 118	5	
Manganese	ug/L	1.00	48.8	50.0		97.6	85 - 118	5	
Matrix Spike							Lab ID =	815102-001	
Parameter	Unit	DF	Result	Expected/Adde	d F	Recovery	Accepta	ance Range	
Chromium	ug/L	1.00	49.4	50.0(50.0)	98.8		75 - 125	5	
Manganese	ug/L	1.00	52.7	56.8(50.0)		91.9	75 - 128	5	
Matrix Spike Duplicate							Lab ID =	815102-001	
Parameter	Unit	DF	Result	Expected/Adde	d F	Recovery	Accepta	ance Range	
Chromium	ug/L	1.00	48.9	50.0(50.0)		97.9	75 - 128	5	
Manganese	ug/L	1.00	52.5	56.8(50.0)		91.5	75 - 12	5	
MRCCS - Secondary									
Parameter	Unit	DF	Result	Expected	F	Recovery	Accepta	ance Range	
Chromium	ug/L	1.00	19.7	20.0		98.3	90 - 110	כ	
Manganese	ug/L	1.00	19.9	20.0		99.4	90 - 110	כ	
MRCVS - Primary									
Parameter	Unit	DF	Result	Expected	F	Recovery	Accepta	ance 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		



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Parameter		Unit	Ana	lyzed	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	Solids mg/L 1.00 ND								
Duplicate							Lab ID =	815102-001	
Parameter	Unit	DF	Result	Expected	RI	PD D	Accepta	ance Range	
Total Dissolved Solids	mg/L	1.00	4250	4270	+	0.469	0 - 10		
Lab Control Sample									
Parameter	Unit	DF	Result	Expected	Re	ecovery	Accepta	ance Range	
Total Dissolved Solids	mg/L	1.00	538	500		108	90 - 110		
<b>Turbidity by SM 2130 B</b> Parameter		Unit		ı 1412305 Ilyzed	DF	MDL	RL	Result	
Parameter			Ana	lyzed					
Parameter 815102-001 Turbidity		Unit NTU	Ana		DF 1.00	0.0140	0.100	ND	
Parameter 815102-001 Turbidity Method Blank	Unit	NTU	Ana 12/10	lyzed		0.0140		ND	
Parameter 815102-001 Turbidity Method Blank Parameter	Unit	NTU DF	Ana 12/10 Result	lyzed		0.0140	0.100	ND	
Parameter 815102-001 Turbidity Method Blank	Unit NTU	NTU	Ana 12/10	lyzed		0.0140	0.100	ND	
Parameter 815102-001 Turbidity  Method Blank  Parameter Turbidity		NTU DF	Ana 12/10 Result	olyzed 0/2014	1.00	0.0140	0.100 Lab ID =	ND 815116-00	
Parameter 815102-001 Turbidity  Method Blank  Parameter  Turbidity  Duplicate	NTU	DF 1.00	Ana 12/10 Result ND	lyzed	1.00 RI	0.0140	0.100 Lab ID =	ND 815116-001	
Parameter 815102-001 Turbidity  Method Blank  Parameter Turbidity  Duplicate  Parameter	NTU Unit	DF 1.00	Ana 12/10  Result ND  Result	olyzed 0/2014 Expected	1.00 RI	0.0140 PD	0.100 Lab ID = Accepta 0 - 20	ND	
Parameter  815102-001 Turbidity  Method Blank  Parameter  Turbidity  Duplicate  Parameter  Turbidity	NTU Unit	DF 1.00	Ana 12/10  Result ND  Result	olyzed 0/2014 Expected	1.00 RI	0.0140 PD	0.100 Lab ID = Accepta 0 - 20	ND 815116-001 ance Range	
Parameter  815102-001 Turbidity  Method Blank  Parameter Turbidity  Duplicate  Parameter Turbidity  Lab Control Sample	NTU Unit NTU	DF 1.00 DF 1.00	Ana 12/10  Result ND  Result ND	Expected 0	1.00 RI	0.0140 PD 0	0.100 Lab ID = Accepta 0 - 20	ND 815116-001 ance Range ance Range	
Parameter  815102-001 Turbidity  Method Blank  Parameter Turbidity  Duplicate  Parameter Turbidity  Lab Control Sample  Parameter	NTU Unit NTU Unit NTU	DF 1.00 DF 1.00	Ana 12/10  Result ND  Result ND  Result	Expected 0  Expected	1.00 RI	0.0140 PD 0	0.100  Lab ID = Accepta 0 - 20  Accepta	ND 815116-001 ance Range ance Range	
Parameter  815102-001 Turbidity  Method Blank  Parameter Turbidity  Duplicate  Parameter Turbidity  Lab Control Sample  Parameter Turbidity	NTU Unit NTU Unit NTU	DF 1.00 DF 1.00	Ana 12/10  Result ND  Result ND  Result	Expected 0  Expected	1.00 RI	0.0140 PD 0	0.100  Lab ID =  Accepta 0 - 20  Accepta 90 - 110	ND 815116-00° ance Range	



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Respectfully submitted,

TRUESDAIL LABORATORIES, INC.

Manager, Analytical Services

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#### 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	11
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	11
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	11
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	11
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:

Filterable residue (TDS), mg/L =

Where:

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

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

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

Laboratory Control Sample (LCS) Summary

QC Std I.D.	I.D. Value, ppm Val		Percent Rec	Acceptance Limit	QC Within Control?
LCS	538.0	500	107.6%	90-110%	Yes
LCSD					

**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

LCS Recovery

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

P = Percent recovery.

LC = Measured LCS value (ppm).

LT = Theoretical LCS value (ppm).

#### **Duplicate Determination Difference**

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

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

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

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

C = Average weight in (g).

Maksim G.

Reviewer Printed Name

Jenny T.

Analyst Printed Name

Analyst 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

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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-498]

815102/	146	0250
(COC Number	. 6 600	a floor or a

TURNAROUND TIME

10 Days

DATE 12/09/14 PAGE 1 OF

COMPANY	E2						$\overline{}$	7		7	7	7 /	7	7	/	7		7	$\overline{}$	$\overline{T}$	7	00111515	
PROJECT NAME	PG&E Topock								/ /	<i>'</i>	/ /									//		COMMENTS	5
PHONE	(530) 229-3303		FAX (530	) 339-3303		,	/ /	/ /					/ ,	/ ,	/ ,	/ ,	/ ,	/ ,	/ /				
ADDRESS	155 Grand Ave Oakland, CA 94					A	. / ර	120,1)		/	//	$^{\prime}$ $/$	' /						CONTAINEDS				
P.O. NUMBER	652547.xx.xx.xx	ns K	TEAN	1	Cr6 (218.6.	Total Mes. Lab Fillered	"efals (200.8) (	TDS (SM2540C;		, ubidily (SM24	(0813)	//	//	//	/	/	/	NUMBE	ŏ/				
SAMPLE I.D.		DATE	TIME	DESCRIPTION	28/5	70ta/	Spec	82/	/ /F				/			_	_		/				
SC-700B-WDR	498	12/09/14	12:30	Water	х	х	х	х	)									3		P+	1 = E	(200.	3)
	MACHINE Same from the supplementary and the same is a surface of the supplementary and t	unte materia (no montre america america permetagina di ministra			Carle Strategy Company					***************************************	· · · · · · · · · · · · · · · · · · ·	enere d'une récurement revieu			and appropriate to the first			3	тот	AL NUM	BER OF	CONTAINER	R\$

Please Provide a preliminary Result for the TDS ASAP



/ СН	AIN OF CUSTODY SIG	GNATURE RECORD		SAMPLE CONDITIONS
Signature (Relinquished) / // // // // // // // // // // // //	Printed CHRUS LEMA	Company/ CHZmHilL	Date/ /2-9-14 Time /425	RECEIVED COOL WARM 14.16
Signature (Received)	Printed Name THANH NEE	Company/ Agency TWECDA	Date/ 12.9-14 Time 11/2	CUSTODY SEALED YES NO NO
Signature (Relinquished)	Printed Name THANH NO	Company/ DAgency	Date/ (2-9-14)	SPECIAL REQUIREMENTS:
Signature (Received) Ann MCO	Printed Name Tom Martinez	Company/	Date/ 12/9/14 Time (84)	
Signature (Relinquished)	Printed Name	Company/ Agency	Date/ Time	
Signature (Received)	Printed Name	Company/ Agency	Date/ Time	

# 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	
10/28/11			D.Sml /25ml	4.5	23 123	MK	
· · · · · · · · · · · · · · · · · · ·	1470415=1	(	100 ml/2ml	9-5	7:40	NE	
1	14K0083-01		2 ml, 100 ml	9.5	7:30	NB	
f f	1/ _02	J .	)/	1/-	\ \ \ \ \		
	14 K 2084-01	7.00	2 ml / 100 ml	9.5	7.30	NK	
V	-02	J			J		
14/3/14	14K0224-01	6:00	and /100 ml	9.5	7:10	NE	
	1440004-1		25 ml/ . 5 ml	9-5	7.00	NE	
	1 -2						
	3						
\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	V-4	V	V	1	V	V	
11/19/14	14 Ko 329-01	6:00	2ml/100 nl	9.5	7:15	NE	
	1	7.00	15 Nl 125 ml	9.5	7:30	NK	
<u> </u>	1 02	J	1			· V -	-
11/24/14	460384-01	7:00	.5 ml/25 ml	9.4	8:00	NE	
	-02	-			1	V	
1426111	141(09/18		·				NÉ
11/26/14	14100413-61	6:00	2ml, 100 ml	9.5	7:30	NÉ	
12/3/14	1460070-01	6.00	2 ml / 100 ml	9.5	8:00	NE	
	1 -02						
	1440071-01						_
	-02	<b>V</b>	J.		<u> </u>	<u> </u>	4
12/10/14	1460250-1	6.00	2 ml 1100 ml	9.5	7:40	NE	1
	:		_				
							_
-			-				
						<u> </u>	

12115/14

C:\My Documents\Templates\Hexavalent Chromium\Cr6+ pH Log



Turbidity/pH Check

				ıurbi	dity/pH C	песк			
	Sample Number	Turbidity	рН	Date	Analyst	Need Digest (Y/N)	Time of Adjustment to pH 2	Date/Time of 2nd pH check	Comments
	1416152-(01-03)	41	72	12/5/14	EY	No	970)		
	1440161 (01-03)	J.	V	i	1	ų.	J.		
	14K0147-02	21	22			Yes			
	14L0105-02	フリ	i						
	146104-02	41							
	14 L0709 - 02								
	14 6195-01		**						
	1460201(01-04)	41	۲>	12/6/14	<u>ې د</u>	No			
	147 0142 (01-05		42	12/9/14	En	Yes			
74	1460009-01,-02-04		>2	12/10/14	pri	No	11:00		
12/10/14	140183-01	>1	22		1	yer	1		
	1460184-07	>/	<u>ز ک</u>			yes			
	146209-06	>1	<2 <2			yes			
	146.0210-06	<1	<2			yer			
-	1410216-01,-02					yes			
		>1	c2						
	141.0228-01,03,-07,04		< 2	<b>-</b>	1	yes	10 = 1		
	146253-07-02	<1 <1	72 LZ	12/10/14	EX	×0	11:00		-17471
	14 [02/6/01-02)			1-110119	67	Yes			. 10. 71
	141 0262-10-11-12	pn 12/10			-		A		
	1460262-01,-02,-03	۷(	> 2	12/10/14	pu	NO	12:45		
	Mro263-02,-03,-04	۷١	>2	12/10/14	TM	Jes	10.00		
	1410250-01	ςί	> 1	12/10/14	Im	Too No	13:50		
	146274-01,-02	> /	<b>~</b> 2	12/11/14	pr	4.5		-	
	1460285-10,-11,-12	۷1	>2		<u> </u>	NO	10:00	·	
	146290-01,-02,-03	<b>4.</b> 1	E33212	12/11/14	TH	yes			
	146236-05	41	E33.62	12/12/14	E	xes			
	14 60238-62	71		·	1				
	1410299-02							· · · · · · · · · · · · · · · · · · ·	
	1460240-02								
	HL0241.02	41							
	14 L O242.02								
-	1460276.02	ブリ							
	14 60077-02	-41							
	146278-02	41	1	ŀ	1				
.	1462016.05	41							
	1460761-02	اراد	1		<b>A</b>				
	1460321-01,-02,-03=04	21	<2	12/15/14	M	yes			
	14 L0332-01,-02,-03,-04,-0		<i>ر ۲</i>	12/15/14	per -	yes			
	1420306-01	71	L2	12/16/14	ES	Yes		· .	
	1460707-01	41	1	1	1	1			
	14 20359-01	1	V			<b>→</b>			
	1420364 (01-03		72			NO	1:W	-	
}	1410319-02	41	22	12/17/14	Es.	tes		-	
ŀ	1460340.02	1		<u> </u>	J	V		_	
l	(つしりつつ)	_ <b>v</b>	_    _		v		L.——-		

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

Printed: 12/10/14 7:13:59AM

#### 14L0250

#### Truesdail Laboratories, Inc

Client: E2 Consulting Engineers, Inc. Project Manager: Sean Condon Project: Topock IM3Plant-WDR Weeky Project Number: PGE-2571 **Invoice To:** Report To: E2 Consulting Engineers, Inc. E2 Consulting Engineers, Inc. Christy Gitlin Christy Gitlin 1900 Powell Street, Suite 250 1900 Powell Street, Suite 250 Emeryville, CA 94608 Emeryville, CA 94608 Phone: 510-428-4728 Phone:510-428-4728 Fax: 510-652-5604 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) mate No Custody seals (if an No Analyses within hol Yes Requested analyses Yes

Analysis	Due	TAT	Expires	Comments	
14L0250-01 SC-700B-WE (GMT-08:00) Pacific Time		d 12/09/20	014 12:30		
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		



Samples received in Yes



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

**EXCELLENCE IN INDEPENDENT TESTING** 

Established 1931

14201 FRANKLIN AVENUE TUSTIN, CALIFORNIA 92780-7008 (714) 730-6239 FAX (714) 730-6462

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

Laboratory No.: 815103 Date: January 5, 2015 Collected: December 16, 2014 Received: December 16, 2014

www.truesdail.com

### **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

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

Laboratory No.: 815103

Date Received: December 16, 2014

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

# **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.

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Page 1 of 6

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90 - 110

106

Laboratory No. 815103

#### 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:

Specific Conductivity

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 Batch 1412344 Specific Conductivity - EPA 120.1 Unit MDL Result Parameter Analyzed DF RL 7320 815103-001 Specific Conductivity umhos/cm 12/17/2014 1.00 0.606 2.00 Method Blank Parameter Unit DF Result ND Specific Conductivity umhos 1.00 Lab ID = 815117-003 Duplicate DF Expected **RPD** Acceptance Range Parameter Unit Result Specific Conductivity umhos 1.00 19.4 19.5 0.514 0 - 10Lab Control Sample Parameter Unit DF Result Expected Recovery Acceptance Range Specific Conductivity umhos 1.00 702 706 99.4 90 - 110 MRCCS - Secondary Unit DF Expected Recovery Acceptance Range Parameter Result 90 - 110 Specific Conductivity umhos 1.00 702 706 99.4 MRCVS - Primary Parameter Unit DF Result Expected Recovery Acceptance Range 1000 106 90 - 110 Specific Conductivity umhos 1.00 1060 MRCVS - Primary Acceptance Range Parameter Unit DF Result Expected Recovery

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.

1060

1000

1.00

umhos



Client: E2 Consulting Engineers, Inc.

Project Name: PG&E Topock Project

Project Number: 652547.01.IM.OP.00

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Chrome VI by EPA 218.6		Batch	1412458					
Parameter		Unit	Analyzed		DF	MDL	RL	Result
815103-001 Chromium, Hexa	valent	ug/L 12/2		/2014 13:37 1	1.00	0.00600	0.20	ND
Method Blank			11.11.11.41.41.41.41.41.41.41.41.41.41.4		•	**		
Parameter Chromium, Hexavalent Duplicate	Unit ug/L	DF 1.00	Result ND				Lab ID =	815103-001
Parameter Chromium, Hexavalent Low Level Calibration	Unit ug/L Verification	DF 5.00	Result 0.0700	Expected 0.0705	İ	RPD 0.712	Accepta 0 - 20	ance Range
Parameter Chromium, Hexavalent Lab Control Sample	Unit ug/L	DF 1.00	Result 0.207	Expected 0.200	•		Acceptance Range 70 - 130	
Parameter Chromium, Hexavalent Matrix Spike	Unit ug/L	DF 1.00	Result 5.09	Expected 5.00		Recovery 102	90 - 11	ance Range 0 815103-001
Parameter Chromium, Hexavalent Matrix Spike	Unit ug/L	DF 5.00	Result 5.02	Expected/Adde 5.07(5.00)	ed	Recovery 98.9	90 - 11	ance Range 0 : 815103-001
Parameter Chromium, Hexavalent MRCCS - Secondary	Unit ug/L	DF 1.00	Result 1.08	Expected/Adde 1.07(1.00)	ed	Recovery 101	Accept 90 - 11	
Parameter Chromium, Hexavalent MRCVS - Primary	Unit ug/L	DF 1.00	Result 5.11	Expected 5.00		Recovery 102	Accept 90 - 11	
Parameter Chromium, Hexavalent MRCVS - Primary	Unit ug/L	DF 1.00	Result 9.90	Expected 10.0		Recovery 99.0	95 - 10	ance Range 5
Parameter Chromium, Hexavalent	Unit ug/L	DF 1.00	Result 10.1	Expected 10.0		Recovery 101	Accept 95 - 10	ance Range 5



Client: E2 Consulting Engineers, Inc.

Project Name: PG&E Topock Project

Project Number: 652547.01.IM.OP.00

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Parameter		Unit	Analyzed		)F	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	F	RPD	Accepta	ance Range
Chromium	ug/L	1.00	ND	0		0	0 - 20	J-
Manganese	ug/L	1.00	9.98	9.59		3.94	0 - 20	
Low Level Calibration \	/erification	1						
Parameter	Unit	DF	Result	Expected	F	Recovery	Accepta	ance 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	F	Recovery	Accepta	nce 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	5
Matrix Spike							Lab ID =	815103-001
Parameter	Unit	DF	Result	Expected/Adde	d F	Recovery	Accepta	nce 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	5
Matrix Spike Duplicate				, ,			Lab ID =	815103-001
Parameter	Unit	DF	Result	Expected/Adde	d F	Recovery	Accepta	nce 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	5
MRCCS - Secondary								
Parameter	Unit	DF	Result	Expected	F	Recovery	Accepta	ince 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	F	Recovery	Accepta	ince Range
Chromium	ug/L	1.00	19.8	20.0		99.2	90 - 110	•

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Client: E2 Consulting Engineers, Inc.

Unit

mg/L

Project Name: PG&E Topock Project

DF

1.00

MDL

1.76

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Result

4350

Project Number: 652547.01.IM.OP.00

Batch 1412365

Analyzed

12/17/2014

Printed 1/5/2015

RL

250

Interference Check Standard AB

Total Dissolved Solids by SM 2540 C

815103-001 Total Dissolved Solids

Parameter

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

Method Blank								
Parameter Total Dissolved Solids Duplicate	Unit mg/L	DF 1.00	Result ND				Lab ID =	815103-001
Parameter Total Dissolved Solids Lab Control Sample	Unit mg/L	DF 1.00	Result 4330	Expected 4350	R	RPD 0.461	Accepta 0 - 10	nce Range
Parameter Total Dissolved Solids	Unit mg/L	DF 1.00	Result 493	Expected 500	F	Recovery 98.6	Accepta 90 - 110	nce Range
Turbidity by SM 2130 B			Batch	1412416				
Parameter		Unit	Ana	lyzed	DF	MDL	RL	Result
815103-001 Turbidity		NTU	12/18	3/2014	1.00	0.0140	0.100	ND
Method Blank								
Parameter Turbidity Duplicate	Unit NTU	DF 1.00	Result ND				Lab ID =	815118-004
Parameter Turbidity Lab Control Sample	Unit NTU	DF 1.00	Result 0.173	Expected 0.177	F	RPD 2.28	Accepta 0 - 20	nce Range
Parameter Turbidity	Unit NTU	DF 1.00	Result 7.44	Expected 8.00	F	Recovery 93.0	Accepta 90 - 110	
Lab Control Sample De Parameter Turbidity	Unit NTU	DF 1.00	Result 7.47	Expected 8.00	F	Recovery 93.4		ınce Range

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Client: E2 Consulting Engineers, Inc.

Project Name:

PG&E Topock Project

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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	11
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	11
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:

 $\begin{array}{l} A=\mbox{weight of dish}+\mbox{residue in grams}.\\ B=\mbox{weight of dish in grams}.\\ C=\mbox{mL of sample filtered}. \end{array}$ 

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

Laboratory Control Sample (LCS) Summary

Laboratory	Control Ca.		,		
QC Std I.D.	Measurd Value, ppm	Theoretical Value, ppm	Percent Rec	Acceptance Limit	QC Within Control?
LCS	493.0	500	98.6%	90-110%	Yes
LCSD				İ	

**Duplicate Determinations Difference Summary** 

Lab Number	Sample Welght, 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

LCS Recovery

$$P = \left(\frac{LC}{LT}\right) \times 10^{\circ}$$

P = Percent recovery.

LC= Measured LCS value (ppm).

LT = Theoretical LCS value (ppm).

**Duplicate Determination Difference** 

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

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

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

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

C = Average weight in (g).

Maksim G.

Reviewer Printed Name

Reviewer Signature

Jenny T.

Analyst Printed Name

### 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 H-

8(5103/14) 0380 COC Number

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]

TURNA	ROUND TIME	
DATE	12/16/14	_

10 Days
PAGE 1

												, ,										
COMPANY	E2									/	/ /	/							/		/	COMMENTS
PROJECT NAME	PG&E Topock							/ /	/ /		′ /						/		//	' /	/	COMMENTS
PHONE	(530) 229-3303		fax <u>(530</u>	) 339-3303		/	/ /	/ /				/ ,	/ /	/ /	/ /	/ /	' 	/ /	$///_{\sim}$			
ADDRESS	155 Grand Ave	Ste 1000					/,			/	/ /								THE STATE OF THE S			
	Oakland, CA 94	612				8	15	. \3	/ /		/ /					/	/		CONTAINERS	•		
P.O. NUMBER	652547.xx.xx.xx	, 1	TEAM	<u> 1</u>	/	Lab Fillered	(200.8)	tance,	_ /	\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\	? /	/ ,	/ /	/ /	/ /	/ /	! /	/ /				
SAMPLERS (SIGNA	ture M	n Kan	Яp		Co6 (218 A.)	Total Mat.	cific Co	TDS (SIM2540C)	}'	unicity (SM2130)	/ /			/	/		//	NUMBE				
SAMPLE I.D.		DATE	TIME	DESCRIPTION	/ కో /	10/	/જેં	/ Ř /	/ F	<u> </u>				/ ,	/ /	/ /		[₹				
SC-700B-WDR	-499	12/16/14	12:30	Water	х	х	х	х	)									3		0212	6 (	(و.س۶
			-		Production .						Walistan - Jankislan Homi	no dos diferentes de encuentra de encuentra de encuentra de encuentra de encuentra de encuentra de encuentra d	<del></del>	***************************************				گ	TOTA	L NUM	BER OF	CONTAINERS

Please Provide a preliminary Result for the TDS ASAP



/ / CH	AIN OF CUSTODY SIG	SNATURE RECORD	A supplied to the supplied to	SAMPLE CONDITIONS
Signature (Relinquished) Mb Am	Printed CHRUS LEnor	Company/ CHZm/mu_	Date/ 12-16-74 Time 1440	RECEIVED COOL WARM 1 4.000
Signature (Received)	Printed Name THANH	Company/ Agency TUZSNAI	Date/ 12.16.19 Time 1440	CUSTODY SEALED YES NO
Signature (Relinquished)	Printed Name THAIH	Company Agency	Date/ (2-16- (4) Time 1800	SPECIAL REQUIREMENTS:
(Received) Som (USA)	Printed Bun Marhner Name	Company/ Agency Truesdadl	Date/ 12/16/19 Time 1850	
O Signature (Relinquished)	Printed Name	Company/ Agency	Date/ Time	
Signature (Received)	Printed Name	Company/ Agency	Date/ Time	

# 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	1470416	8.03	DiSml/25ml	4.5	23123	,hix	
	14J0415=1	7.00	100 ml/2ml	9.5	7:40	NE	
11/05/14	14K0083-01	6.00	2 ml , 100 ml	9.5	7:30	NE	
		1					·
	14 1 3084-01		2 ml / (00 ml	9.5	7.30	Nig	
V	- 02	J	J		<u></u>	<u> </u>	
	14K0224-01	6:00	and /100 ml	9.5	7:10	NE	
1 ,	1440004-1	7.50	25 nl 1 · 5 nl	9-5	7:00	NE	
	, 2.			·			
	-3						
	V - 4	V	V		1	V	
11/19/14	14 Ko 329-01	6:00	2ml/100ml	9.5	7:15	NE	
11/19/14	14K0283-01	7.00	15 al/25 ml	9.5	7:30	NK	
	1 .02		1		<u> </u>		
11/24/14	40384-01	7.00	·5 ml/25 ml	9.5	8:00	NE	
	-02	1		V	1	\	
14-26/14	14109118						NÉ
	14100413-61	6:00	2ml, 100 ml	9.5	7:30	NE	
12/3/14	1460070-01	6.00	2 ml / 100 ml	9.2	8:00	NE	
	V -02						
	1420071-01		·	·			
	_02		<b>J</b>	<u> </u>	<u> </u>	<u> </u>	
\$ 2/10/14	1460250-1	6.00	2nl/100ml	9.5	7:40	NE	
	146364-01		15ml/25ml	9.5	15:00	NR	
	1 ->2	Í					
	V -03	V	1		\ \frac{1}{2}	V	
12/17/14	1460380-01	6.00	2ml/100ml	9.5	10:00	NE	
12/19/14	1460370-05		isal 125 ml	9.5	8:30	NE	
12/19/14	1460460-01	7.00	·5 ml/25 ml	9.5	10:00.	NR	
1	102	1	i	(		(	
	-03	J	1			J	

M 12/24/14



Turbidity/pH Check

				Turbi	dity/pH C	heck			
	Sample Number	Turbidity	рН	Date	Analyst	Need Digest (Y/N)	Time of Adjustment to pH 2	Date/Time of 2nd pH check	Comments
	1420741-02	41	22	12/17/14	ES	409			
	1410742-02	.			1	1			
	1460343-02								
	1410354-01							·	
	1460355-02								
	1460756.02								
	1410357-62								
	1460358-02	<u> </u>					<u> </u>		
	14L0768-61 03)								
	14 69 69-01	4	· .						
	141037602	41							
	146377-01	71							
	1410 778 (01-02)	<b>\</b>	<del></del>	V					
	tut o		. 0						
•	1460381-82,-01,-03-04		< 2	12/17/14	Tru 1	yes			
	1420382-01	>1		4	-	AZO YES	marinary		
	1460380-01	<1	> 2	12/14/14	W		11:45		
		5 <1	1	12714714	l I	No	1, 1,		
	1 -07,-08	<u> </u>	<u> </u>	12/13/14	<u> </u>	yes			
	1460390-01,-02,-03	>1 J	J	1 1 1 1 1 1 1	1	-,,	<u> </u>		
+m	1460408-4-02	7871	21	12/18/14	m	yes		-	
17/18/19	1410408 - 1	71	12	12 18	ES12/1				
	14 6 0418 (10-12)	21	72	12/11/14	D,	NO	12:00		
	140419-01	<1	> 2	12/18/14	m	No	12:06		
	1420470-01	71	42	12/18/14		Yes			
	1460431 (01-12)	1	j	1		1			
	1410432 (01-02)								
	1460433-01				1	<i>y</i>			
	1460370	41	72	12/18/14		NO	3:10		
	101045-01	41	22	12/19/14		405			
	14 6448(01-03	) 1	72	<u>\</u>	\$ B	No	10:60		
	14 6466 01	41	`72	12/19/17		NO	2:00		
	146451-01	41	22	12/23/11	E3	1-05			
	14 6452-01	71			· -				
	14 LO483(01-02)		<u> </u>		1				<u> </u>
	1420423-02	1	42	12/27/14	B	7-65	· ·		
	1460424-01	41	<u> </u>	4 -		10	4:00		
	1460497 (0103)		72	12/27/14	ES	<u> </u>	4,00		
	1460 504.01								yellowishuln
	1460507-(01-03		<u> </u>	1 1011			10:00		A CHAMASH ON LA
	1420510-01	<1	>2	12/24/14	pu	yes	(0.00		-
	146532001,-02	71 .	< <u>2</u> > 2	12/26/14	The sun	ges	10100		
	1420540-10,-11,-12	<'(		16/20114	9-	NO			

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.

Printed: 12/17/14 9:36:28AM

### 14L0380

### Truesdail Laboratories, Inc

Project Manager: Client: E2 Consulting Engineers, Inc. Sean Condon Project: Topock IM3Plant-WDR Weeky Project Number: PGE-2571 **Invoice To:** Report To: E2 Consulting Engineers, Inc. E2 Consulting Engineers, Inc. Christy Gitlin Christy Gitlin 1900 Powell Street, Suite 250 1900 Powell Street, Suite 250 Emeryville, CA 94608 Emeryville, CA 94608 Phone: 510-428-4728 Phone:510-428-4728 Fax: 510-652-5604 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-4 (GMT-08:00) Pacific Time (U		1 12/16/20	14 12:30	
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	



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12/17/14

Dat



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

**EXCELLENCE IN INDEPENDENT TESTING** 

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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

Sample: One (1) Groundwater Sample

Project Name: PG&E Topock Project Project No.: 652547.01.IM.OP.00

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

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Laboratory No.: 815105

Date Received: December 23, 2014

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

### **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.

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Matrix

Laboratory No. 815105

### 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:

Field ID

Samples Received on 12/23/2014 6:38:00 PM

Lab ID

SC-700B-WDR-500 815105-001 12/23/2014 07:30 Water

Specific Conductivity - E	PA 120.1		Batch	1412475				
Parameter		Unit	Ana	lyzed	DF	MDL	RL	Result
815105-001 Specific Conductivity		umhos/cn	n 12/24	1/2014	1.00	0.606	2.00	7230
Method Blank								
Parameter Specific Conductivity	Unit umhos	DF 1.00	Result ND					
Duplicate							Lab ID =	815119-001
Parameter Specific Conductivity	Unit umhos	DF 1.00	Result 34.9	Expected 34.7	F	RPD 0.575	Accepta 0 - 10	ance Range
Lab Control Sample								
Parameter Specific Conductivity MRCCS - Secondary	Unit umhos	DF 1.00	Result 739	Expected 706	Egist :	Recovery 105	Accepta 90 - 110	ance Range
Parameter Specific Conductivity MRCVS - Primary	Unit umhos	DF 1.00	Result 7.39	Expected 706	F	Recovery 1.05	Accepta 90 - 110	
Parameter Specific Conductivity MRCVS - Primary	Unit umhos	DF 1.00	Result 1080	Expected 1000	F	Recovery 108	Accepta 90 - 110	ance Range )
Parameter Specific Conductivity	Unit umhos	DF 1.00	Result 1080	Expected 1000	F	Recovery 108	Accepta 90 - 110	ance Range

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Client: E2 Consulting Engineers, Inc.

Project Name: PG&E Topock Project

Project Number: 652547.01.IM.OP.00

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Chrome VI by EPA 218.6			Batcl	ո 1412587				
Parameter		Unit	Ana	alyzed	DF	MDL	RL	Result
815105-001 Chromium, Hexav	valent	ug/L	12/3	0/2014 12:03	1.00	0.00600	0.20	ND
Method Blank								
Parameter Chromium, Hexavalent Duplicate	Unit ug/L	DF 1.00	Result ND				:: SLab ID ≡	815105-001
Parameter Chromium, Hexavalent Low Level Calibration \	Unit ug/L	DF 5.00	Result 0.120	Expected 0.120		RPD 0 NOVÁR(AKI) T	Accepta 0 - 20	ance Range
Parameter Chromium, Hexavalent Lab Control Sample	Unit ug/L	DF 1.00	Result 0.214	Expected 0.200		Recovery 107		ance Range
Parameter Chromium, Hexavalent Matrix Spike	Unit ug/L	DF 1.00	Result 5.14	Expected 5.00	£.	Recovery 103	90 - 110	ance Range ) 815105-001
Parameter Chromium, Hexavalent Matrix Spike	Unit ug/L	DF 5.00	Result 5,00	Expected/Add 5.12(5.00)	ded	Recovery 97.6	90 - 110	ance Range ) 815105-001
Parameter Chromium, Hexavalent MRCCS - Secondary	Unit ug/L	DF 1.00	Result 1.18	Expected/Add 1.12(1.00)		Recovery 106	90 - 11	ance Range )
Parameter Chromium, Hexavalent MRCVS - Primary	Unit ug/L	DF 1.00	Result 5.15	Expected 5.00		Recovery 103	90 - 11	ance Range )
Parameter Chromium, Hexavalent MRCVS - Primary	Unit ug/L	DF 1.00	Result 9.86	Expected 10.0		Recovery 98.6	95 - 10	ance Range 5
Parameter Chromium, Hexavalent	Unit ug/L	DF 1.00	Result 10.1	Expected 10.0		Recovery 101	Accepta 95 - 10	ance Range 5

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Project Name: PG&E Topock Project

Project Number: 652547.01.IM.OP.00

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Parameter		Unit	Anal	lyzed	DF	MDL	RL	Result
815105-001 Chromium		ug/L	12/31/2014 15:48 12/31/2014 15:48		1.00 1.00	0.0710	1.0	ND
Manganese		ug/L				0.0600	0.50	4.3
Method Blank	grafik i ritoto e	a a constant						
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	Accepta	ance 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	Accepta	ance Range
Chromium	ug/L	1.00	0.581	0.500		116	70 - 13	0
Manganese	ug/L	1.00	0.544	0.500		109	70 - 13	0
Lab Control Sample								
Parameter	Unit	DF	Result	Expected		Recovery	•	ance Range
Chromium	ug/L	1.00	49.8	50.0		99.5	85 - 11	
Manganese	ug/L	1.00	49.6	50.0		99.1	85 - 11	5
Matrix Spike							Lab ID =	815105-001
Parameter	Unit	DF	Result	Expected/Add	ed	Recovery	Accept	ance Range
Chromium	ug/L	1.00	50.2	50.0(50.0)		100	75 - 12	5
Manganese	ug/L	1.00	57.0	54.3(50.0)		106	75 - 12	5
Matrix Spike Duplicate	!						Lab ID =	815105-001
Parameter	Unit	DF	Result	Expected/Add	ed	Recovery	Accept	ance Range
Chromium	ug/L	1.00	50.3	50.0(50.0)		101	75 - 12	5
Manganese	ug/L	1.00	58.5	54.3(50.0)		108	75 - 12	5
MRCCS - Secondary								
Parameter	Unit	DF	Result	Expected		Recovery	Accept	ance Range
Chromium	ug/L	1.00	20.0	20.0		100	90 - 11	0
Manganese	ug/L	1.00	20.0	20.0		100.	90 - 11	0
MRCVS - Primary								
Parameter	Unit	DF	Result	Expected		Recovery	Accept	ance Range
Chromium	ug/L	1.00	19.2	20.0		96.1	90 - 11	0

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

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Interference Check S	tandard AB					
Parameter Chromium Interference Check S	Unit ug/L tandard AB	DF 1.00	Result 19.9	Expected 20.0	Recovery 99.7	Acceptance Range 80 - 120
Parameter Manganese Interference Check S	Unit ug/L tandard AB	DF 1.00	Result 20.3	Expected 20.0	Recovery 102	Acceptance Range 80 - 120
Parameter Manganese	Unit ug/L	DF 1.00	Result 20.3	Expected 20.0	Recovery 102	Acceptance Range 80 - 120

Total Dissolved Solids b	Batch	1412485						
Parameter			Ana	lyzed	DF	MDL	RL	Result
815105-001 Total Dissolved	mg/L	12/23/2014		1.00	1.76	250	4250	
Method Blank	I. Two							
Parameter Total Dissolved Solids Duplicate	Unit mg/L	DF 1.00	Result ND				Lab ID =	815120-001
Parameter Total Dissolved Solids Lab Control Sample	Unit mg/L	DF 1.00	Result 680	Expected 682		RPD 0.294	0 - 10	ance Range
Parameter Total Dissolved Solids	Unit mg/L	DF 1.00	Result 514	Expected 500	F	Recovery 103	Accepta 90 - 11	ance Range 0

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Client: E2 Consulting Engineers, Inc.

Project Name: PG&E Topock Project

Project Number: 652547.01.IM.OP.00

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Turbidity by SM 2130 B			Bato	:h 1412542				
Parameter		Unit	An	alyzed	DF	MDL	RL	Result
815105-001 Turbidity		NTU	12/2	12/24/2014		0.0140	0.100	ND
Method Blank				server (MA	40,184			
Parameter	Unit	DF	Result					
Turbidity	NTU	1.00	ND					
Duplicate							Lab ID =	815121-013
Parameter	Unit	DF	Result	Expected	F	RPD	Accepta	nce Range
Turbidity	NTU	1.00	ND	0.103		0	0 - 20	•
Lab Control Sample								
Parameter	Unit	DF	Result	Expected	F	Recovery	Accepta	nce Range
Turbidity	NTU	1.00	7.47	8.00		93.4	90 - 110	+
Lab Control Sample Du	uplicate							
Parameter	Unit	DF	Result	Expected	F	Recovery	Accepta	nce Range
Turbidity	NTU	1.00	7.86	8.00		98.2	90 - 110	

Respectfully submitted,

TRUESDAIL LABORATORIES, INC.

Sean Condon Project Manager

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### Total Dissolved Solids by SM 2540 C

#### **Calculations**

Batch: 1412485

Date Analyzed: 12/23/2014

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	79.1620	79.1620	79.1620	0.0000	No	0.0000	0.0	25.0	ND	1
14L0370-01Q	100	75.2645	75.3165	75.3163	0.0002	No	0.0518	518.0	25.0	518.0	1
14L0466-01C	480	158.8669	158.8689	158.8689	0.0000	No	0.0020	4.2	5.2	ND	1
14L0478-01A	50	49.1075	49.1417	49.1416	0.0001	No	0.0341	682.0	50.0	682.0	1
14L0478-02	100	75,2495	75.3062	75.3062	0.0000	No	0.0567	567.0	25.0	567.0	1
14L0478-03	100	74.8579	74.9130	74.9130	0.0000	No	0.0551	551.0	25.0	551.0	1
14L0478-04	50	50.6771	50.7086	50.7086	0.0000	No	0.0315	630.0	50.0	630.0	1
14L0483-01B	100	78.1660	78.2074	78,2072	0.0002	No	0.0412	412.0	25.0	412.0	1
14L0483-02	100	75.7218	75.7665	75.7664	0.0001	No	0.0446	446.0	25.0	446.0	1
14L0504-01C	100	78.3603	78.4215	78.4211	0.0004	No	0.0608	608.0	25.0	608.0	1
14L0510-01A	10	28.8154	28.8579	28.8579	0.0000	No	0.0425	4250.0	250.0	4250.0	1
14L0478-01 Dup	50	50.7418	50.7758	50.7758	0.0000	Nο	0.0340	680.0	50.0	680.0	1
LCS	100	74.6796	74.7314	74.7310	0.0004	No	0.0514	514.0	25.0	514.0	11
				•							

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

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

P = Percent recovery. LC = Measured LCS value (ppm).

LT = Theoretical LCS value (ppm).

**Duplicate Determinations Difference Summary** 

Duplicate Determinations Difference Summary										
Lab Number	Sample Welght, g	Sample Dup Welght, g	% RPD	Acceptance Limit	QC Within Control?					
14L0478-01	0.0341	0.0340	0.1%	≤5%	Yes					

#### **Duplicate Determination Difference**

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

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

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

C = Average weight in (g).

Reviewer Printed Name

Maksim G.

Reviewer Signature

Jenny T.

Analyst Printed Name

### Total Dissolved Solids by SM 2540 C

### TDS/EC CHECK

Batch: 1412485

Date Analyzed: 12/23/2014

Laboratory Number	EC	TDS/EC Ratio: 0.55-0.90	Calculated TDS (EC*0.65)	Measured TDS / Calc TDS <1.3
14L0370-01Q	853	0.61	554.45	0.93
14L0466-01C	6.51	ND	4.2315	ND
14L0478-01A	1147	0.59	745.55	0.91
14L0478-02	934	0.61	607.1	0.93
14L0478-03	886	0.62	575.9	0.96
14L0478-04	1062	0.59	690.3	0.91
14L0483-01B	799	0.52	519.35	0.79
14L0483-02	751	0.59	488.15	0.91
14L0504-01C	997	0.61	648.05	0.94
14L0510-01A	7230	0.59	4699.5	0.90
14L0478-01 Dup	1147	0.59	745.55	0.91
LCS				

Mul



COC Number

$\overline{}$

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]

91S	105	1/	4	40	51	0

10 Days TURNAROUND TIME DATE 12/23/14 PAGE 1

COMPANY	E2									Γ,	/ /			-/	-/	-/	$\neg$		$\mathcal{T}$	$\mathcal{T}$	7	COMMENT	
PROJECT NAME	PG&E Topock								/ /					/						/ /	/	COMMENT	5
PHONE	(530) 229-3303		fax <u>(530</u>	) 339-3303		/	/ /	/ /			/ /	/ /	/ /	/ /	/ /	/ /	/	/ /	/ /	_/	•		
ADDRESS	155 Grand Ave	Ste 1000					/,	1 (1)	/ /	/ /	/ /								\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\				
	Oakland, CA 94	1612				8	,	: / 🏖	/ /										TE.	/			
P.O. NUMBER	652547.xx.xx.xx	<i>A</i>	/) TEAN	1	/	b Filler	(200.8)	ctance		(00)	/ /	/ /	/ /	/ /	/ /	/ /	/		FCONTAINED				
SAMPLERS (SIGNA	ATURE	ris X	en			Tolal Met.		TDS (SM2540C)	*/ /	unidity (SM2130)	/ /								ASKOF.				
SAMPLE I.D.		DATE	TIME	DESCRIPTION	1/8	10m/	Specific	/8a/				/ .	/ /	/ ,	/_,	/ /	/_,	NUMBER	/				
SC-700B-WDF	R-500	12/23/14	07:30	Water	х	х	х	х	х									3			nu:	= 6 ( zu	w 5)
And Annual Market and Annual A		•		Mand American Harding and Commission and American Commission Commission (Commission Commission Commission Comm	anna de ministrativo de co	te ostadou PP-duaret (Carlo				ATTACT COMMENTAL CONTRACTOR						orania de comunicación de cuito de constitución de cuito de constitución de co		3	тот	AL NU	MBER (	OF CONTAIN	ERS
																	•						

Please Provide a preliminary Result for the TDS ASAP



) CH.	AIN OF CUSTODY SIG	SNATURE RECORD				SA	MPLE COND	TIONS	
Signature (Relinquished)	Printed CHRUS LEWZ	Company/ CH2m HILL	Date/ Time	12-23-14	RECEIVED	COOL	W.	ARM 🔲	6-0€ €
Signature (Received) Suaw was	Printed Name THANH Was	Company/ DAgency TDV2SDAIL	Date/ _ Time	1350	CUSTODY SEA	ALED	YES 🗖	NO 🗆	
Signature (Relinquished)	Printed — CHANH	Company/ Agency	Date/ Time	1830	SPECIAL REQUIRE	MENTS:			
Signature (Received)	Printed Tom Martinez	Company/ Agency Truesdad/	Date/ Time	12/23/cy					
Signature (Relinquished)	Printed Name	Company/ Agency	Date/ Time						
Signature (Received)	Printed Name	Company/ Agency	Date/ Time						

# 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
12/19/14	1420460-4	7.00	15 nl / 25 ml	9.5	10.00	NE
\ -	\ _05				\ .	
	1 -06			J		
12/24/14		6.00	2ml/100 ml	9.5	7;30	NE
12/25/14	1460538-01	7.00	15 ml/25 ml	9.5	10.00	NE
	1 -02	·				
	-03					
	-04					
	_05					
	-06					
	V -07.					
	1460539-01	.~				
<u> </u>	1 -02	V	,5 ml / 25 0 C/NZ	U	J	$\overline{}$
1.2/30/14	146549-01	7.00	15 ml 1250 CME	9.5	.8:30	NE
1430/14	1410563-01	6.00	2ml/100ml	9.5	7:30	WE
				-		
						· -
	_					
						<u> </u>

N 115/15

C:\My Documents\Templates\Hexavalent Chromium\Cr6+ pH Log



rhidity/nH Check

			lurbi	dity/pH C	песк	<del> </del>		
Sample Number	Turbidity	рН	Date	Analyst	Need Digest (Y/N)	Time of Adjustment to pH 2	Date/Time of 2nd pH check	Comments
1410741-02	41	12	12/17/14	ES	409			
1410742-02		,	,	1				
1460343-02								
1410 354.01				**				
1410355-02								
1460756.02				,				
1460357-02								
1460358-02								
146768-61-03)	7							
146769-01	+						1	
141037602	21							
1469-77-01	71			,				
1410778(01-02)	V	1	1	V	W			
tut o								
12460381-82,-01,-03-04	>1	< 2	12/17/14	Try	yes			
1420382-01	>1	< 2	iL	1			•	
1460380-01	<1	> 2			ADO Yes	12/17/14		
14.60388-01,-02,-0		> 2_	12/14/14	لسل	NO	11:45		
1 -07,-08			j.		Ī	L		
1460390-01,-02,-03	>1	<u> </u>	12/12/14	hab	Yes			
17.05,00-01,-05,-06	1,	J		T.	J			
1460408-4-02	7871	<u> </u>	12/18/14	m	yes		-	
14-040x - 1		12	12/18	ES12/1		ì		
1460418 (10-12)	21	72	12/18/N	Es.	NO	1270		
1460419-01	<1	> 2	12/18/14	pri	No	12:00		
1410470-01	71	22	12/18/14		Yes			
1460431 (01-12)		i	1	1				
1410432(01.02)						-		
1460472(01-02)					$\mathcal{L}$			
1440370	Z1	72	12/18/14	ES	NO	3:10		
14 60445-01	41	22	12/19/14		725		· · · · · · · · · · · · · · · · · · ·	
14 60448(01-03		72	1-1111		No	10:40		
14 60466 01	41	72	12/14/1	E.>	NO	2:00		-
14L0451-01	41	<u> </u>	12/23/14		ies			
14 60452-01	71	<u> </u>	1-1~714	- /	1			
1410483(01-02)		_						
146048360192	21	42	12/27/14	<b>B</b>	7-65			
	1		1010 114	ا	1			
1460424-01	41	<u> </u>	12 12 212	ES	40	4:W		-
1410497 (01.03)	1	72	12/27/14	じり	1	1		
1460 504-01	5 1		<del>                                      </del>					yellowish
146507-(01-02	/	<u> </u>	1000	2/1	Jes	10:00		5011000
1420510-01	<1	>2	12/24/14	pu				
146532001,-02	7/	>2	12/26/14	727	ges	10100		
14/2540-10,-11,-12	< (	16	12/26/14	Ser.	NO	1,720		L

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

### WORK ORDER

### 14L0510

### Truesdail Laboratories, Inc

Printed: 12/24/14 9:32:38AM

Client: E2 Consulting Engineers, Inc. Project: Topock IM3Plant-WDR Weeky 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: Logged In By: Tom Martinez

Date Received:

12/23/2014 18:35

Luda Shabunina

Date Logged In:

12/24/2014 09:30

Samples Received at:

Chain of Custody re Yes

6°C Samples intact?

Yes

Letter (if sent) matc No Requested analyses Yes Custody seals (if an No Analyses within hol Yes

Samples received in Yes

Analysis	Due	TAT	Expires	Comments
14L0510-01 SC-700B-WDR-500 (GMT-08:00) Pacific Time (US &		12/23/201	4 07:30	
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	

12/29/14



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 Atgo

Michael Ngo

Quality Assurance/Quality Control Officer

**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

Sample: One (1) Groundwater Sample

Project Name: PG&E Topock Project Project No.: 652547.01.IM.OP.00

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

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Laboratory No.: 815106

Date Received: December 30, 2014

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

### **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	NŤU	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.

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Page 1 of 7

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Printed 1/6/2015

Laboratory No. 815106

### 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:

Samples Received on 12/30/2014 6:30:00 PM

Matrix Lab ID Collected Field ID 12/30/2014 07:30 Water SC-700B-WDR-501 815106-001

Parameter		Unit	Α	nalyzed	DF	MDL	RL	Result
815106-001 Specific Conducti	vity	umhos/	/cm 01	/02/2015	1.00	0.606	2.00	7160
Method Blank				•				
Parameter Specific Conductivity Duplicate	Unit umhos	DF 1.00	Result ND				Lab ID =	815123-001
Parameter Specific Conductivity Lab Control Sample	Unit umhos	DF 1.00	Result 856	Expected 848	F	RPD 0.939	Accepta 0 - 10	ance Range
Parameter Specific Conductivity MRCCS - Secondary	Unit umhos	DF 1.00	Result 702	Expected 706	s i i i	Recovery 99.4	Accept 90 - 11	ance Range 0
Parameter Specific Conductivity MRCVS - Primary	Unit umhos	DF 1.00	Result 702	Expected 706	i	Recovery 99.4	Accept 90 - 11	
Parameter Specific Conductivity MRCVS - Primary	Unit umhos	DF 1.00	Result 985	Expected 1000	1	Recovery 98.5	Accept 90 - 11	
Parameter Specific Conductivity	Unit umhos	DF 1.00	Result 985	Expected 1000		Recovery 98.5	Accept 90 - 11	ance Range 0

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Client: E2 Consulting Engineers, Inc.

Project Name: PG&E Topock Project

Project Number: 652547.01.IM.OP.00

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Chrome VI by EPA 218.6			Batch	1412612				
Parameter		Unit	Anal	yzed	DF	MDL	RL	Result
815106-001 Chromium, Hexay	valent	ug/L	12/31	/2014 09:46	1.00	0.00600	0.20	ND
Method Blank								
Parameter Chromium, Hexavalent Duplicate	Unit ug/L	DF 1.00	Result ND				Lab ID =	815106-001
Parameter Chromium, Hexavalent Low Level Calibration	Unit ug/L	DF 5.00	Result 0.0150	Expected 0.0160		RPD 6.45		ance Range
Parameter Chromium, Hexavalent Lab Control Sample	Unit ug/L	DF 1.00	Result 0.186	Expected 0.200		Recovery 92.9	70 - 13	ance Range 0
Parameter Chromium, Hexavalent Matrix Spike	Unit ug/L	DF 1.00	Result 5.01	Expected 5.00		Recovery 100	90 - 11	ance Range 0 : 815106-001
Parameter Chromium, Hexavalent Matrix Spike	Unit ug/L	DF 5.00	Result 4.79	Expected/Add 5.02(5.00)	ded	Recovery 95.4	90 - 11	ance Range 0 815106-001
Parameter Chromium, Hexavalent MRCCS - Secondary	Unit ug/L	DF 1.00	Result 1.06	Expected/Add 1.02(1.00)		Recovery 104	90 - 11	ance Range 0
Parameter Chromium, Hexavalent MRCVS - Primary	Unit ug/L	DF 1.00	Result 5.15	Expected 5.00		Recovery 103	Accept 90 - 11	ance Range 0
Parameter Chromium, Hexavalent MRCVS - Primary	Unit ug/L	DF 1.00	Result 9.92	Expected 10.0		Recovery 99.2	Accept 95 - 10	ance Range 5
Parameter Chromium, Hexavalent	Unit ug/L	DF 1.00	Result 10.0	Expected 10.0		Recovery 100	Accept 95 - 10	ance Range 5

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Project Name: PG&E Topock Project

Project Number: 652547.01.IM.OP.00

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Parameter		Unit	Ana	lyzed	DF	MDL	RL	Result
315106-001 Chromium		ug/L	01/02	2/2015 14:51	1.00	0.0710	1.0	ND
Method Blank								
Parameter	Unit	DF	Result					
Chromium  Duplicate	ug/L	1.00	ND				Lab ID =	815106-001
Parameter	Unit	DF	Result	Expected	F	RPD	Accepta	ance Range
Chromium	ug/L	1.00	ND	0		0	0 - 20	_
Low Level Calibration Verification								
Parameter	Unit	DF	Result	Expected	F	Recovery	•	ance Range
Chromium	ug/L	1.00	0.566	0.500		113	70 - 13	0
Lab Control Sample								
Parameter Unit		DF	Result	Expected	I	Recovery	•	ance Range
Chromium	romium ug/L		49.4	50.0		98.7	85 - 11	5
Matrix Spike							Lab ID =	815106-001
Parameter	Unit	DF	Result	Expected/Add	ed l	Recovery	•	ance Range
Chromium	ug/L	1.00	51.9	50.0(50.0)		104	75 - 12	
Matrix Spike Duplicat	te						Lab ID =	815106-001
Parameter	Unit	DF	Result	Expected/Add	led l	Recovery	•	ance Range
Chromium	ug/L	1.00	50.7	50.0(50.0)		101	75 - 12	
MRCCS - Secondary								
Parameter	Unit	DF	Result	Expected		Recovery	•	ance Range
Chromium	ug/L	1.00	21.0	20.0		105	90 - 11	0
MRCVS - Primary								
Parameter	Unit	DF	Result	Expected		Recovery		ance Rang
Chromium	ug/L	1.00	20.3	20.0		101	90 - 11	0
MRCVS - Primary								
Parameter	Unit	DF	Result	Expected		Recovery		ance Rang
Chromium	ug/L	1.00	20.1	20.0		101	90 - 11	
MRCVS - Primary								
Parameter	Unit	DF	Result	Expected		Recovery	•	ance Rang
Chromium	ug/L	1.00	20.4	20.0		102	90 - 11	0

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Project Name: PG&E Topock Project

Project Number: 652547.01.IM.OP.00

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Metals by EPA 200.8, Tot	al		Batch	010515A				
Parameter		Unit	Anal	yzed	DF	MDL	RL	Result
815106-001 Manganese		ug/L	01/05	/2015 14:50 5	5.00	0.300	2.5	99.5
Method Blank						1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 -		
Parameter	Unit	DF	Result					
Manganese	ug/L	1.00	ND					
Duplicate							Lab ID =	815106-001
Parameter	Unit	DF	Result	Expected	RPD		Accept	ance Range
Manganese	ug/L	5.00	106	99.5		6.87	0 - 20	
Low Level Calibration	Verification							
Parameter	Unit	DF	Result	Expected	F	Recovery	Accept	ance Range
Manganese	ug/L	1.00	0.520	0.500		104	70 - 13	0
Lab Control Sample								
Parameter	Unit	DF	Result	Expected	l	Recovery	Accept	ance Range
Manganese	ug/L 1.00		51.7	50.0		103	85 - 11	5
Matrix Spike			1.				Lab ID =	= 815106-001
Parameter	Unit	DF	Result	Expected/Adde	ed l	Recovery	•	ance Range
Manganese	ug/L	5.00	155	150(50.0)		110	75 - 12	
Matrix Spike Duplicate	9 4						Lab ID =	= 815106-001
Parameter	Unit	DF	Result	Expected/Add	ed	Recovery		ance Range
Manganese	ug/L	5.00	145	150(50.0)		90.8	75 - 12	.5
MRCCS - Secondary								
Parameter	Unit	DF	Result	Expected		Recovery	-	ance Range
Manganese	ug/L	1.00	19.9	20.0		99.5	90 - 11	0
MRCVS - Primary								
Parameter	Unit	DF	Result	Expected		Recovery	-	tance Range
Manganese	ug/L	1.00	20.2	20.0		101	90 - 11	0
MRCVS - Primary								
Parameter	Unit	DF	Result	Expected		Recovery	•	tance Range
Manganese	ug/L	1.00	19.7	20.0		98.6	90 - 11	
Interference Check St	tandard A							
Parameter	Unit	DF	Result	Expected		Recovery	Accep	tance Range
Manganese	ug/L	1.00	ND	0				

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Client: E2 Consulting Engineers, Inc.

Project Name: PG&E Topock Project

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Project Number: 652547.01.IM.OP.00

Printed 1/6/2015

Interference Check S	Standard A					
Parameter Manganese Interference Check S	Unit ug/L	DF 1.00	Result ND	Expected 0	Recovery	Acceptance Range
Parameter Manganese Interference Check S	Unit ug/L	DF 1.00	Result 20.2	Expected 20.0	Recovery 101	Acceptance Range 80 - 120
Parameter Manganese Serial Dilution	Unit ug/L	DF 1.00	Result 20.0	Expected 20.0	Recovery 100.	Acceptance Range 80 - 120 Lab ID = 815106-001
Parameter Manganese	Unit ug/L	DF 25.0	Result 98.2	Expected 99.5	RPD 1.33	Acceptance Range 0 - 10

Total Dissolved Solids b	y SM 254	0 C	Batch	1501003				
Parameter		Unit	Ana	lyzed	DF	MDL	RL	Result
815106-001 Total Dissolved S	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	F	RPD	Accepta	ance Range
Total Dissolved Solids	mg/L	1.00	4290	4400		2.53	0 - 10	
Lab Control Sample								
Parameter	arameter Unit DF		Result	Expected	F	Recovery	Accepta	ance Range
Total Dissolved Solids mg/L 1.00		1.00	512	500		102	90 - 11	0

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Client: E2 Consulting Engineers, Inc.

Project Name: PG&E Topock Project

Project Number: 652547.01.IM.OP.00

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Turbidity by SM 2130 B			Batch	1412614				
Parameter		Unit	Ana	ılyzed	DF	MDL	RL	Result
815106-001 Turbidity		NTU	12/3′	1/2014	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	F	RPD Acceptar		
Turbidity	NTU	1.00	0.106	0.108		1.87	0 - 20	
Lab Control Sample								
Parameter	Unit	DF	Result	Expected	F	Recovery	Accepta	ance Range
Turbidity	NTU	1.00	8.59	8.00		107	90 - 110	)
Lab Control Sample D	uplicate							
Parameter	Unit	DF	Result	Expected	Recovery		Accepta	ance Range
Turbidity	NTU	1.00	8.36	8.00		90 - 110	)	

Respectfully submitted,

TRUESDAIL LABORATORIES, INC.

Sean Condon

Project Manager

This report applies only to the sample, or samples, investigated and is not necessarily indicative of the quality or condition of apparently identical or similar products. As a mutual protection to clients, the public, and these laboratories, this report is submitted and accepted for the exclusive use of the client to whom it is addressed and upon the condition that it is not to be used, in whole or in part, in any advertising or publicity matter without prior written authorization from Truesdail Laboratories. 015

### Total Dissolved Solids by SM 2540 C

#### **Calculations**

Batch: 1501003

Date Analyzed: 1/2/2015

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	78.3690	78.3690	78.3690	0.0000	No	0.0000	0.0	25.0	ND	1
14L0548-01	100	76.0098	76.0516	76.0516	0.0000	No	0.0418	418.0	25.0	418.0	1
14L0548-02	100	74.3572	74.4028	74.4028	0.0000	No	0.0456	456.0	25.0	456.0	1
14L0563-01A	10	27.9972	28.0415	28.0412	0.0003	No	0.0440	4400.0	250.0	4400.0	1
14L0576-01C	100	75.7254	75.7765	75.7762	0.0003	No	0.0508	508.0	25.0	508.0	1
14L0576-02	100	76.7683	76.8185	76.8183	0.0002	No	0.0500	500.0	25.0	500.0	1
14L0576-03	100	67.9419	67.9945	67.9942	0.0003	No	0.0523	523.0	25.0	523.0	1
14L0576-04	100	69.7348	69.7878	69.7874	0.0004	No	0.0526	526.0	25.0	526.0	1
14L0577-01B	100	78.7734	78.8200	78.8196	0.0004	No	0.0462	462.0	25.0	462.0	1
14L0577-02	100	74.4877	74.5355	74.5353	0.0002	No	0.0476	476.0	25.0	476.0	1
14L0563-01 Dur	10	29.5545	29.5978	29.5974	0.0004	No	0.0429	4290.0	250.0	4290.0	1
LCS	100	75.7544	75.8058	75.8056	0.0002	No	0.0512	512.0	25.0	512.0	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.	Measurd Value, ppm	Theoretical Value, ppm	Percent Rec	Acceptance Limit	QC Within Control?
LCS	512.0	500	102.4%	90-110%	Yes
LCSD					

**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
			-		

LCS Recovery

$$P = \left(\frac{LC}{LT}\right) \times 10^{\circ}$$

P = Percent recovery.

LC= Measured LCS value (ppm).

LT = Theoretical LCS value (ppm).

**Duplicate Determination Difference** 

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

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

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

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

C = Average weight in (g).

Maksim G.

Reviewer Printed Name

Reviewer Signature

Jenny T.

Analyst Printed Name

Analyst Signature

### Total Dissolved Solids by SM 2540 C

### TDS/EC CHECK

Batch: 1501003

Date Analyzed: 1/2/2015

Laboratory Number	EC	TDS/EC Ratio: 0.55-0.90	Calculated TDS (EC*0.65)	Measured TDS / Calc TDS <1.3
14L0548-01	815	0.51	529.75	0.79
14L0548-02	708	0.64	460.2	0.99
14L0563-01A	7160	0.61	4654	0.95
14L0576-01C	889	0.57	577.85	0.88
14L0576-02	875	0.57	568.75	0.88
14L0576-03	877	0.60	570.05	0.92
14L0576-04	881	0.60	572.65	0.92
14L0577-01B	834	0.55	542.1	0.85
14L0577-02	766	0.62	497.9	0.96
14L0563-01 Dup	7160	0.60	4654	0.92
LCS				



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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-501]

COC Number

TURNA	ROUND TIME	5	Days			
DATE	12/30/14	PAGE	1	OF	1	

																				_	_		
COMPANY	E2						7	<i>[</i>	7	7	/ /	7	$\overline{}$	7	7	7	7	7	$\overline{\mathcal{I}}$	$T_{\perp}$	7	COMMENTS	
PROJECT NAME	PG&E Topock								/ /	′ /	/ /			/	/				/ /	/ /			
PHONE	(530) 229-3303	:	fax <u>(53</u> 0	0) 339-3303	ŀ	,	/ /	/ /			/ ,	/ ,	/ /	/ /	/ /	/ /	/ /	/ /	/ /,	$\int$			
ADDRESS	155 Grand Ave	Ste 1000	·=·····				/,		. /	/	/ /			/-									
	Oakland, CA 94	1612				8		· / 🕉	/ /	′ /	′ /			/					NE NE				
P.O. NUMBER	652547.xx.xx.xx	1	/ TEAI	w <u>1</u>		Filler.	(200.8)	tance		/\$	3/	/ /	/ /	/ /	/	/ /	/ /	/ /	CONTAINERS				
SAMPLERS (SIGNA	ATURE	m f	<u></u>		(210)	Toby Mass.	cific C	TDS (SM25400)	\$ /   	"urbidity (SM21.30)	//				/		/	NUMBEC	റ് 🖊				
SAMPLE I.D.		DATE	TIME	DESCRIPTION	/હૈ	/g	\\ \&	/g/	/ /,									\ <u>\{\}</u>					
SC-700B-WDF	R-501	12/30/14	730	Water	х	х	х	х		(								3		DV	/ = 6		
			- Andrew Colonia Colon									The second second second	THE COLUMN STREET, STR					3	TOTA	AL NUMI	BER OF	CONTAINERS	3

Please Provide a preliminary Result for the TDS ASAP



13USH

	$\wedge$			
	/CHAIN OF CUSTODY S	SIGNATURE RECORD		SAMPLE CONDITIONS
Signature (Relinquished)	Printed Chris Van	R Company/ CHZm Hive	Date/ /2-30-/4 Time /3 55	RECEIVED COOL WARM 1 4.0 8
Signature (Received)	New Printed THANKING	Company/ O Agency TWESDAIL	Date/ 12 - 30 - 14 Time , 3 CT	CUSTODY SEALED YES NO
Signature (Relinquished)	NGO Name THANH NE	∕ Company/ ó Ógency	Date/ 1.2 - 36 - 14- Time 1830	SPECIAL REQUIREMENTS:
Signature Received) Son May	Printed Tom Marking	Company/ Agency Truesdas/	Date/ 12/20/14 Time 18:20	
Signature (Relinquished)	Printed Name	Company/ Agency	Date/ Time	
Signature (Received)	Printed Name	Company/ Agen <i>c</i> y	Date/ Time	

# 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
12/19/14	1420460-41	7.00	15 nl / 25 ml	9.5	10.00	NE
. \ -	1 .05	<u> </u>		_	\	
	1 -06	- J ~~	· J	1		
12/24/14	146510-01	6.00	2ml/100 ml	9.5	7:30	NE
1425114	1460538-01	7.00	15 ml/25 ml	9.5	10:00	NE
	-02					
	-03			·		·
	04					
	_05		·			•
	-06		·			
	V -07					
	1460539-01					
	1 _02	$\bigvee$	25,00	V	V	$\bigvee$
1:2/30/14	146549-01	7.00	·5 ml / 250 CNZ	9.5	8:30	NE
1430/14	1410563-01	6.00	2ml/100ml	9.5	7:30	NE
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M 1/5/15

C:\My Documents\Templates\Hexavalent Chromium\Cr6+ pH Log



Turbidity/pH Check

			Turbi	dity/pH C	Check			
Sample Number	Turbidity	рH	Date	Analyst	Need Digest (Y/N)	Time of Adjustment to pH 2	Date/Time of 2nd pH check	Comments
1460505-01	ZI	<i>L</i> 2	12/29/14	B	4.65	•		
1420502-01	71	,	1	i	,			
-02	41		J	1				
14L0491-01	71	12	12/29/14	ES _	4-85	-		
1410314(01-02,0	1) 21	72	12 1	1.	4-e5 NO	4:11)		
1410548(01-02	7 7 1 11 1		12/20/14	ES	yes			
146503-01	034721	42	1	1	;			
142055-01	アー	22	1		J.			-
1420556-01-02-03	<1	> 2	(2/31/14	m	No	10:00		
1400555-01-04-0	<1	> 2			1	1		
1465-63-01	< j	72			yes			
1410488-02	>1	. < 2						
14LOS 7 2/16,11,-11		22	12/3/14	Ten	NO	15.00		
1410493-02	21	22	1/5/15	Tu	yes	, ,		
146500-02			7 /3	<del>'</del>				
146501-02								
1460202-02								-
146577-01			,					
146577-02								
19-03-71-02	V		V		- V			
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- Samples should be analyzed after 24 hrs of pH adjustment to pH2 for Dissolved Analytes.
   All Total Recoverable Analytes must be pH adjusted and digested.
   Do not use disposable pipette to measure pH; pour a little amount of sample from the bottle.

#### WORK ORDER

### 14L0563

Printed: 12/31/2014 7:01:24AM

### Truesdail Laboratories, Inc

Client: E2 Consulting Engineers, Inc. Project: Topock IM3Piant-WDR Weeky 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:

Chain of Custody re Yes

Letter (if sent) matc No

4°C

Samples intact? Custody seals (if an No

Analyses within hol Yes

Yes

Requested analyses Yes Samples received in Yes

Analysis	Due	TAT	Expires	Comments
14L0563-01 SC-700B-WDR-501 (GMT-08:00) Pacific Time (US &	•	12/30/2014	07:30	
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	



12/31/14 Date

## **WDR pH Results**

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 #Z	10/7/14	0415	-56.5	CHRIS LENTE	6.7
otes:					12					
2 St- 701	10/7/14	07:55	10/7/14	800	METER #2	10/7/14	0415	-56.5	CHILIS LENOL	7.6
utes:										
SC-1008	10/7/14	07:55	10/7/14	800	mesen#2	10/7/14	0415	-54.5	CHRIS LENDE	17.4
otes:			<u>s</u>							
SC-700B	10/14/14	13:55	10/14/14	14:00	HO 440 CE	10/14/14	03:36	-58.29	CHRIS LENGE	7.14
otes:									10	
5C-700B	10-21-14	10:00	10-21-14	10:02	WETER	10-21-14	4:19	58.17	Now Votelps	7-10
otes:			8							
SC-700B	10/28/14	1530	10/28/14	1535	HQ 440	10/28/14	04:12	-57.95	CHRIS LEAST	7.03
otes:	. , ,									
7										
otes:										
· <del>v</del> ———————————————————————————————————		Ren	ninder: WDF	R Require	ed pH Range for th	e Effluent (So	C-700B) is: 6	.5 - 8.4		



Sample Name	Date	Time of sampling	Date of	Time of	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	at down until the problem  Analyst Name  (for the pH result)	pH Resul
Sc-700C	11-4-14	13:13	11-4-14	1319	HQ440d	11-4-14	4:20	-57.93	0 0	7.17
ntes:	11-4-14	ppf 13:44	11-4-14	13:44	11Q 440d	11-4-14			Ryan Pholps	1.1 /
18C -700 B	11-12-14	13:40	11-12-14			11-12-14	4:20	-57.93	Ryan Phelps	7.34
teres:	1 1	1300	11 10 19;	1201	HANAAAA	11 12-19	0422	-58.42	G-GLARIA	7.09
SC-700/3	11-18-14	0755	11-18-14	8:00	HQ440	11-18-14	04:09	-58.08	CHRIS LENTE	7.11
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## WDR pH Results

Cample 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	1319	HQ440d	11-4-14	4:20	-57.93	Ryan Pholps	7.17
ntes:			1							
2 SC-106B	11-4-14	PPP 13:44	11-4-14	13:44	11Q440d	11-4-14	4:20	-57.93	Ryan Phelps	1.34
otes:		13:40								r
SC-700B	11/25/14	7:40	11/25/14	7:45	Harrod	11/25/14	00:55	-58.40	CHRAS LENOZ	6,89
e es										
SC-700B	12-02-14	13:42	12-02-12	13:45	H a 4400	12-02-14	00:20	-58.07	G. GLORIA	7.04
otes:						-				
51 SC - 100 B	12-02-14	13:35	12:02-14	13:46	H24400	12-02-14	00'-20	-58.07	G. GWRIA	7.35
otes:							•	•		
6 St 700B	12-9-14	12125	12-9-14	12:30	HQ 4400	12-9-14	04,29	-57.84	CHIES LENGE	7.25
otes:			`				•	1		
1 SC-700B	12/16/14	12:25	12/16/14	12:30	HQ 4400	12/16/14	03.37	-57.34	CHRIS LENOZ	7.07
otes.								·		, , ,
					d pH Range for the					

### 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. pH Meter Slope **Time** Date Time **Analyst Name** pН Date Date Time #1, #2, or #3 etc. of the pH meter pH meter of (for the pH result) Result of of Sample Name of See cover Sheet Calibrated Curve Calibrated sampling sampling analysis analysis for Serial Number 7.01 CHRIS LENGE -58.24 12/23/14 0413 12/23/14/0725 12/23/14 0730 HQ4400 SC-700 B tes: CHRIS LENZ 7.46 -58.48 12/30/14 07:00 12/30/14 07:30 12/30/14 0410 Ha4400 2 SC- 700B votes: Notes: hotes. Notes: Notes: Notes: Reminder: WDR Required pH Range for the Effluent (SC-700B) is: 6.5 - 8.4