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January 15, 2013

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Denver, CO 80225-0007

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

Subject: Topock IM-3 Combined Fourth Quarter 2012 Monitoring and Semiannual July – December 2012 / Annual January – December 2012 Operation and Maintenance Report
PG&E Topock Compressor Station, Needles, California
Interim Measure No. 3 Groundwater Treatment System
(Document ID: PGE20130115A)

Dear Ms. Innis and Mr. Perdue:

Enclosed is the Combined Fourth Quarter 2012 Monitoring and Semiannual July – December 2012/ Annual January – December 2012 Operation and Maintenance Report for the Pacific Gas and Electric Company (PG&E) Topock Compressor Station, Interim Measure (IM) No. 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 490,349,587 gallons of water and removed approximately 2,550 kilograms (5,610 pounds) of total chromium from August 1, 2005 through December 31, 2012.[1]

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 2012 Monitoring and Semiannual July – December 2012 / Annual January – December 2012 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

[1] See footnote in Section 5.2, page 5-2.

Topock Project Executive Abstract

Document Title:
Topock IM-3 Combined Fourth Quarter 2012 Monitoring Report, Jul-Dec 2012 Semiannual, and Jan-Dec 2012 Annual Operation and Maintenance Report
Submitting Agency/Authored by: U.S. Department of the Interior and Regional Water Quality Control Board
Final Document? ☒ Yes ☐ No

Date of Document: January 15, 2013
Who Created this Document?: (i.e. PG&E, DTSC, DOI, Other)
PG&E
Document ID Number:
PGE20130115A

Priority Status: ☐ HIGH ☐ MED ☒ LOW
Is this time critical? ☐ Yes ☒ No

Action Required:
☒ Information Only ☐ Review & Comment
Return to: _____
By Date:_____
☐ Other / Explain:

Type of Document:
☐ Draft ☒ Report ☐ Letter ☐ Memo
☐ Other / Explain:

What does this information pertain to?
☐ Resource Conservation and Recovery Act (RCRA) Facility Assessment (RFA)/Preliminary Assessment (PA)
☐ RCRA Facility Investigation (RFI)/Remedial Investigation (RI) (including Risk Assessment)
☐ Corrective Measures Study (CMS)/Feasibility Study (FS)
☐ Corrective Measures Implementation (CMI)/Remedial Action
☐ California Environmental Quality Act (CEQA)/Environmental Impact Report (EIR)
☒ Interim Measures
☐ Other / Explain:

Is this a Regulatory Requirement?
☒ Yes
☐ No
If no, why is the document needed?

What is the consequence of NOT doing this item? What is the consequence of DOING this item?

Submittal of this report is a compliance requirement of the waste discharge ARARs as documented in Attachment A to the Letter Agreement issued July 26, 2011.

Other Justification/s:
☐ Permit ☐ Other / Explain:

Brief Summary of attached document:

This report covers the Interim Measures No. 3 (IM-3) groundwater treatment system monitoring activities during the Fourth Quarter 2012 period. The groundwater monitoring results for wells OW-1S/M/D, OW-2S/M/D, OW-5S/M/D, CW-1M/D, CW-2M/D, CW-3M/D, and CW-4M/D will be submitted under separate cover, as part of the Compliance Monitoring Program. This report also covers the IM-3 operation and maintenance activities during the July – December 2012 semiannual and January – December 2012 annual periods.

Written by: PG&E

Recommendations:
This report is for your information only.

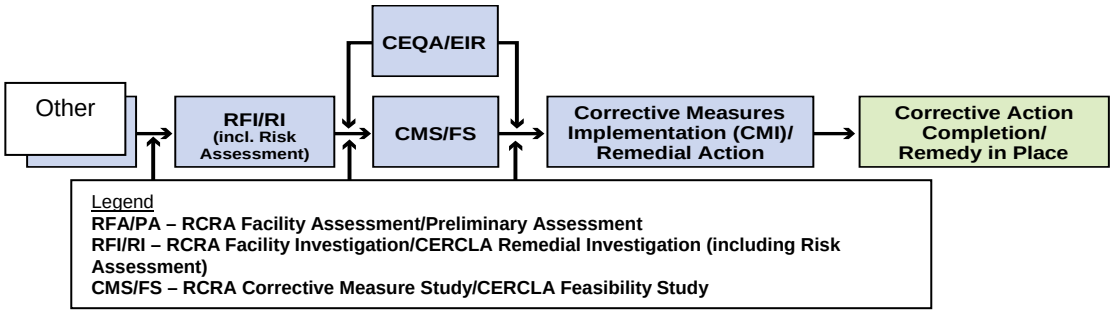
How is this information related to the Final Remedy or Regulatory Requirements?

The Topock IM-3 Fourth Quarter 2012 Monitoring Report, Jul-Dec 2012 Semiannual, and Jan-Dec 2012 Annual Operation and Maintenance Report is related to the Interim Measure. PG&E is currently operating the IM-3 groundwater treatment system as authorized by the U.S. Department of the Interior (DOI) Waste Discharge Applicable or Relevant and Appropriate Requirements (ARARs) as documented in Attachment A to the Letter Agreement issued July 26, 2011 from the Colorado River Basin Regional Water Quality Control Board (Regional Water Board) to DOI, and the subsequent Letter of Concurrence issued August 18, 2011 from DOI to the Regional Water Board.

Other requirements of this information?
None.

Related Reports and Documents:

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



Legend

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

Version 9

Combined Fourth Quarter 2012 Monitoring and Semiannual July – December 2012 / Annual January – December 2012 Operation and Maintenance Report

Interim Measure No. 3 Groundwater Treatment System

Document ID: PGE20130115A

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, 2013

CH2MHILL
155 Grand Avenue, Suite 800
Oakland, CA 94612

Combined Fourth Quarter 2012 Monitoring and Semiannual July – December 2012/ Annual January – December 2012 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, 2013

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

Dennis Fink, P.E.
Project Engineer

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Acronyms and Abbreviations

ARARs	Applicable or Relevant and Appropriate Requirements
DOI	United States Department of the Interior
gpm	gallons per minute
IM	Interim Measure
IW	injection well
MRP	Monitoring and Reporting Program
PG&E	Pacific Gas and Electric Company
PST	Pacific Standard Time
Regional Water Board	Colorado River Basin Regional Water Quality Control Board
RO	reverse osmosis
Truesdail	Truesdail Laboratories, Inc.
WDR	Waste Discharge Requirements

1.0 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 in the Colorado River floodplain and management of extracted groundwater. The groundwater extraction, treatment, and injection systems are collectively referred to as Interim Measure No. 3 (IM-3). Currently, the IM-3 facilities include a groundwater extraction system, conveyance piping, a groundwater treatment plant, and an injection well field for the discharge of the treated groundwater. Figure 1 shows the location of the IM-3 extraction, conveyance, treatment, and injection facilities. (All figures and tables are provided 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 California Regional Water Quality Control Board, Colorado River Basin (Regional Water Board) Waste Discharge Requirements (WDR) 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).

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). The WDR Order No. R7-2006-0060 expired on September 20, 2011 and was replaced by DOI enforcement of the 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 the IM-3 groundwater treatment system monitoring activities during the Fourth Quarter 2012; the operation and maintenance activities during the July 1, 2012 to December 31, 2012 semiannual period (Third and Fourth Quarters 2012); and (by reference; see Section 3.0) the operation and maintenance activities during the January 1, 2012 to June 30, 2012 semiannual period (First and Second Quarters 2012). The groundwater monitoring results for wells OW-1S/M/D, OW-2S/M/D, OW-5S/M/D, CW-1M/D, CW-2M/D, CW-3M/D, and CW-4M/D will be submitted under separate cover, as part of the Compliance Monitoring Program.

2.0 Sampling Station Locations

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

3.0 Description of Activities

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 No. R7-2004-0103. Full-time operation of the treatment system commenced in August 2005.

This report describes Fourth Quarter 2012 monitoring activities and the July 1, 2012 through December 31, 2012 (Third and Fourth Quarters) operation and maintenance activities related to the IM-3 groundwater treatment system. IM-3 monitoring activities from January 1, 2012 through September 30, 2012 (First, Second, and Third Quarter monitoring) were presented in the following monitoring reports:

- *IM-3 First Quarter 2012 Monitoring Report,* submitted to the DOI and Regional Water Board April 13, 2012.
- *IM No. 3 Second Quarter 2012 Monitoring / Semiannual January 1- June 30, 2012 Operation and Maintenance Report,* submitted to the Regional Water Board July 13, 2012.
- *IM-3 Third Quarter 2012 Monitoring Report,* submitted to the DOI and Regional Water Board October 15, 2012.

The IM-3 operation and maintenance activities from January 1, 2012 through June 30, 2012 (First and Second Quarter 2012 operation and maintenance) were reported in the Second Quarter 2012 Monitoring/Semiannual Operation and Maintenance Report listed above; these operation and maintenance data are incorporated in the present report by reference. The present report therefore also serves as the annual January through December 2012 Operation and Maintenance Report for IM-3.

3.1 Groundwater Treatment System

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

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

- 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 2012

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 2.5 percent downtime during Fourth Quarter 2012) are summarized in the Semiannual Operations and Maintenance Log provided in Appendix A. The times shown are in Pacific Standard Time to be consistent with other data collected (e.g., water level data) at the site. Periods of planned and unplanned extraction system downtime during the months July 2012 – September 2012 are reported in the *IM-3 Third Quarter 2012 Monitoring Report, PG&E Topock Compressor Station, Needles, CA*, published October 15, 2012 and are provided 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 2012, extraction wells TW-3D and PE-1 operated at a target pump rate of 135 gallons per minute (gpm), excluding periods of planned and unplanned downtime. Extraction wells TW-2D and TW-2S were only operated for short periods during December 2012 for groundwater sampling. The operational run time for the IM-3 groundwater extraction system (combined or individual pumping), by month, was approximately:

- 98.9 percent during October 2012
- 98.7 percent during November 2012
- 98.0 percent during December 2012

The Fourth Quarter 2012 treatment system monthly average flow rates (influent, effluent, and RO concentrate) are presented in Table 2. The system influent flow rate was measured by flow meters at groundwater extraction wells TW-2S, TW-2D, TW-3D, and PE-1 (Figure TP-PR-10-10-03).

The IM-3 facility treated approximately 17,435,633 gallons of extracted groundwater during Fourth Quarter 2012.

In addition to extracted groundwater, during Fourth Quarter 2012 the IM-3 facility treated approximately 8,770 gallons of water generated from the groundwater monitoring program and approximately 16,200 gallons of injection well development water.

3.2.2 Effluent Streams

The treatment system effluent flow rate was measured by flow meters 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 approximately 17,425,015 gallons of treatment system effluent during Fourth Quarter 2012. The monthly average flow rate to injection wells is shown in Table 2.

The reverse osmosis concentrate flow rate was measured by a flow meter at the piping carrying water from RO concentrate tank T-701 to the truck load-out station (Figure PR-10-04). The IM-3 facility generated approximately 170,185 gallons of RO concentrate during Fourth Quarter 2012. 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. Ten sludge containers were shipped offsite from the IM-3 facility during Fourth Quarter 2012. 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 laboratory confirmed the samples were received in chilled condition upon arrival.

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

During the Fourth Quarter 2012, 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 2012sample 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.

4.0 Analytical Results

The analytical results and laboratory reports for the IM-3 groundwater treatment system monitoring program between January 1, 2012 and June 30, 2012 were included in the First Quarter and Second Quarter Monitoring Reports submitted to the Regional Water Board. The analytical results and laboratory report between July 1, 2012 and September 30, 2012 were included in Third Quarter Monitoring Reports submitted to the DOI and Regional Water Board (see Section 3.0 for a complete listing of reports).

Laboratory reports for samples collected in Fourth Quarter 2012 were prepared by certified analytical laboratories, and are presented in Appendix D. The Fourth Quarter 2012 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.
- Reverse osmosis 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 aquatic bioassay test was conducted on a July 2012 sample, and the results were presented in the Third Quarter Monitoring Report submitted to the DOI and the Regional Water Board on October 15, 2012.

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

5.0 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, 2012 through December 31, 2012. The IM-3 operation and maintenance activities for January 1, 2012 through June 30, 2012 were reported in the Second Quarter 2012 Monitoring and Semiannual January 1- June 30, 2012 Operation and Maintenance Report, submitted July 13, 2012.

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

5.1 Flowmeter Calibration Records

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

Location	Flowmeter Location ID	Current Flowmeter Serial No.	Date of Calibration	Date of Installation
Extraction well PE-1	FIT-103	6C037216000	7/15/11	12/13/11
Extraction well TW-3D	FIT-102	6C037116000	7/15/11	12/13/11
Extraction well TW-2D[a]	FIT-101	7700F216000	11/30/06	7/6/11
Extraction well TW-2S[b]	FIT-100	6A022016000	11/29/04	7/28/05
Injection well IW-02	FIT-1202	6C036F16000	8/6/10	1/5/11
Injection well IW-03	FIT-1203	6A037016000	6/19/12	7/12/12
Combined IW-02 and IW-03	FIT-700	7700C616000	7/25/11	12/13/11
Reverse osmosis concentrate	FIT-701	6A021F16000	6/19/12	7/14/12

Notes:
[a] TW-2D is a backup extraction well only operated for brief testing and sampling periods since January 2006.
[b] TW-2S is a backup extraction well only operated for brief testing and sampling periods since October 2005.

5.2 Volumes of Groundwater Treated

Data regarding daily volumes of groundwater treated between July 1, 2012 and December 31, 2012 are provided in Appendix B. The daily volumes of groundwater treated from January 1, 2012 through June 30, 2012 were reported in the Second Quarter 2012 Monitoring and Semiannual January 1- June 30, 2012 Operation and Maintenance Report, submitted July 13, 2012.

Approximately 34,165,045 gallons of groundwater were extracted and treated between July 1, 2012 and December 31, 2012. Treatment of this water at the IM-3 facility is being performed in accordance with the conditions of ARARs.

Additionally, approximately 13,070 gallons of well purge water (generated during well development, monitoring well sampling, and/or aquifer testing) and 41,400 gallons of injection well re-development water were treated at the IM-3 facility during the July 1, 2012 through December 31, 2012 semiannual period.

A total of approximately 34,124,850 gallons of treated groundwater was injected back into the Alluvial Aquifer between July 1, 2012 and December 31, 2012.

The IM-3 groundwater extraction and treatment system has extracted and treated approximately 490,349,587 gallons of water and removed approximately 2,550 kilograms (5,610 pounds) of total chromium from August 1, 2005 through December 31, 2012.[1]

5.3 Residual Solids Generated (Sludge)

During the July 1, 2012 through December 31, 2012 reporting period, 17 containers of sludge were shipped offsite for disposal. The containers of sludge shipped offsite for disposal from January 1, 2012 through June 30, 2012 were reported in the Second Quarter 2012 Monitoring and Semiannual January 1- June 30, 2012 Operation and Maintenance Report, submitted July 13, 2012. The sludge was shipped to U.S. Ecology in Beatty, Nevada for disposal. A listing of each shipment during the July 1, 2012 through December 31, 2012 reporting period is provided below.

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[1] The total volume of groundwater extracted and treated and mass of chromium removed reported for IM-3 under ARARs (the Monitoring and Reporting Program originally established under Board Order No. R7-2004-0103 issued October 13, 2004) is the amount of water extracted and treated and chromium removed by the IM-3 system beginning with the first full month following the start-up and commissioning of the IM-3 system in mid-July 2005 through the end of the current reporting period. The total volume of groundwater extracted and treated is rounded to the nearest gallon. Because laboratory data are reported to three significant figures, the last digit of the chromium removed total (currently calculated at 2,546 kg) is rounded for this reporting period to 2,550 kg.

Other interim measures efforts that pre-date IM-3 were conducted at the MW-20 Bench before IM-3 commissioning. Those prior actions were concluded in mid-July 2005 upon startup of the IM-3 system. The total volume of groundwater extracted and treated and the total chromium removed by IM-1, IM-2, and IM-3 startup from March 2004 through July 31, 2005 are 36,583,666 gallons and 823 kg (1,810 pounds), respectively. Of the total volume of groundwater extracted and treated during this period, 35,055,942 gallons of water were extracted from extraction wells TW-2D and TW-2S, and 1,527,724 gallons were extracted from monitoring wells MW-20-70, MW-20-100, and MW-20-130. The total groundwater extracted and treated as recorded in the Third Quarter 2011 through Third Quarter 2012 ARARs reports erroneously included the 35,055,942 gallons from TW-2S and TW-2D in the summation calculations. Future ARARs reports will exclude this volume of groundwater since it was treated prior to August 1, 2005. The total chromium amount removed prior to August 1, 2005 has not previously and will not be included in cumulative reporting under IM-3 ARARs. Therefore, the cumulative chromium removal for the project to date reported with PMR-GMP reporting in the future will be approximately 823 kg greater for any given month than the total chromium removal by IM-3 reported under IM-3 ARARs.

Date Sludge Bin Removed from Site	Approximate Quantity from Waste Manifests (cubic yards)	Type of Shipment
July 12, 2012	8	Non-RCRA hazardous waste
July 12, 2012	8	Non-RCRA hazardous waste
July 30, 2012	8	Non-RCRA hazardous waste
July 30, 2012	8	Non-RCRA hazardous waste
September 10, 2012	8	Non-RCRA hazardous waste
September 10, 2012	8	Non-RCRA hazardous waste
September 11, 2012	8	Non-RCRA hazardous waste
October 1, 2012	8	Non-RCRA hazardous waste
October 1, 2012	8	Non-RCRA hazardous waste
October 15, 2012	8	Non-RCRA hazardous waste
October 15, 2012	8	Non-RCRA hazardous waste
November 2, 2012	8	Non-RCRA hazardous waste
November 4, 2012	8	Non-RCRA hazardous waste
November 26, 2012	8	Non-RCRA hazardous waste
November 26, 2012	8	Non-RCRA hazardous waste
December 13, 2012	8	Non-RCRA hazardous waste
December 13, 2012	8	Non-RCRA hazardous waste

Notes:
RCRA = Resource Conservation and Recovery Act.

5.4 Reverse Osmosis Concentrate Generated

Data regarding daily volumes of reverse osmosis concentrate generated are provided in Appendix B, as measured by flowmeter FIT-701 (Figures PR-10-03 and PR-10-04). From July 1, 2012 through December 31, 2012, approximately 409,756 gallons of RO concentrate were transported to Liquid Environmental Solutions in Phoenix, Arizona for disposal. The daily volumes of RO concentrate generated from January 1, 2012 through June 30, 2012 were reported in the Semiannual January 1- June 30, 2012 Operation and Maintenance Report, submitted July 13, 2012.

5.5 Summary of ARARs Compliance

No ARARs violations were identified during the July 1, 2012 through December 31, 2012 semiannual reporting period, nor during the January 1, 2012 through December 31, 2012 annual reporting period.

5.6 Operation and Maintenance – Required Shutdowns

Records of routine maintenance are kept onsite. The summary of operation or maintenance issues that required the groundwater extraction system to be shut down during the January 1, 2012 through June 30, 2012 period was reported in the Second Quarter 2012 Monitoring

and Semiannual January 1- June 30, 2012 Operation and Maintenance Report, submitted July 13, 2012.

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, 2012 through December 31, 2012 semiannual reporting period.

Activities during the Third Quarter 2012 included one extended shutdown. The extraction system downtime occurred August 13 – 17, 2012, for a total of 4 days, 2 hours and 36 minutes, due to a planned plant outage for maintenance.

No extended shutdowns of the IM-3 extraction system occurred during the Fourth Quarter 2012.

5.7 Treatment Plant Modifications

No major IM-3 treatment plant modifications that affected the quality or quantity of treated effluent were performed during the January 1, 2012 through December 31, 2012 annual period.

6.0 Conclusions

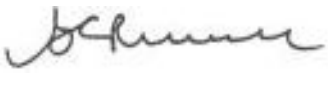
There were no exceedances of effluent limitations during the reporting period.

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

7.0 Certification

Certification Statement:

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

Signature: 

Name: Curt Russell

Company: Pacific Gas and Electric Company

Title: Topock Site Manager

Date: January 15, 2013

Tables

TABLE 1
Sampling Station Descriptions
Fourth Quarter 2012 Monitoring Report for Interim Measure No. 3 Groundwater Treatment System

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

Note:

= Sequential sample identification number at each sample station.

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

TABLE 2
Flow Monitoring Results
Fourth Quarter 2012 Monitoring Report for Interim Measure No. 3 Groundwater Treatment System

Parameter	System Influent[a,b] (gpm)	System Effluent[b] (gpm)	Reverse Osmosis Concentrate[b] (gpm)
October 2012 Average Monthly Flowrate	132.1	132.1	1.2
November 2012 Average Monthly Flowrate	131.8	131.6	1.3
December 2012 Average Monthly Flowrate	131.0	130.9	1.4

Notes:

gpm: gallons per minute

[a] Extraction wells TW-3D and PE-1 were operated during the Fourth Quarter 2012. Extraction wells TW-2D and TW-2S were operated for a short period of time during the Fourth Quarter 2012.

[b] The difference between influent flow rate and the sum of the effluent and reverse osmosis concentrate flow rates during the Fourth Quarter 2012 is approximately 0.91 percent.

TABLE 3
Sample Collection Dates
Fourth Quarter 2012 Monitoring Report for Interim Measure No. 3 Groundwater Treatment System

Parameter	Sample Collection Dates	Results
Influent	October 2, 2012 November 7, 2012 December 4, 2012	See Table 4
Effluent	October 2, 2012 October 9, 2012 October 16, 2012 October 23, 2012 October 30, 2012 November 7, 2012 November 14, 2012 November 21, 2012 November 27, 2012 December 4, 2012 December 11, 2012 December 18, 2012 December 26, 2012	See Table 5
Reverse Osmosis Concentrate	October 2, 2012	See Table 6
Sludge[a]	October 2, 2012	See Table 7

Notes:

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

TABLE 4
Topock IM-3 Waste Discharge Applicable or Relevant and Appropriate Requirements (ARARs)
Influent Monitoring Results [a]
Fourth Quarter 2012 Monitoring Report for Interim Measure No.3 Groundwater Treatment System

Sampling Frequency		Monthly																					
Analytes		TDS	Turbidity	Specific Conductance	Field pH [c]	Chromium	Hexavalent Chromium	Aluminium	Ammonia (as N)	Antimony	Arsenic	Barium	Boron	Copper	Fluoride	Lead	Manganese	Molybdenum	Nickel	Nitrate (as N)	Nitrite (as N)	Sulfate	Iron	Zinc
Units [b]		mg/L	NTU	µmhos/cm	pH units	µg/L	µg/L	µg/L	mg/L	µg/L	µg/L	µg/L	mg/L	µg/L	mg/L	µg/L	µg/L	µg/L	µg/L	mg/L	mg/L	mg/L	µg/L	µg/L
MDL		0.757	0.0140	0.116	---	0.390	0.460	10.0	0.0098	0.210	0.250	0.200	0.0023	0.240	0.104	0.180	0.220	0.150	0.360	0.0415	0.00054	1.54	0.900	4.60
Sample ID	**Date**																							
SC-100B-WDR-381	**10/2/2012**	**4620**	**0.106**	**7520**	**7.3**	**735**	**791**	**ND (10.0)**	**ND (0.500)**	**ND (2.00)**	**3.30**	**24.9**	**0.977**	**ND (5.00)**	**2.60**	**ND (1.00)**	**3.90**	**22.2**	**ND (2.00)**	**3.16**	**ND (0.0050)**	**520**	**ND (20.0)**	**ND (10.0)**
RL		250	0.100	2.00	---	2.00	10.0	10.0	0.500	2.00	1.00	5.00	0.200	5.00	0.500	1.00	1.00	5.00	2.00	0.500	0.0050	25.0	20.0	10.0
SC-100B-WDR-386	**11/6/2012**	**4550**	**ND (0.100)**	**7740**	**7.4**	**716**	**758**	**ND (50.0)**	**ND (0.500)**	**ND (2.00)**	**3.40**	**25.0**	**0.977**	**ND (5.00)**	**2.61**	**ND (1.00)**	**3.70**	**22.0**	**ND (2.00)**	**3.34**	**ND (0.0050)**	**522**	**ND (20.0)**	**ND (20.0)**
RL		250	0.100	2.00	---	1.00	10.0	50.0	0.500	2.00	0.500	5.00	0.200	5.00	0.500	1.00	0.500	2.00	2.00	0.500	0.0050	25.0	20.0	20.0
SC-100B-WDR-390	**12/4/2012**	**4660**	**0.166**	**7810**	**7.4**	**746**	**746**	**ND (50.0)**	**ND (0.500)**	**2.00**	**3.30**	**26.1**	**1.09**	**ND (5.00)**	**2.38**	**ND (1.00)**	**3.60**	**21.2**	**ND (5.00)**	**3.25**	**ND (0.0050)**	**532**	**ND (20.0)**	**ND (20.0)**
RL		250	0.100	2.00	---	2.00	10.0	50.0	0.500	2.00	0.500	5.00	0.200	5.00	0.500	1.00	0.500	5.00	5.00	0.500	0.0050	25.0	20.0	20.0

NOTES:

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

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

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

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

TABLE 5
Topock IM-3 Waste Discharge Applicable or Relevant and Appropriate Requirements (ARARs)
Effluent Monitoring Results[a]
Fourth Quarter 2012 Monitoring Report for Interim Measure No.3 Groundwater Treatment System

Effluent Limits[b]	Ave. Monthly	NA	NA	NA	6.5-8.4	25	8	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	Max Daily	NA	NA	NA	6.5-8.4	50	16	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Sampling Frequency		**Weekly**						**Monthly**																
Analytes		TDS	Turbidity	Specific Conductance	Field pH[e]	Chromium	Hexavalent Chromium	Aluminium	Ammonia (as N)	Antimony	Arsenic	Barium	Boron	Copper	Fluoride	Lead	Manganese	Molybdenum	Nickel	Nitrate (as N)	Nitrite (as N)	Sulfate	Iron	Zinc
Units[c]		mg/L	NTU	µmhos/cm	pH units	µg/L	µg/L	µg/L	mg/L	µg/L	µg/L	µg/L	mg/L	µg/L	mg/L	µg/L	µg/L	µg/L	µg/L	mg/L	mg/L	mg/L	µg/L	µg/L
MDL[d]		0.757	0.0140	0.116	---	0.200	0.0058	10.0	0.0098	0.210	0.250	0.200	0.0023	0.240	0.104	0.180	0.220	0.150	0.360	0.0415	0.00054	1.54	0.900	4.60
Sample ID	**Date**																							
SC-700B-WDR-381	**10/2/2012**	**4350**	**ND (0.100)**	**7230**	**7.10**	**ND (1.00)**	**0.210**	**ND (10.0)**	**ND (0.500)**	**ND (2.00)**	**ND (1.00)**	**12.3**	**0.926**	**ND (5.00)**	**2.10**	**ND (1.00)**	**1.00**	**20.4**	**ND (2.00)**	**3.00**	**ND (0.0050)**	**497**	**ND (20.0)**	**ND (10.0)**
RL		250	0.100	2.00	---	1.00	0.200	10.0	0.500	2.00	1.00	5.00	0.200	5.00	0.500	1.00	1.00	5.00	2.00	0.500	0.0050	50.0	20.0	10.0
SC-700B-WDR-382	**10/9/2012**	**4360**	**ND (0.100)**	**7310**	**7.00**	**ND (1.00)**	**ND (0.200)**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**1.10**	**---**	**---**	**---**	**---**	**---**	**---**	**---**
RL		250	0.100	2.00	---	1.00	0.200	---	---	---	---	---	---	---	---	---	0.500	---	---	---	---	---	---	---
SC-700B-WDR-383	**10/16/2012**	**4330**	**ND (0.100)**	**7370**	**6.90**	**ND (1.00)**	**0.250**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**0.820**	**---**	**---**	**---**	**---**	**---**	**---**	**---**
RL		250	0.100	2.00	---	1.00	0.200	---	---	---	---	---	---	---	---	---	0.500	---	---	---	---	---	---	---
SC-700B-WDR-384	**10/23/2012**	**4210**	**0.110**	**7320**	**7.10**	**ND (1.00)**	**0.210**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**0.810**	**---**	**---**	**---**	**---**	**---**	**---**	**---**
RL		250	0.100	2.00	---	1.00	0.200	---	---	---	---	---	---	---	---	---	0.500	---	---	---	---	---	---	---
SC-700B-WDR-385	**10/30/2012**	**4700**	**0.189**	**7380**	**7.00**	**ND (1.00)**	**ND (0.200)**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**2.40**	**---**	**---**	**---**	**---**	**---**	**---**	**---**
RL		250	0.100	2.00	---	1.00	0.200	---	---	---	---	---	---	---	---	---	0.500	---	---	---	---	---	---	---
SC-700B-WDR-386	**11/6/2012**	**4480**	**ND (0.100)**	**7250**	**7.00**	**ND (1.00)**	**ND (0.200)**	**ND (50.0)**	**ND (0.500)**	**ND (2.00)**	**ND (0.500)**	**11.2**	**0.940**	**ND (5.00)**	**1.97**	**ND (1.00)**	**1.10**	**21.8**	**ND (2.00)**	**3.15**	**ND (0.0050)**	**486**	**ND (20.0)**	**ND (20.0)**
RL		250	0.100	2.00	---	1.00	0.200	50.0	0.500	2.00	0.500	5.00	0.200	5.00	0.500	1.00	0.500	2.00	2.00	0.500	0.0050	25.0	20.0	20.0
SC-700B-WDR-387	**11/13/2012**	**4050**	**ND (0.100)**	**7400**	**7.00**	**ND (1.00)**	**ND (0.200)**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**1.30**	**---**	**---**	**---**	**---**	**---**	**---**	**---**
RL		250	0.100	2.00	---	1.00	0.200	---	---	---	---	---	---	---	---	---	0.500	---	---	---	---	---	---	---
SC-700B-WDR-388	**11/20/2012**	**4170 J**	**ND (0.100)J**	**7390 J**	**7.00**	**ND (1.00)**	**ND (0.200)J**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**1.20**	**---**	**---**	**---**	**---**	**---**	**---**	**---**
RL		250	0.100	2.00	---	1.00	0.200	---	---	---	---	---	---	---	---	---	0.500	---	---	---	---	---	---	---
SC-700B-WDR-389	**11/27/2012**	**4300**	**0.102**	**7440**	**7.70**	**ND (1.00)**	**ND (0.200)**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**3.10**	**---**	**---**	**---**	**---**	**---**	**---**	**---**
RL		250	0.100	2.00	---	1.00	0.200	---	---	---	---	---	---	---	---	---	0.500	---	---	---	---	---	---	---
SC-700B-WDR-390	**12/4/2012**	**4380**	**0.102**	**7380**	**6.80**	**ND (1.00)**	**0.210**	**ND (50.0)**	**ND (0.500)**	**ND (2.00)**	**ND (0.500)**	**10.2**	**1.04**	**ND (5.00)**	**2.00**	**ND (1.00)**	**0.520**	**21.9**	**ND (5.00)**	**3.14**	**ND (0.0050)**	**498**	**ND (20.0)**	**ND (20.0)**
RL		250	0.100	2.00	---	1.00	0.200	50.0	0.500	2.00	0.500	5.00	0.200	5.00	0.500	1.00	0.500	5.00	5.00	0.500	0.0050	25.0	20.0	20.0
SC-700B-WDR-391	**12/11/2012**	**4190**	**ND (0.100)**	**7030**	**7.00**	**ND (1.00)**	**ND (0.200)**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**0.980**	**---**	**---**	**---**	**---**	**---**	**---**	**---**
RL		250	0.100	2.00	---	1.00	0.200	---	---	---	---	---	---	---	---	---	0.500	---	---	---	---	---	---	---
SC-700B-WDR-392	**12/18/2012**	**4280**	**ND (0.100)**	**7100**	**7.10**	**ND (1.00)**	**ND (0.200)**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**1.50**	**---**	**---**	**---**	**---**	**---**	**---**	**---**
RL		250	0.100	2.00	---	1.00	0.200	---	---	---	---	---	---	---	---	---	0.500	---	---	---	---	---	---	---
SC-700B-WDR-393	**12/26/2012**	**4680**	**ND (0.100)**	**7080**	**7.10**	**ND (1.00)**	**ND (0.200)**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**5.40**	**---**	**---**	**---**	**---**	**---**	**---**	**---**
RL		250	0.100	2.00	---	1.00	0.200	---	---	---	---	---	---	---	---	---	0.500	---	---	---	---	---	---	---

TABLE 5
Topock IM-3 Waste Discharge Applicable or Relevant and Appropriate Requirements (ARARs)
Effluent Monitoring Results[a]
Fourth Quarter 2012 Monitoring Report for Interim Measure No.3 Groundwater Treatment System

NOTES:

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

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

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

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

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

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

TABLE 6
Topock IM-3 Waste Discharge Applicable or Relevant and Appropriate Requirements (ARARs)
Reverse Osmosis Concentrate Monitoring Results [a]
Fourth Quarter 2012 Monitoring Report for Interim Measure No.3 Groundwater Treatment System

Sampling Frequency		Quarterly																				
Analytes		TDS	Specific Conductance	Field pH [c]	Chromium	Hexavalent Chromium	Antimony	Arsenic	Barium	Beryllium	Cadmium	Cobalt	Copper	Fluoride	Lead	Molybdenum	Mercury	Nickel	Selenium	Silver	Thallium	Vanadium	Zinc
Units [b]		mg/L	µmhos/cm	pH units	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
MDL		0.757	0.116	---	0.00020	0.000092	0.00021	0.00026	0.00020	0.00014	0.00014	0.00027	0.00024	0.104	0.00026	0.00015	0.00012	0.00036	0.00036	0.00012	0.00026	0.00032	0.0046
Sample ID	**Date**																						
SC-701-WDR-381	**10/2/2012**	**32000**	**43500**	**6.9**	**0.00790**	**ND (0.0020)**	**ND (0.0020)**	**0.00110**	**0.0828**	**ND (0.00050)**	**ND (0.0010)**	**ND (0.0050)**	**ND (0.0050)**	**15.4**	**ND (0.0010)**	**0.144**	**ND (0.0010)**	**0.00820**	**0.0223**	**ND (0.0050)**	**ND (0.0010)**	**ND (0.0050)**	**ND (0.0100)**
RL		1250	2.00	---	0.0010	0.0020	0.0020	0.0010	0.0050	0.00050	0.0010	0.0050	0.0050	0.500	0.0010	0.0020	0.0010	0.0020	0.0050	0.0050	0.0010	0.0050	0.0100

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

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

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

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

TABLE 7
Topock IM-3 Waste Discharge Applicable or Relevant and Appropriate Requirements (ARARs)
Sludge Monitoring Results[a]
Fourth Quarter 2012 Monitoring Report for Interim Measure No.3 Groundwater Treatment System

Sampling Frequency		Quarterly																		
Analytes		Chromium	Hexavalent Chromium	Antimony	Arsenic	Barium	Beryllium	Cadmium	Cobalt	Copper	Fluoride	Lead	Molybdenum	Mercury	Nickel	Selenium	Silver	Thallium	Vanadium	Zinc
Units[b]		mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
MDL		0.0040	0.310	0.0290	0.0100	0.0240	0.0016	0.0070	0.0050	0.0140	0.0209	0.0050	0.0350	0.00012	0.0055	0.0190	0.0094	0.0118	0.0100	0.0230
Sample ID	**Date**																			
SC-Sludge-WDR-381	**10/2/2012**	**2370**	**20.8**	**32.8**	**ND (5.00)**	**39.7**	**ND (1.71)**	**4.54**	**ND (10.0)**	**14.2**	**20.6**	**ND (5.00)**	**ND (10.0)**	**ND (0.100)**	**23.2**	**ND (5.00)**	**ND (5.00)**	**ND (5.00)**	**28.7**	**29.1**
RL		8.53	6.93	5.00	5.00	10.0	1.71	1.71	10.0	5.00	3.46	5.00	10.0	0.100	5.00	5.00	5.00	5.00	8.53	10.0

NOTES:

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

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

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

TABLE 8
Topock IM-3 Waste Discharge Applicable or Relevant and Appropriate Requirements (ARARs)
Monitoring Information
Fourth Quarter 2012 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-381	C.Knight	10/2/2012	1:36:00 PM	TLI	EPA 120.1	SC	10/5/2012	Gautam Savani
					TLI	EPA 200.7	AL	10/10/2012	Ethel Suico
					TLI	EPA 200.7	B	10/9/2012	Ethel Suico
					TLI	EPA 200.7	FE	10/9/2012	Ethel Suico
					TLI	EPA 200.7	ZN	10/10/2012	Ethel Suico
					TLI	EPA 200.8	AS	10/15/2012	Katia Kiarashpoor/Bita Emami
					TLI	EPA 200.8	BA	10/9/2012	Katia Kiarashpoor/Bita Emami
					TLI	EPA 200.8	CR	10/15/2012	Katia Kiarashpoor/Bita Emami
					TLI	EPA 200.8	CU	10/9/2012	Katia Kiarashpoor/Bita Emami
					TLI	EPA 200.8	MN	10/15/2012	Katia Kiarashpoor/Bita Emami
					TLI	EPA 200.8	MO	10/6/2012	Katia Kiarashpoor/Bita Emami
					TLI	EPA 200.8	NI	10/15/2012	Katia Kiarashpoor/Bita Emami
					TLI	EPA 200.8	PB	10/6/2012	Katia Kiarashpoor/Bita Emami
					TLI	EPA 200.8	SB	10/30/2012	Katia Kiarashpoor/Bita Emami
					TLI	EPA 218.6	CR6	10/8/2012	Himani Vaishnav
					TLI	EPA 300.0	FL	10/3/2012	Giawad Ghenniwa
					TLI	EPA 300.0	NO3N	10/3/2012	Giawad Ghenniwa
					TLI	EPA 300.0	SO4	10/3/2012	Giawad Ghenniwa
					FIELD	HACH	PH	10/2/2012	C.Knight
					TLI	SM2130B	TRB	10/3/2012	Gautam Savani
					TLI	SM2540C	TDS	10/4/2012	Jenny Tankunakorn
					TLI	SM4500NH3D	NH3N	10/4/2012	Maksin Gorbunov
					TLI	SM4500NO2B	NO2N	10/3/2012	Jenny Tankunakorn
SC-100B	SC-100B-WDR-386	C.Knight	11/6/2012	1:47:00 PM	TLI	EPA 120.1	SC	11/8/2012	Gautam Savani
					TLI	EPA 200.7	AL	11/30/2012	Ethel Suico
					TLI	EPA 200.7	B	11/30/2012	Ethel Suico
					TLI	EPA 200.7	FE	11/30/2012	Ethel Suico
					TLI	EPA 200.7	FETD	11/30/2012	Ethel Suico
					TLI	EPA 200.7	ZN	11/30/2012	Ethel Suico
					TLI	EPA 200.8	AS	11/29/2012	Bita Emami
					TLI	EPA 200.8	BA	11/29/2012	Bita Emami
					TLI	EPA 200.8	CR	11/29/2012	Bita Emami
					TLI	EPA 200.8	CU	11/29/2012	Bita Emami
					TLI	EPA 200.8	MN	11/29/2012	Bita Emami
					TLI	EPA 200.8	MND	12/8/2012	Bita Emami
					TLI	EPA 200.8	MO	11/29/2012	Bita Emami

TABLE 8
Topock IM-3 Waste Discharge Applicable or Relevant and Appropriate Requirements (ARARs)
Monitoring Information
Fourth Quarter 2012 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-386	C.Knight	11/6/2012	1:47:00 PM	TLI	EPA 200.8	NI	12/4/2012	Bita Emami
					TLI	EPA 200.8	PB	11/29/2012	Bita Emami
					TLI	EPA 200.8	SB	11/29/2012	Bita Emami
					TLI	EPA 218.6	CR6	11/8/2012	George Wahba
					TLI	EPA 300.0	FL	11/7/2012	Giawad Ghenniwa
					TLI	EPA 300.0	NO3N	11/7/2012	Giawad Ghenniwa
					TLI	EPA 300.0	SO4	11/7/2012	Giawad Ghenniwa
					FIELD	HACH	PH	11/6/2012	C.Knight
					TLI	SM 2320B	ALKB	11/12/2012	Melissa Scharfe
					TLI	SM 2320B	ALKC	11/12/2012	Melissa Scharfe
					TLI	SM2130B	TRB	11/7/2012	Gautam Savani
					TLI	SM2540C	TDS	11/7/2012	Jenny Tankunakorn
					TLI	SM4500NH3D	NH3N	11/14/2012	Melissa Scharfe
					TLI	SM4500NO2B	NO2N	11/7/2012	Jenny Tankunakorn
SC-100B	SC-100B-WDR-390	C.Knight	12/4/2012	2:41:00 PM	TLI	EPA 120.1	SC	12/6/2012	Gautam Savani
					TLI	EPA 200.7	AL	12/14/2012	Ethel Suico
					TLI	EPA 200.7	B	12/13/2012	Ethel Suico
					TLI	EPA 200.7	FE	12/13/2012	Ethel Suico
					TLI	EPA 200.7	FETD	12/13/2012	Ethel Suico
					TLI	EPA 200.7	ZN	12/14/2012	Ethel Suico
					TLI	EPA 200.8	AS	1/2/2013	Bita Emami
					TLI	EPA 200.8	BA	12/17/2012	Bita Emami
					TLI	EPA 200.8	CR	12/17/2012	Bita Emami
					TLI	EPA 200.8	CU	12/17/2012	Bita Emami
					TLI	EPA 200.8	MN	12/17/2012	Bita Emami
					TLI	EPA 200.8	MND	12/17/2012	Bita Emami
					TLI	EPA 200.8	MO	12/17/2012	Bita Emami
					TLI	EPA 200.8	NI	1/2/2013	Bita Emami
					TLI	EPA 200.8	PB	12/17/2012	Bita Emami
					TLI	EPA 200.8	SB	1/2/2013	Bita Emami
					TLI	EPA 218.6	CR6	12/10/2012	Himani Vaishnav
					TLI	EPA 300.0	FL	12/5/2012	Giawad Ghenniwa
					TLI	EPA 300.0	NO3N	12/5/2012	Giawad Ghenniwa
					TLI	EPA 300.0	SO4	12/5/2012	Giawad Ghenniwa
					FIELD	HACH	PH	12/4/2012	C.Knight
					TLI	SM 2320B	ALKB	12/6/2012	Melissa Scharfe

TABLE 8
Topock IM-3 Waste Discharge Applicable or Relevant and Appropriate Requirements (ARARs)
Monitoring Information
Fourth Quarter 2012 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-390	C.Knight	12/4/2012	2:41:00 PM	TLI	SM 2320B	ALKC	12/6/2012	Melissa Scharfe
					TLI	SM2130B	TRB	12/5/2012	Gautam Savani
					TLI	SM2540C	TDS	12/6/2012	Jenny Tankunakorn
					TLI	SM4500NH3D	NH3N	12/19/2012	Melissa Scharfe
					TLI	SM4500NO2B	NO2N	12/5/2012	Jenny Tankunakorn
SC-700B	SC-700B-WDR-381	C.Knight	10/2/2012	1:52:00 PM	TLI	EPA 120.1	SC	10/5/2012	Gautam Savani
					TLI	EPA 200.7	AL	10/10/2012	Ethel Suico
					TLI	EPA 200.7	B	10/9/2012	Ethel Suico
					TLI	EPA 200.7	FE	10/9/2012	Ethel Suico
					TLI	EPA 200.7	ZN	10/10/2012	Ethel Suico
					TLI	EPA 200.8	AS	10/15/2012	Katia Kiarashpoor/Bita Emami
					TLI	EPA 200.8	BA	10/9/2012	Katia Kiarashpoor/Bita Emami
					TLI	EPA 200.8	CR	10/6/2012	Katia Kiarashpoor/Bita Emami
					TLI	EPA 200.8	CU	10/9/2012	Katia Kiarashpoor/Bita Emami
					TLI	EPA 200.8	MN	10/15/2012	Katia Kiarashpoor/Bita Emami
					TLI	EPA 200.8	MO	10/6/2012	Katia Kiarashpoor/Bita Emami
					TLI	EPA 200.8	NI	10/15/2012	Katia Kiarashpoor/Bita Emami
					TLI	EPA 200.8	PB	10/6/2012	Katia Kiarashpoor/Bita Emami
					TLI	EPA 200.8	SB	10/30/2012	Katia Kiarashpoor/Bita Emami
					TLI	EPA 218.6	CR6	10/8/2012	Himani Vaishnav
					TLI	EPA 300.0	FL	10/3/2012	Giawad Ghenniwa
					TLI	EPA 300.0	NO3N	10/3/2012	Giawad Ghenniwa
					TLI	EPA 300.0	SO4	10/3/2012	Giawad Ghenniwa
					FIELD	HACH	PH	10/2/2012	C.Knight
					TLI	SM2130B	TRB	10/3/2012	Gautam Savani
					TLI	SM2540C	TDS	10/4/2012	Jenny Tankunakorn
					TLI	SM4500NH3D	NH3N	10/4/2012	Maksin Gorbunov
					TLI	SM4500NO2B	NO2N	10/3/2012	Jenny Tankunakorn
SC-700B	SC-700B-WDR-382	Josh Rosenberg	10/9/2012	1:18:00 PM	TLI	EPA 120.1	SC	10/12/2012	Gautam Savani
					TLI	EPA 200.8	CR	10/23/2012	Bita Emami
					TLI	EPA 200.8	MN	10/23/2012	Bita Emami
					TLI	EPA 218.6	CR6	10/10/2012	Himani Vaishnav/George Wahba
					FIELD	HACH	PH	10/9/2012	Josh R.
					TLI	SM2130B	TRB	10/10/2012	Gautam Savani
					TLI	SM2540C	TDS	10/10/2012	Jenny Tankunakorn

TABLE 8
Topock IM-3 Waste Discharge Applicable or Relevant and Appropriate Requirements (ARARs)
Monitoring Information
Fourth Quarter 2012 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-383	C.Knight	10/16/2012	2:09:00 PM	TLI	EPA 120.1	SC	10/18/2012	Gautam Savani
					TLI	EPA 200.8	CR	11/27/2012	Bita Emami
					TLI	EPA 200.8	MN	11/27/2012	Bita Emami
					TLI	EPA 218.6	CR6	10/18/2012	Himani Vaishnav
					FIELD	HACH	PH	10/16/2012	C.Knight
					TLI	SM2130B	TRB	10/17/2012	Gautam Savani
					TLI	SM2540C	TDS	10/18/2012	Jenny Tankunakorn
SC-700B	SC-700B-WDR-384	C.Knight	10/23/2012	2:00:00 PM	TLI	EPA 120.1	SC	10/25/2012	Gautam Savani
					TLI	EPA 200.8	CR	11/27/2012	Bita Emami
					TLI	EPA 200.8	MN	11/27/2012	Bita Emami
					TLI	EPA 218.6	CR6	10/24/2012	George Wahba
					FIELD	HACH	PH	10/23/2012	C.Knight
					TLI	SM2130B	TRB	10/24/2012	Gautam Savani
					TLI	SM2540C	TDS	10/24/2012	Jenny Tankunakorn
SC-700B	SC-700B-WDR-385	C.Knight	10/30/2012	1:15:00 PM	TLI	EPA 120.1	SC	10/31/2012	Gautam Savani
					TLI	EPA 200.8	CR	11/27/2012	Bita Emami
					TLI	EPA 200.8	MN	11/27/2012	Bita Emami
					TLI	EPA 218.6	CR6	11/2/2012	Himani Vaishnav
					FIELD	HACH	PH	10/30/2012	C.Knight
					TLI	SM2130B	TRB	10/31/2012	Gautam Savani
					TLI	SM2540C	TDS	11/5/2012	Jenny Tankunakorn
SC-700B	SC-700B-WDR-386	C.Knight	11/6/2012	1:32:00 PM	TLI	EPA 120.1	SC	11/8/2012	Gautam Savani
					TLI	EPA 200.7	AL	11/30/2012	Ethel Suico
					TLI	EPA 200.7	B	11/30/2012	Ethel Suico
					TLI	EPA 200.7	FE	11/30/2012	Ethel Suico
					TLI	EPA 200.7	ZN	11/30/2012	Ethel Suico
					TLI	EPA 200.8	AS	11/29/2012	Bita Emami
					TLI	EPA 200.8	BA	11/29/2012	Bita Emami
					TLI	EPA 200.8	CR	11/29/2012	Bita Emami
					TLI	EPA 200.8	CU	11/29/2012	Bita Emami
					TLI	EPA 200.8	MN	11/29/2012	Bita Emami
					TLI	EPA 200.8	MO	11/29/2012	Bita Emami
					TLI	EPA 200.8	NI	12/4/2012	Bita Emami
					TLI	EPA 200.8	PB	11/29/2012	Bita Emami
					TLI	EPA 200.8	SB	11/29/2012	Bita Emami

TABLE 8
Topock IM-3 Waste Discharge Applicable or Relevant and Appropriate Requirements (ARARs)
Monitoring Information
Fourth Quarter 2012 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-386	C.Knight	11/6/2012	1:32:00 PM	TLI	EPA 218.6	CR6	11/8/2012	George Wahba
					TLI	EPA 300.0	FL	11/7/2012	Giawad Ghenniwa
					TLI	EPA 300.0	NO3N	11/7/2012	Giawad Ghenniwa
					TLI	EPA 300.0	SO4	11/7/2012	Giawad Ghenniwa
					FIELD	HACH	PH	11/6/2012	C.Knight
					TLI	SM2130B	TRB	11/7/2012	Gautam Savani
					TLI	SM2540C	TDS	11/7/2012	Jenny Tankunakorn
					TLI	SM4500NH3D	NH3N	11/14/2012	Melissa Scharfe
					TLI	SM4500NO2B	NO2N	11/7/2012	Jenny Tankunakorn
SC-700B	SC-700B-WDR-387	C.Knight	11/13/2012	1:44:00 PM	TLI	EPA 120.1	SC	11/16/2012	Gautam Savani
					TLI	EPA 200.8	CR	12/4/2012	Katia Kiarashpoor/Bita Emami
					TLI	EPA 200.8	MN	12/3/2012	Katia Kiarashpoor/Bita Emami
					TLI	EPA 218.6	CR6	11/16/2012	George Wahba
					FIELD	HACH	PH	11/13/2012	C.Knight
					TLI	SM2130B	TRB	11/15/2012	Gautam Savani
					TLI	SM2540C	TDS	11/15/2012	Jenny Tankunakorn
SC-700B	SC-700B-WDR-388	Ron Phelps	11/20/2012	11:30:00 AM	TLI	EPA 120.1	SC	11/23/2012	Gautam Savani
					TLI	EPA 200.8	CR	12/8/2012	Bita Emami
					TLI	EPA 200.8	MN	12/8/2012	Bita Emami
					TLI	EPA 218.6	CR6	11/23/2012	George Wahba
					FIELD	HACH	PH	11/20/2012	Ron Phelps
					TLI	SM2130B	TRB	11/21/2012	Gautam Savani
					TLI	SM2540C	TDS	11/27/2012	Jenny Tankunakorn
SC-700B	SC-700B-WDR-389	C.Knight	11/27/2012	2:10:00 PM	TLI	EPA 120.1	SC	11/28/2012	Gautam Savani
					TLI	EPA 200.8	CR	12/8/2012	Bita Emami
					TLI	EPA 200.8	MN	12/8/2012	Bita Emami
					TLI	EPA 218.6	CR6	12/1/2012	Himani Vaishnav
					FIELD	HACH	PH	11/27/2012	C.Knight
					TLI	SM2130B	TRB	11/28/2012	Gautam Savani
					TLI	SM2540C	TDS	11/29/2012	Jenny Tankunakorn
SC-700B	SC-700B-WDR-390	C.Knight	12/4/2012	2:33:00 PM	TLI	EPA 120.1	SC	12/6/2012	Gautam Savani
					TLI	EPA 200.7	AL	12/14/2012	Ethel Suico
					TLI	EPA 200.7	B	12/13/2012	Ethel Suico
					TLI	EPA 200.7	FE	12/13/2012	Ethel Suico
					TLI	EPA 200.7	ZN	12/14/2012	Ethel Suico

TABLE 8
Topock IM-3 Waste Discharge Applicable or Relevant and Appropriate Requirements (ARARs)
Monitoring Information
Fourth Quarter 2012 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-390	C.Knight	12/4/2012	2:33:00 PM	TLI	EPA 200.8	AS	1/2/2013	Bita Emami
					TLI	EPA 200.8	BA	12/17/2012	Bita Emami
					TLI	EPA 200.8	CR	12/17/2012	Bita Emami
					TLI	EPA 200.8	CU	12/17/2012	Bita Emami
					TLI	EPA 200.8	MN	12/17/2012	Bita Emami
					TLI	EPA 200.8	MO	12/17/2012	Bita Emami
					TLI	EPA 200.8	NI	1/2/2013	Bita Emami
					TLI	EPA 200.8	PB	12/17/2012	Bita Emami
					TLI	EPA 200.8	SB	1/2/2013	Bita Emami
					TLI	EPA 218.6	CR6	12/10/2012	Himani Vaishnav
					TLI	EPA 300.0	FL	12/5/2012	Giawad Ghenniwa
					TLI	EPA 300.0	NO3N	12/5/2012	Giawad Ghenniwa
					TLI	EPA 300.0	SO4	12/5/2012	Giawad Ghenniwa
					FIELD	HACH	PH	12/4/2012	C.Knight
					TLI	SM2130B	TRB	12/5/2012	Gautam Savani
					TLI	SM2540C	TDS	12/6/2012	Jenny Tankunakorn
					TLI	SM4500NH3D	NH3N	12/19/2012	Melissa Scharfe
					TLI	SM4500NO2B	NO2N	12/5/2012	Jenny Tankunakorn
SC-700B	SC-700B-WDR-391	C.Knight	12/11/2012	3:09:00 PM	TLI	EPA 120.1	SC	12/14/2012	Melissa Scharfe
					TLI	EPA 200.8	CR	12/18/2012	Bita Emami
					TLI	EPA 200.8	MN	12/18/2012	Bita Emami
					TLI	EPA 218.6	CR6	12/17/2012	Himani Vaishnav
					FIELD	HACH	PH	12/11/2012	C.Knight
					TLI	SM2130B	TRB	12/12/2012	Gautam Savani
					TLI	SM2540C	TDS	12/13/2012	Jenny Tankunakorn
SC-700B	SC-700B-WDR-392	Scott O Donnell	12/18/2012	10:30:00 AM	TLI	EPA 120.1	SC	1/2/2013	Gautam Savani
					TLI	EPA 200.8	CR	1/8/2013	Bita Emami
					TLI	EPA 200.8	MN	1/8/2013	Bita Emami
					TLI	EPA 218.6	CR6	12/20/2012	Himani Vaishnav
					FIELD	HACH	PH	12/18/2012	Ron Phelps
					TLI	SM2130B	TRB	12/19/2012	Gautam Savani
					TLI	SM2540C	TDS	12/20/2012	Jenny Tankunakorn
SC-700B	SC-700B-WDR-393	Ryan Phelps	12/26/2012	6:53:00 AM	TLI	EPA 120.1	SC	1/2/2013	Gautam Savani
					TLI	EPA 200.8	CR	1/5/2013	Bita Emami
					TLI	EPA 200.8	MN	1/5/2013	Bita Emami

TABLE 8
Topock IM-3 Waste Discharge Applicable or Relevant and Appropriate Requirements (ARARs)
Monitoring Information
Fourth Quarter 2012 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-393	Ryan Phelps	12/26/2012	6:53:00 AM	TLI	EPA 218.6	CR6	1/2/2013	Himani Vaishnav
					FIELD	HACH	PH	12/26/2012	Ron Phelps
					TLI	SM2130B	TRB	12/27/2012	Maksim Gorbunov
					TLI	SM2540C	TDS	12/31/2012	Maksim Gorbunov
SC-701	SC-701-WDR-381	C.Knight	10/2/2012	1:19:00 PM	TLI	EPA 120.1	SC	10/5/2012	Gautam Savani
					TLI	EPA 200.7	ZN	10/10/2012	Ethel Suico
					TLI	EPA 200.8	AG	10/19/2012	Katia Kiarashpoor/Bita Emami
					TLI	EPA 200.8	AS	10/15/2012	Katia Kiarashpoor/Bita Emami
					TLI	EPA 200.8	BA	10/9/2012	Katia Kiarashpoor/Bita Emami
					TLI	EPA 200.8	BE	10/9/2012	Katia Kiarashpoor/Bita Emami
					TLI	EPA 200.8	CD	10/6/2012	Katia Kiarashpoor/Bita Emami
					TLI	EPA 200.8	CO	10/6/2012	Katia Kiarashpoor/Bita Emami
					TLI	EPA 200.8	CR	10/6/2012	Katia Kiarashpoor/Bita Emami
					TLI	EPA 200.8	CU	10/9/2012	Katia Kiarashpoor/Bita Emami
					TLI	EPA 200.8	HG	10/6/2012	Katia Kiarashpoor/Bita Emami
					TLI	EPA 200.8	MN	10/15/2012	Katia Kiarashpoor/Bita Emami
					TLI	EPA 200.8	MO	10/9/2012	Katia Kiarashpoor/Bita Emami
					TLI	EPA 200.8	NI	10/15/2012	Katia Kiarashpoor/Bita Emami
					TLI	EPA 200.8	PB	10/6/2012	Katia Kiarashpoor/Bita Emami
					TLI	EPA 200.8	SB	10/30/2012	Katia Kiarashpoor/Bita Emami
					TLI	EPA 200.8	SE	10/10/2012	Katia Kiarashpoor/Bita Emami
					TLI	EPA 200.8	TL	10/6/2012	Katia Kiarashpoor/Bita Emami
					TLI	EPA 200.8	V	10/9/2012	Katia Kiarashpoor/Bita Emami
					TLI	EPA 218.6	CR6	10/8/2012	Himani Vaishnav
					TLI	EPA 300.0	FL	10/3/2012	Giawad Ghenniwa
					TLI	SM2540C	TDS	10/4/2012	Jenny Tankunakorn
Phase Separator	SC-Sludge-WDR-381	C.Knight	10/2/2012	10:10:00 AM	TLI	EPA 300.0	FL	10/3/2012	Giawad Ghenniwa
					TLI	EPA 300.0	NO3N	10/3/2012	Giawad Ghenniwa
					TLI	EPA 6010B	AG	10/30/2012	Ethel Suico
					TLI	EPA 6010B	AS	10/17/2012	Ethel Suico
					TLI	EPA 6010B	BA	10/16/2012	Ethel Suico
					TLI	EPA 6010B	BE	10/30/2012	Ethel Suico
					TLI	EPA 6010B	CD	10/30/2012	Ethel Suico
					TLI	EPA 6010B	CO	10/16/2012	Ethel Suico
					TLI	EPA 6010B	CR	10/16/2012	Ethel Suico
					TLI	EPA 6010B	CU	10/30/2012	Ethel Suico

TABLE 8
Topock IM-3 Waste Discharge Applicable or Relevant and Appropriate Requirements (ARARs)
Monitoring Information
Fourth Quarter 2012 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-381	C.Knight	10/2/2012	10:10:00 AM	TLI	EPA 6010B	MN	10/16/2012	Ethel Suico
					TLI	EPA 6010B	MO	10/16/2012	Ethel Suico
					TLI	EPA 6010B	NI	10/17/2012	Ethel Suico
					TLI	EPA 6010B	PB	10/30/2012	Ethel Suico
					TLI	EPA 6010B	SB	10/17/2012	Ethel Suico
					TLI	EPA 6010B	SE	10/17/2012	Ethel Suico
					TLI	EPA 6010B	TL	10/30/2012	Ethel Suico
					TLI	EPA 6010B	V	10/16/2012	Ethel Suico
					TLI	EPA 6010B	ZN	10/17/2012	Ethel Suico
					TLI	SM2540B	MOIST	10/4/2012	Gautam Savani
					TLI	SW 6020A	HG	10/29/2012	Bita Emami
					TLI	SW 7199	CR6	10/16/2012	George Wahba

NOTES:

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

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

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

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

ALKB =	alkalinity, bicarb as CaCO3	MO =	molybdenum
ALKC =	alkalinity, carb as CaCO3	MOIST =	moisture
AL =	aluminum	NH3N =	ammonia (as N)
Ag =	silver	NI =	nickel
AS =	arsenic	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		

Figures

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

BLM

BLM

East Mesa
Injection Area

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

IW-1
IW-2
IW-3

IM3
Treatment
Plant

Historic Route 66

Park Moabi Rd./National Trails Highway

66

BAT CAVE WASH

Colorado River

MW-20
Bench

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

BN&SF RAILROAD

INTERSTATE
40

500
550
600

LEGEND

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

N

0 170 340 680 Feet

California State Plane NAD83 Zone 5 US Feet

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

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

TREATMENT PLANT CONTROL PANEL LCP - 100

LEAK DETECTION PANEL - 003

ALM

–120V

PLANT ALARM R YL1000

PLANT ALARM R YL1001

PLANT ALARM R YL1002

PLANT ALARM R YL1003

PLANT ALARM HORN H YL1004

CLOSED OPENED OPEN TEMP REM pH LVL COND.

RUN ON REM FLOW

LVL POSITION FLOW CONTROL

RUN ON REM PSL FLOW FLOW

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

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

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

STATIC MIXER 4"x3" 4"x3"

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

1" V-1390

V-TW-105-02

HS 200 HOA

HS 700 HOA

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

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

HS 100A HOA

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

LIT 200
120 VAC
LE 200

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

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

4"-TW-114-1HB

LIT 700
120 VAC
LE 700

VFD - 1100

3"-TW-143-1HB

VENT
MANHOLE

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

6"-DR-115-1HB

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

TOTAL FLOWMETER TO INJECTION WELLS

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

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

FUTURE

2"-TW-127-1HB

SAMPLING STATION B

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

PI 700
V-1390
FIT 700
SC
4"x3" 4"x3"
TW-117-1HB
TP-PR-10-10- 10 [A1]
TREATED WATER TO BAKER TANKS
V-TW-117-02
V-TW-117-01
4"x1 1/2"
EJ-TW-116-01
6"x3"
T
TS-TW-116-01
6"-TW-116-1HB
V-TW-116-01
V-DR-101-01
6"-DR-101-1HB
V-TW-126-01
3"-TW-126-1HB

FE 702
TW-125-1HB
2"
TP-PR-10-10- 05,06..
FIELD ROUTE TO FLUSH SYS. HOSE CONNS.

V-1390 V-1390 V-1390 V-1390
PSL 1100
PS-TW-127-01
2"x1"
BFP
V-TW-127-01

SEAL WATER TANK
PI 1100
PT 1100
T-1100
P-1100
3"x1 1/4"

FIC 200
ZT 200
SEAL WATER PUMP
25 GPM X
115 FT. H20
V-TW-126-02
4"x2 1/2"
AIR SET 80 PSIG
FCV - 200
F.C.
4"x2 1/2"
4"x3"
4"x3"
4"-RW-112-1HB
RW-112-1HB
TP-PR-10-10- 05 [C1]
TO TREATMENT SYSTEM CONTINUOUS FLOW

LSH 201A-(H)
SAMPLING STATION A
ZSC 100
ZSO 100
SV 100
90 PSIG AIR SET
S
F.C.
4"-RW-110-1HB
FV 100
RW 1KB RW 1HB
V-RW-110-01
RO 200
2"-RW-113-1HB
MINIMUM RECIRC. 40 GPM MIN.

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

NOTE 1
LEAK DETECTION (TYP 8)

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

NOTE 1
SPARE

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

FUTURE
4" IN 8" SPARE
4" IN 8" PE-3

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

6"-DR-114-1HB
6"-DR-100-1HB
V-DR-100-01
V-RW-111-01

1/2" x 3/8"
SOV 200
PI 200
V-1390
EJ-RW-111-01
6"x4"
6"-RW-111-1HB
PS-RW-111-01
4"x3"
V-RW-112-01
P-200
RAW WATER FEED PUMP
190 GPM X 35 FT H20
V-1390
V-RW-112-02
FE 200
FIT 200

NOTES

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

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

SECONDARY CONTAINMENT - PROCESS PLANT

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

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

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

SCALE NONE

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

PROJ NO. 315994

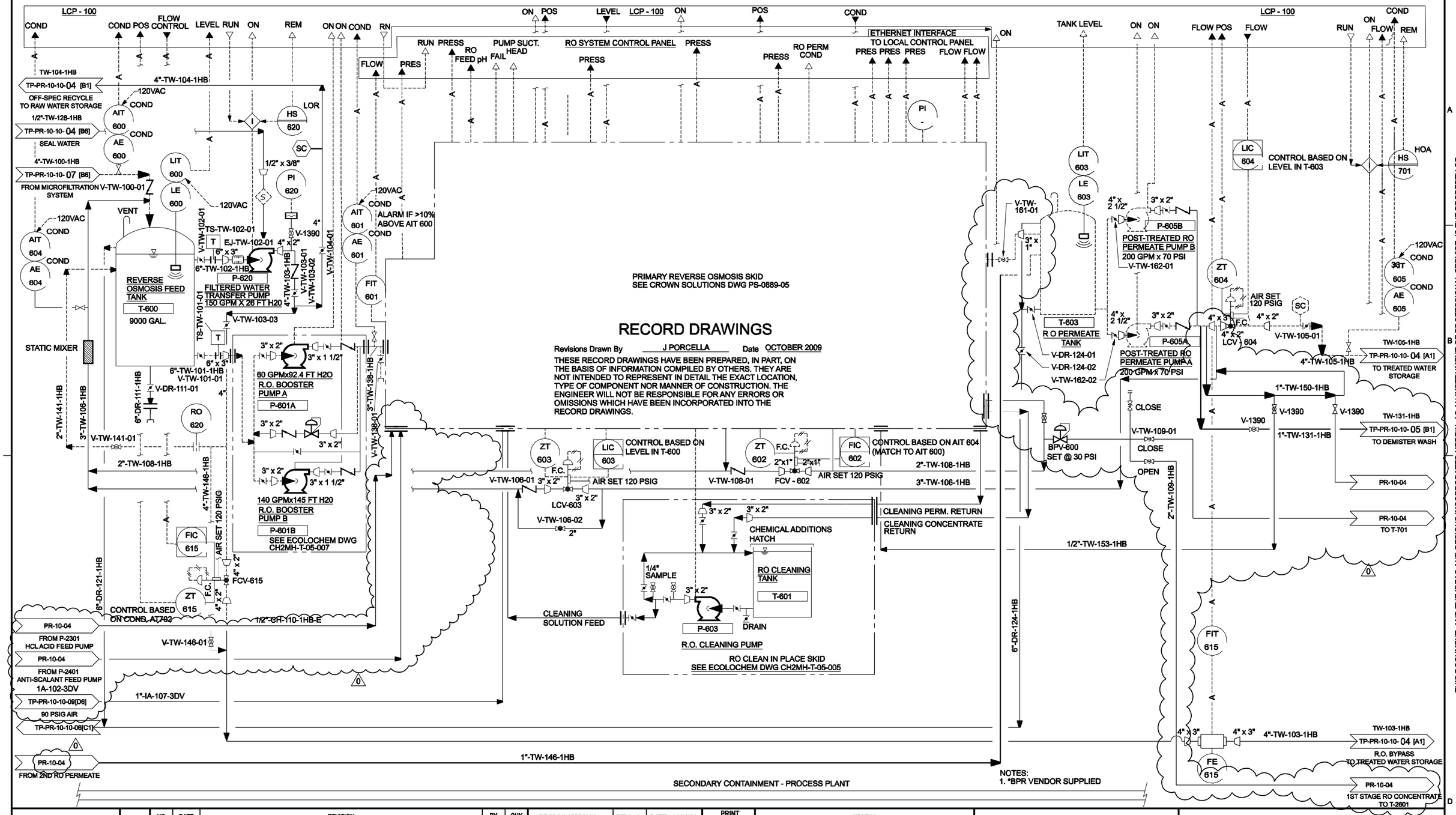
CH2MHILL

PROCESS AND INSTRUMENTATION DIAGRAM
SHEET 04
STORAGE AREA

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

BAR IS ONE INCH ON ORIGINAL DRAWING

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



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

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

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

REVISION APPROVAL	REVIEWED	DISCIPLINE	REVIEWED
DISCIPLINE	REVIEWED	DISCIPLINE	REVIEWED
CIVIL	SJ	ELECTRICAL	FH
STRUCTURAL		INST & CONTROL	JG
MECHANICAL	SJ	ARCHITECTURAL	
PROCESS	DF	ENVIRONMENTAL	
PIPING	SJ	GEN. ARRANG.	SJ

REV 0 DATE 10/02/09

PRINT DISTRIBUTION	
DATE	
STATUS	
REV.	
CLIENT	
FIELD	
INTRA CO.	

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

SCALE NONE

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

PROJ NO. 362032

CH2MHILL

PROCESS AND INSTRUMENTATION DIAGRAM
REVERSE OSMOSIS SYSTEM
SHEET ONE OF TWO

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

BAR IS ONE INCH ON ORIGINAL DRAWING. 0 1"

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

COND LVL RUN ON FLOW

PR-10-03 → TO SEAL WATER TRUNK LINE

HS 701 HOA

1 1/2" TW-154-1HB

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

LOCATED IN CHEMICAL STORAGE AREA

1/2" CH-112-1HB

HCI ACID TOTE

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

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

LOCATED NEAR EXISTING RO

1/2" CH-114-1HB

SECONDARY RO ANTI-SCALANT CHEMICAL DRUM

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

PRIMARY RO ANTI-SCALANT CHEMICAL DRUM

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

V-1390 NO

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

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

1"-1A-108-3DV

120VAC

AIT 701 COND

AE 701 COND

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

1ST STAGE RO CONCENTATE
PR-10-03

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

2"x1 1/2"

V-1390 NO

2" TW-109-1HB

V-1390 NC

LIT 701

LE 701

120VAC

VENT

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

1 1/2" TW-149-1HB

V-1390 NC

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

1 1/2" TW-151-1HB

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

1" TW-146-1HB

PERMEATE
PR-10-03
TO T-603 TANK

V-1390

SAMPLING STATION D

SC

PR-10-03
FROM PRIMARY RO

CLOSE

2"x1"

OPEN V-1390

V-DR-112-01

SEAL WATER

SOV 701

S

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

1/2"x3/8"

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

PI 701

V-1390

TS-TW-111-01

T

6"x1 1/2"

V-TW-111-01

EJ-TW-111-01

6"-TW-111-1HB

P-107

3"x1"

V-TW-112-01

FIT 701

RD CONCENTRATE FLOWMETER

FE 701

MAG

3"x1"

3"x2"

V-TW-112-03

6"-DR-112-1HB

RO CONCENTRATE
TRANSFER PUMP
80 GPM X 85 FT H20

TO TRENCH DRAIN

1" TW-147-1HB

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

RECORD DRAWINGS

Revisions Drawn By J PORCELLA Date OCTOBER 2009

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

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

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

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

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

PRINT DISTRIBUTION	
DATE	
STATUS	
REV.	
CLIENT	
FIELD	
INTRA CO.	

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

SCALE NONE

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

PROJ NO. 362032

CH2MHILL

PROCESS AND INSTRUMENTATION DIAGRAM
REVERSE OSMOSIS SYSTEM
SHEET TWO OF TWO

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

BAR IS ONE INCH ON ORIGINAL DRAWING. 0 1"

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

CONTROL PANEL

PLC

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

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

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

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

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

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

M-400-A · M-400-B · M-400-C · CL-400 CLARIFIER · NSH 400 TORQUE · HS 400 HOA · HS 410 HOA · AIT 400 120VAC TURB · SV 400 · ZSC 400 · ZSO 400 · AIR SET 120 PSIG · F. C. · FV - 400 · AE 400 TURB · SV 401 · 120 PSIG AIR SET · PI 401 · PE 401 · LE 402 · M-402 · 4"-WS-102-1HB

ZSC 410 · ZSO 410 · AIR SET 120 PSIG · SV 410 · F. C. · FV - 410 · V-WS-104-01 · 4"-WS-100-1HB

SEE PARKSON DRAWING 10066701-01

6"-DR-107-1HB

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

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

120VAC LIT 402 · SV 404 · 120 PSIG AIR SET · HS 403 HOA · SV 403 · PI 404 · PE 404 · 1/2" · 2" x 1" · V-WS-103-01 · V-WS-103-02 · WS-103-1HB
TP-PR-10-10- 05 [B1]
SLUDGE RECYCLE

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

2"-WS-101-1HB · 2" x 1" · V-WS-101-01 · 4" x 2" · P-401 SLUDGE WITHDRAWAL PUMP 20 GPM X 30 FT. H2O · 6" x 4"

SLUDGE HOLDING TANK 6000 GAL · T-402 · VENT · DECANT · 3% - 5% SOLIDS · 2"-WS-105-1HB · V-WS-105-01 · 2"-WS-107-1HB · V-WS-107-01 · V-WS-108-01 · 4"-WS-108-1HB · P-403 SEPARATOR FEED PUMP 20 GPM X 30 FT. H2O · V-WS-110-01

2" x 1" · 2" x 1" · 2"-WS-106-1HB · V-WS-106-01 · 4"-WS-110-1HB · TRUCK FILL FOR OFF-SITE DISPOSAL

2" V-1790 (TYP 5) · 4" (TYP 5) AIR/SIGHT GAP · 4" · PI 403 · PE 403

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

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

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

4"-WS-104-1HB

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

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

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

120VAC LIT 900 · LE 900 · 1/2" x 3/8" · VENT · PROCESS DRAIN TANK 5,000 GAL. T-900 · P-900 PROCESS DRAIN PUMP · V-DR-113-01 · 6"-DR-113-1HB · VERTICAL WET PIT 175 GPM x 37 FT. H2O · LSH 900

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

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

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

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

LSHH 405 · 480 VAC · LCP - 405 · P-405 PHASE SEPARATOR SUMP PUMP PACKAGE 25 GPM x 25 FT. H2O · PUMPOUT VAULT · PS-405 PHASE SEPARATORS ALTERNATING DURING OPERATION

SECONDARY CONTAINMENT - PROCESS PLANT

T-900A PROCESS SUMP

NOTES:

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

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

REVISION APPROVAL — REV 2 — DATE 01/23/05

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

PRINT DISTRIBUTION

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

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

SCALE NONE

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

CH2MHILL

PROCESS AND INSTRUMENTATION DIAGRAM
SHEET 06
CLARIFICATION AND SLUDGE REMOVAL

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

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

BAR IS ONE INCH ON ORIGINAL DRAWING. 0 1"

CONTROL PANEL LCP-100

WELL TW-3D CONTROL

WELL TW-2S CONTROL

WELL TW-2D CONTROL

WELL PE-1 CONTROL

LEAK DETECTION PANEL - 003

ALM

120V

LSH LVL RUN ON RM PRESS FLOW

LSH LSHH

HS 102 HOA

HS 100 HOA

HS 101 HOA

HS 103 HOA

HOLD

LSH 002

LSHH 002

FUTURE

4"-RW-140-1HB

V-RW-140-01

VALVE VAULT No. 2

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

NOTE 1

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

4"-RW-139-1HB

V-RW-139-01

3"-RW-138-1HB

V-RW-138-01

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

4"-RW-105-1HB

V-RW-105-05

4" IN 8"-FUTURE

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

LSH 102A

NOTE 1

Well TW-2S Flowmeter

FI 102

LSH 001

LSHH 001

LT 100 VENT

FE 100

FIT 100

PIT 100

PE 100

3"x2"

V-RW-105-02

3"-RW-105-1HB THROTTLING

MAG

V-RW-105-01

V-1390

VALVE VAULT No. 1

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

LSH 100A

NOTE 1

1" V-1390

LT 101

Well TW-2D Flowmeter

4" x 3"

EJ-RW-105-01

4"-RW-105-1HB

FE 101

FIT 101

PIT 101

PE 101

V-RW-102-02

3"-RW-102-1HB THROTTLING

V-RW-102-01

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

LSH 101A

NOTE 1

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

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

TP-PR-10-10-04 [C1]

SPARE TO VALVE VAULT 4

NOTES 1 & 2

V-RW-105-06 THROTTLING

V-RW-105-03

V-RW-105-04

4" IN 8"-RW-107-1KB

TP-PR-10-10-04 [C1]

TO RAW WATER STORAGE

V-RW-108-02 THROTTLING

4"-RW-130-1HB

LT 103 VENT

FE 103

FIT 103

PIT 103

PE 103

V-RW-130-02

V-RW-130-01

V-RW-108-01

LSH

NOTE 1

4" IN 8"-RW-131-1KB

TO BAKER TANKS V-RW-131-01

LSH 103A

NOTE 1

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

4"x3"

V-RW-132-02

V-RW-132-01

3"-RW-132-1HB

Well TW-3D Flowmeter

VENT LT 102

PI 102

PIT 102

PRV 102

PE 102

FIT 102

FE 102

LSH 102

SET AT 120 PSI

V-1390

3"x2"

3"-RW-134-1HB

V-RW-134-01

MAG

4"x3"

V-RW-134-02

WELL VAULT No. 4

LE 102

P-102

EXTRACTION WELL TW-3D

135 GPM x 248 FT. H20

PI 100

LSH 100

3"-RW-103-1HB

V-RW-103-01

V-RW-103-02

WELL VAULT No. 2

LE 100

P-100

EXTRACTION WELL TW-2S

40 GPM x 180 FT. H20

PI 101

PRV 101

LSH 101

3"-RW-100-1HB

V-RW-100-01

V-RW-100-02

WELL VAULT No. 1

LE 101

P-101

EXTRACTION WELL TW-2D

90 GPM x 245 FT. H20

PI 103

PRV 103

LSH 103

WELL VAULT No. 3

LE 103

P-103

EXTRACTION WELL PE-1

40 GPM x 235 FT. H20

NOTES

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

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

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

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

STATUS	REV	DATE	SDE	PEM
PRELIMINARY				
FOR REVIEW AND APPROVAL	D	07/28/04		
APPROVED FOR CONSTRUCTION	0	09/03/04	KLM	TP
REVISED & APPROVED FOR CONSTRUCTION	7	12/9/05	AJ for KLM	AJ

SCALE NONE

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

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

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

PROJ NO. 315994

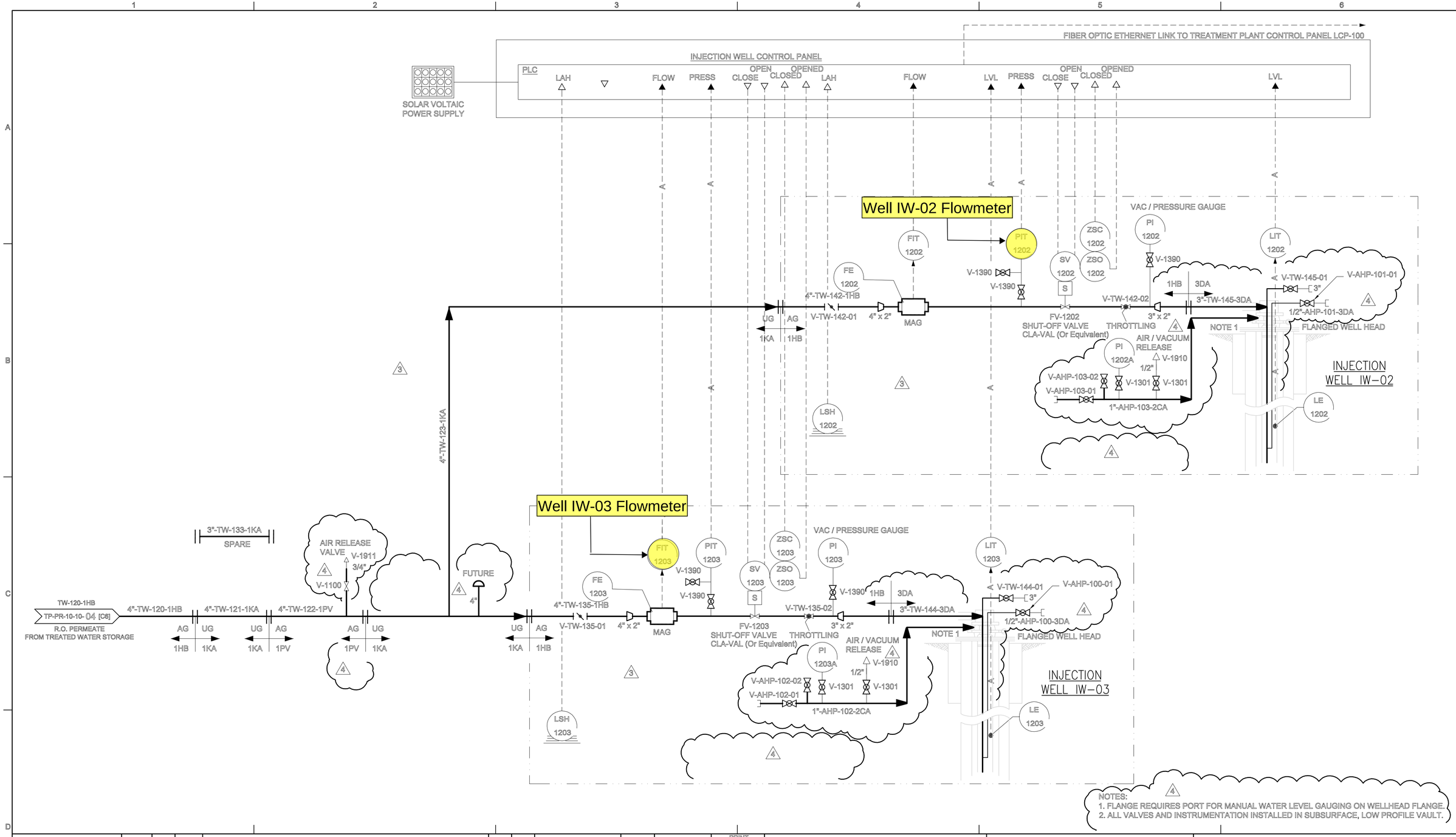
CH2MHILL

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

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

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

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



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

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

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

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

SCALE NONE

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

CH2MHILL

PROCESS AND INSTRUMENTATION DIAGRAM
SHEET 11
INJECTION WELLS

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

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

BAR IS ONE INCH ON ORIGINAL DRAWING. 0 1"

Appendix A
Semiannual Operations and Maintenance Log, July 1, 2012 through December 31, 2012

APPENDIX A

Semiannual Operations and Maintenance Log, July 1, 2012 through December 31, 2012

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 2012

During July 2012, extraction wells TW-3D and PE-1 operated at a target pumping rate of 135 gallons per minute (gpm) excluding periods of planned and unplanned downtime. Extraction wells TW-2S and TW-2D were not operated during July 2012. The operational run time for the IM-3 groundwater extraction system (combined or individual pumping) was 99.0 percent during the July 2012 reporting period.

The IM-3 facility treated approximately 5,955,686 gallons of extracted groundwater during July 2012. The IM-3 facility treated 460 gallons of water generated from the groundwater monitoring program and 9,000 gallons of injection well backwashing water. Four containers of solids from the IM-3 facility were transported offsite during July 2012.

Periods of planned and unplanned extraction system downtime (that together resulted in approximately 1.0 percent downtime during July 2012) are summarized below.

- **July 2, 2012 (planned):** The extraction well system was offline from 2:10 p.m. to 2:56 p.m. due to permanent alarm and leak detection system testing that shut down extraction wells. Extraction system downtime was 46 minutes.
- **July 5, 2012 (unplanned):** The extraction well system was offline from 9:40 p.m. to 10:06 p.m. due to a loss of power from Needles Power. Extraction system downtime was 26 minutes.
- **July 8, 2012 (unplanned):** The extraction well system was offline from 9:00 p.m. to 9:06 p.m. due to loss of power from Needles Power. Extraction system downtime was 6 minutes.
- **July 9, 2012 (unplanned):** The extraction well system was offline from 5:42 a.m. to 6:12 a.m. due to loss of power from Needles Power. Extraction system downtime was 30 minutes.
- **July 11, 2012 (planned):** The extraction well system was offline from 6:50 a.m. to 12:08 p.m. due to planned maintenance to clear a blockage between the 301 tanks. Extraction system downtime was 5 hours, 18 minutes.

- **July 14, 2012 (unplanned):** The extraction well system was offline from 4:00 p.m. to 4:04 p.m. and from 6:34 p.m. to 6:38 p.m. due to loss of power from Needles Power. Extraction system downtime was 8 minutes.
- **July 21, 2012 (unplanned):** The extraction well system was offline from 1:54 a.m. to 2:08 a.m. due to loss of power from Needles Power. Extraction system downtime was 14 minutes.

August 2012

During August 2012, extraction wells TW-3D and PE-1 operated at a target pumping rate of 135 gpm excluding periods of planned and unplanned downtime. Extraction wells TW-2S and TW-2D were not operated during August 2012. The operational run time for the IM-3 groundwater extraction system (combined or individual pumping) was 85.7 percent during the August 2012 reporting period.

The IM No. 3 facility treated approximately 5,095,995 gallons of extracted groundwater during August 2012. The IM-3 facility treated 1,300 gallons of water generated from the groundwater monitoring program and 11,700 gallons of injection well backwashing/re-development water. No containers of solids from the IM-3 facility were transported offsite during August 2012.

Periods of planned and unplanned extraction system downtime (that together resulted in approximately 14.3 percent downtime during August 2012) are summarized below.

- **August 2, 2012 (planned):** The extraction well system was offline from 10:54 a.m. to 10:56 a.m., 11:04 a.m. to 11:06 a.m., 11:08 a.m. to 11:10 a.m., and 11:16 a.m. to 11:18 a.m. due to testing of critical alarms and leak detection system. Extraction system downtime was 8 minutes.
- **August 9, 2012 (unplanned):** The extraction well system was offline from 5:58 p.m. to 6:00 p.m. due to a loss of power from Needles Power. Extraction system downtime was 2 minutes.
- **August 13-17, 2012 (planned):** The extraction well system was offline from 4:26 a.m. on August 13th to 2:16 p.m. on August 16th, from 2:58 p.m. on August 16th to 6:46 a.m. on August 17th, and from 9:40 a.m. to 10:38 a.m. on August 17th for semiannual scheduled maintenance. Extraction system downtime was 4 days, 2 hours and 36 minutes.
- **August 21, 2012 (unplanned):** The extraction well system was offline from 6:56 p.m. to 7:02 p.m. due to a loss of power from Needles Power. Extraction system downtime was 6 minutes.
- **August 23, 2012 (unplanned):** The extraction well system was offline from 4:00 a.m. to 4:10 a.m. and 9:14 a.m. to 9:18 a.m. due to a loss of power from Needles Power. Extraction system downtime was 14 minutes.
- **August 30, 2012 (unplanned):** The extraction well system was offline from 4:06 p.m. to 4:20 p.m. and 4:36 p.m. to 11:48 p.m. due to a ferrous feed pump malfunction. Plant was in recirculation mode until pump was repaired and all parameters were within specifications. Extraction system downtime was 7 hours, 26 minutes.

September 2012

During September 2012, extraction wells TW-3D and PE-1 operated at a target pumping rate of 135 gpm excluding periods of planned and unplanned downtime. Extraction wells TW-2S and TW-2D were not operated during September 2012. The operational run time for the IM-3 groundwater extraction system (combined or individual pumping) was 98.2 percent during the September 2012 reporting period.

The IM-3 facility treated approximately 5,678,133 gallons of extracted groundwater during September 2012. The IM-3 facility treated 2,540 gallons of water generated from the groundwater monitoring program and 4,500 gallons of injection well backwashing/re-development water. Three containers of solids from the IM-3 facility were transported offsite during September 2012.

Periods of planned and unplanned extraction system downtime (that together resulted in approximately 1.8 percent downtime during September 2012) are summarized below.

- **September 4, 2012 (planned):** The extraction well system was offline from 12:46 p.m. to 12:48 p.m., from 1:06 p.m. to 1:08 p.m., from 1:16 p.m. to 1:18 p.m., and from 1:34 p.m. to 1:44 p.m. due to testing of critical alarms and leak detection system. Extraction system downtime was 16 minutes.
- **September 4, 2012 (unplanned):** The extraction well system was offline from 4:42 p.m. to 5:02 p.m. due to a loss of power from Needles Power. Extraction system downtime was 20 minutes.
- **September 5, 2012 (unplanned):** The extraction well system was offline from 12:08 a.m. to 12:12 a.m. due to a loss of power from Needles Power. Extraction system downtime was 4 minutes.
- **September 5, 2012 (unplanned):** The extraction well system was offline from 7:54 a.m. to 9:48 a.m. for maintenance of electrical bucket for extraction well pump (PE-1) motor. Extraction system downtime was 1 hour and 54 minutes.
- **September 5, 2012 (unplanned):** The extraction well system was offline from 10:08 a.m. to 2:08 p.m., from 2:10 p.m. to 2:12 p.m., 2:14 p.m. to 2:18 p.m., from 2:20 p.m. to 2:22 p.m., from 2:28 p.m. to 2:34 p.m., from 2:40 p.m. to 3:00 p.m., from 3:06 p.m. to 3:14 p.m., from 3:16 p.m. to 3:26 p.m., from 3:28 p.m. to 3:32 p.m., from 3:34 p.m. to 4:00 p.m., from 4:46 p.m. to 4:50 p.m., from 5:08 p.m. to 5:12 p.m., and from 5:14 p.m. to 5:16 p.m. for maintenance of the variable frequency drive on the primary reverse osmosis pump (P-2501). Extraction system downtime was 5 hours and 32 minutes.
- **September 6, 2012 (unplanned):** The extraction well system was offline from 2:12 p.m. to 2:18 p.m. and from 2:42 p.m. to 2:46 p.m. due to a loss of power from Needles Power. Extraction system downtime was 10 minutes.
- **September 8, 2012 (unplanned):** The extraction well system was offline from 1:08 p.m. to 1:14 p.m. and 2:36 p.m. to 2:40 p.m. due to a loss of power from Needles Power. Extraction system downtime was 10 minutes.

- **September 11, 2012 (planned):** The extraction well system was offline from 3:54 a.m.to 4:16 a.m., from 7:04 a.m.to 7:06 a.m., and from 7:08 a.m.to 7:10 a.m. due to a planned loss of power from Needles Power. Extraction system downtime was 26 minutes.
- **September 12, 2012 (unplanned):** The extraction well system was offline from 12:14 p.m. to 12:56 p.m. for maintenance of the blower. Extraction system downtime was 42 minutes.
- **September 14, 2012 (unplanned):** The extraction well system was offline from 2:10 a.m.to 2:16 a.m. and 4:04 a.m.to 4:10 a.m. due to a loss of power from Needles Power. Extraction system downtime was 12 minutes.
- **September 21, 2012 (unplanned):** The extraction well system was offline from 11:14 a.m. to 1:08 p.m. and from 1:12 p.m. to 2:00 p.m. for replacement of the microfilter feed pump (P-500). Extraction system downtime was 2 hours and 42 minutes.
- **September 23, 2012 (unplanned):** The extraction well system was offline from 9:46 p.m. to 9:48 p.m. due to a loss of power from Needles Power. Extraction system downtime was 2 minutes.
- **September 26, 2012 (unplanned):** The extraction well system was offline from 2:24 a.m.to 2:26 a.m. and 2:28 a.m.to 2:30 a.m. because the incoming power to the plant from the City of Needles was too high, so plant power supply needed to be switched to generator power. Extraction system downtime was 4 minutes.
- **September 23, 2012 (unplanned):** The extraction well system was offline from 6:16 a.m.to 6:28 a.m. and 10:30 a.m.to 10:52 a.m. when Needles Power adjusted power feed to plant. Extraction system downtime was 34 minutes.

October 2012

During October 2012, extraction wells TW-3D and PE-1 operated at a target pump rate of 135 gpm excluding periods of planned and unplanned downtime. Extraction wells TW-2S and TW-2D were not operated during October 2012. The operational run time for the IM-3 groundwater extraction system (combined or individual pumping) was 98.9 percent during the October 2012 reporting period.

The IM-3 facility treated approximately 5,895,301 gallons of extracted groundwater during October 2012. The IM-3 facility treated 2,230 gallons of water generated from the groundwater monitoring program and 12,600 gallons of injection well backwashing/re-development water. Four containers of solids from the IM-3 facility were transported offsite during October 2012.

Periods of planned and unplanned extraction system down time (that together resulted in approximately 1.1 percent of downtime during October 2012) are summarized below.

- **October 1, 2012 (unplanned):** The extraction well system was offline from 2:12 a.m. to 3:48 a.m., 3:50 a.m. to 5:06 a.m., and 5:48 a.m. to 6:04 a.m. due to a low pH alarm in the treated water that shut down the extraction well system. The low pH alarm was a false alarm due to a malfunction of the installed pH probe. Extraction system downtime was 3 hours and 8 minutes.

- **October 3, 2012 (planned):** The extraction well system was offline from 9:26 a.m. to 10:02 a.m. and 10:06 a.m. to 10:08 a.m. due to testing of critical alarms and leak detection system. Extraction system downtime was 38 minutes.
- **October 10, 2012 (unplanned):** The extraction well system was offline from 6:48 p.m. to 6:54 p.m. due to a loss of power from Needles Power. Extraction system downtime was 6 minutes.
- **October 11, 2012 (unplanned):** The extraction well system was offline from 7:18 a.m. to 7:20 a.m., 9:40 a.m. to 9:44 a.m., and 11:20 a.m. to 11:22 a.m. due to a loss of power from Needles Power. Extraction system downtime was 8 minutes.
- **October 13, 2012 (unplanned):** The extraction well system was offline from 9:40 a.m. to 9:44 a.m. due to a loss of power from Needles Power. Extraction system downtime was 4 minutes.
- **October 24, 2012 (unplanned):** The extraction well system was offline from 9:18 a.m. to 1:26 p.m. due to microfilter maintenance. Extraction system downtime was 4 hours and 8 minutes.

November 2012

During November 2012, extraction wells TW-3D and PE-1 operated at a target pump rate of 135 gpm excluding periods of planned and unplanned downtime. Extraction wells TW-2S and TW-2D were not operated during November 2012. The operational run time for the IM-3 groundwater extraction system (combined or individual pumping) was 98.7 percent during the November 2012 reporting period.

The IM-3 facility treated approximately 5,693,802 gallons of extracted groundwater during November 2012. The IM-3 facility treated 2,870 gallons of water generated from the groundwater monitoring program. Four containers of solids from the IM-3 facility were transported offsite during November 2012.

Periods of planned and unplanned extraction system down time (that together resulted in approximately 1.3 percent of downtime during November 2012) are summarized below.

- **November 3, 2012 (unplanned):** The extraction well system was offline from 5:20 p.m. to 5:30 p.m. due to a loss of power from Needles Power. Extraction system downtime was 10 minutes.
- **November 4, 2012 (unplanned):** The extraction well system was offline from 1:40 p.m. to 1:44 p.m. due to a loss of power from Needles Power. Extraction system downtime was 4 minutes.
- **November 7, 2012 (planned):** The extraction well system was offline from 8:06 a.m. to 8:30 a.m. and 8:36 a.m. to 8:40 a.m. due to testing of critical alarms and leak detection system. Extraction system downtime was 28 minutes.
- **November 14, 2012 (planned):** The extraction well system was offline from 8:26 a.m. to 4:06 p.m. and 4:46 p.m. to 5:06 p.m. due to scheduled plant maintenance activities. Extraction system downtime was 8 hours.

- **November 27, 2012 (unplanned):** The extraction well system was offline from 6:24 a.m. to 7:10 a.m. and 7:24 a.m. to 7:30 a.m. due to a loss of power from Needles Power. Extraction system downtime was 52 minutes.

December 2012

During December 2012, 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 ran for a short period of time on December 13, 2012 for the fourth quarter GMP sampling event. The operational run time for the IM-3 groundwater extraction system (combined or individual pumping) was 98.0 percent during the December 2012 reporting period.

The IM-3 facility treated approximately 5,846,530 gallons of extracted groundwater during December 2012. The IM-3 facility treated 3,670 gallons of water generated from the groundwater monitoring program and 3,600 gallons of injection well backwashing/re-development water. Two containers of solids from the IM-3 facility were transported offsite during December 2012.

Periods of planned and unplanned extraction system down time (that together resulted in approximately 2.0 percent of downtime during December 2012) are summarized below.

- **December 2, 2012 (unplanned):** The extraction well system was offline from 7:04 a.m. to 7:54 a.m. due to the need to clean a buildup of solids in the pipe between Iron Oxidation Tank T-301A and the next iron oxidation tank in series. Extraction system downtime was 50 minutes.
- **December 5, 2012 (planned):** The extraction well system was offline from 10:26 a.m. to 10:28 a.m., 10:32 a.m. to 10:34 a.m., 10:58 a.m. to 11:42 a.m., and 12:10 a.m. to 12:12 a.m. due to testing of critical alarms and leak detection system. Extraction system downtime was 50 minutes.
- **December 8, 2012 (unplanned):** The extraction well system was offline from 10:44 p.m. to 11:10 p.m. due to solids buildup on the flow switch located in the chemical injection loop. Extraction system downtime was 26 minutes.
- **December 12, 2012 (unplanned):** The extraction well system was offline from 9:46 a.m. to 2:36 p.m. for clarifier feed pump P-400 maintenance. Extraction system downtime was 4 hours, 50 minutes.
- **December 12, 2012 (unplanned):** The extraction well system was offline from 10:32 p.m. to 10:36 p.m. due to a loss of power from Needles Power. Extraction system downtime was 4 minutes.
- **December 13, 2012 (unplanned):** The extraction well system was offline from 11:08 a.m. to 11:10 a.m. due to a loss of power from Needles Power. Extraction system downtime was 2 minutes.
- **December 19, 2012 (unplanned):** The extraction well system was offline from 6:32 p.m. to 6:46 p.m. due to a loss of power from Needles Power. Extraction system downtime was 14 minutes.

- **December 20, 2012 (unplanned):** The extraction well system was offline from 5:54 a.m. to 6:24 a.m. and 10:00 a.m. to 10:26 a.m. due to maintenance on the RO system. Extraction system downtime was 56 minutes.
- **December 20, 2012 (unplanned):** The extraction well system was offline from 7:10 p.m. to 7:12 p.m. due to a loss of power from Needles Power. Extraction system downtime was 2 minutes.
- **December 23, 2012 (unplanned):** The extraction well system was offline from 10:48 a.m. to 12:10 p.m. due to reduced performance of clarifier feed pump P-400. Extraction system downtime was 1 hour, 22 minutes.
- **December 26, 2012 (unplanned):** The extraction well system was offline from 9:44 a.m. to 10:24 a.m. to replace clarifier feed pump P-400 with a new pump in kind. Extraction system downtime was 40 minutes.
- **December 28, 2012 (unplanned):** The extraction well system was offline from 6:26 a.m. to 6:38 a.m. and 6:56 a.m. to 11:04 a.m. due to reduced chemical mixing loop pump performance. Extraction system downtime was 4 hours, 20 minutes.

Appendix B
Daily Volumes of Groundwater Treated

July 2012 Operational Data

IM-3 Groundwater Extraction and Treatment System

PG&E Topock Compressor Station, Needles, California

			Extraction Well System					Injection Well System			RO Brine
Month	Day	Year	TW-2S (gallons)	TW-2D (gallons)	TW-3D (gallons)	PE-1 (gallons)	Total (gallons)	IW-02 (gallons)	IW-03 (gallons)	Total (gallons)	(gallons)
July	1	2012	--	--	157,428	37,446	194,874	42	196,110	196,153	8,920
July	2	2012	--	--	152,320	36,474	188,794	3	190,354	190,357	9,189
July	3	2012	--	--	157,229	37,905	195,134	13	193,110	193,123	8,539
July	4	2012	--	--	157,468	37,449	194,917	37	196,166	196,202	8,563
July	5	2012	--	--	154,357	36,806	191,162	4	195,790	195,794	8,947
July	6	2012	--	--	156,999	37,484	194,483	10	183,924	183,934	8,207
July	7	2012	--	--	157,011	37,174	194,185	3	194,431	194,434	8,699
July	8	2012	--	--	156,650	37,117	193,767	6	194,577	194,583	9,803
July	9	2012	--	--	154,420	36,500	190,919	24	192,438	192,462	9,388
July	10	2012	--	--	157,185	37,238	194,423	3	192,127	192,129	9,785
July	11	2012	--	--	122,320	29,086	151,406	15	149,870	149,885	9,076
July	12	2012	--	--	157,039	37,124	194,163	12,374	181,945	194,319	9,449
July	13	2012	--	--	156,911	36,847	193,758	7	194,391	194,398	7,069
July	14	2012	--	--	156,267	36,981	193,248	2	192,901	192,902	4,465
July	15	2012	--	--	156,963	38,026	194,989	1	193,795	193,796	2
July	16	2012	--	--	156,922	37,532	194,454	2	195,246	195,248	1,568
July	17	2012	--	--	156,881	37,410	194,291	13	195,689	195,702	2
July	18	2012	--	--	157,115	36,827	193,941	114,853	79,810	194,663	1,573
July	19	2012	--	--	156,999	36,704	193,703	191,250	475	191,724	2
July	20	2012	--	--	156,978	36,614	193,592	191,075	434	191,509	1,614
July	21	2012	--	--	155,460	35,941	191,402	188,323	479	188,803	2
July	22	2012	--	--	157,229	36,222	193,451	194,643	399	195,041	1,563
July	23	2012	--	--	157,285	36,222	193,507	195,682	366	196,047	1,506
July	24	2012	--	--	157,233	36,192	193,425	194,628	317	194,945	--
July	25	2012	--	--	157,470	36,298	193,767	113,916	77,939	191,855	305
July	26	2012	--	--	157,321	36,076	193,396	26	194,075	194,101	3,404
July	27	2012	--	--	157,249	35,739	192,988	5	196,503	196,508	18
July	28	2012	--	--	157,398	35,821	193,220	18	193,979	193,997	2,882
July	29	2012	--	--	157,482	35,622	193,104	6	193,668	193,674	54
July	30	2012	--	--	157,641	35,690	193,331	28	196,363	196,392	3,284
July	31	2012	--	--	157,811	35,677	193,488	12	189,770	189,782	4
Total Monthly Volumes (gal)			**0**	**0**	**4,825,040**	**1,130,244**	**5,955,284**	**1,397,020**	**4,557,441**	**5,954,462**	**137,883**
Average Pump/Injection Rates (gpm)			**0.0**	**0.0**	**108.1**	**25.3**	**133.4**	**31.3**	**102.1**	**133.4**	**3.1**

NOTES: gal: gallons gpm: gallons per minute RO: Reverse Osmosis

a. Extraction wells TW-3D and PE-1 were operated during July 2012 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 2012.

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 2012 is approximately 2.3 percent. This percentage difference includes instrument noise in the system, but is within the accuracy of the flow meters. A well is considered to be offline if the daily reported flow is 140 gallons per day or less.

August 2012 Operational Data

IM-3 Groundwater Extraction and Treatment System

PG&E Topock Compressor Station, Needles, California

			Extraction Well System					Injection Well System			RO Brine
Month	Day	Year	TW-2S (gallons)	TW-2D (gallons)	TW-3D (gallons)	PE-1 (gallons)	Total (gallons)	IW-02 (gallons)	IW-03 (gallons)	Total (gallons)	(gallons)
August	1	2012	--	--	157,642	35,620	193,263	123,994	72,017	196,011	6
August	2	2012	--	--	155,372	36,407	191,779	197,474	744	198,219	2,891
August	3	2012	--	--	156,850	37,127	193,977	192,934	938	193,872	4
August	4	2012	--	--	156,786	36,935	193,720	186,936	1,038	187,974	3,233
August	5	2012	--	--	156,973	36,560	193,533	181,455	1,207	182,662	4
August	6	2012	--	--	156,980	36,345	193,325	192,801	807	193,608	2,977
August	7	2012	--	--	157,037	36,236	193,273	193,196	744	193,940	4
August	8	2012	--	--	156,973	36,169	193,142	160,834	30,126	190,959	3,156
August	9	2012	--	--	156,686	36,422	193,108	198,799	1,361	200,160	4
August	10	2012	--	--	156,812	36,946	193,758	188,894	1,810	190,705	3,002
August	11	2012	--	--	154,662	36,963	191,625	187,382	1,961	189,343	4
August	12	2012	--	--	148,982	37,451	186,433	179,508	2,306	181,814	3
August	13	2012	--	--	29,019	6,967	35,985	62,691	984	63,675	3,105
August	14	2012	--	--	11	1	11	6	1,220	1,226	6
August	15	2012	--	--	19	0	19	4	375	380	3
August	16	2012	--	--	4,505	1,103	5,608	5	642	647	4
August	17	2012	--	--	105,950	25,900	131,850	109,278	833	110,112	3
August	18	2012	--	--	156,550	38,056	194,606	189,638	1,185	190,823	2
August	19	2012	--	--	156,644	37,893	194,536	193,370	1,114	194,484	3,001
August	20	2012	--	--	156,794	37,775	194,569	190,338	1,207	191,544	3
August	21	2012	--	--	156,201	37,633	193,834	196,641	989	197,629	3,139
August	22	2012	--	--	157,148	37,598	194,746	156,727	35,729	192,456	1
August	23	2012	--	--	155,990	37,493	193,483	33,960	154,596	188,556	2,875
August	24	2012	--	--	156,970	37,341	194,311	4	198,323	198,327	3
August	25	2012	--	--	156,863	37,107	193,969	10	196,760	196,770	3,124
August	26	2012	--	--	156,953	37,072	194,025	5	194,710	194,715	1
August	27	2012	--	--	157,105	36,957	194,062	9	196,133	196,142	3,214
August	28	2012	--	--	153,151	36,887	190,038	3	193,000	193,003	3,251
August	29	2012	--	--	157,471	36,690	194,161	1	196,124	196,125	2
August	30	2012	--	--	73,524	17,104	90,628	36,538	50,670	87,207	3,140
August	31	2012	--	--	157,173	37,444	194,617	196,437	1,578	198,015	2
Total Monthly Volumes (gal)			**0**	**0**	**4,119,794**	**976,201**	**5,095,995**	**3,549,872**	**1,541,232**	**5,091,104**	**40,169**
Average Pump/Injection Rates (gpm)			**0.0**	**0.0**	**92.3**	**21.9**	**114.2**	**79.5**	**34.5**	**114.0**	**0.9**

NOTES: gal: gallons gpm: gallons per minute RO: Reverse Osmosis

a. Extraction wells TW-3D and PE-1 were operated during August 2012 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 2012.

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 2012 is approximately 0.69 percent. This percentage difference includes instrument noise in the system, but is within the accuracy of the flow meters. A well is considered to be offline if the daily reported flow is 140 gallons per day or less.

September 2012 Operational Data

IM-3 Groundwater Extraction and Treatment System

PG&E Topock Compressor Station, Needles, California

			Extraction Well System					Injection Well System			RO Brine
Month	Day	Year	TW-2S (gallons)	TW-2D (gallons)	TW-3D (gallons)	PE-1 (gallons)	Total (gallons)	IW-02 (gallons)	IW-03 (gallons)	Total (gallons)	(gallons)
September	1	2012	--	--	157,094	37,234	194,328	196,498	1,542	198,039	3,245
September	2	2012	--	--	157,207	37,209	194,416	190,429	1,775	192,203	2
September	3	2012	--	--	157,400	37,196	194,595	192,670	1,739	194,409	3,144
September	4	2012	--	--	151,762	37,006	188,768	187,943	1,915	189,858	2
September	5	2012	--	--	98,133	25,242	123,374	112,270	2,286	114,555	1
September	6	2012	--	--	136,837	41,362	178,199	178,266	1,940	180,206	2
September	7	2012	--	--	152,701	40,446	193,147	190,703	1,712	192,415	3,096
September	8	2012	--	--	156,633	36,349	192,982	194,400	1,486	195,886	3,275
September	9	2012	--	--	157,589	36,307	193,896	190,408	1,836	192,244	2,973
September	10	2012	--	--	157,718	36,046	193,764	191,678	1,737	193,415	2
September	11	2012	--	--	154,840	35,787	190,628	187,055	1,903	188,958	3,097
September	12	2012	--	--	153,082	35,398	188,480	181,469	1,915	183,384	4
September	13	2012	--	--	157,598	36,612	194,210	194,325	1,565	195,890	3,158
September	14	2012	--	--	156,227	36,118	192,345	191,868	1,363	193,232	3,121
September	15	2012	--	--	157,589	35,968	193,557	187,126	1,989	189,115	2,629
September	16	2012	--	--	157,612	35,788	193,399	191,096	1,867	192,963	521
September	17	2012	--	--	157,660	35,705	193,365	190,487	1,859	192,346	3,141
September	18	2012	--	--	157,640	35,609	193,249	191,568	1,832	193,400	2,847
September	19	2012	--	--	157,738	35,540	193,277	194,421	1,748	196,169	2,499
September	20	2012	--	--	157,731	35,497	193,227	194,397	1,688	196,086	649
September	21	2012	--	--	139,638	32,073	171,711	160,187	1,506	161,693	3,129
September	22	2012	--	--	157,286	36,464	193,750	188,142	1,555	189,697	3,013
September	23	2012	--	--	157,214	36,047	193,261	190,530	1,637	192,168	2
September	24	2012	--	--	157,503	35,944	193,448	192,298	1,631	193,929	3,128
September	25	2012	--	--	157,652	35,760	193,412	191,627	1,715	193,341	3,003
September	26	2012	--	--	152,678	35,484	188,162	102,124	86,900	189,024	1
September	27	2012	--	--	157,197	35,809	193,006	4	197,794	197,798	2,999
September	28	2012	--	--	157,190	35,632	192,822	41,778	139,574	181,352	3,010
September	29	2012	--	--	157,152	35,523	192,675	193,363	2,539	195,902	2,844
September	30	2012	--	--	157,198	35,482	192,679	192,637	1,956	194,593	2,981
Total Monthly Volumes (gal)			**0**	**0**	**4,601,500**	**1,076,633**	**5,678,133**	**5,181,767**	**472,503**	**5,654,269**	**61,519**
Average Pump/Injection Rates (gpm)			**0.0**	**0.0**	**106.5**	**24.9**	**131.4**	**119.9**	**10.9**	**130.9**	**1.4**

NOTES: gal: gallons gpm: gallons per minute RO: Reverse Osmosis

a. Extraction wells TW-3D and PE-1 were operated during September 2012 at a target pump rate of 135 gpm excluding periods of planned and unplanned downtime. Extraction wells TW-2D and TW-2S were not operated during September 2012.

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 2012 is approximately 0.66 percent. This percentage difference includes instrument noise in the system, but is within the accuracy of the flow meters. A well is considered to be offline if the daily reported flow is 140 gallons per day or less.

October 2012 Operational Data

IM-3 Groundwater Extraction and Treatment System

PG&E Topock Compressor Station, Needles, California

			Extraction Well System					Injection Well System			RO Brine
Month	Day	Year	TW-2S (gallons)	TW-2D (gallons)	TW-3D (gallons)	PE-1 (gallons)	Total (gallons)	IW-02 (gallons)	IW-03 (gallons)	Total (gallons)	(gallons)
October	1	2012	--	--	135,970	31,203	167,172	154,370	3,604	157,974	2
October	2	2012	--	--	157,317	35,632	192,949	192,296	3,287	195,582	3,014
October	3	2012	--	--	152,848	35,149	187,997	193,244	3,303	196,548	3,262
October	4	2012	--	--	157,107	36,026	193,133	183,126	5,927	189,052	1
October	5	2012	--	--	156,959	35,773	192,731	185,153	5,627	190,780	2,453
October	6	2012	--	--	156,963	35,615	192,578	185,946	5,500	191,446	2
October	7	2012	--	--	156,949	35,508	192,457	188,395	5,191	193,586	3,068
October	8	2012	--	--	156,936	35,495	192,431	192,139	4,214	196,353	2
October	9	2012	--	--	156,923	35,521	192,444	186,339	5,296	191,635	3,011
October	10	2012	--	--	156,233	35,284	191,517	73,494	116,864	190,357	3,074
October	11	2012	--	--	155,797	35,735	191,532	143	194,193	194,337	4
October	12	2012	--	--	157,027	35,726	192,753	8	195,567	195,575	3,202
October	13	2012	--	--	156,925	35,737	192,662	16	194,740	194,756	4
October	14	2012	--	--	157,098	35,364	192,462	13	193,943	193,956	3,113
October	15	2012	--	--	157,131	35,267	192,397	18	190,998	191,015	1
October	16	2012	--	--	157,106	35,028	192,134	2	192,151	192,153	2,988
October	17	2012	--	--	157,076	34,923	191,999	27	194,571	194,598	3,001
October	18	2012	--	--	157,105	34,735	191,840	22	190,586	190,608	3
October	19	2012	--	--	157,137	34,630	191,767	1	188,937	188,938	2,699
October	20	2012	--	--	157,077	34,560	191,637	23	189,213	189,237	3
October	21	2012	--	--	157,065	34,531	191,595	32	194,741	194,773	3,223
October	22	2012	--	--	157,058	34,474	191,532	47	191,808	191,855	4
October	23	2012	--	--	157,114	34,486	191,600	14	190,757	190,771	2,989
October	24	2012	--	--	129,639	28,980	158,619	7	153,177	153,184	3,177
October	25	2012	--	--	156,818	35,504	192,323	32,763	153,304	186,067	3
October	26	2012	--	--	156,852	35,406	192,258	4	195,688	195,692	3,075
October	27	2012	--	--	157,011	34,888	191,898	12	197,031	197,043	2,992
October	28	2012	--	--	156,970	34,903	191,873	32	193,958	193,990	132
October	29	2012	--	--	157,055	34,915	191,970	21	193,818	193,840	3,032
October	30	2012	--	--	157,237	34,943	192,181	25,500	164,762	190,261	3
October	31	2012	--	--	156,569	36,291	192,860	48	190,413	190,461	2,611
Total Monthly Volumes (gal)			**0**	**0**	**4,813,068**	**1,082,232**	**5,895,301**	**1,793,257**	**4,103,168**	**5,896,425**	**54,148**
Average Pump/Injection Rates (gpm)			**0.0**	**0.0**	**107.8**	**24.2**	**132.1**	**40.2**	**91.9**	**132.1**	**1.2**

NOTES: gal: gallons gpm: gallons per minute RO: Reverse Osmosis

a. Extraction wells TW-3D and PE-1 were operated during October 2012 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 2012.

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 2012 is approximately 0.94 percent. This percentage difference includes instrument noise in the system, but is within the accuracy of the flow meters. A well is considered to be offline if the daily reported flow is 140 gallons per day or less.

November 2012 Operational Data

IM-3 Groundwater Extraction and Treatment System

PG&E Topock Compressor Station, Needles, California

			Extraction Well System					Injection Well System			RO Brine
Month	Day	Year	TW-2S (gallons)	TW-2D (gallons)	TW-3D (gallons)	PE-1 (gallons)	Total (gallons)	IW-02 (gallons)	IW-03 (gallons)	Total (gallons)	(gallons)
November	1	2012	--	--	154,652	36,098	190,750	18	194,220	194,238	2,865
November	2	2012	--	--	156,422	35,644	192,066	10	189,456	189,465	3
November	3	2012	--	--	155,282	35,127	190,409	18	192,769	192,787	2,998
November	4	2012	--	--	155,658	35,733	191,391	7	191,261	191,269	3,141
November	5	2012	--	--	155,912	36,329	192,241	6	194,259	194,264	2
November	6	2012	--	--	155,890	36,078	191,968	23	190,682	190,705	3,357
November	7	2012	--	--	151,011	34,271	185,282	1,629	188,218	189,847	4
November	8	2012	--	--	156,242	36,041	192,282	0	187,663	187,663	2,992
November	9	2012	--	--	156,631	38,085	194,716	18	189,590	189,608	7
November	10	2012	--	--	156,735	38,008	194,743	8	194,005	194,013	2,993
November	11	2012	--	--	156,782	37,921	194,704	27	195,040	195,067	3,108
November	12	2012	--	--	156,839	37,848	194,687	6	196,439	196,445	3
November	13	2012	--	--	156,428	37,767	194,195	10	192,618	192,628	2,299
November	14	2012	--	--	103,859	24,850	128,709	46	126,469	126,515	5
November	15	2012	--	--	156,381	36,302	192,682	20	194,881	194,901	3,108
November	16	2012	--	--	156,436	36,136	192,572	2	194,742	194,744	3,239
November	17	2012	--	--	156,368	36,088	192,456	2	193,920	193,922	5
November	18	2012	--	--	156,455	35,958	192,413	9	193,631	193,639	3,123
November	19	2012	--	--	156,447	35,867	192,314	16	188,957	188,973	5
November	20	2012	--	--	156,393	35,790	192,184	13	189,476	189,489	3,127
November	21	2012	--	--	156,424	35,574	191,998	2	192,904	192,907	3
November	22	2012	--	--	156,526	35,338	191,864	6	189,721	189,726	3,227
November	23	2012	--	--	156,537	35,274	191,811	37	190,952	190,989	2,995
November	24	2012	--	--	156,596	35,264	191,860	5	191,914	191,919	3
November	25	2012	--	--	156,714	35,176	191,890	1	192,170	192,171	3,121
November	26	2012	--	--	156,591	35,137	191,727	3	191,536	191,538	5
November	27	2012	--	--	150,764	34,162	184,926	3	182,843	182,846	2,669
November	28	2012	--	--	156,614	35,150	191,765	10	193,297	193,307	3,124
November	29	2012	--	--	156,592	35,010	191,602	26	189,420	189,445	5
November	30	2012	--	--	156,564	35,033	191,597	7	191,570	191,577	2,986
Total Monthly Volumes (gal)			**0**	**0**	**4,626,744**	**1,067,058**	**5,693,802**	**1,987**	**5,684,622**	**5,686,609**	**54,521**
Average Pump/Injection Rates (gpm)			**0.0**	**0.0**	**107.1**	**24.7**	**131.8**	**0.0**	**131.6**	**131.6**	**1.3**

NOTES: gal: gallons gpm: gallons per minute RO: Reverse Osmosis

a. Extraction wells TW-3D and PE-1 were operated during November 2012 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 2012.

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 2012 is approximately 0.83 percent. This percentage difference includes instrument noise in the system, but is within the accuracy of the flow meters. A well is considered to be offline if the daily reported flow is 140 gallons per day or less.

December 2012 Operational Data

IM-3 Groundwater Extraction and Treatment System

PG&E Topock Compressor Station, Needles, California

			Extraction Well System					Injection Well System			RO Brine
Month	Day	Year	TW-2S (gallons)	TW-2D (gallons)	TW-3D (gallons)	PE-1 (gallons)	Total (gallons)	IW-02 (gallons)	IW-03 (gallons)	Total (gallons)	(gallons)
December	1	2012	--	12	156,528	34,933	191,473	9	191,675	191,684	2
December	2	2012	--	13	150,751	34,557	185,320	35	187,465	187,500	3,120
December	3	2012	--	13	156,132	36,048	192,193	5	184,456	184,461	3,123
December	4	2012	--	10	156,101	35,752	191,863	47	196,957	197,004	3
December	5	2012	--	13	148,861	34,763	183,637	2,714	187,230	189,944	3,205
December	6	2012	--	7	155,917	36,387	192,311	4	186,559	186,563	5
December	7	2012	--	7	155,927	36,398	192,332	5	193,397	193,402	2,859
December	8	2012	--	7	152,792	35,692	188,492	5	190,209	190,214	5
December	9	2012	--	11	156,046	36,017	192,073	2	191,673	191,674	3,877
December	10	2012	--	11	156,086	35,674	191,771	12	191,513	191,525	2,976
December	11	2012	--	14	156,057	35,585	191,656	2	190,464	190,466	129
December	12	2012	--	23	123,634	29,345	153,001	9	153,561	153,570	2,864
December	13	2012	4,649	8,084	141,545	34,502	188,780	1	192,351	192,352	2,977
December	14	2012	--	6	155,468	37,589	193,063	7	190,534	190,541	5
December	15	2012	--	9	155,475	37,457	192,941	10	192,103	192,113	3,225
December	16	2012	--	7	155,395	37,364	192,766	27	193,647	193,674	6
December	17	2012	--	9	155,480	37,153	192,642	24	193,407	193,431	2,962
December	18	2012	--	5	155,384	37,034	192,424	17	192,494	192,511	2,980
December	19	2012	--	5	153,880	36,657	190,542	12	188,083	188,095	2,969
December	20	2012	--	10	148,665	36,348	185,023	10	181,656	181,666	6
December	21	2012	--	6	155,142	37,963	193,110	1	187,839	187,840	3,021
December	22	2012	--	6	155,123	37,789	192,918	6	188,563	188,569	2,977
December	23	2012	--	8	146,083	36,055	182,145	34	188,620	188,654	3,084
December	24	2012	--	10	154,870	38,448	193,327	22	194,466	194,487	3
December	25	2012	--	2	154,830	38,223	193,055	18	192,069	192,087	3,106
December	26	2012	--	15	150,175	37,771	187,960	27	181,863	181,890	2,965
December	27	2012	--	9	154,539	39,106	193,654	26,084	169,776	195,860	7
December	28	2012	--	9	126,404	31,478	157,890	23	156,576	156,599	3,108
December	29	2012	--	10	154,877	38,100	192,987	20	198,421	198,441	2,970
December	30	2012	--	6	154,829	37,925	192,760	28	193,256	193,284	2,972
December	31	2012	--	6	154,788	37,627	192,421	21	191,859	191,879	3
Total Monthly Volumes (gal)			**4,649**	**8,361**	**4,707,780**	**1,125,739**	**5,846,530**	**29,240**	**5,812,741**	**5,841,981**	**61,516**
Average Pump/Injection Rates (gpm)			**0.1**	**0.2**	**105.5**	**25.2**	**131.0**	**0.7**	**130.2**	**130.9**	**1.4**

NOTES: gal: gallons gpm: gallons per minute RO: Reverse Osmosis

a. Extraction wells TW-3D and PE-1 were operated during December 2012 at a target pump rate of 135 gpm excluding periods of planned and unplanned downtime. Extraction wells TW-2D and TW-2S were operated for a short period of time on December 13, 2012 for the fourth quarter GMP sampling event. The flow element in the TW-2S discharge pipe did not transmit its signal to the IM-3 Data Historian, so the total volume extracted by this pump and subsequently treated by the IM-3 plant was calculated by multiplying the average extraction well pump rate (36.9 gpm) by the documented pump run time minutes (126 minutes) to get 4,649 gallons.

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 2012 is approximately 0.97 percent. This percentage difference includes instrument noise in the system, but is within the accuracy of the flow meters. A well is considered to be offline if the daily reported flow is 140 gallons per day or less.

Appendix C
Flowmeter Calibration Records

Endress+Hauser

People for Process Automation

Flow Calibration with Adjustment

30201334-1304708

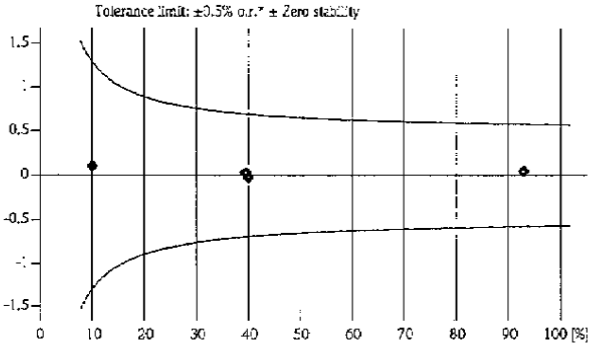
WWRA-008929F	FCP-6.F
Purchase order number	Calibration rig
US-465002381-20 / Endress+Hauser Flowtec	155.6102 us.gal/min (≙ 100%)
Order N°/Manufacturer	Calibrated full scale
23P50-AL1A1AA022AW	Current 4 - 20 mA
Order code	Calibrated output
PROMAG 23 P 2"	0.9184
Transmitter/Sensor	Calibration factor
6C037216000	20
Serial N°	Zero point
FIT-1204	76.8 °F
Tag N°	Water temperature

Flow [%]	Flow [us.gal/min]	Duration [s]	V target [us.gal]	V meas. [us.gal]	Δ o.r.* [%]	Outp.** [mA]
9.9	15.4	30.2	7.7528	7.7611	0.11	5.59
39.5	61.4	30.2	30.907	30.917	0.03	10.32
39.9	62.1	30.2	31.246	31.239	-0.02	10.38
93.0	144.7	30.2	72.803	72.836	0.05	18.88
-	-	-	-	-	-	-
-	-	-	-	-	-	-
-	-	-	-	-	-	-
-	-	-	-	-	-	-
-	-	-	-	-	-	-
-	-	-	-	-	-	-

*o.r.: of rate

**Calculated value (4 - 20 mA)

Measured error % o.r.



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

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

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

Leonard L. McGee

07-15-2011
Date of calibration

Leonard McGee
Operator

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

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

Endress+Hauser

People for Process Automation

Flow Calibration without Adjustment

30201330-1304708

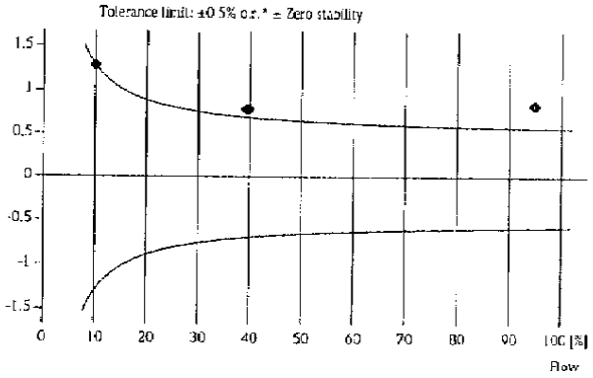
WWRA-008929F Purchase order number	FCP-6.F Calibration rig
US-465002381-20 / Endress+Hauser Flowtec Order N°/Manufacturer	155.6102 us.gal/min (≙ 100%) Calibrated full scale
23P50-AL1A1AA022AW Order code	Current 4 - 20 mA Calibrated output
PROMAG 23 P 2" Transmitter/Sensor	0.9258 Calibration factor
6C037216000 Serial N°	20 Zero point
FIT-1204 Tag N°	75.9 °F Water temperature

Flow [%]	Flow [us.gal/min]	Duration [s]	V target [us.gal]	V meas. [us.gal]	Δ o.r.* [%]	Outp.** [mA]
9.9	15.4	30.2	7.7490	7.8501	1.31	5.60
39.3	61.1	30.2	30.760	31.006	0.80	10.34
39.7	61.8	30.2	31.109	31.358	0.80	10.41
94.9	147.7	30.2	74.312	74.944	0.85	19.31
-	-	-	-	-	-	-
-	-	-	-	-	-	-
-	-	-	-	-	-	-
-	-	-	-	-	-	-
-	-	-	-	-	-	-
-	-	-	-	-	-	-

*o.r.: of rate

**Calculated value (4 - 20 mA)

Measured error % o.r.



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

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

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

07-15-2011
Date of calibration

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

Leonard McGee
Operator

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

Flow Calibration with Adjustment

30201328-1304707

WWRA008929F
Purchase order number

US-465002380-10 / Endress+Hauser Flowtec
Order N°/Manufacturer

23P50-AL1A1AA022AW
Order code

PROMAG 23 P 2"
Transmitter/Sensor

6C037116000
Serial N°

FIT-1203
Tag N°

FCP-6.F
Calibration rig

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

Current 4 - 20 mA
Calibrated output

0.9106
Calibration factor

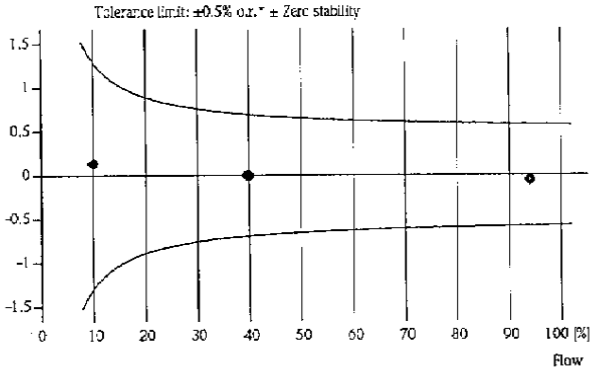
0
Zero point

75.4 °F
Water temperature

Flow [%]	Flow [us.gal/min]	Duration [s]	V target [us.gal]	V meas. [us.gal]	Δ o.r.* [%]	Outp.** [mA]
9.9	15.4	30.2	7.7531	7.7639	0.14	5.59
39.4	61.4	30.2	30.874	30.873	0.00	10.31
39.9	62.1	30.2	31.207	31.206	0.00	10.38
94.1	146.4	30.2	73.642	73.601	-0.05	19.04
-	-	-	-	-	-	-
-	-	-	-	-	-	-
-	-	-	-	-	-	-
-	-	-	-	-	-	-
-	-	-	-	-	-	-
-	-	-	-	-	-	-

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

Measured error % o.r.



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

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

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

Leonard D. McGee

07-15-2011
Date of calibration

Leonard McGee
Operator

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

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

Endress+Hauser

People for Process Automation

Flow Calibration without Adjustment

30201327-1304707

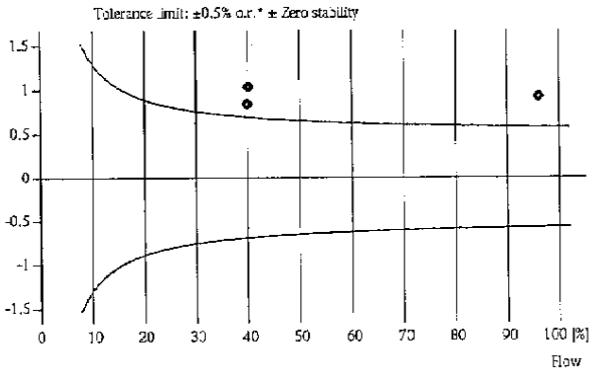
WWRA008929F Purchase order number	FCP-6.F Calibration rig
US-465002380-10 / Endress+Hauser Flowtec Order N°/Manufacturer	155.6102 us.gal/min (≙ 100%) Calibrated full scale
23P50-AL1A1AA022AW Order code	Current 4 - 20 mA Calibrated output
PROMAG 23 P 2" Transmitter/Sensor	0.9195 Calibration factor
6C037116000 Serial N°	0 Zero point
FIT-1203 Tag N°	74.9 °F Water temperature

Flow [%]	Flow [us.gal/min]	Duration [s]	V target [us.gal]	V meas. [us.gal]	Δ o.r.* [%]	Outp.** [mA]
10.0	15.5	30.2	7.7934	7.9184	1.60	5.62
39.8	61.9	30.2	31.146	31.410	0.85	10.42
40.0	62.2	30.2	31.325	31.654	1.05	10.47
96.0	149.4	30.2	75.197	75.894	0.93	19.51
-	-	-	-	-	-	-
-	-	-	-	-	-	-
-	-	-	-	-	-	-
-	-	-	-	-	-	-
-	-	-	-	-	-	-
-	-	-	-	-	-	-

*o.r.: of rate

**Calculated value (4 - 20 mA)

Measured error % o.r.



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

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

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

Leonard D. McGee

07-15-2011
Date of calibration

Leonard McGee
Operator

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

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

Endress+Hauser
People for Process Automation

Flow Calibration with Adjustment

30092171-1385272

WWRA-000923-F
Purchase order number

US-19050353-20 / Endress+Hauser Flowtec
Order N°/Manufacturer

23P50-AL1A1AA022AW
Order code

PROMAG 23 P 2"
Transmitter/ Sensor

7700F216000
Serial N°

Installed at TW-2D 7/6/11
~~FIT-103~~ ~~PE-1~~ AB
Tag N°

FCP-6.F
Calibration rig

155.6102 GPM (≙ 100%)
Calibrated full scale

Current 4 - 20 mA
Calibrated output

0.9289
Calibration factor

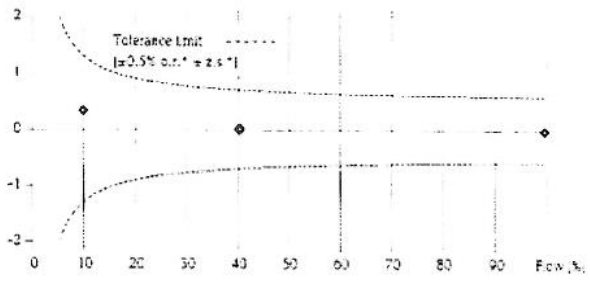
0
Zero point

74.9 °F
Water temperature

Flow [%]	Flow [GPM]	Duration [sec]	V target [US GAL]	V meas. [US GAL]	Δ o.r.* [%]	Outp.** [mA]
10.0	15.5	30.1	7.7642	7.7895	0.33	5.60
40.5	62.9	30.1	31.549	31.556	0.02	10.47
40.5	62.9	30.1	31.546	31.541	-0.02	10.47
99.7	155.1	30.1	77.735	77.718	-0.02	19.95
-	-	-	-	-	-	-
-	-	-	-	-	-	-
-	-	-	-	-	-	-
-	-	-	-	-	-	-
-	-	-	-	-	-	-
-	-	-	-	-	-	-

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

Measured error % o.r.



*z.s.: Zero stability

For detailed data concerning output specifications of the unit under test, see technical informations (TI), chapter Performance characteristics.
The calibration is traceable to the N.I.S.T. through standards certified at preset intervals.

M. E. Trueblood Jr.

11-30-2006
Date of calibration

Morris E. Trueblood Jr.
Operator

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

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

Flow Calibration with Adjustment

Endress+Hauser
People for Process Automation

30057870-1275191

41724888
Purchase Order Number

USA-49310090-40 / Endress+Hauser Flowtec
Order Nº/Manufacturer

23P50-AL1A1RA022AW
Order Code

PROMAG 23 P 2"
Transmitter/Sensor

6A022016000
Serial Nº

FIT ~~101~~ 100 / TW-25 / installed 7/28/05
Tag Nº

FCP-6.C
Calibration rig

155.6102 GPM (≙ 100%)
Calibrated full scale

Current 4 - 20 mA
Calibrated output

0.9207
Calibration factor

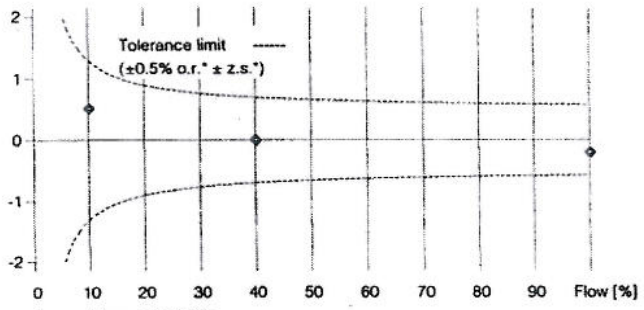
0
Zero point

74.1 °F
Water temperature

Flow [%]	Flow [GPM]	Duration [sec]	V target [US GAL]	V meas. [US GAL]	Δ o.r.* [%]	Outp.** [mA]
10.0	15.6	30.0	7.7910	7.8318	0.52	5.61
40.0	62.3	30.0	31.157	31.160	0.01	10.40
40.1	62.4	30.0	31.229	31.229	0.00	10.42
100.2	155.9	30.0	78.017	77.856	-0.21	20.00
-	-	-	-	-	-	-
-	-	-	-	-	-	-
-	-	-	-	-	-	-
-	-	-	-	-	-	-
-	-	-	-	-	-	-
-	-	-	-	-	-	-

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

Measured error % o.r.



*z.s.: Zero stability

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

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

Tim Swick

11-29-2004
Date of calibration

Tim Swick
Operator

Endress+Hauser
2350 Endress Place
Greenwood, IN 46143

Certified acc. to
MIL-STD-45662A
ISO 9001, Reg.-Nº 030502.2

Endress+Hauser

People for Process Automation

Flow Calibration with Adjustment

30171212-1304705

WWRA-006931-F
Purchase order number

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

23P50-AL1A1AA022AW
Order code

PROMAG 23 P 2"
Transmitter/Sensor

6C036F16000
Serial N°

FIT-1201
Tag N°

FCP-6.F
Calibration rig

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

Current 4 - 20 mA
Calibrated output

0.9101
Calibration factor

-34
Zero point

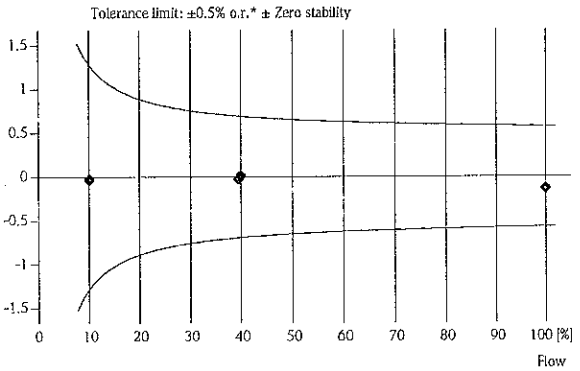
78.7 °F
Water temperature

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

*o.r.: of rate

**Calculated value (4 - 20 mA)

Measured error % o.r.



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

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

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

08-06-2010
Date of calibration

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

John Davis
Operator

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

Endress+Hauser

People for Process Automation

Flow Calibration without Adjustment

92002720-1304706

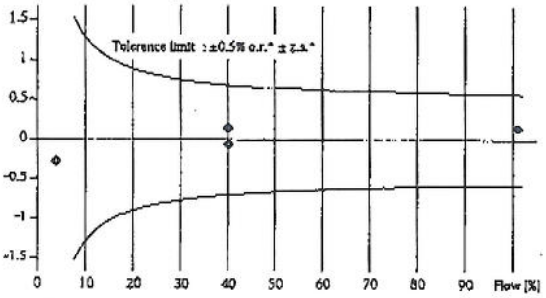
4600082515	FCP-8.2 US
Purchase order number	Calibration rig
US-3601521707-200 / Endress+Hauser Inc.	155 us.gal/min (≙ 100%)
Order N°/Manufacturer	Calibrated full scale
23P50-AL1A1AA022AW	Current 4 - 20 mA
Order code	Calibrated output
PROMAG 23 P 2"	0.9154
Transmitter/Sensor	Calibration factor
6C037016000	0
Serial N°	Zero point
FIT-1202	75.5 °F
Tag N°	Water temperature

Flow [%]	Flow [us.gal/min]	Duration [sec]	V target [us.gal]	V meas. [us.gal]	Δ o.r.* [%]	Outp.** [mA]
4.0	6.12	60.0	6.1222	6.1053	-0.28	4.63
40.1	62.2	60.0	62.267	62.358	0.15	10.43
40.2	62.2	60.0	62.283	62.243	-0.06	10.42
101.1	156.7	60.0	156.766	156.998	0.15	20.20
-	-	-	-	-	-	-
-	-	-	-	-	-	-
-	-	-	-	-	-	-
-	-	-	-	-	-	-
-	-	-	-	-	-	-
-	-	-	-	-	-	-

*o.r.: of rate

**Calculated value (4 - 20 mA)

Measured error % o.r.



*z.s.: Zero stability

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

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

Wesley Watkins

06-19-2012
Date of calibration

W. Watkins
Operator

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

Endress+Hauser

People for Process Automation

Flow Calibration with Adjustment

30202337-1385113

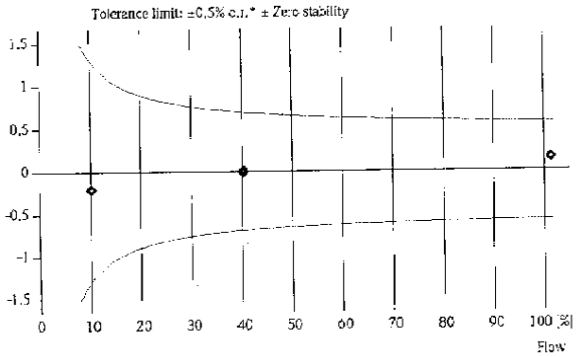
WWRA008929F	FCP-7.1.B
Purchase order number	Calibration rig
US-465002382-30 / Endress+Hauser Flowtec	398.3621 us.gal/min (≙ 100%)
Order N°/Manufacturer	Calibrated full scale
23P80-AL1A1AA022AW	Current 4 - 20 mA
Order code	Calibrated output
PROMAG 23 P 3"	1.1670
Transmitter/Sensor	Calibration factor
7700C616000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

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

*o.r. = of rate

**Calculated value (4 - 20 mA)

Measured error % o.r.



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

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

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

07-25-2011
Date of calibration

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

Taylor Shepard
Operator

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

Endress+Hauser

People for Process Automation

Flow Calibration without Adjustment

92002718-1275190

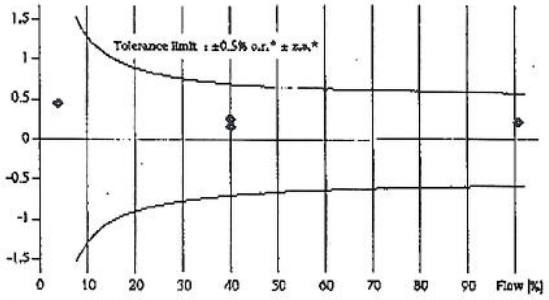
4600082515	FCP-8.2 US
Purchase order number	Calibration rig
US-3601521707-100 / Endress+Hauser Inc.	155 us.gal/min (≙ 100%)
Order N°/Manufacturer	Calibrated full scale
23P50-AL1A1RA022AW	Current 4 - 20 mA
Order code	Calibrated output
PROMAG 23 P 2"	0.9178
Transmitter/Sensor	Calibration factor
6A021F16000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

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

*o.r.: of rate

**Calculated value (4 - 20 mA)

Measured error % o.r.



*z.s.: Zero stability

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

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

Wesley Watkins

06-19-2012
Date of calibration

W. Watkins
Operator

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

Appendix D
Fourth Quarter 2012 Laboratory Analytical Reports

TRUESDAIL LABORATORIES, INC.

EXCELLENCE IN INDEPENDENT TESTING

Established 1931

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

November 5, 2012

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-381 PROJECT, SLUDGE MONITORING,

TLI NO.: 804100

Truesdail Laboratories, Inc. is pleased to submit this report summarizing the Topock IM3Plant-WDR-381 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 10, 2012, 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.

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

Due to matrix interference, the sample for Total Beryllium by SW 6010B was analyzed at a dilution of 2x and reported as non-detect with a report limit that exceeded the contract required detection limit.

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

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

Respectfully Submitted,
TRUESDAIL LABORATORIES, INC.

for Mona Nassimi
Manager, Analytical Services

Michael Ngo
Quality Assurance/Quality Control Officer

TRUESDAIL LABORATORIES, INC.

EXCELLENCE IN INDEPENDENT TESTING

Established 1931

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.: 456827.01.DM

Laboratory No.: 804100
Date: November 5, 2012
Collected: October 2, 2012
Received: October 2, 2012

ANALYST LIST

METHOD	PARAMETER	ANALYST
EPA 300.0	Anions	Giawad Ghenniwa
SM 2540 B	% Moisture	Gautam Savani
SW 6010B	Metals by ICP	Ethel Suico
SW 6020A	Metals by ICP/MS	Bita Emami
SW 7199	Hexavalent Chromium	George Wahba

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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.: 456827.01.DM
P.O. No.: 456827.01.DM

Laboratory No.: 804100
Date Received: October 2, 2012

Analytical Results Summary

Lab I.D.	Sample I.D.	Sample Time	SW 7199 *Hexavalent Chromium*	EPA 300.0 *Fluoride*	EPA 300.0 *Nitrate as N*	SM 2540 B *% Moisture*
			mg/kg	*mg/kg*	*mg/kg*	*%*
804100	SC-Sludge-WDR-381	10:10	20.8	20.6	14.1	42.3

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

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

005

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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.: 456827.01.DM
P.O. No.: 456827.01.DM

Laboratory No.: 804100
Date Received: October 2, 2012

Analytical Results Summary

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

Lab I.D.	Sample ID	*Date of Analysis:* Time Coll.	Antimony SW 6010B 10/17/12 mg/kg	Arsenic SW 6010B 10/17/12 mg/kg	Barium SW 6010B 10/16/12 mg/kg	Beryllium SW 6010B 10/30/12 mg/kg	Cadmium SW 6010B 10/30/12 mg/kg	Chromium SW 6010B 10/16/12 mg/kg	Cobalt SW 6010B 10/16/12 mg/kg	Copper SW 6010B 10/30/12 mg/kg	Lead SW 6010B 10/30/12 mg/kg
804100	SC-Sludge-WDR-381	10:10	32.8	ND	39.7	ND	4.54	2370	ND	14.2	ND

Lab I.D.	Sample ID	*Date of Analysis:* Time Coll.	Manganese SW 6010B 10/16/12 mg/kg	Mercury SW 6020A 10/29/12 mg/kg	Molybdenum SW 6010B 10/16/12 mg/kg	Nickel SW 6010B 10/17/12 mg/kg	Selenium SW 6010B 10/17/12 mg/kg	Silver SW 6010B 10/30/12 mg/kg	Thallium SW 6010B 10/30/12 mg/kg	Vanadium SW 6010B 10/16/12 mg/kg	Zinc SW 6010B 10/17/12 mg/kg
804100	SC-Sludge-WDR-381	10:10	265	ND	ND	23.2	ND	ND	ND	28.7	29.1

NOTES:
ND: Not detected, or below limit of detection

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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.: 456827.01.DM
P.O. No.: 456827.01.DM
Prep. Batch: 10CrH12A

Laboratory No.: 804100
Date: November 5, 2012
Collected: October 2, 2012
Received: October 2, 2012
Prep/ Analyzed: October 16, 2012
Analytical Batch: 10CrH12A

Investigation: **Hexavalent Chromium by IC Using Method SW 7199**

Analytical Results Hexavalent Chromium

TLI I.D.	Field I.D.	Sample Time	Run Time	Units	DF	RL	Results
804100	SC-Sludge-WDR-381	10:10	11:08	mg/kg	10.0	6.93	20.8

QA/QC Summary

QC STD I.D.	Laboratory Number	Sample Concentration	Duplicate Concentration	Relative Percent Difference	Acceptance limits	QC Within Control
Duplicate	804100	20.8	21.1	1.56%	≤ 20%	Yes

QC Std I.D.	Lab Number	Conc.of unspiked sample	Dilution Factor	Added Spike Conc.	MS Amount	Measured Conc. of spiked sample	Theoretical Conc. of spiked sample	MS% Recovery	Acceptance limits	QC Within Control
MS	804100	20.8	25.0	11.2	281	314	301	105%	75-125%	Yes
IMS	804100	20.8	100	17.8	1781	1920	1801	107%	75-125%	Yes
PDMS	804100	20.8	25.0	6.98	175	194	195	99.2%	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	2.04	2.00	102%	90% - 110%	Yes
MRCVS#1	2.10	2.00	105%	90% - 110%	Yes
LLCS	0.00924	0.0100	92.4%	70% - 130%	Yes
LCS	2.03	2.00	101%	80% - 120%	Yes

ND: Below the reporting limit (Not Detected).

DF: Dilution Factor.

Respectfully submitted,
TRUESDAIL LABORATORIES, INC.

for Mona Nassimi, Manager
Analytical Services

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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.: 456827.01.DM
P.O. No.: 456827.01.DM

Laboratory No.: 804100
Date: November 5, 2012
Collected: October 2, 2012
Received: October 2, 2012
Prep/ Analyzed: October 4, 2012
Analytical Batch: 10SOLID12A

Investigation: **Total Solids by SM 2540 B**

Analytical Results % Moisture

TLI I.D.	Field I.D.	Sample Time	Units	Results
804100	SC-Sludge-WDR-381	10:10	%	42.3

QA/QC Summary

QC STD I.D.	Laboratory Number	Concentration	Duplicate Concentration	Relative Percent Difference	Acceptance limits	QC Within Control
Duplicate	804100	42.3	41.2	2.62%	≤ 20%	Yes

ND: Below the reporting limit (Not Detected).
DF: Dilution Factor

Respectfully submitted,
TRUESDAIL LABORATORIES, INC.

for Mona Nassimi, Manager
Analytical Services

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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.: 456827.01.DM
P.O. No.: 456827.01.DM

Laboratory No.: 804100
Date: November 5, 2012
Collected: October 2, 2012
Received: October 2, 2012
Prep/ Analyzed: October 3, 2012
Analytical Batch: 10AN12D

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
804100	SC-Sludge-WDR-381	10:10	15:19	mg/kg	1.00	3.46	20.6

QA/QC Summary

QC STD I.D.	Laboratory Number	Concentration	Duplicate Concentration	Relative Percent Difference	Acceptance limits	QC Within Control
Duplicate	801102-2	2.60	2.67	2.73%	≤ 20%	Yes

QC Std I.D.	Lab Number	Conc.of unspiked sample	Dilution Factor	Added Spike Conc.	MS Amount	Measured Conc. of spiked sample	Theoretical Conc. of spiked sample	MS% Recovery	Acceptance limits	QC Within Control
MS	801102-2	2.60	5.00	4.00	20.0	23.1	22.6	103%	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	4.12	4.00	103%	90% - 110%	Yes
MRCVS#1	3.15	3.00	105%	90% - 110%	Yes
MRCVS#2	3.18	3.00	106%	90% - 110%	Yes
MRCVS#3	3.16	3.00	105%	90% - 110%	Yes
LCS	4.12	4.00	103%	90% - 110%	Yes

ND: Below the reporting limit (Not Detected).
DF: Dilution Factor.

Respectfully submitted,
TRUESDAIL LABORATORIES, INC.

for Mona Nassimi, Manager
Analytical Services

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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.: 456827.01.DM
P.O. No.: 456827.01.DM

Laboratory No.: 804100
Date: November 5, 2012
Collected: October 2, 2012
Received: October 2, 2012
Prep/ Analyzed: October 3, 2012
Analytical Batch: 10AN12D

Investigation: **Nitrate as N by Ion Chromatography using EPA 300.0**

Analytical Results Nitrate as N

TLI I.D.	Field I.D.	Sample Time	Run Time	Units	DF	RL	Results
804100	SC-Sludge-WDR-381	10:10	15:19	mg/kg	1.00	3.46	14.1

QA/QC Summary

QC STD I.D.	Laboratory Number	Concentration	Duplicate Concentration	Relative Percent Difference	Acceptance limits	QC Within Control
Duplicate	804102-2	3.16	3.09	2.08%	≤ 20%	Yes

QC Std I.D.	Lab Number	Conc.of unspiked sample	Dilution Factor	Added Spike Conc.	MS Amount	Measured Conc. of spiked sample	Theoretical Conc. of spiked sample	MS% Recovery	Acceptance limits	QC Within Control
MS	804102-2	3.16	5.00	4.00	20.0	23.6	23.2	102%	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	4.10	4.00	102%	90% - 110%	Yes
MRCVS#1	2.98	3.00	99.3%	90% - 110%	Yes
MRCVS#2	2.99	3.00	99.8%	90% - 110%	Yes
MRCVS#3	2.98	3.00	99.4%	90% - 110%	Yes
MRCVS#4	2.98	3.00	99.3%	90% - 110%	Yes
LCS	4.01	4.00	100%	90% - 110%	Yes

ND: Below the reporting limit (Not Detected).
DF: Dilution Factor.

Respectfully submitted,
TRUESDAIL LABORATORIES, INC.

for Mona Nassimi, Manager
Analytical Services

TRUESDAIL LABORATORIES, INC.

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REPORT

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

Attention: Shawn Duffy

Samples: One (1) Soil Sample
Project Name: PG&E Topock Project
Project No.: 456827.01.DM
P.O. No.: 456827.01.DM
Investigation: Total Metal Analyses as Requested

Laboratory No.: 804100
Reported: November 5, 2012
Collected: October 2, 2012
Received: October 2, 2012
Analyzed: See Below

Analytical Results

SAMPLE ID: SC-Sludge-WDR-381 **Time Collected:** 10:10 **LAB ID:** 804100

Parameter	Method	Reported Value	DF	Units	RL	Batch	Date Analyzed	Time Analyzed
Antimony	SW 6010B	32.8	5.00	mg/kg	5.00	101712B-Th2	10/17/12	17:52
Arsenic	SW 6010B	ND	5.00	mg/kg	5.00	101712B-Th2	10/17/12	17:52
Barium	SW 6010B	39.7	10.0	mg/kg	10.0	101612B-Th2	10/16/12	18:49
Beryllium	SW 6010B	ND	2.00	mg/kg	1.71	103012A-Th2	10/30/12	12:06
Cadmium	SW 6010B	4.54	2.00	mg/kg	1.71	103012A	10/30/12	15:04
Chromium	SW 6010B	2370	10.0	mg/kg	8.53	101612B-Th2	10/16/12	18:49
Cobalt	SW 6010B	ND	10.0	mg/kg	10.0	101612B-Th2	10/16/12	18:49
Copper	SW 6010B	14.2	2.00	mg/kg	5.00	103012A	10/30/12	15:04
Lead	SW 6010B	ND	2.00	mg/kg	5.00	103012A-Th2	10/30/12	12:06
Manganese	SW 6010B	265	10.0	mg/kg	8.53	101612B-Th2	10/16/12	18:49
Mercury	SW 6020A	ND	5.00	mg/kg	0.100	102912A	10/29/12	14:31
Molybdenum	SW 6010B	ND	10.0	mg/kg	10.0	101612B-Th2	10/16/12	18:49
Nickel	SW 6010B	23.2	5.00	mg/kg	5.00	101712B-Th2	10/17/12	17:52
Selenium	SW 6010B	ND	5.00	mg/kg	5.00	101712B-Th2	10/17/12	17:52
Silver	SW 6010B	ND	2.00	mg/kg	5.00	103012A	10/30/12	15:04
Thallium	SW 6010B	ND	2.00	mg/kg	5.00	103012A	10/30/12	15:04
Vanadium	SW 6010B	28.7	10.0	mg/kg	8.53	101612B-Th2	10/16/12	18:49
Zinc	SW 6010B	29.1	5.00	mg/kg	10.0	101712B-Th2	10/17/12	17:52

NOTES:

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

ND: Not detected,or below limit of detection.

DF: Dilution factor.

Respectfully submitted,
TRUESDAIL LABORATORIES, INC.

for Sean Carl
Mona Nassimi, Manager
Analytical Services

TRUESDAIL LABORATORIES, INC.
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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.: 456827.01.DM
P.O. No.: 456827.01.DM

Laboratory No.: 804100
Reported: November 5, 2012
Collected: October 2, 2012
Received: October 2, 2012

Quality Control/Quality Assurance Report

				DIGESTED BLANK		MRCCS				MRCVS			
Parameter	Method	Batch	Units	Blank	RL	Observed Value	TRUE Value	% Rec	Control Limits	Observed Value	TRUE Value	% Rec	Control Limits %
Antimony	SW 6010B	101712B-Th2	mg/kg	ND	5.00	4.94	5.00	98.8%	90-110%	4.57	5.00	91.5%	90-110%
Arsenic	SW 6010B	101712B-Th2	mg/kg	ND	5.00	4.93	5.00	98.5%	90-110%	4.50	5.00	90.0%	90-110%
Barium	SW 6010B	101612B-Th2	mg/kg	ND	10.0	4.88	5.00	97.7%	90-110%	4.91	5.00	98.2%	90-110%
Beryllium	SW 6010B	103012A-Th2	mg/kg	ND	1.00	4.82	5.00	96.4%	90-110%	4.69	5.00	93.8%	90-110%
Cadmium	SW 6010B	103012A	mg/kg	ND	1.00	4.67	5.00	93.4%	90-110%	4.95	5.00	99.0%	90-110%
Chromium	SW 6010B	101612B-Th2	mg/kg	ND	5.00	5.13	5.00	103%	90-110%	4.89	5.00	97.7%	90-110%
Cobalt	SW 6010B	101612B-Th2	mg/kg	ND	10.0	5.05	5.00	101%	90-110%	4.76	5.00	95.2%	90-110%
Copper	SW 6010B	103012A	mg/kg	ND	5.00	4.75	5.00	94.9%	90-110%	4.75	5.00	95.1%	90-110%
Lead	SW 6010B	103012A-Th2	mg/kg	ND	5.00	4.99	5.00	99.7%	90-110%	4.92	5.00	98.4%	90-110%
Manganese	SW 6010B	101612B-Th2	mg/kg	ND	1.00	5.10	5.00	102%	90-110%	5.06	5.00	101%	90-110%
Mercury	SW 6020A	102912A	mg/kg	ND	0.100	0.00192	0.00200	96.2%	90-110%	0.00186	0.00200	93.2%	90-110%
Molybdenum	SW 6010B	101612B-Th2	mg/kg	ND	10.0	4.98	5.00	99.6%	90-110%	4.56	5.00	91.2%	90-110%
Nickel	SW 6010B	101712B-Th2	mg/kg	ND	5.00	5.05	5.00	101%	90-110%	4.70	5.00	94.0%	90-110%
Selenium	SW 6010B	101712B-Th2	mg/kg	ND	5.00	5.00	5.00	99.9%	90-110%	4.62	5.00	92.4%	90-110%
Silver	SW 6010B	103012A	mg/kg	ND	5.00	4.81	5.00	96.1%	90-110%	4.73	5.00	94.7%	90-110%
Thallium	SW 6010B	103012A	mg/kg	ND	5.00	4.86	5.00	97.2%	90-110%	5.12	5.00	102%	90-110%
Vanadium	SW 6010B	101612B-Th2	mg/kg	ND	5.00	5.05	5.00	101%	90-110%	4.80	5.00	96.0%	90-110%
Zinc	SW 6010B	101712B-Th2	mg/kg	ND	10.0	5.13	5.00	103%	90-110%	4.92	5.00	98.3%	90-110%

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

Parameter	Method	Units	ICS Obs.	ICS Theo.	% Rec.	Control Limits	ICS Obs.	ICS Theo.	% Rec.	Control Limits
Arsenic	SW 6010B	mg/kg	1.82	2.00	91.2%	80-120%	1.78	2.00	88.9%	80-120%
Cadmium	SW 6010B	mg/kg	1.97	2.00	98.6%	80-120%	2.05	2.00	103%	80-120%
Chromium	SW 6010B	mg/kg	2.02	2.00	101%	80-120%	1.96	2.00	98.2%	80-120%
Cobalt	SW 6010B	mg/kg	2.01	2.00	100%	80-120%	1.93	2.00	96.5%	80-120%
Copper	SW 6010B	mg/kg	1.97	2.00	98.7%	80-120%	1.98	2.00	99.0%	80-120%
Manganese	SW 6010B	mg/kg	2.02	2.00	101%	80-120%	2.04	2.00	102%	80-120%
Mercury	SW 6020A	mg/kg	0.00189	0.00200	94.5%	80-120%	0.00175	0.00200	87.7%	80-120%
Nickel	SW 6010B	mg/kg	1.93	2.00	96.6%	80-120%	1.91	2.00	95.6%	80-120%
Silver	SW 6010B	mg/kg	1.85	2.00	92.7%	80-120%	1.95	2.00	97.6%	80-120%
Zinc	SW 6010B	mg/kg	1.97	2.00	98.3%	80-120%	2.01	2.00	101%	80-120%

LABORATORY CONTROL SAMPLES **SAMPLE DUPLICATES**

Parameter	Method	Units	LCS Obs.	LCS Theo.	% Rec.	Control Limits	SAMPLE ID	SAMPLE RESULT	DUP RESULT	% RPD	Precision Control Limits %
Antimony	SW 6010B	mg/kg	1.95	2.00	97.3%	85-115%	804100	32.8	28.4	14.3%	≤20
Arsenic	SW 6010B	mg/kg	1.92	2.00	96.2%	85-115%	804100	ND	ND	0.00%	≤20
Barium	SW 6010B	mg/kg	1.82	2.00	90.9%	85-115%	804100	39.7	37.7	5.01%	≤20
Beryllium	SW 6010B	mg/kg	2.00	2.00	100%	85-115%	804100	ND	ND	0.00%	≤20
Cadmium	SW 6010B	mg/kg	1.98	2.00	98.9%	85-115%	804100	4.54	4.61	1.70%	≤20
Chromium	SW 6010B	mg/kg	1.91	2.00	95.7%	85-115%	804100	2370	2290	3.43%	≤20
Cobalt	SW 6010B	mg/kg	1.88	2.00	94.2%	85-115%	804100	ND	ND	0.00%	≤20
Copper	SW 6010B	mg/kg	1.97	2.00	98.7%	85-115%	804100	14.2	14.1	0.72%	≤20
Lead	SW 6010B	mg/kg	2.01	2.00	100%	85-115%	804100	ND	ND	0.00%	≤20
Manganese	SW 6010B	mg/kg	1.99	2.00	99.7%	85-115%	804100	265	251	5.64%	≤20
Mercury	SW 6020A	mg/kg	0.0958	0.100	95.8%	85-115%	804100	ND	ND	0.00%	≤20
Molybdenum	SW 6010B	mg/kg	1.77	2.00	88.6%	85-115%	804100	ND	ND	0.00%	≤20
Nickel	SW 6010B	mg/kg	2.05	2.00	102%	85-115%	804100	23.2	22.4	3.57%	≤20
Selenium	SW 6010B	mg/kg	1.96	2.00	98.1%	85-115%	804100	ND	ND	0.00%	≤20
Silver	SW 6010B	mg/kg	1.96	2.00	97.9%	85-115%	804100	ND	ND	0.00%	≤20
Thallium	SW 6010B	mg/kg	2.09	2.00	105%	85-115%	804100	ND	ND	0.00%	≤20
Vanadium	SW 6010B	mg/kg	1.88	2.00	93.9%	85-115%	804100	28.7	28.1	2.32%	≤20
Zinc	SW 6010B	mg/kg	2.09	2.00	105%	85-115%	804100	29.1	28.9	0.72%	≤20

MATRIX SPIKE

Sample ID	Parameter	Method	Units	Sample Result	DF	Spike Level	Total Amt. of Spike	Theo. Value	MS Obs.	% Rec.	Accuracy Control Limits %
804100	Antimony	SW 6010B	mg/kg	32.8	5.00	171	853	886	810	91.2%	75-125%
804100	Arsenic	SW 6010B	mg/kg	0.00	5.00	171	853	853	794	93.1%	75-125%
804100	Barium	SW 6010B	mg/kg	39.7	10.0	171	1706	1745	1790	103%	75-125%
804100	Beryllium	SW 6010B	mg/kg	0.00	2.00	86.5	173	173	197	114%	75-125%
804100	Cadmium	SW 6010B	mg/kg	4.54	2.00	86.5	173	178	167	93.8%	75-125%
804100	Chromium	SW 6010B	mg/kg	2370	10.0	171	1706	4076	3890	89.1%	75-125%
804100	Cobalt	SW 6010B	mg/kg	0.00	10.0	171	1706	1706	1600	93.8%	75-125%
804100	Copper	SW 6010B	mg/kg	14.2	2.00	87	173	187	177	93.8%	75-125%
804100	Lead	SW 6010B	mg/kg	0.00	2.00	86.5	173	173	136	78.7%	75-125%
804100	Manganese	SW 6010B	mg/kg	265	10.0	171	1706	1971	1900	95.8%	75-125%
804100	Mercury	SW 6020A	mg/kg	0.00	5.00	0.213	1.07	1.07	0.934	87.6%	75-125%
804100	Molybdenum	SW 6010B	mg/kg	0.00	10.0	171	1706	1706	1620	95.0%	75-125%
804100	Nickel	SW 6010B	mg/kg	23.2	5.00	171	853	876	797	90.7%	75-125%
804100	Selenium	SW 6010B	mg/kg	0.00	5.00	171	853	853	764	89.6%	75-125%
804100	Silver	SW 6010B	mg/kg	0.00	2.00	86.5	173	173	150	86.6%	75-125%
804100	Thallium	SW 6010B	mg/kg	0.00	2.00	86.5	173	173	141	81.3%	75-125%
804100	Vanadium	SW 6010B	mg/kg	28.7	10.0	171	1706	1734	1600	92.1%	75-125%
804100	Zinc	SW 6010B	mg/kg	29.1	5.00	171	853	882	865	98.0%	75-125%

ND: Not detected, or below limit of detection.
DF: Dilution Factor

Respectfully submitted,
TRUESDAIL LABORATORIES, INC.

for Sean Carl
Mona Nassimi, Manager
Analytical Services

020

TRUESDAIL LABORATORIES, INC.

EXCELLENCE IN INDEPENDENT TESTING

Established 1931

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

Dry Weight Calculations

Date Calculated: 11/5/2012

	Sample Result Wet Weight mg/kg	Dilution Factor	% Moisture %	Sample Result Dry* Weight mg/kg	Reported Value mg/kg	Reporting Limit Wet Weight mg/kg	Reporting Limit Dry Weight mg/kg
Fluoride	11.909	---	42.3	20.6284	20.6	2.00	3.46
Nitrate as N	8.144	---	42.3	14.1068	14.1	2.00	3.46
Hexavalent Chromium	12.0040	---	42.3	20.7930	20.8	4.0000	6.93
Hexavalent Chromium - Dup	12.1931	---	42.3	21.1205	21.1	4.0000	6.93
Hexavalent Chromium - MS	181.5656	---	42.3	314.503	314	10.1215	17.5
Hexavalent Chromium - IMS	1108.959	---	42.3	1920.907	1920	39.6825	68.7
Hexavalent Chromium - PDMS	112.3175	---	42.3	194.553	194	10.0806	17.5
Antimony	18.97	5.00	42.3	32.8593	32.8	2.4616	5.00
Arsenic	ND	5.00	42.3	ND	ND	2.4616	5.00
Barium	22.91	10.0	42.3	39.68405	39.7	4.9232	10.0
Beryllium	0.4927	2.00	42.3	0.8534	ND	0.9846	1.71
Cadmium	2.619	2.00	42.3	4.5366	4.54	0.9846	1.71
Chromium	1369	10.0	42.3	2371.3430	2370	4.9232	8.53
Cobalt	1.479	10.0	42.3	2.5619	ND	4.9232	10.0
Copper	8.192	2.00	42.3	14.1899	14.2	0.9846	5.00
Lead	1.202	2.00	42.3	2.0821	ND	0.9846	5.00
Manganese	153.2	10.0	42.3	265.3687	265	4.9232	8.53
Mercury	0.03794	5.00	42.3	0.06572	ND	0.0492	0.100
Molybdenum	2.593	10.0	42.3	4.4915	ND	4.9232	10.0
Nickel	13.41	5.00	42.3	23.2284	23.2	2.4616	5.00
Selenium	ND	5.00	42.3	ND	ND	2.4616	5.00
Silver	ND	2.00	42.3	ND	ND	0.9846	5.00
Thallium	ND	2.00	42.3	ND	ND	0.9846	5.00
Vanadium	16.58	10.0	42.3	28.7194	28.7	4.9232	8.53
Zinc	16.80	5.00	42.3	29.1005	29.1	2.4616	10.0

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

where:
$Sample_{ww}$ = Sample result in wet weight

E2

TRUESDAIL LABORATORIES, INC.

SC

TOTAL SOLIDS BY SM 2540 B

Date of Analysis: 10/04/12

Analytical Batch: 10SOLID12A

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
804100	1	1.3195	2.0301	3.3496	2.4915	1.1720	57.731	42.269
804100D	2	1.3281	2.017	3.3451	2.5146	1.1865	58.825	41.175

Relative Percent Difference			
Sample ID	Sample	Sample Dup	RPD
80411	42.269	41.175	2.6

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

Where:

A = Weight of dried Residue + Dish, g

B = Weight of dish, g

C = Weight of wet sample + Dish, g

G. Savani
Analyst Name

Analyst Signature

Reviewer 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-381] 804100

TURNAROUND TIME 10 Days
DATE 10/02/12 PAGE 1 OF 1

COMPANY CH2M HILL / E2
PROJECT NAME PG&E Topock IM3
PHONE 530-229-3303 FAX 530-339-3303
ADDRESS 155 Grand Ave Ste 1000
Oakland, CA 94612
P.O. NUMBER 424973.01.DM
SAMPLERS (SIGNATURE C. Knight

SAMPLE I.D.	DATE	TIME	DESCRIPTION	Anions (300.0) F, NO3	Bioassay 96hr Acute	Metals (6010B) Title 22, (includes Mercury)	Cr6 (7199)	Metals (6010B) Mn	NUMBER OF CONTAINERS	COMMENTS
SC-Sludge-WDR-381	10/02/12	10:10	Sludge	X		X	X	X	4	
									4	TOTAL NUMBER OF CONTAINERS

ALERT !!
Level III QC

For Sample Conditions
See Form Attached

CHAIN OF CUSTODY SIGNATURE RECORD

	Signature	Printed Name	Company/ Agency	Date/ Time
Relinquished	C. Knight	C. Knight	CH2M Hill	10.2.12 14:41
Received	Rafael Davila	Rafael	T.L.I	10-2-12 15:30
Relinquished	Rafael Davila	Rafael	T.L.I	10-2-12 22:00
Received	Shakeemine	Lucia	TLI	10/2/12 22:00
Relinquished				
Received				

SAMPLE CONDITIONS
RECEIVED COOL ☑ WARM ☐ 4.8 °C
CUSTODY SEALED YES ☐ NO ☐

SPECIAL REQUIREMENTS:

055

TRUESDAIL LABORATORIES, INC.

Sample Integrity & Analysis Discrepancy Form

Client: E2 **Lab #** 804100

Date Delivered: 10 / 02 / 12 **Time:** 22:00 **By:** ☐Mail ☒Field Service ☐Client

1.	Was a Chain of Custody received and signed?	☒Yes	☐No	☐N/A
2.	Does Customer require an acknowledgement of the COC?	☐Yes	☐No	☑N/A
3.	Are there any special requirements or notes on the COC?	☐Yes	☐No	☑N/A
4.	If a letter was sent with the COC, does it match the COC?	☐Yes	☐No	☑N/A
5.	Were all requested analyses understood and acceptable?	☑Yes	☐No	☐N/A
6.	Were samples received in a chilled condition? Temperature (if yes)? 4.8 °C	☑Yes	☐No	☐N/A
7.	Were samples received intact (i.e. broken bottles, leaks, air bubbles, etc..)?	☑Yes	☐No	☐N/A
8.	Were sample custody seals intact?	☐Yes	☐No	☑N/A
9.	Does the number of samples received agree with COC?	☑Yes	☐No	☐N/A
10.	Did sample labels correspond with the client ID's?	☑Yes	☐No	☐N/A
11.	Did sample labels indicate proper preservation? Preserved (if yes) by: ☐Truesdail ☐Client	☐Yes	☐No	☑N/A
12.	Were samples pH checked? pH = _____	☐Yes	☐No	☑N/A
13.	Were all analyses within holding time at time of receipt? If not, notify Project Manager.	☑Yes	☐No	☐N/A
14.	Have Project due dates been checked and accepted? Turn Around Time (TAT): ☐ RUSH ☑ Std	☑Yes	☐No	☐N/A

15. **Sample Matrix:** ☐Liquid ☐Drinking Water ☐Ground Water ☐Waste Water ☒Sludge ☐Soil ☐Wipe ☐Paint ☐Solid ☐Other_____

16. Comments: _____

17. Sample Check-In completed by **Truesdail** Log-In/Receiving: L. Shabunina

ALERT !!
Level III QC

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November 6, 2012

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-381 PROJECT, GROUNDWATER MONITORING,

TLI NO.: 804102

Truesdail Laboratories, Inc. is pleased to submit this report summarizing the Topock IM3Plant-WDR-381 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 2, 2012, 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 method blank internal standards Germanium #2 and #3 for Total Metals by EPA 200.8 analyzed in batch 101512A just exceeded the recovery limits of 70% - 130%. The method blank was also analyzed in batches 100512A and 100812C and the internal standard recovery was within the acceptance range. All other QA/QC was within acceptable limits, therefore, the data was accepted.

The matrix spike recovery for Total Arsenic by EPA 200.8 was outside the acceptance limits, therefore a post-spike was analyzed and the recovery was within acceptable limits. All other QA/QC were within acceptable limits (batch 102612A).

The matrix spike for Total Boron by EPA 200.7 was spiked too low for the sample concentration, therefore a post-spike was analyzed and all QA/QC were within acceptable limits (batch 100912A-Th2).

Due to matrix interference, the sample for Total Arsenic by EPA 200.8 was analyzed at a dilution of 5x and reported as non-detect with a report limit that exceeded the contract required detection limit. Mr. Duffy was notified.

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

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

Respectfully Submitted,
TRUESDAIL LABORATORIES, INC.

for Mona Nassimi
Manager, Analytical Services

Michael Ngo
Quality Assurance/Quality Control Officer

TRUESDAIL LABORATORIES, INC.
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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.: 424973.01.DM

Laboratory No.: 804102
Date: November 6, 2012
Collected: October 2, 2012
Received: October 2, 2012

ANALYST LIST

METHOD	PARAMETER	ANALYST
EPA 120.1	Specific Conductivity	Gautam Savani
SM 2540C	Total Dissolved Solids	Jenny Tankunakorn
SM 2130B	Turbidity	Gautam Savani
EPA 300.0	Anions	Giawad Ghenniwa
SM 4500-NH3 D	Ammonia	Maksin 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	Katia Kiarashpoor / Bita Emami
EPA 218.6	Hexavalent Chromium	Himani Vaishnav

TRUESDAIL LABORATORIES, INC.
INDEPENDENT TESTING, FORENSIC SCIENCE, AND ENVIRONMENTAL ANALYSES

Established 1931

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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.: 424973.01.DM
P.O. No.: 424973.01.DM

Laboratory No.: 804102
Date Received: October 2, 2012

Analytical Results Summary

Lab Sample ID	Field ID	Analysis Method	Extraction Method	Sample Date	Sample Time	Parameter	Result	Units	RL
804102-001	SC-700B-WDR-381	E120.1	NONE	10/2/2012	13:52	EC	7230	umhos/cm	2.0
804102-001	SC-700B-WDR-381	E200.7	NONE	10/2/2012	13:52	Aluminum	ND	ug/L	10.0
804102-001	SC-700B-WDR-381	E200.7	NONE	10/2/2012	13:52	BORON	926	ug/L	200
804102-001	SC-700B-WDR-381	E200.7	NONE	10/2/2012	13:52	Iron	ND	ug/L	20.0
804102-001	SC-700B-WDR-381	E200.7	NONE	10/2/2012	13:52	Zinc	ND	ug/L	10.0
804102-001	SC-700B-WDR-381	E200.8	NONE	10/2/2012	13:52	Antimony	ND	ug/L	2.0
804102-001	SC-700B-WDR-381	E200.8	NONE	10/2/2012	13:52	Arsenic	ND	ug/L	1.0
804102-001	SC-700B-WDR-381	E200.8	NONE	10/2/2012	13:52	Barium	12.3	ug/L	5.0
804102-001	SC-700B-WDR-381	E200.8	NONE	10/2/2012	13:52	Chromium	ND	ug/L	1.0
804102-001	SC-700B-WDR-381	E200.8	NONE	10/2/2012	13:52	Copper	ND	ug/L	5.0
804102-001	SC-700B-WDR-381	E200.8	NONE	10/2/2012	13:52	Lead	ND	ug/L	1.0
804102-001	SC-700B-WDR-381	E200.8	NONE	10/2/2012	13:52	Manganese	1.0	ug/L	1.0
804102-001	SC-700B-WDR-381	E200.8	NONE	10/2/2012	13:52	Molybdenum	20.4	ug/L	5.0
804102-001	SC-700B-WDR-381	E200.8	NONE	10/2/2012	13:52	Nickel	ND	ug/L	2.0
804102-001	SC-700B-WDR-381	E218.6	LABFLT	10/2/2012	13:52	Chromium, Hexavalent	0.21	ug/L	0.20
804102-001	SC-700B-WDR-381	E300	NONE	10/2/2012	13:52	Fluoride	2.10	mg/L	0.500
804102-001	SC-700B-WDR-381	E300	NONE	10/2/2012	13:52	Nitrate as N	3.00	mg/L	0.500
804102-001	SC-700B-WDR-381	E300	NONE	10/2/2012	13:52	Sulfate	497	mg/L	50.0
804102-001	SC-700B-WDR-381	SM2130B	NONE	10/2/2012	13:52	Turbidity	ND	NTU	0.100
804102-001	SC-700B-WDR-381	SM2540C	NONE	10/2/2012	13:52	Total Dissolved Solids	4350	mg/L	250
804102-001	SC-700B-WDR-381	SM4500NH3D	NONE	10/2/2012	13:52	Ammonia-N	ND	mg/L	0.500
804102-001	SC-700B-WDR-381	SM4500NO2B	NONE	10/2/2012	13:52	Nitrite as N	ND	mg/L	0.0050

900

Lab Sample ID	Field ID	Analysis Method	Extraction Method	Sample Date	Sample Time	Parameter	Result	Units	RL
804102-002	SC-100B-WDR-381	E120.1	NONE	10/2/2012	13:36	EC	7520	umhos/cm	2.00
804102-002	SC-100B-WDR-381	E200.7	NONE	10/2/2012	13:36	Aluminum	ND	ug/L	10.0
804102-002	SC-100B-WDR-381	E200.7	NONE	10/2/2012	13:36	BORON	977	ug/L	200
804102-002	SC-100B-WDR-381	E200.7	NONE	10/2/2012	13:36	Iron	ND	ug/L	20.0
804102-002	SC-100B-WDR-381	E200.7	NONE	10/2/2012	13:36	Zinc	ND	ug/L	10.0
804102-002	SC-100B-WDR-381	E200.8	NONE	10/2/2012	13:36	Antimony	ND	ug/L	2.0
804102-002	SC-100B-WDR-381	E200.8	NONE	10/2/2012	13:36	Arsenic	3.3	ug/L	1.0
804102-002	SC-100B-WDR-381	E200.8	NONE	10/2/2012	13:36	Barium	24.9	ug/L	5.0
804102-002	SC-100B-WDR-381	E200.8	NONE	10/2/2012	13:36	Chromium	735	ug/L	2.0
804102-002	SC-100B-WDR-381	E200.8	NONE	10/2/2012	13:36	Copper	ND	ug/L	5.0
804102-002	SC-100B-WDR-381	E200.8	NONE	10/2/2012	13:36	Lead	ND	ug/L	1.0
804102-002	SC-100B-WDR-381	E200.8	NONE	10/2/2012	13:36	Manganese	3.9	ug/L	1.0
804102-002	SC-100B-WDR-381	E200.8	NONE	10/2/2012	13:36	Molybdenum	22.2	ug/L	5.0
804102-002	SC-100B-WDR-381	E200.8	NONE	10/2/2012	13:36	Nickel	ND	ug/L	2.0
804102-002	SC-100B-WDR-381	E218.6	LABFLT	10/2/2012	13:36	Chromium, Hexavalent	791	ug/L	10.0
804102-002	SC-100B-WDR-381	E300	NONE	10/2/2012	13:36	Fluoride	2.60	mg/L	0.500
804102-002	SC-100B-WDR-381	E300	NONE	10/2/2012	13:36	Nitrate as N	3.16	mg/L	0.500
804102-002	SC-100B-WDR-381	E300	NONE	10/2/2012	13:36	Sulfate	520	mg/L	25.0
804102-002	SC-100B-WDR-381	SM2130B	NONE	10/2/2012	13:36	Turbidity	0.106	NTU	0.100
804102-002	SC-100B-WDR-381	SM2540C	NONE	10/2/2012	13:36	Total Dissolved Solids	4620	mg/L	250
804102-002	SC-100B-WDR-381	SM4500NH3D	NONE	10/2/2012	13:36	Ammonia-N	ND	mg/L	0.500
804102-002	SC-100B-WDR-381	SM4500NO2B	NONE	10/2/2012	13:36	Nitrite as N	ND	mg/L	0.0050
804102-003	SC-701-WDR-381	E120.1	NONE	10/2/2012	13:19	EC	43500	umhos/cm	2.00

Lab Sample ID	Field ID	Analysis Method	Extraction Method	Sample Date	Sample Time	Parameter	Result	Units	RL
804102-003	SC-701-WDR-381	E200.7	NONE	10/2/2012	13:19	Zinc	ND	ug/L	10.0
804102-003	SC-701-WDR-381	E200.8	NONE	10/2/2012	13:19	Antimony	ND	ug/L	2.0
804102-003	SC-701-WDR-381	E200.8	NONE	10/2/2012	13:19	Arsenic	1.1	ug/L	1.0
804102-003	SC-701-WDR-381	E200.8	NONE	10/2/2012	13:19	Barium	82.8	ug/L	5.0
804102-003	SC-701-WDR-381	E200.8	NONE	10/2/2012	13:19	Beryllium	ND	ug/L	0.50
804102-003	SC-701-WDR-381	E200.8	NONE	10/2/2012	13:19	Cadmium	ND	ug/L	1.0
804102-003	SC-701-WDR-381	E200.8	NONE	10/2/2012	13:19	Chromium	7.9	ug/L	1.0
804102-003	SC-701-WDR-381	E200.8	NONE	10/2/2012	13:19	Cobalt	ND	ug/L	5.0
804102-003	SC-701-WDR-381	E200.8	NONE	10/2/2012	13:19	Copper	ND	ug/L	5.0
804102-003	SC-701-WDR-381	E200.8	NONE	10/2/2012	13:19	Lead	ND	ug/L	1.0
804102-003	SC-701-WDR-381	E200.8	NONE	10/2/2012	13:19	Manganese	10.7	ug/L	1.0
804102-003	SC-701-WDR-381	E200.8	NONE	10/2/2012	13:19	Mercury	ND	ug/L	1.0
804102-003	SC-701-WDR-381	E200.8	NONE	10/2/2012	13:19	Molybdenum	144	ug/L	2.0
804102-003	SC-701-WDR-381	E200.8	NONE	10/2/2012	13:19	Nickel	8.2	ug/L	2.0
804102-003	SC-701-WDR-381	E200.8	NONE	10/2/2012	13:19	Selenium	22.3	ug/L	5.0
804102-003	SC-701-WDR-381	E200.8	NONE	10/2/2012	13:19	Silver	ND	ug/L	5.0
804102-003	SC-701-WDR-381	E200.8	NONE	10/2/2012	13:19	Thallium	ND	ug/L	1.0
804102-003	SC-701-WDR-381	E200.8	NONE	10/2/2012	13:19	Vanadium	ND	ug/L	5.0
804102-003	SC-701-WDR-381	E218.6	LABFLT	10/2/2012	13:19	Chromium, Hexavalent	ND	ug/L	2.0
804102-003	SC-701-WDR-381	E300	NONE	10/2/2012	13:19	Fluoride	15.4	mg/L	0.500
804102-003	SC-701-WDR-381	SM2540C	NONE	10/2/2012	13:19	Total Dissolved Solids	32000	mg/L	1250

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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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: 456827.01.DM
P.O. Number: 456827.01.DM
Release Number:

Laboratory No. 804102

Printed 11/7/2012

Samples Received on 10/2/2012 10:00:00 PM

Field ID	Lab ID	Collected	Matrix
SC-700B-WDR-381	804102-001	10/02/2012 13:52	Water
SC-100B-WDR-381	804102-002	10/02/2012 13:36	Water
SC-701-WDR-381	804102-003	10/02/2012 13:19	Water

Anions By I.C. - EPA 300.0 Batch 10AN12D

Parameter	Unit	Analyzed	DF	MDL	RL	Result
804102-001 Fluoride	mg/L	10/03/2012 10:44	5.00	0.104	0.500	2.10
Nitrate as Nitrogen	mg/L	10/03/2012 10:44	5.00	0.0415	0.500	3.00
Sulfate	mg/L	10/03/2012 10:41	100	3.07	50.0	497
804102-002 Fluoride	mg/L	10/03/2012 10:56	5.00	0.104	0.500	2.60
Nitrate as Nitrogen	mg/L	10/03/2012 10:56	5.00	0.0415	0.500	3.16
Sulfate	mg/L	10/03/2012 13:59	50.0	1.54	25.0	520
804102-003 Fluoride	mg/L	10/03/2012 11:07	5.00	0.104	0.500	15.4

Method Blank

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

Duplicate — Lab ID = 804102-001

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Sulfate	mg/L	100	494	497	0.688	0 - 20

Duplicate — Lab ID = 804102-002

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Fluoride	mg/L	5.00	2.67	2.60	2.62	0 - 20
Nitrate as Nitrogen	mg/L	5.00	3.09	3.16	2.18	0 - 20

Lab Control Sample

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Fluoride	mg/L	1.00	4.12	4.00	103	90 - 110
Sulfate	mg/L	1.00	20.1	20.0	100	90 - 110
Nitrate as Nitrogen	mg/L	1.00	4.01	4.00	100	90 - 110

Matrix Spike — Lab ID = 804102-001

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Sulfate	mg/L	100	1530	1500(1000)	103	85 - 115

Matrix Spike — Lab ID = 804102-002

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Fluoride	mg/L	5.00	23.1	22.6(20.0)	102	85 - 115
Nitrate as Nitrogen	mg/L	5.00	23.6	23.2(20.0)	102	85 - 115

MRCCS - Secondary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Fluoride	mg/L	1.00	4.12	4.00	103	90 - 110
Sulfate	mg/L	1.00	20.1	20.0	100	90 - 110
Nitrate as Nitrogen	mg/L	1.00	4.01	4.00	100	90 - 110

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Fluoride	mg/L	1.00	3.18	3.00	106	90 - 110

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Fluoride	mg/L	1.00	3.15	3.00	105	90 - 110

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Fluoride	mg/L	1.00	3.16	3.00	105	90 - 110

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Sulfate	mg/L	1.00	14.9	15.0	99.7	90 - 110

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Sulfate	mg/L	1.00	15.0	15.0	100.	90 - 110
Nitrate as Nitrogen	mg/L	1.00	2.98	3.00	99.4	90 - 110

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Nitrate as Nitrogen	mg/L	1.00	2.98	3.00	99.3	90 - 110

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Nitrate as Nitrogen	mg/L	1.00	2.98	3.00	99.3	90 - 110

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Nitrate as Nitrogen	mg/L	1.00	2.99	3.00	99.8	90 - 110

Nitrite SM 4500-NO2 B Batch 10NO212C

Parameter	Unit	Analyzed	DF	MDL	RL	Result
804102-001 Nitrite as Nitrogen	mg/L	10/03/2012 12:36	1.00	0.000540	0.0050	ND
804102-002 Nitrite as Nitrogen	mg/L	10/03/2012 12:37	1.00	0.000540	0.0050	ND

Method Blank

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

Duplicate — Lab ID = 804102-002

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

Lab Control Sample

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Nitrite as Nitrogen	mg/L	1.00	0.0282	0.0308	91.6	90 - 110

Matrix Spike — Lab ID = 804102-001

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Nitrite as Nitrogen	mg/L	1.00	0.0183	0.0200(0.0200)	91.5	85 - 115

MRCCS - Secondary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Nitrite as Nitrogen	mg/L	1.00	0.0282	0.0308	91.6	90 - 110

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Nitrite as Nitrogen	mg/L	1.00	0.0187	0.0200	93.5	90 - 110

Specific Conductivity - EPA 120.1

Batch 10EC12A

Parameter	Unit	Analyzed	DF	MDL	RL	Result
804102-001 Specific Conductivity	umhos/cm	10/05/2012	1.00	0.116	2.00	7230
804102-002 Specific Conductivity	umhos/cm	10/05/2012	1.00	0.116	2.00	7520
804102-003 Specific Conductivity	umhos/cm	10/05/2012	1.00	0.116	2.00	43500

Method Blank

Parameter	Unit	DF	Result
Specific Conductivity	umhos	1.00	ND

Duplicate

Lab ID = 804102-003

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Specific Conductivity	umhos	1.00	43400	43500	0.230	0 - 10

Lab Control Sample

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Specific Conductivity	umhos	1.00	702	706	99.4	90 - 110

Lab Control Sample Duplicate

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Specific Conductivity	umhos	1.00	708	706	100	90 - 110

MRCCS - Secondary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Specific Conductivity	umhos	1.00	693	706	98.2	90 - 110

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Specific Conductivity	umhos	1.00	970	998	97.2	90 - 110

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Specific Conductivity	umhos	1.00	975	998	97.7	90 - 110

Chrome VI by EPA 218.6 Batch 10CrH12C

Parameter	Unit	Analyzed	DF	MDL	RL	Result
804102-001 Chromium, Hexavalent	ug/L	10/08/2012 11:19	1.00	0.00920	0.20	0.21
804102-002 Chromium, Hexavalent	ug/L	10/08/2012 11:29	50.0	0.460	10.0	791
804102-003 Chromium, Hexavalent	ug/L	10/08/2012 13:03	10.0	0.0920	2.0	ND

Method Blank

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

Duplicate — Lab ID = 804102-002

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Chromium, Hexavalent	ug/L	50.0	792	791	0.131	0 - 20

Low Level Calibration Verification

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	0.186	0.200	92.8	70 - 130

Lab Control Sample

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	4.96	5.00	99.2	90 - 110

Matrix Spike — Lab ID = 804102-001

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	5.00	4.99	5.21(5.00)	95.6	90 - 110

Matrix Spike — Lab ID = 804102-001

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	1.16	1.21(1.00)	95.3	90 - 110

Matrix Spike — Lab ID = 804102-002

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	50.0	1760	1790(1000)	97.2	90 - 110

Matrix Spike — Lab ID = 804102-003

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

Matrix Spike — Lab ID = 804102-003

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	10.0	11.1	11.8(10.0)	92.9	90 - 110

Matrix Spike — Lab ID = 804105-001

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	5.00	41.0	43.4(25.0)	90.2	90 - 110

Metals by EPA 200.7, Total

Batch 100912A-Th2

Parameter	Unit	Analyzed	DF	MDL	RL	Result
804102-001 Boron	ug/L	10/09/2012 11:56	1.00	2.30	200	926
Iron	ug/L	10/09/2012 11:56	1.00	0.900	20.0	ND
804102-002 Boron	ug/L	10/09/2012 13:14	1.00	2.30	200	977
Iron	ug/L	10/09/2012 13:14	1.00	0.900	20.0	ND

Method Blank

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

Duplicate

Lab ID = 804102-001

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Iron	ug/L	1.00	ND	0	0	0 - 20
Boron	ug/L	1.00	916	926	1.10	0 - 20

Lab Control Sample

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Iron	ug/L	1.00	107	100	107	85 - 115
Boron	ug/L	1.00	103	100	103	85 - 115

Matrix Spike

Lab ID = 804102-001

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Iron	ug/L	1.00	88.5	100(100)	88.5	75 - 125
Boron	ug/L	1.00	2700	2930(2000)	88.5	75 - 125

MRCCS - Secondary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Iron	ug/L	1.00	4950	5000	99.0	95 - 105
Boron	ug/L	1.00	4940	5000	98.7	95 - 105

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Iron	ug/L	1.00	4990	5000	99.8	90 - 110

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Iron	ug/L	1.00	4740	5000	94.8	90 - 110
Boron	ug/L	1.00	4910	5000	98.2	90 - 110

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Boron	ug/L	1.00	5170	5000	103	90 - 110

Metals by EPA 200.7, Total

Batch 101012A-Th2

Parameter	Unit	Analyzed	DF	MDL	RL	Result
804102-001 Aluminum	ug/L	10/10/2012 12:26	1.00	2.00	10.0	ND
Zinc	ug/L	10/10/2012 12:26	1.00	4.60	10.0	ND
804102-002 Aluminum	ug/L	10/10/2012 13:07	1.00	2.00	10.0	ND
Zinc	ug/L	10/10/2012 13:07	1.00	4.60	10.0	ND
804102-003 Zinc	ug/L	10/10/2012 13:13	1.00	4.60	10.0	ND

Method Blank

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

Duplicate

Lab ID = 804102-001

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

Lab Control Sample

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Aluminum	ug/L	1.00	103	100	103	85 - 115
Zinc	ug/L	1.00	96.1	100	96.1	85 - 115

Matrix Spike

Lab ID = 804102-001

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Aluminum	ug/L	1.00	76.7	100(100)	76.7	75 - 125
Zinc	ug/L	1.00	100	100(100)	100	75 - 125

MRCCS - Secondary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Aluminum	ug/L	1.00	5080	5000	102	95 - 105
Zinc	ug/L	1.00	5200	5000	104	95 - 105

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Aluminum	ug/L	1.00	4790	5000	95.8	90 - 110

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Aluminum	ug/L	1.00	4810	5000	96.2	90 - 110

MRCVS - Primary

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

Metals by EPA 200.8, Total Batch 100512A

Parameter	Unit	Analyzed	DF	MDL	RL	Result
804102-001 Chromium	ug/L	10/06/2012 02:10	5.00	0.195	1.0	ND
Lead	ug/L	10/06/2012 02:10	5.00	0.265	1.0	ND
Molybdenum	ug/L	10/06/2012 02:10	5.00	0.150	5.0	20.4
804102-002 Lead	ug/L	10/06/2012 03:22	5.00	0.265	1.0	ND
Molybdenum	ug/L	10/06/2012 03:22	5.00	0.150	5.0	22.2
804102-003 Cadmium	ug/L	10/06/2012 03:29	5.00	0.135	1.0	ND
Chromium	ug/L	10/06/2012 03:29	5.00	0.195	1.0	7.9
Cobalt	ug/L	10/06/2012 03:29	5.00	0.270	5.0	ND
Lead	ug/L	10/06/2012 03:29	5.00	0.265	1.0	ND
Mercury	ug/L	10/06/2012 03:29	5.00	0.120	1.0	ND
Thallium	ug/L	10/06/2012 03:29	5.00	0.265	1.0	ND

Method Blank

Parameter	Unit	DF	Result
Barium	ug/L	1.00	ND
Cadmium	ug/L	1.00	ND
Cobalt	ug/L	1.00	ND
Chromium	ug/L	1.00	ND
Mercury	ug/L	1.00	ND
Lead	ug/L	1.00	ND
Thallium	ug/L	1.00	ND
Molybdenum	ug/L	1.00	ND

Duplicate Lab ID = 804102-001

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Barium	ug/L	5.00	13.3	12.6	5.26	0 - 20
Cadmium	ug/L	5.00	ND	0	0	0 - 20
Cobalt	ug/L	5.00	ND	0	0	0 - 20
Chromium	ug/L	5.00	ND	0	0	0 - 20
Mercury	ug/L	5.00	ND	0	0	0 - 20
Lead	ug/L	5.00	ND	0	0	0 - 20
Thallium	ug/L	5.00	ND	0	0	0 - 20
Molybdenum	ug/L	5.00	19.9	20.4	2.33	0 - 20

Low Level Calibration Verification

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Barium	ug/L	1.00	0.949	1.00	94.9	70 - 130
Cadmium	ug/L	1.00	0.190	0.200	95.0	70 - 130
Cobalt	ug/L	1.00	0.968	1.00	96.8	70 - 130
Chromium	ug/L	1.00	0.221	0.200	110	70 - 130
Mercury	ug/L	1.00	0.228	0.200	114	70 - 130
Lead	ug/L	1.00	0.192	0.200	96.2	70 - 130
Thallium	ug/L	1.00	0.201	0.200	101	70 - 130
Molybdenum	ug/L	1.00	0.771	1.00	77.1	70 - 130

Lab Control Sample

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Barium	ug/L	5.00	113	100	113	85 - 115
Cadmium	ug/L	5.00	106	100	106	85 - 115
Cobalt	ug/L	5.00	107	100	107	85 - 115
Chromium	ug/L	5.00	105	100	105	85 - 115
Mercury	ug/L	5.00	9.96	10.0	99.6	85 - 115
Lead	ug/L	5.00	111	100	111	85 - 115
Thallium	ug/L	5.00	111	100	111	85 - 115
Molybdenum	ug/L	5.00	103	100	103	85 - 115

Matrix Spike Lab ID = 804102-001

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Barium	ug/L	5.00	121	113(100)	109	75 - 125
Cadmium	ug/L	5.00	90.0	100(100)	90.0	75 - 125
Cobalt	ug/L	5.00	105	100(100)	105	75 - 125
Chromium	ug/L	5.00	108	100(100)	108	75 - 125
Mercury	ug/L	5.00	8.39	10.0(10.0)	83.9	75 - 125
Lead	ug/L	5.00	99.4	100(100)	99.4	75 - 125
Thallium	ug/L	5.00	99.2	100(100)	99.2	75 - 125
Molybdenum	ug/L	5.00	126	120(100)	106	75 - 125

Matrix Spike Duplicate — Lab ID = 804102-001

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Barium	ug/L	5.00	122	113(100)	109	75 - 125
Cadmium	ug/L	5.00	92.3	100(100)	92.3	75 - 125
Cobalt	ug/L	5.00	108	100(100)	108	75 - 125
Chromium	ug/L	5.00	99.9	100(100)	99.9	75 - 125
Mercury	ug/L	5.00	8.51	10.0(10.0)	85.1	75 - 125
Lead	ug/L	5.00	101	100(100)	101	75 - 125
Thallium	ug/L	5.00	101	100(100)	101	75 - 125
Molybdenum	ug/L	5.00	133	120(100)	113	75 - 125

MRCCS - Secondary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Barium	ug/L	1.00	20.4	20.0	102	90 - 110
Cadmium	ug/L	1.00	20.3	20.0	101	90 - 110
Cobalt	ug/L	1.00	20.4	20.0	102	90 - 110
Chromium	ug/L	1.00	20.6	20.0	103	90 - 110
Mercury	ug/L	1.00	1.84	2.00	91.9	90 - 110
Lead	ug/L	1.00	20.4	20.0	102	90 - 110
Thallium	ug/L	1.00	21.0	20.0	105	90 - 110
Molybdenum	ug/L	1.00	21.9	20.0	110	90 - 110

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Barium	ug/L	1.00	20.9	20.0	105	90 - 110

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Barium	ug/L	1.00	20.9	20.0	104	90 - 110

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Barium	ug/L	1.00	20.8	20.0	104	90 - 110

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Barium	ug/L	1.00	20.8	20.0	104	90 - 110

MRCVS - Primary

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

Metals by EPA 200.8, Total

Batch 100812C

Parameter	Unit	Analyzed	DF	MDL	RL	Result
804102-001 Barium	ug/L	10/09/2012 10:44	5.00	0.205	5.0	12.3
Copper	ug/L	10/09/2012 10:44	5.00	0.235	5.0	ND
804102-002 Barium	ug/L	10/09/2012 11:49	5.00	0.205	5.0	24.9
Copper	ug/L	10/09/2012 11:49	5.00	0.235	5.0	ND
804102-003 Barium	ug/L	10/09/2012 12:03	5.00	0.205	5.0	82.8
Beryllium	ug/L	10/09/2012 12:03	5.00	0.140	0.50	ND
Copper	ug/L	10/09/2012 12:03	5.00	0.235	5.0	ND
Molybdenum	ug/L	10/09/2012 12:03	5.00	0.150	2.0	144
Vanadium	ug/L	10/09/2012 12:03	5.00	0.325	5.0	ND

Method Blank

Parameter	Unit	DF	Result
Barium	ug/L	1.00	ND
Beryllium	ug/L	1.00	ND
Copper	ug/L	1.00	ND
Vanadium	ug/L	1.00	ND
Molybdenum	ug/L	1.00	ND

Low Level Calibration Verification

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Barium	ug/L	1.00	0.976	1.00	97.6	70 - 130
Beryllium	ug/L	1.00	0.110	0.100	110	70 - 130
Copper	ug/L	1.00	0.940	1.00	94.0	70 - 130
Vanadium	ug/L	1.00	1.02	1.00	102	70 - 130
Molybdenum	ug/L	1.00	0.414	0.400	104	70 - 130

Lab Control Sample

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Barium	ug/L	5.00	101	100	101	85 - 115
Beryllium	ug/L	5.00	100	100	100	85 - 115
Copper	ug/L	5.00	104	100	104	85 - 115
Vanadium	ug/L	5.00	103	100	103	85 - 115
Molybdenum	ug/L	5.00	97.8	100	97.8	85 - 115

Matrix Spike — Lab ID = 804102-001

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Barium	ug/L	5.00	112	112(100)	99.6	75 - 125
Beryllium	ug/L	5.00	99.6	100(100)	99.6	75 - 125
Copper	ug/L	5.00	91.7	100(100)	91.7	75 - 125
Vanadium	ug/L	5.00	108	100(100)	108	75 - 125
Molybdenum	ug/L	5.00	121	120(100)	101	75 - 125

Matrix Spike Duplicate — Lab ID = 804102-001

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Barium	ug/L	5.00	107	112(100)	94.3	75 - 125
Beryllium	ug/L	5.00	95.0	100(100)	95.0	75 - 125
Copper	ug/L	5.00	92.6	100(100)	92.6	75 - 125
Vanadium	ug/L	5.00	106	100(100)	106	75 - 125
Molybdenum	ug/L	5.00	116	120(100)	96.4	75 - 125

MRCCS - Secondary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Barium	ug/L	1.00	19.7	20.0	98.7	90 - 110
Beryllium	ug/L	1.00	19.8	20.0	98.9	90 - 110
Copper	ug/L	1.00	20.8	20.0	104	90 - 110
Vanadium	ug/L	1.00	20.3	20.0	102	90 - 110
Molybdenum	ug/L	1.00	21.6	20.0	108	90 - 110

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Barium	ug/L	1.00	19.9	20.0	99.4	90 - 110

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Barium	ug/L	1.00	20.8	20.0	104	90 - 110

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Barium	ug/L	1.00	20.5	20.0	102	90 - 110

MRCVS - Primary

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

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Barium	ug/L	1.00	20.5	20.0	103	90 - 110

Interference Check Standard AB

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

Interference Check Standard AB

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

Interference Check Standard AB

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

Interference Check Standard AB

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

Serial Dilution Lab ID = 804102-003

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Barium	ug/L	25.0	85.3	82.8	2.99	0 - 10
Molybdenum	ug/L	25.0	147	144	1.92	0 - 10

Metals by EPA 200.8, Total

Batch 101012A

Parameter	Unit	Analyzed	DF	MDL	RL	Result
804102-003 Selenium	ug/L	10/10/2012 19:19	5.00	0.355	5.0	22.3

Method Blank

Parameter	Unit	DF	Result
Arsenic	ug/L	1.00	ND
Nickel	ug/L	1.00	ND
Selenium	ug/L	1.00	ND
Manganese	ug/L	1.00	ND

Low Level Calibration Verification

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Arsenic	ug/L	1.00	0.254	0.200	127	70 - 130
Nickel	ug/L	1.00	1.06	1.00	106	70 - 130
Selenium	ug/L	1.00	1.06	1.00	106	70 - 130
Manganese	ug/L	1.00	0.206	0.200	103	70 - 130

Lab Control Sample

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Arsenic	ug/L	5.00	99.0	100	99.0	85 - 115
Nickel	ug/L	5.00	105	100	105	85 - 115
Selenium	ug/L	5.00	95.4	100	95.4	85 - 115
Manganese	ug/L	5.00	99.4	100	99.4	85 - 115

Matrix Spike

Lab ID = 804102-001

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Selenium	ug/L	5.00	91.4	100(100)	91.4	75 - 125

Matrix Spike Duplicate

Lab ID = 804102-001

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Selenium	ug/L	5.00	91.8	100(100)	91.8	75 - 125

MRCCS - Secondary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Arsenic	ug/L	1.00	19.4	20.0	97.2	90 - 110
Nickel	ug/L	1.00	20.4	20.0	102	90 - 110
Selenium	ug/L	1.00	19.7	20.0	98.6	90 - 110
Manganese	ug/L	1.00	19.7	20.0	98.6	90 - 110

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Arsenic	ug/L	1.00	21.2	20.0	106	90 - 110

Metals by EPA 200.8, Total Batch 101512A

Parameter	Unit	Analyzed	DF	MDL	RL	Result
804102-001 Arsenic	ug/L	10/15/2012 12:47	5.00	0.265	1.0	ND
Manganese	ug/L	10/15/2012 12:47	5.00	0.270	1.0	1.0
Nickel	ug/L	10/15/2012 12:47	5.00	0.355	2.0	ND
804102-002 Arsenic	ug/L	10/15/2012 13:45	5.00	0.265	1.0	3.3
Chromium	ug/L	10/15/2012 13:59	10.0	0.390	2.0	735
Manganese	ug/L	10/15/2012 13:45	5.00	0.270	1.0	3.9
Nickel	ug/L	10/15/2012 13:45	5.00	0.355	2.0	ND
804102-003 Arsenic	ug/L	10/15/2012 14:20	5.00	0.265	1.0	1.1
Manganese	ug/L	10/15/2012 14:20	5.00	0.270	1.0	10.7
Nickel	ug/L	10/15/2012 14:20	5.00	0.355	2.0	8.2

Method Blank

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

Duplicate Lab ID = 804102-001

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Arsenic	ug/L	5.00	ND	0	0	0 - 20
Chromium	ug/L	5.00	ND	0	0	0 - 20
Nickel	ug/L	5.00	ND	0	0	0 - 20
Manganese	ug/L	5.00	0.891	1.04	15.4	0 - 20

Low Level Calibration Verification

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Arsenic	ug/L	1.00	0.259	0.200	129	70 - 130
Chromium	ug/L	1.00	0.206	0.200	103	70 - 130
Nickel	ug/L	1.00	0.209	0.200	104	70 - 130
Manganese	ug/L	1.00	0.206	0.200	103	70 - 130

Lab Control Sample

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Arsenic	ug/L	5.00	92.3	100	92.3	85 - 115
Chromium	ug/L	5.00	97.4	100	97.4	85 - 115
Nickel	ug/L	5.00	94.1	100	94.1	85 - 115
Manganese	ug/L	5.00	99.4	100	99.4	85 - 115

Matrix Spike — Lab ID = 804102-001

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Arsenic	ug/L	5.00	95.3	100(100)	95.3	75 - 125
Chromium	ug/L	5.00	98.7	100(100)	98.7	75 - 125
Nickel	ug/L	5.00	92.9	100(100)	92.9	75 - 125
Manganese	ug/L	5.00	96.9	101(100)	95.9	75 - 125

Matrix Spike Duplicate — Lab ID = 804102-001

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Arsenic	ug/L	5.00	91.6	100(100)	91.6	75 - 110
Chromium	ug/L	5.00	96.0	100(100)	96.0	75 - 125
Nickel	ug/L	5.00	90.1	100(100)	90.1	75 - 125
Manganese	ug/L	5.00	98.8	101(100)	97.7	75 - 125

MRCCS - Secondary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Arsenic	ug/L	1.00	18.4	20.0	92.2	90 - 110
Chromium	ug/L	1.00	19.6	20.0	97.8	90 - 110
Nickel	ug/L	1.00	19.3	20.0	96.4	90 - 110
Manganese	ug/L	1.00	18.6	20.0	93.2	90 - 110

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Arsenic	ug/L	1.00	19.0	20.0	95.0	90 - 110

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Arsenic	ug/L	1.00	19.6	20.0	98.2	90 - 110

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium	ug/L	1.00	20.5	20.0	102	90 - 110

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium	ug/L	1.00	19.7	20.0	98.4	90 - 110

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Nickel	ug/L	1.00	20.0	20.0	99.8	90 - 110

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Nickel	ug/L	1.00	19.0	20.0	95.0	90 - 110

Interference Check Standard AB

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium	ug/L	1.00	20.6	20.0	103	80 - 120

Interference Check Standard AB

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium	ug/L	1.00	19.8	20.0	99.2	80 - 120

Interference Check Standard AB

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Nickel	ug/L	1.00	20.1	20.0	101	80 - 120

Interference Check Standard AB

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Nickel	ug/L	1.00	18.8	20.0	94.2	80 - 120

Interference Check Standard AB

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Manganese	ug/L	1.00	20.4	20.0	102	80 - 120

Interference Check Standard AB

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Manganese	ug/L	1.00	20.8	20.0	104	80 - 120

Serial Dilution Lab ID = 804102-002

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Chromium	ug/L	50.0	729	735	0.778	0 - 10

Metals by EPA 200.8, Total Batch 101912A

Parameter	Unit	Analyzed	DF	MDL	RL	Result
804102-003 Silver	ug/L	10/19/2012 13:38	5.00	0.125	5.0	ND

Method Blank

Parameter	Unit	DF	Result
Silver	ug/L	1.00	ND

Duplicate — Lab ID = 804102-003

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Silver	ug/L	5.00	ND	0	0	0 - 20

Low Level Calibration Verification

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Silver	ug/L	1.00	1.12	1.00	112	70 - 130

Lab Control Sample

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Silver	ug/L	5.00	91.6	100	91.6	85 - 115

Matrix Spike — Lab ID = 804102-003

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Silver	ug/L	5.00	105	100(100)	105	75 - 125

MRCCS - Secondary

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

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Silver	ug/L	1.00	18.9	20.0	94.7	90 - 110

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Silver	ug/L	1.00	21.8	20.0	109	90 - 110

Interference Check Standard A

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

Interference Check Standard A

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

Metals by EPA 200.8, Total Batch 103012A

Parameter	Unit	Analyzed	DF	MDL	RL	Result
804102-001 Antimony	ug/L	10/30/2012 11:07	2.50	0.210	2.0	ND
804102-002 Antimony	ug/L	10/30/2012 11:15	2.50	0.210	2.0	ND
804102-003 Antimony	ug/L	10/30/2012 12:21	2.50	0.210	2.0	ND

Method Blank

Parameter	Unit	DF	Result
Antimony	ug/L	1.00	ND

Duplicate — Lab ID = 804102-002

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Antimony	ug/L	2.50	ND	0	0	0 - 20

Low Level Calibration Verification

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Antimony	ug/L	1.00	0.571	0.500	114	70 - 130

Lab Control Sample

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Antimony	ug/L	2.50	110	100	110	85 - 115

Matrix Spike — Lab ID = 804102-002

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Antimony	ug/L	2.50	111	100(100)	111	75 - 125

Matrix Spike Duplicate — Lab ID = 804102-002

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Antimony	ug/L	2.50	113	100(100)	113	75 - 125

MRCCS - Secondary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Antimony	ug/L	1.00	21.9	20.0	110	90 - 110

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Antimony	ug/L	1.00	21.1	20.0	105	90 - 110

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Antimony	ug/L	1.00	21.4	20.0	107	90 - 110

Interference Check Standard A

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

Interference Check Standard A

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

Interference Check Standard AB

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

Interference Check Standard AB

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

Total Dissolved Solids by SM 2540 C Batch 10TDS12B

Parameter	Unit	Analyzed	DF	MDL	RL	Result
804102-001 Total Dissolved Solids	mg/L	10/04/2012	1.00	0.757	250	4350
804102-002 Total Dissolved Solids	mg/L	10/04/2012	1.00	0.757	250	4620
804102-003 Total Dissolved Solids	mg/L	10/04/2012	1.00	0.757	1250	32000

Method Blank

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

Duplicate — Lab ID = 804101-001

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Total Dissolved Solids	mg/L	1.00	2600	2720	4.70	0 - 10

Lab Control Sample

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Total Dissolved Solids	mg/L	1.00	491	500	98.2	90 - 110

Ammonia Nitrogen by SM4500-NH3D Batch 10NH312A

Parameter	Unit	Analyzed	DF	MDL	RL	Result
804102-001 Ammonia as N	mg/L	10/04/2012	1.00	0.00980	0.500	ND
804102-002 Ammonia as N	mg/L	10/04/2012	1.00	0.00980	0.500	ND

Method Blank

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

Lab Control Sample

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Ammonia as N	mg/L	1.00	8.24	8.00	103	90 - 110

Lab Control Sample Duplicate

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Ammonia as N	mg/L	1.00	8.61	8.00	108	90 - 110

Matrix Spike — Lab ID = 804102-001

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Ammonia as N	mg/L	1.00	7.60	6.00(6.00)	127	75 - 125

MRCCS - Secondary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Ammonia as N	mg/L	1.00	5.98	6.00	99.8	90 - 110

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Ammonia as N	mg/L	1.00	6.37	6.00	106	90 - 110

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Ammonia as N	mg/L	1.00	6.25	6.00	104	90 - 110

Turbidity by SM 2130 B Batch 10TUC12C

Parameter	Unit	Analyzed	DF	MDL	RL	Result
804102-001 Turbidity	NTU	10/03/2012	1.00	0.0140	0.100	ND
804102-002 Turbidity	NTU	10/03/2012	1.00	0.0140	0.100	0.106

Method Blank

Parameter	Unit	DF	Result
Turbidity	NTU	1.00	ND

Duplicate — Lab ID = 804102-002

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Turbidity	NTU	1.00	0.108	0.106	1.87	0 - 20

Lab Control Sample

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Turbidity	NTU	1.00	8.20	8.00	102	90 - 110

Lab Control Sample Duplicate

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Turbidity	NTU	1.00	7.70	8.00	96.2	90 - 110

Respectfully submitted,
TRUESDAIL LABORATORIES, INC.

for Mona Nassimi
Manager, Analytical Services

EJ

Truesdail Laboratories, Inc.

lc SC

Total Dissolved Solids by SM 2540 C

Calculations

Batch: 10TDS12B
Date Analyzed: 10/8/12

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	69.1949	69.1952	69.1950	0.0002	No	0.0001	1.0	25.0	ND	1
804101-1	20	50.3202	50.3749	50.3747	0.0002	No	0.0545	2725.0	125.0	2725.0	1
804101-2	10	48.0084	48.0574	48.0573	0.0001	No	0.0489	4890.0	250.0	4890.0	1
804102-1	10	51.4710	51.5149	51.5145	0.0004	No	0.0435	4350.0	250.0	4350.0	1
804102-2	10	47.5160	47.5624	47.5622	0.0002	No	0.0462	4620.0	250.0	4620.0	1
804102-3	2	51.0754	51.1396	51.1394	0.0002	No	0.0640	32000.0	1250.0	32000.0	1
804111	50	67.6996	67.7385	67.7385	0.0000	No	0.0389	778.0	50.0	778.0	1
804116-1	100	69.3395	69.3975	69.3974	0.0001	No	0.0579	579.0	25.0	579.0	1
804116-2	100	67.1019	67.1613	67.1613	0.0000	No	0.0594	594.0	25.0	594.0	1
804117-8	100	78.3969	78.4321	78.4319	0.0002	No	0.0350	350.0	25.0	350.0	1
804120	200	115.2361	115.2588	115.2587	0.0001	No	0.0226	113.0	12.5	113.0	1
804101-1D	20	49.1973	49.2494	49.2492	0.0002	No	0.0519	2595.0	125.0	2595.0	1
LCS	100	69.3427	69.3920	69.3918	0.0002	No	0.0491	491.0	25.0	491.0	1
804122-1	100	66.8086	66.8314	66.8311	0.0003	No	0.0225	225.0	25.0	225.0	1
804123-1	100	66.7126	66.7354	66.7354	0.0000	No	0.0228	228.0	25.0	228.0	1
804129-4	50	50.7030	50.7652	50.7648	0.0004	No	0.0618	1236.0	50.0	1236.0	1
804129-5	50	74.5311	74.5931	74.5931	0.0000	No	0.0620	1240.0	50.0	1240.0	1
804129-6	100	50.1279	50.1689	50.1687	0.0002	No	0.0408	408.0	25.0	408.0	1
804139	490	109.0645	109.0647	109.0647	0.0000	No	0.0002	0.4	5.1	ND	1
804180-4	100	76.3406	76.388	76.388	0.0000	No	0.0474	474.0	25.0	474.0	1

Calculation as follows:

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

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?
LCS1	491	500	98.2%	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

Lab Number	Sample Weight, g	Sample Dup Weight, g	% RPD	Acceptance Limit	QC Within Control?
804101-1	0.0545	0.0519	2.4%	≤5%	Yes

Duplicate Determination Difference

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

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

A = Weght of the first sample in (g).
B = Weght of the second sample in (g).
C = Average weight in (g).

Jenny T.
Analyst Printed Name

Analyst Signature

Hope T.
Reviewer Printed Name

Reviewer Signature

Total Dissolved Solids by SM 2540 C

TDS/EC CHECK

Batch: 10TDS12B
Date Analyzed: 10/8/12

Laboratory Number	EC	TDS/EC Ratio: 0.55-.9	Calculated TDS (EC*0.65)	Measured TDS / Calc TDS <1.3
804101-1	4460	0.61	2899	0.94
804101-2	7340	0.67	4771	1.02
804102-1	7340	0.59	4771	0.91
804102-2	7660	0.60	4979	0.93
804102-3	44300	0.72	28795	1.11
804111	1340	0.58	871	0.89
804116-1	920	0.63	598	0.97
804116-2	931	0.64	605.15	0.98
804117-8	579	0.60	376.35	0.93
804120	171	0.66	111.15	1.02
804101-1D	4460	0.58	2899	0.90
LCS				
804122-1	389	0.58	252.85	0.89
804123-1	324	0.70	210.6	1.08
804129-4	1802	0.69	1171.3	1.06
804129-5	1806	0.69	1173.9	1.06
804129-6	630	0.65	409.5	1.00
804139	2.5	ND	1.625	ND
804180-4	791	0.60	514.15	0.92

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CHAIN OF CUSTODY RECORD

[IM3Plant-WDR-381]

804102

TURNAROUND TIME 10 Days
DATE 10/02/12 PAGE 1 OF 1

COMPANY CH2M HILL /E2
PROJECT NAME PG&E Topock IM3
PHONE 530-229-3303 FAX 530-339-3303
ADDRESS 155 Grand Ave Ste 1000
Oakland, CA 94612
P.O. NUMBER 408401.01.DM
SAMPLERS (SIGNATURE C.Knight

	SAMPLE I.D.	DATE	TIME	DESCRIPTION	Cr(VI) (218.6) Lab Filtered	Title 22 Metals List (200.7, 200.8, 245.1)	EC (120.1)	TDS (2540 c)	Turb (2130)	Total Metals (200.7) See List Below	Ammonia (4500-NH3)	Anions (300.0) F	Anions (300.0) F, NO3, SO4	TOC (5310 C)	Total Metals (200.7) Mn	NO2 (4500-NO2B)			NUMBER OF CONTAINERS	COMMENTS
-1	SC-700B-WDR-381	10/02/12	1352		X		X	X	X	X	X		X			X			4	pH=2 metals
-2	SC-100B-WDR-381	10/02/12	13:36		X		X	X	X	X	X		X			X			4	
3	SC-701-WDR-381	10/02/12	13:19		X	X	X	X				X			X				4	
																			12	TOTAL NUMBER OF CONTAINERS

ALERT !!
Level III QC

For Sample Conditions
See Form Attached

CHAIN OF CUSTODY SIGNATURE RECORD

Signature	Printed Name	Company/ Agency	Date/ Time
Signature (Relinquished) C.Knight	C.Knight	CH2MHill	10-2-12 14:41
Signature (Received) Rafael Davila	Rafael	T.L.I	10-2-12 15:30
Signature (Relinquished) Rafael Davila	Rafael	T.L.I	10-2-12 22:00
Signature (Received) [illegible]	Linda	TLI	10/2/12 22:00
Signature (Relinquished)	Printed Name	Company/ Agency	Date/ Time
Signature (Received)	Printed Name	Company/ Agency	Date/ Time

SAMPLE CONDITIONS

RECEIVED COOL ☑ WARM ☐ 4.8 °C

CUSTODY SEALED YES ☐ NO ☑

SPECIAL REQUIREMENTS:

The metals include: Cr, Al, Sb, As, Ba, B, Cu, Pb, Mn, Mo, Ni, Fe, Zn

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
09/21/12	803903-1	9.5	N/A	N/A	N/A	
↓	↓ -2	↓	↓	↓	↓	
09/21/12	803904-1	9.5	N/A	N/A	N/A	
↓	↓ -2	↓	↓	↓	↓	
↓	↓ -3	↓	↓	↓	↓	
↓	↓ -4	↓	↓	↓	↓	
09/21/12	803905-1	9.5	N/A	N/A	N/A	
↓	↓ -2	↓	↓	↓	↓	
↓	↓ -3	↓	↓	↓	↓	
↓	↓ -4	↓	↓	↓	↓	
↓	↓ -5	↓	↓	↓	↓	
↓	↓ -6	↓	↓	↓	↓	
↓	↓ -7	↓	↓	↓	↓	
09/26/12	803980	7	2 ml	9.5	8:30 AM	HAV
09/26/12	803981	9.5	N/A	N/A	N/A	HAV
09/26/12	803982-1	9.5	N/A	N/A	N/A	HAV
↓	↓ -2	↓	↓	↓	↓	↓
↓	↓ -3	↓	↓	↓	↓	↓
↓	↓ -4	↓	↓	↓	↓	↓
↓	↓ -5	↓	↓	↓	↓	↓
↓	↓ -6	↓	↓	↓	↓	↓
09/26/12	803983-1	9.5	N/A	N/A	N/A	HAV
↓	↓ -2	↓	↓	↓	↓	↓
↓	↓ -3	↓	↓	↓	↓	↓
10/03/12	804101-1	7	2 ml	9.5	9:00 AM	HAV
10/03/12	804102-1	7	2 ml	9.5	9:20 AM	HAV
↓	↓ -2	7	2 ml	↓	9:30 AM	HAV
↓	↓ -3	8	1 ml	↓	9:40 AM	HAV
10/03/12	804101-2	7	2 ml	9.5	9:10 AM	HAV
10/03/12	804103-1	9.5	N/A	N/A	N/A	HAV
↓	↓ -2	↓	↓	↓	↓	↓

HAV 10/09/12

TRUESDAIL LABORATORIES, INC.

Turbidity/pH Check

Sample Number	Turbidity	pH	Date	Analyst	Need Digest	pH2-Adjusted Time	Date/Time of 2nd pH check	Comments
803894	>1	~~>2~~ BE	9-21-12	BE	3010A			~~<2~~ BE
803895 (1-3)	↓	↓	↓	↓	↓			-3pH<2
803896 (1-3)	↓	~~<2~~	↓	↓	↓			
803903 (1-2)	<1	↓	↓	↓	↓			
803904 (1-4)	↓	↓	↓	↓	↓			
803905 (1-7)	↓	↓	↓	↓	↓			
803914	>1	↓	↓	↓	↓			
803915 (1-2+5)	~~>1~~ BE	>2				10:30 AM		
803908 (1-2)	~~<1~~	↓	↓	↓	↓	10:30 AM		
803943	>1	<2	9-24-12	BE	3010A			
803929	↓	↓	↓	↓	↓			
803903 (1-2)	<1	<2	9-24-12	M.M	3010A			
803904 (1-4)	↓	↓	↓	↓	↓			
803905 (1-7)	↓	↓	↓	↓	↓			
803925	>1	<2	9/24/12	M.M	3010B			
803943	↓	↓	↓	↓	↓			
803963	>1	<2	9-25-12	BE	3010A			
803984	↓	↓	↓	↓	↓			
803985	↓	↓	↓	↓	↓			
803966	↓	↓	↓	↓	↓			
803987	↓	↓	↓	↓	↓			
803980	<1	>2	9-26-12	M.M	3010A			
803981	↓	<2	↓	↓	↓			
803982 (4-6)	↓	↓	↓	↓	↓			
803983 (1-3)	↓	↓	↓	↓	↓			
803964	>1	<2	9-26-12	M.M	3010A			
803965	↓	↓	↓	↓	↓			
803971 (1-3)	<1	>2	9-26-12	BE	NO	15:30	9-27	pH<2
803977	↓	↓	↓	↓	↓	↓	↓	
804011	>1	>2	9-26-12	M.M	3010A	16:00	9-27	pH<2
804012 (1-10)	<1	>2	↓	BE	NO	17:15	↓	↓
804010 (1-3)	↓	↓	↓	↓	↓	↓	↓	↓
804009 (1-9)	↓	↓	↓	↓	↓	↓	↓	↓
804013 (1-40)	↓	↓	↓	↓	↓	↓	9-28	pH<2
804015 (1-5)	<1	<2	9-27-12	M.M	3010A			
804030 (1-3)	<1	<2	9-28-12	M.M	3010A			
804020	<1	<2	10/1/12	ES	3010A			
804024	↓	↓	↓	↓	↓			
804052	↓	↓	↓	↓	↓			
804062	<1	<2	10/2/12	MM	3010A			
sludge 804100 M.M	~~<1~~	~~>2~~	10/03/12	MM	3010A			
804101 (1-2)	<1	~~<2~~	↓	↓	↓			
804102 (1-3)	<1	<2	↓	↓	↓			
804103 (1-9)	↓	↓	↓	↓	↓			

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.

TRUESDAIL LABORATORIES, INC.

Sample Integrity & Analysis Discrepancy Form

Client: E2 **Lab #** 804102

Date Delivered: 10/02/12 **Time:** 22:00 **By:** ☐Mail ☒Field Service ☐Client

1. Was a Chain of Custody received and signed? ☒Yes ☐No ☐N/A
2. Does Customer require an acknowledgement of the COC? ☐Yes ☐No ☒N/A
3. Are there any special requirements or notes on the COC? ☐Yes ☐No ☒N/A
4. If a letter was sent with the COC, does it match the COC? ☐Yes ☐No ☒N/A
5. Were all requested analyses understood and acceptable? ☒Yes ☐No ☐N/A
6. Were samples received in a chilled condition? ☒Yes ☐No ☐N/A
   Temperature (if yes)? 4.8° C
7. Were samples received intact? ☒Yes ☐No ☐N/A
   (i.e. broken bottles, leaks, air bubbles, etc.)?
8. Were sample custody seals intact? ☐Yes ☐No ☒N/A
9. Does the number of samples received agree with COC? ☒Yes ☐No ☐N/A
10. Did sample labels correspond with the client ID's? ☒Yes ☐No ☐N/A
11. Did sample labels indicate proper preservation? ☒Yes ☐No ☐N/A
    Preserved (if yes) by: ☐Truesdail ☒Client
12. Were samples pH checked? pH = See C.O.C. ☒Yes ☐No ☐N/A
13. Were all analyses within holding time at time of receipt? ☒Yes ☐No ☐N/A
    If not, notify Project Manager.
14. Have Project due dates been checked and accepted? ☒Yes ☐No ☐N/A
    Turn Around Time (TAT): ☐ RUSH ☒ Std
15. **Sample Matrix:** ☐Liquid ☐Drinking Water ☐Ground Water ☐Waste Water
    ☐Sludge ☐Soil ☐Wipe ☐Paint ☐Solid ☒Other Water
16. Comments: __________
17. Sample Check-In completed by **Truesdail** Log-In/Receiving: L. Chabunrong

ALERT !! Level III QC

C:\Users\Test\Desktop\Forms A - D\Discrp.FormBlank.doc

TRUESDAIL LABORATORIES, INC.

EXCELLENCE IN INDEPENDENT TESTING

Established 1931

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

October 26, 2012

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-382 PROJECT, GROUNDWATER MONITORING, TLI NO.: 804229

Truesdail Laboratories, Inc. is pleased to submit this report summarizing the Topock IM3Plant-WDR-382 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 9, 2012, 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.

Total Chromium and Total Manganese were analyzed by EPA 200.8 rather than EPA 200.7 as requested on the chain of custody with Mr. Shawn Duffy's approval.

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

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

Respectfully Submitted,
TRUESDAIL LABORATORIES, INC.

for Mona Nassimi
Manager, Analytical Services

Michael Ngo
Quality Assurance/Quality Control Officer

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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.: 456827.01.DM

Laboratory No.: 804229
Date: October 26, 2012
Collected: October 9, 2012
Received: October 9, 2012

ANALYST LIST

METHOD	PARAMETER	ANALYST
EPA 120.1	Specific Conductivity	Gautam Savani
SM 2540C	Total Dissolved Solids	Jenny Tankunakorn
SM 2130B	Turbidity	Gautam Savani
EPA 200.8	Total Metals	Bita Emami
EPA 218.6	Hexavalent Chromium	Himani Vaishnav / George Wahba

TRUESDAIL LABORATORIES, INC.
INDEPENDENT TESTING, FORENSIC SCIENCE, AND ENVIRONMENTAL ANALYSES

Established 1931

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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.: 456827.01.DM
P.O. No.: 456827.01.DM

Laboratory No.: 804229
Date Received: October 9, 2012

Analytical Results Summary

Lab Sample ID	Field ID	Analysis Method	Extraction Method	Sample Date	Sample Time	Parameter	Result	Units	RL
804229-001	SC-700B-WDR-382	E120.1	NONE	10/9/2012	13:18	EC	7310	umhos/cm	2.00
804229-001	SC-700B-WDR-382	E200.8	NONE	10/9/2012	13:18	Chromium	ND	ug/L	1.0
804229-001	SC-700B-WDR-382	E200.8	NONE	10/9/2012	13:18	Manganese	1.1	ug/L	0.50
804229-001	SC-700B-WDR-382	E218.6	LABFLT	10/9/2012	13:18	Chromium, Hexavalent	ND	ug/L	0.20
804229-001	SC-700B-WDR-382	SM2130B	NONE	10/9/2012	13:18	Turbidity	ND	NTU	0.100
804229-001	SC-700B-WDR-382	SM2540C	NONE	10/9/2012	13:18	Total Dissolved Solids	4360	mg/L	250

ND: Non Detected (below reporting limit)
mg/L: Milligrams per liter.
Note: The following "Significant Figures" rule has been applied to all results:
Results below 0.01ppm will have two (2) significant figures.
Result above or equal to 0.01ppm will have three (3) significant figures.
Quality Control data will always have three (3) significant figures.

TRUESDAIL LABORATORIES, INC.

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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: 456827.01.DM
P.O. Number: 456827.01.DM
Release Number:

Laboratory No. 804229

Printed 10/26/2012

Samples Received on 10/9/2012 9:30:00 PM

Field ID	Lab ID	Collected	Matrix
SC-700B-WDR-382	804229-001	10/09/2012 13:18	Water

Specific Conductivity - EPA 120.1 Batch 10EC12B

Parameter	Unit	Analyzed	DF	MDL	RL	Result
804229-001 Specific Conductivity	umhos/cm	10/12/2012	1.00	0.116	2.00	7310

Method Blank

Parameter	Unit	DF	Result
Specific Conductivity	umhos	1.00	ND

Duplicate — Lab ID = 804229-001

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Specific Conductivity	umhos	1.00	7310	7310	0.00	0 - 10

Lab Control Sample

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Specific Conductivity	umhos	1.00	703	706	99.6	90 - 110

Lab Control Sample Duplicate

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Specific Conductivity	umhos	1.00	706	706	100.	90 - 110

MRCCS - Secondary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Specific Conductivity	umhos	1.00	678	706	96.0	90 - 110

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Specific Conductivity	umhos	1.00	975	998	97.7	90 - 110

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Specific Conductivity	umhos	1.00	979	998	98.1	90 - 110

Chrome VI by EPA 218.6

Batch 10CrH12E

Parameter	Unit	Analyzed	DF	MDL	RL	Result
804229-001 Chromium, Hexavalent	ug/L	10/10/2012 10:25	1.00	0.00920	0.20	ND

Method Blank

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

Duplicate Lab ID = 804181-010

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Chromium, Hexavalent	ug/L	10.0	140.	140.	0.273	0 - 20

Low Level Calibration Verification

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	0.172	0.200	86.2	70 - 130

Lab Control Sample

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	4.88	5.00	97.5	90 - 110

Matrix Spike Lab ID = 804181-003

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	250	10500	10500(5000)	100.	90 - 110

Matrix Spike Lab ID = 804181-004

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	200	8870	8850(4000)	100.	90 - 110

Matrix Spike Lab ID = 804181-009

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	25.0	701.	691(375)	103.	90 - 110

Matrix Spike Lab ID = 804181-010

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	10.0	282.	290.(150.)	94.8	90 - 110

Matrix Spike Lab ID = 804181-011

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	25.0	631.	625(375)	102.	90 - 110

Matrix Spike Lab ID = 804182-002

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	200	8460	8510(4000)	98.8	90 - 110

Matrix Spike — Lab ID = 804183-001

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	0.840	1.00(1.00)	84.0	90 - 110

Matrix Spike — Lab ID = 804183-001

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	5.00	4.66	5.00(5.00)	93.2	90 - 110

Matrix Spike — Lab ID = 804183-002

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	5.00	4.50	5.00(5.00)	90.0	90 - 110

Matrix Spike — Lab ID = 804183-002

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	0.814	1.00(1.00)	81.4	90 - 110

Matrix Spike — Lab ID = 804183-003

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

Matrix Spike — Lab ID = 804183-003

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	5.00	4.77	5.00(5.00)	95.4	90 - 110

Matrix Spike — Lab ID = 804183-004

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	5.00	7.08	7.32(5.00)	95.2	90 - 110

Matrix Spike — Lab ID = 804229-001

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	1.19	1.18(1.00)	101.	90 - 110

MRCCS - Secondary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	4.90	5.00	98.0	90 - 110

MRCVS - Primary

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

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	10.00	10.0	100.0	95 - 105

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	9.96	10.0	99.6	95 - 105

Metals by EPA 200.8, Total

Batch 102212B

Parameter	Unit	Analyzed	DF	MDL	RL	Result
804229-001 Chromium	ug/L	10/23/2012 07:14	5.00	0.195	1.0	ND
Manganese	ug/L	10/23/2012 07:14	5.00	0.270	0.50	1.1

Method Blank

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

Duplicate

Lab ID = 804229-001

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Chromium	ug/L	5.00	ND	0.00	0	0 - 20
Manganese	ug/L	5.00	1.03	1.14	10.1	0 - 20

Low Level Calibration Verification

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium	ug/L	1.00	0.208	0.200	104.	70 - 130
Manganese	ug/L	1.00	0.100	0.100	100.	70 - 130

Lab Control Sample

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium	ug/L	5.00	102.	100.	102.	85 - 115
Manganese	ug/L	5.00	102.	100.	102.	85 - 115

Matrix Spike

Lab ID = 804229-001

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium	ug/L	5.00	105.	100.(100.)	105.	75 - 125
Manganese	ug/L	5.00	103.	101.(100.)	101.	75 - 125

Matrix Spike Duplicate

Lab ID = 804229-001

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium	ug/L	5.00	106.	100.(100.)	106.	75 - 125
Manganese	ug/L	5.00	101	101.(100.)	99.9	75 - 125

MRCCS - Secondary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium	ug/L	1.00	19.6	20.0	97.8	90 - 110
Manganese	ug/L	1.00	19.7	20.0	98.4	90 - 110

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium	ug/L	1.00	20.4	20.0	102.	90 - 110

Interference Check Standard AB

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium	ug/L	1.00	20.0	20.0	100.	80 - 120

Interference Check Standard AB

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

Interference Check Standard AB

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Manganese	ug/L	1.00	20.2	20.0	101.	80 - 120

Total Dissolved Solids by SM 2540 C

Batch 10TDS12C

Parameter	Unit	Analyzed	DF	MDL	RL	Result
804229-001 Total Dissolved Solids	mg/L	10/10/2012	1.00	0.757	250.	4360

Method Blank

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

Duplicate — Lab ID = 804229-001

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Total Dissolved Solids	mg/L	1.00	4240	4360	2.79	0 - 10

Lab Control Sample

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

Turbidity by SM 2130 B Batch 10TUC12F

Parameter	Unit	Analyzed	DF	MDL	RL	Result
804229-001 Turbidity	NTU	10/10/2012	1.00	0.0140	0.100	ND

Method Blank

Parameter	Unit	DF	Result
Turbidity	NTU	1.00	ND

Duplicate — Lab ID = 804229-001

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Turbidity	NTU	1.00	ND	0.00	0	0 - 20

Lab Control Sample

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

Lab Control Sample Duplicate

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Turbidity	NTU	1.00	7.79	8.00	97.4	90 - 110

Respectfully submitted,
TRUESDAIL LABORATORIES, INC.

for Mona Nassimi
Manager, Analytical Services

Truesdail Laboratories, Inc.

Total Dissolved Solids by SM 2540 C

Calculations

Batch: 10TDS12C
Date Analyzed: 10/10/12

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	66.8086	66.8088	66.8088	0.0000	No	0.0002	2.0	25.0	ND	1
804199-1	50	68.8054	68.8434	68.8431	0.0003	No	0.0377	754.0	50.0	754.0	1
804199-2	50	69.5106	69.5494	69.5493	0.0001	No	0.0387	774.0	50.0	774.0	1
804200-2	20	73.5930	73.6481	73.6481	0.0000	No	0.0551	2755.0	125.0	2755.0	1
804203	850	108.7366	108.7374	108.7374	0.0000	No	0.0008	0.9	2.9	ND	1
804221-1	100	71.3282	71.3796	71.3796	0.0000	No	0.0514	514.0	25.0	514.0	1
804221-2	100	72.7779	72.8269	72.8268	0.0001	No	0.0489	489.0	25.0	489.0	1
804221-3	100	76.5450	76.5952	76.5952	0.0000	No	0.0502	502.0	25.0	502.0	1
804222-2	100	76.6760	76.6954	76.6954	0.0000	No	0.0194	194.0	25.0	194.0	1
804222-4	100	74.6785	74.7149	74.7146	0.0003	No	0.0361	361.0	25.0	361.0	1
804229	10	74.1522	74.1959	74.1958	0.0001	No	0.0436	4360.0	250.0	4360.0	1
804229D	10	65.6676	65.7102	65.7100	0.0002	No	0.0424	4240.0	250.0	4240.0	1
LCS	100	76.3406	76.3901	76.3900	0.0001	No	0.0494	494.0	25.0	494.0	1
804233-2	50	73.1854	73.2499	73.2499	0.0000	No	0.0645	1290.0	50.0	1290.0	1
804257	50	68.3801	68.4147	68.4147	0.0000	No	0.0346	692.0	50.0	692.0	1
804276-1	50	68.4084	68.5162	68.5162	0.0000	No	0.1078	2156.0	50.0	2156.0	1
804276-2	50	75.9629	76.0706	76.0705	0.0001	No	0.1076	2152.0	50.0	2152.0	1
804295-5	50	67.0552	67.0854	67.0851	0.0003	No	0.0299	598.0	50.0	598.0	1
804295-6	50	74.2297	74.2598	74.2597	0.0001	No	0.0300	600.0	50.0	600.0	1

Calculation as follows:

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

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?
LCS1	494	500	98.8%	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

Lab Number	Sample Weight, g	Sample Dup Weight, g	% RPD	Acceptance Limit	QC Within Control?
804229	0.0436	0.0424	1.4%	≤5%	Yes

Duplicate Determination Difference

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

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).

Jenny T.
Analyst Printed Name

Analyst Signature

Maksim G.
Hope T.
Reviewer Printed Name

Reviewer Signature

020

WetChem TDS 2012.xls

Total Dissolved Solids by SM 2540 C

TDS/EC CHECK

Batch: 10TDS12C
Date Analyzed: 10/10/12

Laboratory Number	EC	TDS/EC Ratio: 0.55-.9	Calculated TDS (EC*0.65)	Measured TDS / Calc TDS <1.3
804199-1	1250	0.60	812.5	0.93
804199-2	1230	0.63	799.5	0.97
804200-2	3880	0.71	2522	1.09
804203	7.09	ND	4.6085	ND
804221-1	896	0.57	582.4	0.88
804221-2	858	0.57	557.7	0.88
804221-3	850	0.59	552.5	0.91
804222-2	307	0.63	199.55	0.97
804222-4	615	0.59	399.75	0.90
804229	7280	0.60	4732	0.92
804229D	7280	0.58	4732	0.90
LCS				
804233-2	1930	0.67	1254.5	1.03
804257	1248	0.55	811.2	0.85
804276-1	3020	0.71	1963	1.10
804276-2	3000	0.72	1950	1.10
804295-5	1060	0.56	689	0.87
804295-6	1060	0.57	689	0.87

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CHAIN OF CUSTODY RECORD

[IM3Plant-WDR-382]

COC Number 804229

TURNAROUND TIME 10 Days

DATE 10/9/12 PAGE 1 OF 1

COMPANY	E2
PROJECT NAME	PG&E Topock
PHONE	(530) 229-3303 FAX (530) 339-3303
ADDRESS	155 Grand Ave Ste 1000 Oakland, CA 94612
P.O. NUMBER	456827.01.DM TEAM 1
SAMPLERS (SIGNATURE	Josh Rosenberg

SAMPLE I.D.	DATE	TIME	DESCRIPTION	Cr6 (218.6) Lab Filtered	Total Metals (200.7) Cr, Mn	Specific Conductance (120.1)	TDS (SM2540C)		Turbidity (SM2130)								NUMBER OF CONTAINERS	COMMENTS
SC-700B-WDR-382	10/9/12	1318	Water	X	X	X	X		X								3	pH=6 (200.7)
																		TOTAL NUMBER OF CONTAINERS

For Sample Conditions
See Form Attached

ALERT !!
Level III QC

CHAIN OF CUSTODY SIGNATURE RECORD

	Signature	Printed Name	Company/ Agency	Date/ Time
1	Signature (Relinquished) Josh Rosenberg	Josh Rosenberg	CH2M	10-9-12 13:24
2	Signature (Received) Rafael Davila	Rafael	T.L.I	10-9-12 13:25
3	Signature (Relinquished) Rafael Davila	Rafael	T.L.I	10-9-12 21:30
4	Signature (Received) Linda	Stebenne	TCP	10/9/12 21:30
5	Signature (Relinquished)	Printed Name	Company/ Agency	Date/ Time
6	Signature (Received)	Printed Name	Company/ Agency	Date/ Time

SAMPLE CONDITIONS

RECEIVED COOL ☑ WARM ☐ 2.6 °C

CUSTODY SEALED YES ☐ NO ☑

SPECIAL REQUIREMENTS:

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
10/09/12	804200-10	9.5	N/A	N/A	N/A	HAV
10/10/12	804229	7	9 ml	9.5	9:00 AM	HAV
10/10/12	804230	9.5	N/A	N/A	N/A	HAV
10/10/12	804231-1	9.5	N/A	N/A	N/A	HAV
	-2					
	-3					
	-4					
	-5					
	-6					
	-7					
	-8					
	-9					
10/10/12	804232-1	9.5	N/A	N/A	N/A	HAV
	-2					
	-3					
	-4					
	-5					
	-6					
	-7					
	-8					
	-9					
	-10					
	-11					
10/10/12	804233-1	9.5	N/A	N/A	N/A	HAV
	-2					
	-3					
	-4					
	-5					
10/10/12	804236-1	9.5	N/A	N/A	N/A	HAV
	-2					
	-3					

10-18-12

HAV
10/15/12

TRUESDAIL LABORATORIES, INC.

Turbidity/pH Check

Sample Number	Turbidity	pH	Date	Analyst	Need Digest	pH2-Adjusted Time	Date/Time of 2nd pH check	Comments
804104 (1-4)	<1	<2	10/03/12	M.M	3010A			
804105 (1-9)	↓	↓	↓	↓	↓			
804079	>1	<2	10/03/12	M.M	3010A			
804080	↓	↓	↓	↓	↓			
804071	>1	<2	10/03/12	M.M	3010A			
804072								
804073								
804074								
804075								
804099								
804111	↓	↓	↓		↓			
804147	>1	>2	10-5-12	BE	3010A	8:30AM		
804142	↓	↓	↓	↓	↓	↓		
804083	<1				NO	9:00AM		
804094 (1-3)	↓	↓	↓	↓	↓	↓		
804112 (1-12)								
804117 (2,5-6)	↓	↓	↓	↓	↓	↓		
804154	>1	<2	10/05/12	M.M	3010A			
804155	↓	↓	↓	↓	↓			
804156								
804172								
804173	↓	↓	↓	↓	↓			
804129 (1-7)	<1	<2	10/05/12	M.M	3010A			
804157 (1-5)	↓	↓		↓	↓			
804179	<1	<2	10/09/12	M.M	3010A			
804180 (1-4)	↓	↓	↓	↓	↓			
804181 (1-11)								
804182 (1-4)								
804183 (1-4)								
804199 (1-4)								
804200 (1-9)	↓	↓	↓	↓	↓			
804229	<1	>2	10/10/12	M.M	3010A			
804230	↓	<2	↓	↓	↓			
804231 (1-9)		↓						
804232 (1-9,11)								
804233 (1-3,5)								
804234 (1-9)	↓	↓	↓	↓	↓			
804120	>1	<2	10/10/12	M.M	3010A			
804139	↓	↓	↓	↓	↓			
804187								
804186								
804189								
804190 (1-4)								
804197	↓	↓	↓	↓	↓			

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.

TLLpH Check book

TRUESDAIL LABORATORIES, INC.

Sample Integrity & Analysis Discrepancy Form

Client: E2 **Lab #** 804229

Date Delivered: 10 / 09 / 12 **Time:** 2:30 **By:** ☐Mail ☒Field Service ☐Client

1.	Was a Chain of Custody received and signed?	☒Yes	☐No	☐N/A
2.	Does Customer require an acknowledgement of the COC?	☐Yes	☐No	☒N/A
3.	Are there any special requirements or notes on the COC?	☐Yes	☐No	☒N/A
4.	If a letter was sent with the COC, does it match the COC?	☐Yes	☐No	☒N/A
5.	Were all requested analyses understood and acceptable?	☒Yes	☐No	☐N/A
6.	Were samples received in a chilled condition? Temperature (if yes)? 2.6°C	☒Yes	☐No	☐N/A
7.	Were samples received intact (i.e. broken bottles, leaks, air bubbles, etc..)?	☒Yes	☐No	☐N/A
8.	Were sample custody seals intact?	☐Yes	☐No	☒N/A
9.	Does the number of samples received agree with COC?	☒Yes	☐No	☐N/A
10.	Did sample labels correspond with the client ID's?	☒Yes	☐No	☐N/A
11.	Did sample labels indicate proper preservation? Preserved (if yes) by: ☐Truesdail ☐Client	☐Yes	☐No	☒N/A
12.	Were samples pH checked? pH = see c.o.c	☒Yes	☐No	☐N/A
13.	Were all analyses within holding time at time of receipt? If not, notify Project Manager.	☒Yes	☐No	☐N/A
14.	Have Project due dates been checked and accepted? Turn Around Time (TAT): ☐ RUSH ☒ Std	☒Yes	☐No	☐N/A

15. **Sample Matrix:** ☐Liquid ☐Drinking Water ☐Ground Water ☐Waste Water ☐Sludge ☐Soil ☐Wipe ☐Paint ☐Solid ☒Other Water

16. Comments: _____

17. Sample Check-In completed by Truesdail Log-In/Receiving: L. Stubbeman

ALERT !!
Level III QC

TRUESDAIL LABORATORIES, INC.

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December 2, 2012

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-383 PROJECT, GROUNDWATER MONITORING, TLI NO.: 804407

Truesdail Laboratories, Inc. is pleased to submit this report summarizing the Topock IM3Plant-WDR-383 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 16, 2012, 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.

Total Chromium and Total Manganese were analyzed by EPA 200.8 rather than EPA 200.7 as requested on the chain of custody with Mr. Shawn Duffy's approval.

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

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

Respectfully Submitted,
TRUESDAIL LABORATORIES, INC.

for Mona Nassimi
Manager, Analytical Services

Michael Ngo
Quality Assurance/Quality Control Officer

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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.: 456827.01.DM

Laboratory No.: 804407
Date: December 2, 2012
Collected: October 16, 2012
Received: October 16, 2012

ANALYST LIST

METHOD	PARAMETER	ANALYST
EPA 120.1	Specific Conductivity	Gautam Savani
SM 2540C	Total Dissolved Solids	Jenny Tankunakorn
SM 2130B	Turbidity	Gautam Savani
EPA 200.8	Total Metals	Bita Emami
EPA 218.6	Hexavalent Chromium	Himani Vaishnav

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

Laboratory No.: 804407
Date Received: October 16, 2012

Project Name: PG&E Topock Project
Project No.: 456827.01.DM
P.O. No.: 456827.01.DM

Analytical Results Summary

Lab Sample ID	Field ID	Analysis Method	Extraction Method	Sample Date	Sample Time	Parameter	Result	Units	RL
804407-001	SC-700B-WDR-383	E120.1	NONE	10/16/2012	14:09	EC	7370	umhos/cm	2.00
804407-001	SC-700B-WDR-383	E200.8	NONE	10/16/2012	14:09	Chromium	ND	ug/L	1.0
804407-001	SC-700B-WDR-383	E200.8	NONE	10/16/2012	14:09	Manganese	0.82	ug/L	0.50
804407-001	SC-700B-WDR-383	E218.6	LABFLT	10/16/2012	14:09	Chromium, Hexavalent	0.25	ug/L	0.20
804407-001	SC-700B-WDR-383	SM2130B	NONE	10/16/2012	14:09	Turbidity	ND	NTU	0.100
804407-001	SC-700B-WDR-383	SM2540C	NONE	10/16/2012	14:09	Total Dissolved Solids	4330	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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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: 456827.01.DM
P.O. Number: 456827.01.DM
Release Number:

Laboratory No. 804407

Printed 12/2/2012

Samples Received on 10/16/2012 9:30:00 PM

Field ID	Lab ID	Collected	Matrix
SC-700B-WDR-383	804407-001	10/16/2012 14:09	Water

Specific Conductivity - EPA 120.1 Batch 10EC12C

Parameter	Unit	Analyzed	DF	MDL	RL	Result
804407-001 Specific Conductivity	umhos/cm	10/18/2012	1.00	0.116	2.00	7370

Method Blank

Parameter	Unit	DF	Result
Specific Conductivity	umhos	1.00	ND

Duplicate — Lab ID = 804407-001

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Specific Conductivity	umhos	1.00	7370	7370	0	0 - 10

Duplicate — Lab ID = 804408-005

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Specific Conductivity	umhos	1.00	7470	7470	0	0 - 10

Lab Control Sample

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Specific Conductivity	umhos	1.00	700	706	99.2	90 - 110

Lab Control Sample Duplicate

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Specific Conductivity	umhos	1.00	703	706	99.6	90 - 110

MRCCS - Secondary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Specific Conductivity	umhos	1.00	694	706	98.3	90 - 110

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Specific Conductivity	umhos	1.00	971	998	97.3	90 - 110

Chrome VI by EPA 218.6

Batch 10CrH12J

Parameter	Unit	Analyzed	DF	MDL	RL	Result
804407-001 Chromium, Hexavalent	ug/L	10/18/2012 14:15	1.00	0.00580	0.20	0.25

Method Blank

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

Lab ID = 804275-001

Duplicate

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	1.66	1.66	0.192	0 - 20

Low Level Calibration Verification

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	0.200	0.200	99.9	70 - 130

Lab Control Sample

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	4.88	5.00	97.6	90 - 110

Matrix Spike Lab ID = 804275-001

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	6.46	6.66(5.00)	96.0	90 - 110

Matrix Spike Lab ID = 804275-002

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	1.86	1.86(1.00)	99.8	90 - 110

Matrix Spike Lab ID = 804275-003

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	6.12	6.27(5.00)	96.9	90 - 110

Matrix Spike Lab ID = 804275-004

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	6.96	7.13(5.00)	96.5	90 - 110

Matrix Spike Lab ID = 804275-005

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	6.12	6.23(5.00)	97.8	90 - 110

Matrix Spike Lab ID = 804275-006

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	6.37	6.58(5.00)	95.8	90 - 110

Matrix Spike — Lab ID = 804275-007

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	6.82	6.90(5.00)	98.5	90 - 110

Matrix Spike — Lab ID = 804275-008

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	7.04	7.10(5.00)	98.9	90 - 110

Matrix Spike — Lab ID = 804275-009

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	0.975	1.00(1.00)	97.5	90 - 110

Matrix Spike — Lab ID = 804276-001

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	8.26	8.35(5.00)	98.2	90 - 110

Matrix Spike — Lab ID = 804276-002

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	8.22	8.37(5.00)	97.0	90 - 110

Matrix Spike — Lab ID = 804276-003

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	6.91	6.94(5.00)	99.3	90 - 110

Matrix Spike — Lab ID = 804276-004

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	7.07	6.83(5.00)	105	90 - 110

Matrix Spike — Lab ID = 804276-005

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	6.38	6.48(5.00)	98.1	90 - 110

Matrix Spike — Lab ID = 804276-006

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	0.983	1.00(1.00)	98.3	90 - 110

Matrix Spike — Lab ID = 804276-007

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	6.95	7.08(5.00)	97.5	90 - 110

Matrix Spike — Lab ID = 804407-001

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	1.23	1.25(1.00)	98.2	90 - 110

MRCCS - Secondary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	4.91	5.00	98.2	90 - 110

Metals by EPA 200.8, Total Batch 112612B

Parameter	Unit	Analyzed	DF	MDL	RL	Result
804407-001 Chromium	ug/L	11/27/2012 04:02	2.50	0.230	1.0	ND
Manganese	ug/L	11/27/2012 04:02	2.50	0.215	0.50	0.82

Method Blank

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

Low Level Calibration Verification

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium	ug/L	1.00	0.186	0.200	92.8	70 - 130
Manganese	ug/L	1.00	0.187	0.200	93.4	70 - 130

Lab Control Sample

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium	ug/L	2.50	99.3	100	99.3	85 - 115
Manganese	ug/L	2.50	96.9	100	96.9	85 - 115

Matrix Spike — Lab ID = 804302-006

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium	ug/L	2.50	102	106(100)	96.2	75 - 125
Manganese	ug/L	2.50	93.2	102(100)	91.5	75 - 125

Matrix Spike Duplicate — Lab ID = 804302-006

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium	ug/L	2.50	102	106(100)	95.9	75 - 125
Manganese	ug/L	2.50	93.6	102(100)	91.9	75 - 125

MRCCS - Secondary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium	ug/L	1.00	20.2	20.0	101	90 - 110
Manganese	ug/L	1.00	19.4	20.0	96.8	90 - 110

MRCVS - Primary

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

MRCVS - Primary

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

Total Dissolved Solids by SM 2540 C

Batch 10TDS12D

Parameter	Unit	Analyzed	DF	MDL	RL	Result
804407-001 Total Dissolved Solids	mg/L	10/18/2012	1.00	0.757	250	4330

Method Blank

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

Duplicate — Lab ID = 804301-006

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Total Dissolved Solids	mg/L	1.00	980	1020	4.00	0 - 10

Lab Control Sample

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Total Dissolved Solids	mg/L	1.00	502	500	100	90 - 110

Turbidity by SM 2130 B

Batch 10TUC12J

Parameter	Unit	Analyzed	DF	MDL	RL	Result
804407-001 Turbidity	NTU	10/17/2012	1.00	0.0140	0.100	ND

Method Blank

Parameter	Unit	DF	Result
Turbidity	NTU	1.00	ND

Duplicate — Lab ID = 804408-005

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

Lab Control Sample

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Turbidity	NTU	1.00	8.20	8.00	102	90 - 110

Lab Control Sample

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Turbidity	NTU	1.00	8.10	8.00	101	90 - 110

Respectfully submitted,
TRUESDAIL LABORATORIES, INC.

for Mona Nassimi
Manager, Analytical Services

ed
sc

Truesdail Laboratories, Inc.

5

Total Dissolved Solids by SM 2540 C

Calculations

Batch: 10TDS12D
Date Analyzed: 10/15/12

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	76.1930	76.1931	76.1930	0.0001	No	0.0000	0.0	25.0	ND	1
804343-2	100	75.2066	75.2230	75.2230	0.0000	No	0.0164	164.0	25.0	164.0	1
804343-4	100	72.5691	72.6091	72.6088	0.0003	No	0.0397	397.0	25.0	397.0	1
804300-1	50	46.9872	47.0937	47.0935	0.0002	No	0.1063	2126.0	50.0	2126.0	1
804300-2	50	48.1385	48.1917	48.1916	0.0001	No	0.0531	1062.0	50.0	1062.0	1
804300-5	50	47.9495	48.0056	48.0055	0.0001	No	0.0560	1120.0	50.0	1120.0	1
804300-6	50	48.9979	49.0534	49.0532	0.0002	No	0.0553	1106.0	50.0	1106.0	1
804300-7	50	72.6385	72.6896	72.6893	0.0003	No	0.0508	1016.0	50.0	1016.0	1
804301-1	50	47.7657	47.8016	47.8016	0.0000	No	0.0359	718.0	50.0	718.0	1
804301-2	50	50.4130	50.4593	50.4592	0.0001	No	0.0462	924.0	50.0	924.0	1
804301-4	50	50.9550	51.0059	51.0055	0.0004	No	0.0505	1010.0	50.0	1010.0	1
804301-6D	50	51.4341	51.4832	51.4831	0.0001	No	0.0490	980.0	50.0	980.0	1
LCS	100	67.1632	67.2134	67.2134	0.0000	No	0.0502	502.0	25.0	502.0	1
804301-5	50	50.9449	50.995	50.9946	0.0004	No	0.0497	994.0	50.0	994.0	1
804301-6	50	51.0529	51.1041	51.104	0.0001	No	0.0511	1022.0	50.0	1022.0	1
804301-7	50	47.2204	47.2844	47.284	0.0004	No	0.0636	1272.0	50.0	1272.0	1
804301-8	50	51.4240	51.4904	51.49	0.0004	No	0.0660	1320.0	50.0	1320.0	1
804301-9	50	49.5170	49.5715	49.5715	0.0000	No	0.0545	1090.0	50.0	1090.0	1
804301-10	50	50.4929	50.5738	50.5738	0.0000	No	0.0809	1618.0	50.0	1618.0	1
804331-1	50	47.8668	47.9305	47.9301	0.0004	No	0.0633	1266.0	50.0	1266.0	1
804331-2	50	74.7050	74.8205	74.8205	0.0000	No	0.1155	2310.0	50.0	2310.0	1
804331-3	20	49.6804	49.7563	49.7563	0.0000	No	0.0759	3795.0	125.0	3795.0	1
804407	10	49.2475	49.2909	49.2908	0.0001	No	0.0433	4330.0	250.0	4330.0	1

Calculation as follows:

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

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?
LCS1	502	500	100.4%	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

Lab Number	Sample Weight, g	Sample Dup Weight, g	% RPD	Acceptance Limit	QC Within Control?
804301-6	0.0511	0.049	2.1%	≤5%	Yes

Duplicate Determination Difference

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

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).

Jenny T.
Analyst Printed Name

Analyst Signature

Hope T.
Reviewer Printed Name

Reviewer Signature

021

Total Dissolved Solids by SM 2540 C

TDS/EC CHECK

Batch: 10TDS12D
Date Analyzed: 10/15/12

Laboratory Number	EC	TDS/EC Ratio: 0.55-.9	Calculated TDS (EC*0.65)	Measured TDS / Calc TDS <1.3
804343-2	300	0.55	195	0.84
804343-4	684	0.58	444.6	0.89
804300-1	3020	0.70	1963	1.08
804300-2	1570	0.68	1020.5	1.04
804300-5	1680	0.67	1092	1.03
804300-6	1650	0.67	1072.5	1.03
804300-7	1570	0.65	1020.5	1.00
804301-1	1250	0.57	812.5	0.88
804301-2	1510	0.61	981.5	0.94
804301-4	1520	0.66	988	1.02
804301-6D	1570	0.62	1020.5	0.96
LCS				
804301-5	1520	0.65	988	1.01
804301-6	1570	0.65	1020.5	1.00
804301-7	1830	0.70	1189.5	1.07
804301-8	1940	0.68	1261	1.05
804301-9	1720	0.63	1118	0.97
804301-10	2330	0.69	1514.5	1.07
804331-1	1850	0.68	1202.5	1.05
804331-2	3330	0.69	2164.5	1.07
804331-3	5150	0.74	3347.5	1.13
804407	7370	0.59	4790.5	0.90

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CHAIN OF CUSTODY RECORD

[IM3Plant-WDR-383] 804407

COC Number

TURNAROUND TIME 10 Days

DATE 10/16/12 PAGE 1 OF 1

COMPANY	E2
PROJECT NAME	PG&E Topock
PHONE	(530) 229-3303 FAX (530) 339-3303
ADDRESS	155 Grand Ave Ste 1000 Oakland, CA 94612
P.O. NUMBER	456827.01.DM TEAM 1
SAMPLERS (SIGNATURE	C.Knight

SAMPLE I.D.	DATE	TIME	DESCRIPTION	Cr6 (218.6) Lab Filtered	Total Metals (200.7) Cr. Mn	Specific Conductance (120.1)	TDS (SM2540C)	Turbidity (SM2130)	NUMBER OF CONTAINERS	COMMENTS
SC-700B-WDR-383	10/16/12	14:09	Water	X	X	X	X	X	3	pH=6 (200.7)
									3	TOTAL NUMBER OF CONTAINERS

ALERT !!
Level III QC

For Sample Conditions
See Form Attached

CHAIN OF CUSTODY SIGNATURE RECORD

	Printed Name	Company/ Agency	Date/ Time
Signature (Relinquished) C.Knight	C.Knight	CH2M.Hill	10/16/12 15:23
Signature (Received) Rafael Davila	Rafael	T.L.I	10-16-12 15:30
Signature (Relinquished) Rafael Davila	Rafael	T.L.I	10-16-12 21:30
Signature (Received) Shakeenia	Linda	TLI	10/16/12 21:30
Signature (Relinquished)			
Signature (Received)			

SAMPLE CONDITIONS

RECEIVED COOL ☑ WARM ☐ 3.3 °C

CUSTODY SEALED YES ☐ NO ☑

SPECIAL REQUIREMENTS:

042

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
10/16/12	804358-1	9.5	N/A	N/A	N/A	HAV
	-2					
	-3					
	-4					
	-5					
	-6					
	-7					
10/16/12	804359-1	9.5	N/A	N/A	N/A	HAV
	-2					
	-3					
	-4					
	-5					
	-6					
	-7					
	-8					
	-9					
	-10					
10/17/12	804407	7	2 ml	9.5	11:30 AM	HAV
10/17/12	804408-1	9.5	N/A	N/A	N/A	HAV
	-2					
	-3					
	-4					
	-5					
10/17/12	804409-1	9.5	N/A	N/A	N/A	HAV
	-2					
	-3					
	-4					
	-5					
	-6					
	-7					
	-8					

10-24-12 HAV

10/22/12

TRUESDAIL LABORATORIES, INC.

Turbidity/pH Check

Sample Number	Turbidity	pH	Date	Analyst	Need Digest	pH2-Adjusted Time	Date/Time of 2nd pH check	Comments
804259	>1	<2	10/10/12	M.M	3010A			
804274 (1-7,9)	<1	<2	10/11/12	M.M	3010A			
804275 (1-8)	↓	↓	↓	↓	↓			
804276 (1-5,7-8)	↓	↓	↓	↓	↓			
804209	>1	<2	10/12/12	M.M	3010A			
804211	↓	↓	↓	↓	↓			
804236 (1-6)								
804237								
804238								
804264 (1-21)								
804294	↓	↓	↓	↓	↓			
804293 (1-3)	<1	<2	10/15/12	M.M	3010A			
84295 (1-8)	↓	↓	↓	↓	↓			
804303	>1	>2	10/15/12	MM	3010A			
804343 (1,2,4)	<1	>2	↓	MM	NO	10-15-12	10-16-12	pH<2
804222 (1-4)	↓	↓	↓	↓	↓	↓	↓	↓
804221 (1-3)	↓	↓	↓	↓	↓	↓	↓	↓
801357 (1-6)	<1	<2	10/16/12	M.M	3010A			
804358 (1-5,7)	↓	↓	↓	↓	↓			
804359 (1-9)	↓	↓	↓	↓	↓			
804360 (1-2)	↓	↓	↓	↓	↓			
804407	<1	>2	10/17/12	MM	3010A			
804408 (1-5)	↓	<2	↓	↓	↓			
804409 (1-11)	↓	↓	↓	↓	↓			
804410 (1-2)	↓	↓	↓	↓	↓			
804411 (1-6)	↓	↓	↓	↓	↓			
804412 (1-4)	↓	↓	↓	↓	↓			
804413 (1-15)	↓	↓	↓	↓	↓			
804269 (10-12)	<1	>2	10-18-12	BE	NO	12:30pm	10-19-12	pH<2
804270 (1-7)	↓	↓	↓	↓	↓	↓	↓	↓
804376							10-22-12	pH<2
804399 (1-3)							↓	↓
804405 (1-3)								
804428 (1-3)								
804429 (10-12)	↓	↓	↓	↓	↓	↓	↓	↓
804439	>1	>2	10/18/12	KR	YES			
804442	>1	>2	↓	↓	↓			
804418 (1-5)	<1	<2	10/22/12	MM	3010A			
804434 (1-9)	↓	↓	↓	↓	↓			
804435 (1-4,6-9)	↓	↓	↓	↓	↓			
804436 (1-7,6-10)	↓	↓	↓	↓	↓			
804437	↓	↓	↓	↓	↓			
804438	↓	↓	↓	↓	↓			
804458 (1-3)	↓	↓	↓	↓	↓			
804304	<1	<2	10/16/12	MM	3010A			

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.

TRUESDAIL LABORATORIES, INC.

ALERT !!
Level III QC

Sample Integrity & Analysis Discrepancy Form

Client: E2 **Lab #** 804407

Date Delivered: 10/16/12 **Time:** 21:30 **By:** ☐Mail ☒Field Service ☐Client

1.	Was a Chain of Custody received and signed?	☒Yes	☐No	☐N/A
2.	Does Customer require an acknowledgement of the COC?	☐Yes	☐No	☒N/A
3.	Are there any special requirements or notes on the COC?	☐Yes	☐No	☒N/A
4.	If a letter was sent with the COC, does it match the COC?	☐Yes	☐No	☒N/A
5.	Were all requested analyses understood and acceptable?	☒Yes	☐No	☐N/A
6.	Were samples received in a chilled condition? Temperature (if yes)? 3.3°C	☒Yes	☐No	☐N/A
7.	Were samples received intact (i.e. broken bottles, leaks, air bubbles, etc..)?	☒Yes	☐No	☐N/A
8.	Were sample custody seals intact?	☐Yes	☐No	☒N/A
9.	Does the number of samples received agree with COC?	☒Yes	☐No	☐N/A
10.	Did sample labels correspond with the client ID's?	☒Yes	☐No	☐N/A
11.	Did sample labels indicate proper preservation? Preserved (if yes) by: ☐Truesdail ☐Client	☐Yes	☐No	☒N/A
12.	Were samples pH checked? pH = See COC	☒Yes	☐No	☐N/A
13.	Were all analyses within holding time at time of receipt? If not, notify Project Manager.	☒Yes	☐No	☐N/A
14.	Have Project due dates been checked and accepted? Turn Around Time (TAT): ☐ RUSH ☒ Std	☒Yes	☐No	☐N/A

15. **Sample Matrix:** ☐Liquid ☐Drinking Water ☐Ground Water ☐Waste Water ☐Sludge ☐Soil ☐Wipe ☐Paint ☐Solid ☒Other Water

16. Comments: _____

17. Sample Check-In completed by **Truesdail** Log-In/Receiving: Alex

TRUESDAIL LABORATORIES, INC.

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December 2, 2012

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-384 PROJECT, GROUNDWATER MONITORING, TLI NO.: 804512

Truesdail Laboratories, Inc. is pleased to submit this report summarizing the Topock IM3Plant-WDR-384 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 23, 2012, 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.

Total Chromium and Total Manganese were analyzed by EPA 200.8 rather than EPA 200.7 as requested on the chain of custody with Mr. Shawn Duffy's approval.

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

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

Respectfully Submitted,
TRUESDAIL LABORATORIES, INC.

for Mona Nassimi
Manager, Analytical Services

Michael Ngo
Quality Assurance/Quality Control Officer

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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.: 456827.01.DM

Laboratory No.: 804512
Date: December 2, 2012
Collected: October 23, 2012
Received: October 23, 2012

ANALYST LIST

METHOD	PARAMETER	ANALYST
EPA 120.1	Specific Conductivity	Gautam Savani
SM 2540C	Total Dissolved Solids	Jenny Tankunakorn
SM 2130B	Turbidity	Gautam Savani
EPA 200.8	Total Metals	Bita Emami
EPA 218.6	Hexavalent Chromium	George Wahba

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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.: 456827.01.DM
P.O. No.: 456827.01.DM

Laboratory No.: 804512
Date Received: October 23, 2012

Analytical Results Summary

Lab Sample ID	Field ID	Analysis Method	Extraction Method	Sample Date	Sample Time	Parameter	Result	Units	RL
804512-001	SC-700B-WDR-384	E120.1	NONE	10/23/2012	14:00	EC	7320	umhos/cm	2.00
804512-001	SC-700B-WDR-384	E200.8	NONE	10/23/2012	14:00	Chromium	ND	ug/L	1.0
804512-001	SC-700B-WDR-384	E200.8	NONE	10/23/2012	14:00	Manganese	0.81	ug/L	0.50
804512-001	SC-700B-WDR-384	E218.6	LABFLT	10/23/2012	14:00	Chromium, Hexavalent	0.21	ug/L	0.20
804512-001	SC-700B-WDR-384	SM2130B	NONE	10/23/2012	14:00	Turbidity	0.11	NTU	0.100
804512-001	SC-700B-WDR-384	SM2540C	NONE	10/23/2012	14:00	Total Dissolved Solids	4210	mg/L	250

ND: Non Detected (below reporting limit)
mg/L: Milligrams per liter.
Note: The following "Significant Figures" rule has been applied to all results:
Results below 0.01ppm will have two (2) significant figures.
Result above or equal to 0.01ppm will have three (3) significant figures.
Quality Control data will always have three (3) significant figures.

005

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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: 456827.01.DM
P.O. Number: 456827.01.DM
Release Number:

Laboratory No. 804512

Printed 12/2/2012

Samples Received on 10/23/2012 9:30:00 PM

Field ID	Lab ID	Collected	Matrix
SC-700B-WDR-384	804512-001	10/23/2012 14:00	Water

Specific Conductivity - EPA 120.1 Batch 10EC12F

Parameter	Unit	Analyzed	DF	MDL	RL	Result
804512-001 Specific Conductivity	umhos/cm	10/25/2012	1.00	0.116	2.00	7320

Method Blank

Parameter	Unit	DF	Result
Specific Conductivity	umhos	1.00	ND

Duplicate — Lab ID = 804512-001

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Specific Conductivity	umhos	1.00	7310	7320	0.137	0 - 10

Lab Control Sample

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Specific Conductivity	umhos	1.00	703	706	99.6	90 - 110

MRCCS - Secondary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Specific Conductivity	umhos	1.00	701	706	99.3	90 - 110

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Specific Conductivity	umhos	1.00	980	996	98.4	90 - 110

Chrome VI by EPA 218.6

Batch 10CrH12S

Parameter	Unit	Analyzed	DF	MDL	RL	Result
804512-001 Chromium, Hexavalent	ug/L	10/24/2012 14:16	1.00	0.00920	0.20	0.21

Method Blank

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

Duplicate Lab ID = 804358-003

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	4.07	4.07	0.0540	0 - 20

Low Level Calibration Verification

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	0.191	0.200	95.6	70 - 130

Lab Control Sample

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	4.84	5.00	96.9	90 - 110

Matrix Spike Lab ID = 804358-001

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	8.04	8.41(5.00)	92.6	90 - 110

Matrix Spike Lab ID = 804358-002

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	7.36	7.70(5.00)	93.3	90 - 110

Matrix Spike Lab ID = 804358-003

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	8.66	9.07(5.00)	91.8	90 - 110

Matrix Spike Lab ID = 804358-004

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	8.65	9.02(5.00)	92.6	90 - 110

Matrix Spike Lab ID = 804358-005

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	6.35	6.72(5.00)	92.6	90 - 110

Matrix Spike Lab ID = 804358-006

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	0.931	1.00(1.00)	93.1	90 - 110

Matrix Spike — Lab ID = 804358-007

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	8.01	8.36(5.00)	92.9	90 - 110

Matrix Spike — Lab ID = 804410-001

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	1.02	1.05(1.00)	96.6	90 - 110

Matrix Spike — Lab ID = 804412-001

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	8.77	9.08(5.00)	93.8	90 - 110

Matrix Spike — Lab ID = 804412-002

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	7.86	8.20(5.00)	93.1	90 - 110

Matrix Spike — Lab ID = 804412-003

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	8.15	8.52(5.00)	92.7	90 - 110

Matrix Spike — Lab ID = 804412-004

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	9.34	9.60(5.00)	94.7	90 - 110

Matrix Spike — Lab ID = 804512-001

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	1.15	1.21(1.00)	94.1	90 - 110

MRCCS - Secondary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	4.84	5.00	96.7	90 - 110

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	9.60	10.0	96.0	95 - 105

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	9.66	10.0	96.6	95 - 105

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	9.77	10.0	97.7	95 - 105

Metals by EPA 200.8, Total

Batch 112712A

Parameter	Unit	Analyzed	DF	MDL	RL	Result
804512-001 Chromium	ug/L	11/27/2012 21:57	2.50	0.230	1.0	ND
Manganese	ug/L	11/27/2012 21:57	2.50	0.215	0.50	0.81

Method Blank

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

Duplicate

Lab ID = 804512-001

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Chromium	ug/L	2.50	ND	0	0	0 - 20
Manganese	ug/L	2.50	0.747	0.807	7.68	0 - 20

Low Level Calibration Verification

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium	ug/L	1.00	0.173	0.200	86.5	70 - 130
Manganese	ug/L	1.00	0.164	0.200	82.0	70 - 130

Lab Control Sample

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium	ug/L	2.50	100	100	100	85 - 115
Manganese	ug/L	2.50	94.1	100	94.1	85 - 115

Matrix Spike

Lab ID = 804512-001

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium	ug/L	2.50	101	100(100)	101	75 - 125
Manganese	ug/L	2.50	95.7	101(100)	94.9	75 - 125

Matrix Spike Duplicate

Lab ID = 804512-001

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium	ug/L	2.50	104	100(100)	104	75 - 125
Manganese	ug/L	2.50	98.9	101(100)	98.1	75 - 125

MRCCS - Secondary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium	ug/L	1.00	20.1	20.0	101	90 - 110
Manganese	ug/L	1.00	19.0	20.0	95.1	90 - 110

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium	ug/L	1.00	19.6	20.0	98.2	90 - 110

Interference Check Standard AB

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium	ug/L	1.00	19.0	20.0	95.2	80 - 120

Interference Check Standard AB

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Manganese	ug/L	1.00	18.6	20.0	93.2	80 - 120

Interference Check Standard AB

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Manganese	ug/L	1.00	18.3	20.0	91.6	80 - 120

Total Dissolved Solids by SM 2540 C

Batch 10TDS12J

Parameter	Unit	Analyzed	DF	MDL	RL	Result
804512-001 Total Dissolved Solids	mg/L	10/24/2012	1.00	0.757	250	4210

Method Blank

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

Duplicate — Lab ID = 804459-011

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Total Dissolved Solids	mg/L	1.00	1330	1340	1.05	0 - 10

Lab Control Sample

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Total Dissolved Solids	mg/L	1.00	491	500	98.2	90 - 110

Turbidity by SM 2130 B Batch 10TUC12N

Parameter	Unit	Analyzed	DF	MDL	RL	Result
804512-001 Turbidity	NTU	10/24/2012	1.00	0.0140	0.100	0.110

Method Blank

Parameter	Unit	DF	Result
Turbidity	NTU	1.00	ND

Duplicate — Lab ID = 804512-001

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Turbidity	NTU	1.00	0.111	0.110	0.905	0 - 20

Lab Control Sample

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Turbidity	NTU	1.00	8.33	8.00	104	90 - 110

Lab Control Sample

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Turbidity	NTU	1.00	8.10	8.00	101	90 - 110

Respectfully submitted,
TRUESDAIL LABORATORIES, INC.

for Mona Nassimi
Manager, Analytical Services

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Truesdail Laboratories, Inc.

Total Dissolved Solids by SM 2540 C

Calculations

Batch: 10TDS12J
Date Analyzed: 10/23/12

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	72.5691	72.5699	72.5696	0.0003	No	0.0005	5.0	25.0	ND	1
804459-1	100	71.3095	71.3621	71.3621	0.0000	No	0.0526	526.0	25.0	526.0	1
804459-2	50	67.1631	67.2321	67.2318	0.0003	No	0.0687	1374.0	50.0	1374.0	1
804459-3	50	74.6111	74.7093	74.7093	0.0000	No	0.0982	1964.0	50.0	1964.0	1
804459-4	20	51.1863	51.2614	51.261	0.0004	No	0.0747	3735.0	125.0	3735.0	1
804459-5	20	51.4372	51.5086	51.5086	0.0000	No	0.0714	3570.0	125.0	3570.0	1
804459-7	100	68.8721	68.9163	68.9161	0.0002	No	0.0440	440.0	25.0	440.0	1
804459-8	50	71.8074	71.8772	71.8771	0.0001	No	0.0697	1394.0	50.0	1394.0	1
804459-9	50	75.7610	75.83	75.8297	0.0003	No	0.0687	1374.0	50.0	1374.0	1
804459-10	50	72.3863	72.4318	72.4314	0.0004	No	0.0451	902.0	50.0	902.0	1
804459-11	50	74.7062	74.7733	74.7732	0.0001	No	0.0670	1340.0	50.0	1340.0	1
804459-11D	50	65.4470	65.5137	65.5133	0.0004	No	0.0663	1326.0	50.0	1326.0	1
LCS	100	75.2749	75.3240	75.3240	0.0000	No	0.0491	491.0	25.0	491.0	1
804453	50	67.9715	68.0664	68.0661	0.0003	No	0.0946	1892.0	50.0	1892.0	1
804478	50	69.4083	69.4508	69.4504	0.0004	No	0.0421	842.0	50.0	842.0	1
804493-1	100	67.7071	67.732	67.7318	0.0002	No	0.0247	247.0	25.0	247.0	1
804493-3	100	68.1779	68.2115	68.2113	0.0002	No	0.0334	334.0	25.0	334.0	1
804493-4	100	65.6234	65.6669	65.6666	0.0003	No	0.0432	432.0	25.0	432.0	1
804493-5	100	68.1915	68.2289	68.2289	0.0000	No	0.0374	374.0	25.0	374.0	1
804493-6	50	77.5556	77.6183	77.6182	0.0001	No	0.0626	1252.0	50.0	1252.0	1
804493-7	20	74.9370	75.0154	75.015	0.0004	No	0.0780	3900.0	125.0	3900.0	1
804512	10	70.8924	70.9346	70.9345	0.0001	No	0.0421	4210.0	250.0	4210.0	1
804520-1	50	74.7296	74.7718	74.7715	0.0003	No	0.0419	838.0	50.0	838.0	1

Calculation as follows:

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

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?
LCS1	491	500	98.2%	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

Lab Number	Sample Weight, g	Sample Dup Weight, g	% RPD	Acceptance Limit	QC Within Control?
804459-11	0.067	0.0663	0.5%	≤5%	Yes

Duplicate Determination Difference

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

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).

Jenny T.
Analyst Printed Name

Analyst Signature

Maksim L.
Hope T.
Reviewer Printed Name

Reviewer Signature

Total Dissolved Solids by SM 2540 C

TDS/EC CHECK

Batch: 10TDS12J
Date Analyzed: 10/23/12

Laboratory Number	EC	TDS/EC Ratio: 0.55-.9	Calculated TDS (EC*0.65)	Measured TDS / Calc TDS <1.3
804459-1	882	0.60	573.3	0.92
804459-2	2000	0.69	1300	1.06
804459-3	2880	0.68	1872	1.05
804459-4	5210	0.72	3386.5	1.10
804459-5	5080	0.70	3302	1.08
804459-7	736	0.60	478.4	0.92
804459-8	1980	0.70	1287	1.08
804459-9	2000	0.69	1300	1.06
804459-10	1420	0.64	923	0.98
804459-11	1950	0.69	1267.5	1.06
804459-11D	1950	0.68	1267.5	1.05
LCS				
804453	2890	0.65	1878.5	1.01
804478	1250	0.67	812.5	1.04
804493-1	437	0.57	284.05	0.87
804493-3	550	0.61	357.5	0.93
804493-4	667	0.65	433.55	1.00
804493-5	611	0.61	397.15	0.94
804493-6	1766	0.71	1147.9	1.09
804493-7	5790	0.67	3763.5	1.04
804512	7380	0.57	4797	0.88
804520-1	1440	0.58	936	0.90

Rec'd 10/23/12
~~Sta~~ 804512

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-384] 804512

COC Number
TURNAROUND TIME 10 Days
DATE 10/23/12 PAGE 1 OF 1

COMPANY	E2
PROJECT NAME	PG&E Topock
PHONE	(530) 229-3303 FAX (530) 339-3303
ADDRESS	155 Grand Ave Ste 1000 Oakland, CA 94612
P.O. NUMBER	456827.01.DM TEAM 1
SAMPLERS (SIGNATURE	C. Knight

SAMPLE I.D.	DATE	TIME	DESCRIPTION	Cr6 (218.6) Lab Filtered	Total Metals (200.7) Cr, Mn	Specific Conductance (120.1)	TDS (SM2540C)	Turbidity (SM2130)								NUMBER OF CONTAINERS	COMMENTS
SC-700B-WDR-384	10/23/12	14:00	Water	X	X	X	X		X							3	pH=6(200.7)
																3	TOTAL NUMBER OF CONTAINERS

ALERT !!
Level III QC

For Sample Conditions See Form Attached

CHAIN OF CUSTODY SIGNATURE RECORD

Signature (Relinquished)	C. Knight	Printed Name	C. Knight	Company/ Agency	CH2M HILL	Date/ Time	10-23-12 15:00
Signature (Received)	Rafael Davila	Printed Name	Rafael	Company/ Agency	T.L.I	Date/ Time	10-23-12 15:00
Signature (Relinquished)	Rafael Davila	Printed Name	Rafael	Company/ Agency	T.L.I	Date/ Time	10-23-12 21:30
Signature (Received)	Shabenina	Printed Name	Luda	Company/ Agency	TLI	Date/ Time	10/23/12 21:30
Signature (Relinquished)		Printed Name		Company/ Agency		Date/ Time	
Signature (Received)		Printed Name		Company/ Agency		Date/ Time	

SAMPLE CONDITIONS

RECEIVED COOL ☑ WARM ☐ 4.4°C

CUSTODY SEALED YES ☐ NO ☑

SPECIAL REQUIREMENTS:

0533

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
10/19/12	804461-6	9.5	N/A	N/A	N/A	HAV
	-7					
	-8					
	-9					
	-10					
	-11					
	-12					
	-13					
	-14					
10/19/12	804478	9.5	N/A	N/A	N/A	HAV
10/23/12	804493-1	9.5	N/A	N/A	N/A	[illegible]
	-2					
	-3					
	-4					
	-5					
	-6					
	-7					
10/24/12	804512	7	2mL/10mL	9.5	12:15 pm	[illegible]

10-30-12 HAV

10/29/12

TRUESDAIL LABORATORIES, INC.

Turbidity/pH Check

Sample Number	Turbidity	pH	Date	Analyst	Need Digest	pH2-Adjusted Time	Date/Time of 2nd pH check	Comments
804459 (1-5, 7-11	<1	<2	10/22/12	MM	3010A			
804460 (1, 3-11)	↓	↓	↓	↓	↓			
804461 (1-14)	↓	↓	↓	↓	↓			
804478	<1	>2	10-22-12	BE	NO	15:00	10-23-12	PH<2
804444	>1	<2	10/23/12	MM	3010A			
804447	↓	↓	↓	↓	↓			
804471								
804472								
804482								
804494								
804499								
804502	↓	↓	↓	↓	↓	↓		
804493	<1	<2	10/24/12	M.M	3010A			
804512	<1	>2	↓	↓	↓			
804507-1	<1	>2	10/25/12	MS	NO	16:10pm	11-04	PH<2
804507-2	<1	>2	10/25/12	MS	NO	16:12	↓	↓
804507-3	<1	>2	10/25/12	MS	NO	16:15		
804506	<1	>2	10/25/12	MS	NO	16:17		
804529-10	<1	>2	10/25/12	MS	NO	16:19		
804529-11	<1	>2	10/25/12	MS	NO	16:22		
804529-12	<1	>2	10/25/12	MS	NO	16:24	↓	↓
804520	>1	<2	10/29/12	M.M	3010A			
804532	↓	↓	↓	↓	↓			
804537								
804543								
804544								
804545								
804546								
804547								
804562	↓	↓	↓	↓	↓			
804570 (1-2, 4)	<1	>2	10-30-12	BE	NO	8:00 AM	11-4	PH<2
804573 (1-3)	>1	>2	10/31/12	KK	yes	TTLC @ 10am		
804574	>1	>2	↓	↓	↓	↓		
804602	<1	>2	10/31/12	MM	3010A			
804575	>1	<2	↓	↓	↓			
804576	rubber	-			TTLC			
804593	>1	<2	↓	↓	↓			
804607	↓	↓	↓	↓	3010A			
804612	↓	>2	10/31/12	M.M	3010A	11:30am	10/31/12	pH<2
804620	>1	<2	11-2-12	BE	3010A			
804621	↓	↓	↓	↓	↓			
804622								
804623								
804621	↓	↓	↓	↓	↓			

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.

TRUESDAIL LABORATORIES, INC.

Sample Integrity & Analysis Discrepancy Form

Client: E2 **Lab #** 804572

Date Delivered: 10/29/12 **Time:** 11:30 **By:** ☐Mail ☒Field Service ☐Client

1. Was a Chain of Custody received and signed? ☒Yes ☐No ☐N/A
2. Does Customer require an acknowledgement of the COC? ☐Yes ☐No ☒N/A
3. Are there any special requirements or notes on the COC? ☐Yes ☐No ☒N/A
4. If a letter was sent with the COC, does it match the COC? ☐Yes ☐No ☒N/A
5. Were all requested analyses understood and acceptable? ☒Yes ☐No ☐N/A
6. Were samples received in a chilled condition? ☒Yes ☐No ☐N/A
   Temperature (if yes)? 4.4 °C
7. Were samples received intact (i.e. broken bottles, leaks, air bubbles, etc..)? ☒Yes ☐No ☐N/A
8. Were sample custody seals intact? ☐Yes ☐No ☒N/A
9. Does the number of samples received agree with COC? ☒Yes ☐No ☐N/A
10. Did sample labels correspond with the client ID's? ☒Yes ☐No ☐N/A
11. Did sample labels indicate proper preservation? ☐Yes ☐No ☒N/A
    Preserved (if yes) by: ☐Truesdail ☐Client
12. Were samples pH checked? pH = see C.O.C. ☒Yes ☐No ☐N/A
13. Were all analyses within holding time at time of receipt? ☒Yes ☐No ☐N/A
    If not, notify Project Manager.
14. Have Project due dates been checked and accepted? ☒Yes ☐No ☐N/A
    Turn Around Time (TAT): ☐ RUSH ☒Std
15. **Sample Matrix:** ☐Liquid ☐Drinking Water ☐Ground Water ☐Waste Water ☐Sludge ☐Soil ☐Wipe ☐Paint ☐Solid ☒Other Water
16. Comments: ____________
17. Sample Check-In completed by **Truesdail** Log-In/Receiving: L. Shabunina

ALERT !! Level III QC

TRUESDAIL LABORATORIES, INC.

EXCELLENCE IN INDEPENDENT TESTING

Established 1931

14201 FRANKLIN AVENUE
TUSTIN, CALIFORNIA 92780-7008
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www.truesdail.com

December 2, 2012

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-385 PROJECT, GROUNDWATER MONITORING, TLI NO.: 804602

Truesdail Laboratories, Inc. is pleased to submit this report summarizing the Topock IM3Plant-WDR-385 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 30, 2012, 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.

Total Chromium and Total Manganese were analyzed by EPA 200.8 rather than EPA 200.7 as requested on the chain of custody with Mr. Shawn Duffy's approval.

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

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

Respectfully Submitted,
TRUESDAIL LABORATORIES, INC.

for Mona Nassimi
Manager, Analytical Services

Michael Ngo
Quality Assurance/Quality Control Officer

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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.: 456827.01.DM

Laboratory No.: 804602
Date: December 2, 2012
Collected: October 30, 2012
Received: October 30, 2012

ANALYST LIST

METHOD	PARAMETER	ANALYST
EPA 120.1	Specific Conductivity	Gautam Savani
SM 2540C	Total Dissolved Solids	Jenny Tankunakorn
SM 2130B	Turbidity	Gautam Savani
EPA 200.8	Total Metals	Bita Emami
EPA 218.6	Hexavalent Chromium	Himani Vaishnav

TRUESDAIL LABORATORIES, INC.
EXCELLENCE IN INDEPENDENT TESTING

Established 1931

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(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

Project Name: PG&E Topock Project
Project No.: 456827.01.DM
P.O. No.: 456827.01.DM

Laboratory No.: 804602
Date Received: October 30, 2012

Analytical Results Summary

Lab Sample ID	Field ID	Analysis Method	Extraction Method	Sample Date	Sample Time	Parameter	Result	Units	RL
804602-001	SC-700B-WDR-385	E120.1	NONE	10/30/2012	13:15	EC	7380	umhos/cm	2.00
804602-001	SC-700B-WDR-385	E200.8	NONE	10/30/2012	13:15	Chromium	ND	ug/L	1.0
804602-001	SC-700B-WDR-385	E200.8	NONE	10/30/2012	13:15	Manganese	2.4	ug/L	0.50
804602-001	SC-700B-WDR-385	E218.6	LABFLT	10/30/2012	13:15	Chromium, Hexavalent	ND	ug/L	0.20
804602-001	SC-700B-WDR-385	SM2130B	NONE	10/30/2012	13:15	Turbidity	0.189	NTU	0.100
804602-001	SC-700B-WDR-385	SM2540C	NONE	10/30/2012	13:15	Total Dissolved Solids	4700	mg/L	250

ND: Non Detected (below reporting limit)
mg/L: Milligrams per liter.
Note: The following "Significant Figures" rule has been applied to all results:
Results below 0.01ppm will have two (2) significant figures.
Result above or equal to 0.01ppm will have three (3) significant figures.
Quality Control data will always have three (3) significant figures.

005

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REPORT

Client: **E2 Consulting Engineers, Inc.**
155 Grand Avenue, Suite 800
Oakland, CA 94612
Attention: Jennifer Low
Project Name: PG&E Topock Project
Project Number: 456827.01.DM
P.O. Number: 456827.01.DM
Release Number:

Laboratory No. 804602

Printed 12/2/2012

Samples Received on 10/30/2012 9:30:00 PM

Field ID	Lab ID	Collected	Matrix
SC-700B-WDR-385	804602-001	10/30/2012 13:15	Water

Specific Conductivity - EPA 120.1 Batch 10EC12H

Parameter	Unit	Analyzed	DF	MDL	RL	Result
804602-001 Specific Conductivity	umhos/cm	10/31/2012	1.00	0.116	2.00	7380

Method Blank

Parameter	Unit	DF	Result
Specific Conductivity	umhos	1.00	ND

Duplicate — Lab ID = 804602-001

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Specific Conductivity	umhos	1.00	7370	7380	0.136	0 - 10

Lab Control Sample

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Specific Conductivity	umhos	1.00	702	706	99.4	90 - 110

MRCCS - Secondary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Specific Conductivity	umhos	1.00	710	706	100	90 - 110

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Specific Conductivity	umhos	1.00	980	996	98.4	90 - 110

Chrome VI by EPA 218.6

Batch 11CrH12B

Parameter	Unit	Analyzed	DF	MDL	RL	Result
804602-001 Chromium, Hexavalent	ug/L	11/02/2012 11:35	1.00	0.00920	0.20	ND

Method Blank

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

Duplicate Lab ID = 804636-001

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

Low Level Calibration Verification

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	0.196	0.200	97.8	70 - 130

Lab Control Sample

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	5.04	5.00	101	90 - 110

Matrix Spike Lab ID = 804435-004

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	1.92	1.96(1.00)	95.4	90 - 110

Matrix Spike Lab ID = 804602-001

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	5.00	5.24	5.00(5.00)	105	90 - 110

Matrix Spike Lab ID = 804602-001

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	1.15	1.14(1.00)	101	90 - 110

Matrix Spike Lab ID = 804636-001

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	1.02	1.00(1.00)	102	90 - 110

Matrix Spike Lab ID = 804636-002

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	0.998	1.00(1.00)	99.8	90 - 110

Matrix Spike Lab ID = 804636-003

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	0.998	1.00(1.00)	99.8	90 - 110

Metals by EPA 200.8, Total

Batch 112712A

Parameter	Unit	Analyzed	DF	MDL	RL	Result
804602-001 Chromium	ug/L	11/27/2012 11:02	2.50	0.230	1.0	ND
Manganese	ug/L	11/27/2012 11:02	2.50	0.215	0.50	2.4

Method Blank

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

Duplicate

Lab ID = 804602-001

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Chromium	ug/L	2.50	ND	0	0	0 - 20
Manganese	ug/L	2.50	2.47	2.40	2.71	0 - 20

Low Level Calibration Verification

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium	ug/L	1.00	0.173	0.200	86.5	70 - 130
Manganese	ug/L	1.00	0.164	0.200	82.0	70 - 130

Lab Control Sample

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium	ug/L	2.50	50.8	50.0	102	85 - 115
Manganese	ug/L	2.50	48.8	50.0	97.7	85 - 115

Matrix Spike

Lab ID = 804602-001

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium	ug/L	2.50	52.5	50.0(50.0)	105	75 - 125
Manganese	ug/L	2.50	51.9	52.4(50.0)	99.0	75 - 125

Matrix Spike Duplicate

Lab ID = 804602-001

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium	ug/L	2.50	51.1	50.0(50.0)	102	75 - 125
Manganese	ug/L	2.50	50.3	52.4(50.0)	95.8	75 - 125

MRCCS - Secondary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium	ug/L	1.00	20.1	20.0	101	90 - 110
Manganese	ug/L	1.00	19.0	20.0	95.1	90 - 110

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium	ug/L	1.00	19.6	20.0	98.2	90 - 110

Interference Check Standard AB

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium	ug/L	1.00	19.0	20.0	95.2	80 - 120

Interference Check Standard AB

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Manganese	ug/L	1.00	18.6	20.0	93.2	80 - 120

Interference Check Standard AB

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Manganese	ug/L	1.00	18.3	20.0	91.6	80 - 120

Total Dissolved Solids by SM 2540 C Batch 10TDS12K

Parameter	Unit	Analyzed	DF	MDL	RL	Result
804602-001 Total Dissolved Solids	mg/L	11/05/2012	1.00	0.757	250	4700

Method Blank

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

Duplicate Lab ID = 804570-002

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Total Dissolved Solids	mg/L	1.00	90.0	93.0	3.28	0 - 10

Lab Control Sample

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

Turbidity by SM 2130 B Batch 10TUC12Q

Parameter	Unit	Analyzed	DF	MDL	RL	Result
804602-001 Turbidity	NTU	10/31/2012	1.00	0.0140	0.100	0.189

Method Blank

Parameter	Unit	DF	Result
Turbidity	NTU	1.00	ND

Duplicate — Lab ID = 804602-001

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Turbidity	NTU	1.00	0.190	0.189	0.528	0 - 20

Lab Control Sample

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Turbidity	NTU	1.00	8.50	8.00	106	90 - 110

Lab Control Sample

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Turbidity	NTU	1.00	8.35	8.00	104	90 - 110

Respectfully submitted,
TRUESDAIL LABORATORIES, INC.

for Mona Nassimi
Manager, Analytical Services

e2
SC

Truesdail Laboratories, Inc.

Total Dissolved Solids by SM 2540 C

Calculations

Batch: 10TDS12K
Date Analyzed: 10/30/12

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	68.8420	68.8422	68.8422	0.0000	No	0.0002	2.0	25.0	ND	1
804570-2	200	110.9445	110.9631	110.9631	0.0000	No	0.0186	93.0	12.5	93.0	1
804570-4	100	108.7338	108.7715	108.7714	0.0001	No	0.0376	376.0	25.0	376.0	1
804602	10	71.3219	71.3689	71.3689	0.0000	No	0.0470	4700.0	250.0	4700.0	1
804607	50	73.1803	73.2247	73.2243	0.0004	No	0.0440	880.0	50.0	880.0	1
804620	20	49.7761	49.8770	49.8770	0.0000	No	0.1009	5045.0	125.0	5045.0	1
804621	20	50.8522	50.9489	50.9489	0.0000	No	0.0967	4835.0	125.0	4835.0	1
804622	5	51.3397	51.4327	51.4327	0.0000	No	0.0930	18600.0	500.0	18600.0	1
804623	10	51.2454	51.2957	51.2956	0.0001	No	0.0502	5020.0	250.0	5020.0	1
804624	10	49.4000	49.4608	49.4607	0.0001	No	0.0607	6070.0	250.0	6070.0	1
804625	10	50.3187	50.3744	50.3742	0.0002	No	0.0555	5550.0	250.0	5550.0	1
804570-2D	200	112.9685	112.9865	112.9865	0.0000	No	0.0180	90.0	12.5	90.0	1
LCS	100	73.4901	73.5395	73.5395	0.0000	No	0.0494	494.0	25.0	494.0	1
804626	10	51.9310	51.9878	51.9874	0.0004	No	0.0564	5640.0	250.0	5640.0	1
804627	20	51.9377	52.0316	52.0316	0.0000	No	0.0939	4695.0	125.0	4695.0	1
804615	470	105.3551	105.364	105.364	0.0000	No	0.0089	18.9	5.3	18.9	1
804636	100	111.3382	111.3881	111.3881	0.0000	No	0.0499	499.0	25.0	499.0	1
804651-1	480	109.0637	109.0647	109.0645	0.0002	No	0.0008	1.7	5.2	ND	1
804651-2	490	109.9026	109.9026	109.9026	0.0000	No	0.0000	0.0	5.1	ND	1
804658-2	200	112.8428	112.8619	112.8619	0.0000	No	0.0191	95.5	12.5	95.5	1
804658-4	100	111.6516	111.6883	111.6883	0.0000	No	0.0367	367.0	25.0	367.0	1
804622D	5	49.3541	49.4471	49.4468	0.0003	No	0.0927	18540.0	500.0	18540.0	1

Calculation as follows:

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

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?
LCS1	494	500	98.8%	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

Lab Number	Sample Weight, g	Sample Dup Weight, g	% RPD	Acceptance Limit	QC Within Control?
804570-2	0.0186	0.018	1.6%	≤5%	Yes
804622	0.093	0.0927	0.2%	5%	Yes

Duplicate Determination Difference

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

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).

Jenny T.
Analyst Printed Name

Analyst Signature

Maksim
~~Hope T.~~
Reviewer Printed Name

Reviewer Signature

020

Total Dissolved Solids by SM 2540 C

TDS/EC CHECK

Batch: 10TDS12K
Date Analyzed: 10/30/12

Laboratory Number	EC	TDS/EC Ratio: 0.55-.9	Calculated TDS (EC*0.65)	Measured TDS / Calc TDS <1.3
804570-2	165	0.56	107.25	0.87
804570-4	667	0.56	433.55	0.87
804602	7380	0.64	4797	0.98
804607	1418	0.62	921.7	0.95
804620	6560	0.77	4264	1.18
804621	6560	0.74	4264	1.13
804622	28100	0.66	18265	1.02
804623	7970	0.63	5180.5	0.97
804624	7960	0.76	5174	1.17
804625	7860	0.71	5109	1.09
804570-2D	165	0.55	107.25	0.84
LCS				
804626	7920	0.71	5148	1.10
804627	6510	0.72	4231.5	1.11
804615	34.4	0.55	22.36	0.85
804636	900	0.55	585	0.85
804651-1	19.4	ND	12.61	ND
804651-2	1.23	ND	0.7995	ND
804658-2	173	0.55	112.45	0.85
804658-4	670	0.55	435.5	0.84
804622D	28100	0.66	18265	1.02

804602

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-385]

COC Number
TURNAROUND TIME 10 Days
DATE 10/30/12 PAGE 1 OF 1

COMPANY E2
PROJECT NAME PG&E Topock
PHONE (530) 229-3303 FAX (530) 339-3303
ADDRESS 155 Grand Ave Ste 1000
Oakland, CA 94612
P.O. NUMBER 456827.01.DM TEAM 1
SAMPLERS (SIGNATURE C. Knight

Rec'd 10/30/12
Sed 804602

SAMPLE I.D.	DATE	TIME	DESCRIPTION	Cr6 (218.6) Lab Filtered	Total Metals (200.7) Cr, Mn	Specific Conductance (120.1)	TDS (SM2540C)	Turbidity (SM2130)	NUMBER OF CONTAINERS	COMMENTS
SC-700B-WDR-385	10/30/12	13:15	Water	x	x	x	x	x	3	pH=6 (200.7)
									3	TOTAL NUMBER OF CONTAINERS

ALERT, !!
Level III QC

For Sample Conditions See Form Attached

CHAIN OF CUSTODY SIGNATURE RECORD

	Printed Name	Company/ Agency	Date/ Time
Signature (Relinquished) C Knight	C. Knight	CH2M Hill	10-30-12 15:30
Signature (Received) Rafael Davila	Rafael	T.L.I	10-30-12 15:30
Signature (Relinquished) Rafael Davila	Rafael	T.L.I	10-30-12 21:30
Signature (Received)		TLI	10-30-12 21:30
Signature (Relinquished)	Printed Name	Company/ Agency	Date/ Time
Signature (Received)	Printed Name	Company/ Agency	Date/ Time

SAMPLE CONDITIONS
RECEIVED COOL ☑ WARM ☐ 5 °C
CUSTODY SEALED YES ☐ NO ☑

SPECIAL REQUIREMENTS:

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
10/31/12	804602	7	2mL / 100mL	9.5	11 Am	GW
11/2/12						
11/2/12	804636-1	9.5	N/A	N/A	N/A	GW
	-2					
	-3					
	-4					
	-5					
	-6					
	-7					
	-8					
	-9					
	-10					
	-11					
	-12					
	-13					
	-14					
	-15					
11/5/12	804652-1	9.5	N/A	N/A	N/A	GW
	-2					
	-5					
	-6					
	-7					
	-8					
	-9					
	-10					
	-12					
	-13					
11/7/12	804722-1	7	2mL / 100mL (Total)	9.5	11:00 Am	GW
	-2				11:10 Am	
	804723-1	7			11:15 Am	
	-2				11:20 Am	

HAV
11/08/12

GW 11/9/12

TRUESDAIL LABORATORIES, INC.

Turbidity/pH Check

Sample Number	Turbidity	pH	Date	Analyst	Need Digest	pH2-Adjusted Time	Date/Time of 2nd pH check	Comments
804459 (1-5, 7-11	< 1	< 2	10/22/12	M M	3010A			
804460 (1, 3-11)	↓	↓	↓	↓	↓			
804461 (1-14)	↓	↓	↓	↓	↓			
804478	< 1	> 2	10-22-12	BE	NO	15:00	10-23-12	PH < 2
804444	> 1	< 2	10/23/12	M M	3010A			
804447	↓	↓	↓	↓	↓			
804471	↓	↓	↓	↓	↓			
804472	↓	↓	↓	↓	↓			
804482	↓	↓	↓	↓	↓			
804494	↓	↓	↓	↓	↓			
804499	↓	↓	↓	↓	↓			
804502	↓	↓	↓	↓	↓			
804493	< 1	< 2	10/24/12	M.M	3010A			
804512	< 1	> 2	↓	↓	↓			
804507-1	< 1	> 2	10/25/12	MS	NO	16:10pm	11-04	PH < 2
804507-2	< 1	> 2	10/25/12	MS	NO	16:12	↓	↓
804507-3	< 1	> 2	10/25/12	MS	NO	16:15	↓	↓
804506	< 1	> 2	10/25/12	MS	NO	16:17	↓	↓
804529-10	< 1	> 2	10/25/12	MS	NO	16:19	↓	↓
804529-11	< 1	> 2	10/25/12	MS	NO	16:22	↓	↓
804529-12	< 1	> 2	10/25/12	MS	NO	16:24	↓	↓
804520	> 1	< 2	10/29/12	M.M	3010A			
804532	↓	↓	↓	↓	↓			
804537	↓	↓	↓	↓	↓			
804543	↓	↓	↓	↓	↓			
804544	↓	↓	↓	↓	↓			
804545	↓	↓	↓	↓	↓			
804546	↓	↓	↓	↓	↓			
804547	↓	↓	↓	↓	↓			
804562	↓	↓	↓	↓	↓			
804570 (1-2, 4)	< 1	> 2	10-30-12	BE	NO	8:00 AM	11-4	PH < 2
804573 (1-3)	> 1	> 2	10/31/12	KK	yes	TTLC @ 10am		
804574	> 1	> 2	↓	↓	↓	↓		
804602	< 1	> 2	10/31/12	M M	3010A			
804575	> 1	< 2	↓	↓	↓			
804576	rubber	-	↓	↓	TTLC			
804593	> 1	< 2	↓	↓	↓			
804607	↓	↓	↓	↓	3010A			
8046012	↓	> 2	10/31/12	M.M	3010A	11:30am	10/31/12	pH < 2
804620	> 1	< 2	11-2-12	BE	3010A			
804621	↓	↓	↓	↓	↓			
804622	↓	↓	↓	↓	↓			
804623	↓	↓	↓	↓	↓			
804624	↓	↓	↓	↓	↓			

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.

TRUESDAIL LABORATORIES, INC.

ALERT !!
Level III QC

Sample Integrity & Analysis Discrepancy Form

Client: E2 **Lab #** 804602

Date Delivered: 10/30/12 **Time:** 21:30 **By:** ☐Mail ☒Field Service ☐Client

1.	Was a Chain of Custody received and signed?	☒Yes	☐No	☐N/A
2.	Does Customer require an acknowledgement of the COC?	☐Yes	☐No	☒N/A
3.	Are there any special requirements or notes on the COC?	☐Yes	☐No	☒N/A
4.	If a letter was sent with the COC, does it match the COC?	☐Yes	☐No	☒N/A
5.	Were all requested analyses understood and acceptable?	☒Yes	☐No	☐N/A
6.	Were samples received in a chilled condition? Temperature (if yes)? 5 °C	☒Yes	☐No	☐N/A
7.	Were samples received intact (i.e. broken bottles, leaks, air bubbles, etc..)?	☒Yes	☐No	☐N/A
8.	Were sample custody seals intact?	☐Yes	☐No	☒N/A
9.	Does the number of samples received agree with COC?	☒Yes	☐No	☐N/A
10.	Did sample labels correspond with the client ID's?	☒Yes	☐No	☐N/A
11.	Did sample labels indicate proper preservation? Preserved (if yes) by: ☐Truesdail ☐Client	☐Yes	☐No	☒N/A
12.	Were samples pH checked? pH = See CoC	☒Yes	☐No	☐N/A
13.	Were all analyses within holding time at time of receipt? If not, notify Project Manager.	☒Yes	☐No	☐N/A
14.	Have Project due dates been checked and accepted? Turn Around Time (TAT): ☐ RUSH ☒ Std	☒Yes	☐No	☐N/A

15. **Sample Matrix:** ☐Liquid ☐Drinking Water ☐Ground Water ☐Waste Water ☐Sludge ☐Soil ☐Wipe ☐Paint ☐Solid ☒Other Water

16. Comments: _____

17. Sample Check-In completed by **Truesdail** Log-In/Receiving: Alex

Analytical Bench Log Book

WDR pH Results

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

	Sample Name	Date of sampling	Time of sampling	Date of analysis	Time of analysis	pH Meter #1, #2, or #3 etc. See cover Sheet for Serial Number	Date pH meter Calibrated	Time pH meter Calibrated	Slope of the Curve	Analyst Name (for the pH result)	pH Result
1	SC-700B	10-2-12	13:36	10-2-12	13:42	METER #1	10-2-12	00:00	-55.7	C.Knight	7.3
Notes:											
2	SC-700B	10-2-12	13:52	10-2-12	14:01	METER #1	10-2-12	00:50	-55.7	C.Knight	7.1
Notes:											
3	SC-700B	10-9-12	13:18	10-9-12	13:20	Meter #1	10-9-12	00:50	-54.7	Josh R.	7.0
Notes:											
4	SC-700B	10-16-12	14:09	10-16-12	14:15	METER #1	10-16-12	00:45	-53.9	C.Knight	6.9
Notes:											
5	SC-700B	10-23-12	14:00	10-23-12	14:09	Meter #1	10-23-12	00:50	-55.1	C.Knight	7.1
Notes:											
6	SC-700B	10-30-12	13:15	10-30-12	13:19	Meter #1	10-30-12	01:15	-54.2	C.Knight	7.0
Notes:											
7											
Notes:											

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

Analytical Bench Log Book

Analysis Date: Room Temperature:

	Sample Name	Date of sampling	Time of sampling	Time of analysis	pH	Conductivity	Other	Sample Volume Analyzed (mls)	Instrument Reading (mg/L)	Final result corrected for dilution (mg/L)	Analyst Name	Notes
1	SC-2018-1200	10-2-12	1200	1213	X				6.9		CK	
2	SC-300A-1200	10-2-12	1200	1213	X				6.9		CK	
3	SC-400-1200	10-2-12	1200	1217	X				8.7		CK	
4	SC-500-1200	10-2-12	1200	1243	~~X~~		NTU.		2.96		CK	
5	SC-400-1600	10-2-12	1600	1612	✓				8.7		a	
6	SC-700C-1600	10-2-12	1600	1606	✓				7.0		a	
7	SC-700C-1600	10-2-12	1600	1607		✓			7.99		a	
8	SC-700C-1600	10-2-12	1600	1605			NTU		0.47		a	
9	SC-701-1600	10-2-12	1600	160		✓			46.3		a	
10	SC-400-0000	10-3-12	000	0:14	X				8.5		Eif	
11	SC-700C-0000	10-3-12	000	0:09	X				7.0		Eif	
12	SC-700C-0000	10-3-12	000	0:09		X			7.42		Eif	
13	SC-400-0400	10-3-12	400	4:10	X				8.6		Eif	
14	SC-400-0800	10-3-12	0800	8:30	✓				8.6		GG	
15	SC-501-0800	10-3-12	0800	8:17		✓			151.6		GG	
16	SC-501-0800	10-3-12	0800	8:17			NTU		.53		GG	
17	SC-605-0800	10-3-12	0800	8:20			NTU		.54		GG	
18	SC-605-0800	10-3-12	0800	8:20		✓			7.94		GG	
19	SC-700C-0800	10-3-12	0800	8:05	✓				7.0		GG	
20	SC-700C-0800	10-3-12	0800	8:09		✓			7.20		GG	

TRUESDAIL LABORATORIES, INC.

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Established 1931

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

December 11, 2012

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-386 PROJECT, GROUNDWATER MONITORING,

TLI NO.: 804722

Truesdail Laboratories, Inc. is pleased to submit this report summarizing the Topock IM3Plant-WDR-386 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 6, 2012, 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.

No violations or nonconformance actions occurred for this data package.

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

Respectfully Submitted,
TRUESDAIL LABORATORIES, INC.

for Mona Nassimi
Manager, Analytical Services

Michael Ngo
Quality Assurance/Quality Control Officer

TRUESDAIL LABORATORIES, INC.
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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.: 456827.01.DM

Laboratory No.: 804722
Date: December 11, 2012
Collected: November 6, 2012
Received: November 6, 2012

ANALYST LIST

METHOD	PARAMETER	ANALYST
EPA 120.1	Specific Conductivity	Gautam Savani
SM 2540C	Total Dissolved Solids	Jenny Tankunakorn
SM 2320B	Total Alkalinity	Melissa Scharfe
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	Gautam Savani
EPA 300.0	Anions	Giawad Ghenniwa
SM 4500-NH3 D	Ammonia	Melissa Scharfe
SM 4500-NO2 B	Nitrite as N	Jenny Tankunakorn
EPA 200.7	Metals by ICP	Ethel Suico
EPA 200.8	Metals by ICP/MS	Bita Emami
EPA 218.6	Hexavalent Chromium	George Wahba

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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.: 456827.01.DM
P.O. No.: 456827.01.DM

Laboratory No.: 804722
Date Received: November 6, 2012

Analytical Results Summary

Lab Sample ID	Field ID	Analysis Method	Extraction Method	Sample Date	Sample Time	Parameter	Result	Units	RL
804722-001	SC-700B-WDR-386	E120.1	NONE	11/6/2012	13:32	EC	7250	umhos/cm	2.00
804722-001	SC-700B-WDR-386	E200.7	NONE	11/6/2012	13:32	Aluminum	ND	ug/L	50.0
804722-001	SC-700B-WDR-386	E200.7	NONE	11/6/2012	13:32	BORON	940	ug/L	200
804722-001	SC-700B-WDR-386	E200.7	NONE	11/6/2012	13:32	Iron	ND	ug/L	20.0
804722-001	SC-700B-WDR-386	E200.7	NONE	11/6/2012	13:32	Zinc	ND	ug/L	20.0
804722-001	SC-700B-WDR-386	E200.8	NONE	11/6/2012	13:32	Antimony	ND	ug/L	2.00
804722-001	SC-700B-WDR-386	E200.8	NONE	11/6/2012	13:32	Arsenic	ND	ug/L	0.50
804722-001	SC-700B-WDR-386	E200.8	NONE	11/6/2012	13:32	Barium	11.2	ug/L	5.0
804722-001	SC-700B-WDR-386	E200.8	NONE	11/6/2012	13:32	Chromium	ND	ug/L	1.0
804722-001	SC-700B-WDR-386	E200.8	NONE	11/6/2012	13:32	Copper	ND	ug/L	5.0
804722-001	SC-700B-WDR-386	E200.8	NONE	11/6/2012	13:32	Lead	ND	ug/L	1.0
804722-001	SC-700B-WDR-386	E200.8	NONE	11/6/2012	13:32	Manganese	1.1	ug/L	0.50
804722-001	SC-700B-WDR-386	E200.8	NONE	11/6/2012	13:32	Molybdenum	21.8	ug/L	2.0
804722-001	SC-700B-WDR-386	E200.8	NONE	11/6/2012	13:32	Nickel	ND	ug/L	2.0
804722-001	SC-700B-WDR-386	E218.6	LABFLT	11/6/2012	13:32	Chromium, Hexavalent	ND	ug/L	0.20
804722-001	SC-700B-WDR-386	E300	NONE	11/6/2012	13:32	Fluoride	1.97	mg/L	0.500
804722-001	SC-700B-WDR-386	E300	NONE	11/6/2012	13:32	Nitrate as N	3.15	mg/L	0.500
804722-001	SC-700B-WDR-386	E300	NONE	11/6/2012	13:32	Sulfate	486	mg/L	25.0
804722-001	SC-700B-WDR-386	SM2130B	NONE	11/6/2012	13:32	Turbidity	ND	NTU	0.100
804722-001	SC-700B-WDR-386	SM2540C	NONE	11/6/2012	13:32	Total Dissolved Solids	4480	mg/L	250
804722-001	SC-700B-WDR-386	SM4500NH3D	NONE	11/6/2012	13:32	Ammonia-N	ND	mg/L	0.500
804722-001	SC-700B-WDR-386	SM4500NO2B	NONE	11/6/2012	13:32	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
804722-002	SC-100B-WDR-386	E120.1	NONE	11/6/2012	13:47	EC	7740	umhos/cm	2.00
804722-002	SC-100B-WDR-386	E200.7	NONE	11/6/2012	13:47	Aluminum	ND	ug/L	50.0
804722-002	SC-100B-WDR-386	E200.7	NONE	11/6/2012	13:47	BORON	977	ug/L	200
804722-002	SC-100B-WDR-386	E200.7	NONE	11/6/2012	13:47	Iron	ND	ug/L	20.0
804722-002	SC-100B-WDR-386	E200.7	LABFLT	11/6/2012	13:47	Iron	ND	ug/L	20.0
804722-002	SC-100B-WDR-386	E200.7	NONE	11/6/2012	13:47	Zinc	ND	ug/L	20.0
804722-002	SC-100B-WDR-386	E200.8	NONE	11/6/2012	13:47	Antimony	ND	ug/L	2.0
804722-002	SC-100B-WDR-386	E200.8	NONE	11/6/2012	13:47	Arsenic	3.4	ug/L	0.50
804722-002	SC-100B-WDR-386	E200.8	NONE	11/6/2012	13:47	Barium	25.0	ug/L	5.0
804722-002	SC-100B-WDR-386	E200.8	NONE	11/6/2012	13:47	Chromium	716	ug/L	1.0
804722-002	SC-100B-WDR-386	E200.8	NONE	11/6/2012	13:47	Copper	ND	ug/L	5.0
804722-002	SC-100B-WDR-386	E200.8	NONE	11/6/2012	13:47	Lead	ND	ug/L	1.0
804722-002	SC-100B-WDR-386	E200.8	NONE	11/6/2012	13:47	Manganese	3.7	ug/L	0.50
804722-002	SC-100B-WDR-386	E200.8	LABFLT	11/6/2012	13:47	Manganese	3.4	ug/L	0.50
804722-002	SC-100B-WDR-386	E200.8	NONE	11/6/2012	13:47	Molybdenum	22.0	ug/L	2.0
804722-002	SC-100B-WDR-386	E200.8	NONE	11/6/2012	13:47	Nickel	ND	ug/L	2.0
804722-002	SC-100B-WDR-386	E218.6	LABFLT	11/6/2012	13:47	Chromium, Hexavalent	758	ug/L	10.0
804722-002	SC-100B-WDR-386	E300	NONE	11/6/2012	13:47	Fluoride	2.61	mg/L	0.500
804722-002	SC-100B-WDR-386	E300	NONE	11/6/2012	13:47	Nitrate as N	3.34	mg/L	0.500
804722-002	SC-100B-WDR-386	E300	NONE	11/6/2012	13:47	Sulfate	522	mg/L	25.0
804722-002	SC-100B-WDR-386	SM2130B	NONE	11/6/2012	13:47	Turbidity	ND	NTU	0.100
804722-002	SC-100B-WDR-386	SM2320B	NONE	11/6/2012	13:47	Alkalinity	141	mg/L	5.00
804722-002	SC-100B-WDR-386	SM2320B	NONE	11/6/2012	13:47	Alkalinity, Bicarbonate (As CaCO3)	141	mg/L	5.00
804722-002	SC-100B-WDR-386	SM2320B	NONE	11/6/2012	13:47	Alkalinity, Carbonate (As CaCO3)	ND	mg/L	5.00
804722-002	SC-100B-WDR-386	SM2540C	NONE	11/6/2012	13:47	Total Dissolved Solids	4550	mg/L	250
804722-002	SC-100B-WDR-386	SM4500NH3D	NONE	11/6/2012	13:47	Ammonia-N	ND	mg/L	0.500
804722-002	SC-100B-WDR-386	SM4500NO2B	NONE	11/6/2012	13:47	Nitrite as N	ND	mg/L	0.0050
804722-002	SC-100B-WDR-386	SM4500-PB_E	NONE	11/6/2012	13:47	Total Phosphorous-P	ND	mg/L	0.0200
804722-002	SC-100B-WDR-386	SM4500SI	NONE	11/6/2012	13:47	Soluble Silica	21.5	mg/L	2.00
804722-002	SC-100B-WDR-386	SM5310C	NONE	11/6/2012	13:47	Total Organic Carbon	ND	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.

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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: 456827.01.DM
P.O. Number: 456827.01.DM
Release Number:

Laboratory No. 804722

Printed 12/11/2012

Samples Received on 11/6/2012 11:45:00 PM

Field ID	Lab ID	Collected	Matrix
SC-700B-WDR-386	804722-001	11/06/2012 13:32	Water
SC-100B-WDR-386	804722-002	11/06/2012 13:47	Water

Anions By I.C. - EPA 300.0 Batch 11AN12D

Parameter	Unit	Analyzed	DF	MDL	RL	Result
804722-001 Fluoride	mg/L	11/07/2012 11:41	5.00	0.104	0.500	1.97
Nitrate as Nitrogen	mg/L	11/07/2012 11:41	5.00	0.0415	0.500	3.15
Sulfate	mg/L	11/07/2012 14:10	50.0	1.54	25.0	486
804722-002 Fluoride	mg/L	11/07/2012 11:53	5.00	0.104	0.500	2.61
Nitrate as Nitrogen	mg/L	11/07/2012 11:53	5.00	0.0415	0.500	3.34
Sulfate	mg/L	11/07/2012 14:21	50.0	1.54	25.0	522

Method Blank

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

Duplicate — Lab ID = 804729-001

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Fluoride	mg/L	1.00	ND	0	0	0 - 20
Sulfate	mg/L	1.00	ND	0	0	0 - 20
Nitrate as Nitrogen	mg/L	1.00	ND	0	0	0 - 20

Lab Control Sample

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Fluoride	mg/L	1.00	4.14	4.00	103	90 - 110
Sulfate	mg/L	1.00	20.1	20.0	100	90 - 110
Nitrate as Nitrogen	mg/L	1.00	4.01	4.00	100	90 - 110

Nitrite SM 4500-NO2 B Batch 11NO212C

Parameter	Unit	Analyzed	DF	MDL	RL	Result
804722-001 Nitrite as Nitrogen	mg/L	11/07/2012 15:40	1.00	0.000540	0.0050	ND
804722-002 Nitrite as Nitrogen	mg/L	11/07/2012 15:41	1.00	0.000540	0.0050	ND

Method Blank

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

Duplicate — Lab ID = 804680-010

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

Lab Control Sample

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Nitrite as Nitrogen	mg/L	1.00	0.0309	0.0310	99.7	90 - 110

Matrix Spike — Lab ID = 804722-001

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Nitrite as Nitrogen	mg/L	1.00	0.0201	0.0200(0.0200)	100	85 - 115

MRCCS - Secondary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Nitrite as Nitrogen	mg/L	1.00	0.0308	0.0310	99.4	90 - 110

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Nitrite as Nitrogen	mg/L	1.00	0.0194	0.0200	97.0	90 - 110

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Nitrite as Nitrogen	mg/L	1.00	0.0194	0.0200	97.0	90 - 110

Alkalinity by SM 2320B Batch 11ALK12E

Parameter	Unit	Analyzed	DF	MDL	RL	Result
804722-002 Alkalinity as CaCO3	mg/L	11/12/2012	1.00	0.555	5.00	141
Bicarbonate (Calculated)	mg/L	11/12/2012	1.00	0.555	5.00	141
Carbonate (Calculated)	mg/L	11/12/2012	1.00	0.555	5.00	ND

Method Blank

Parameter	Unit	DF	Result
Alkalinity as CaCO3	mg/L	1.00	ND

Duplicate — Lab ID = 804722-002

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Alkalinity as CaCO3	mg/L	1.00	135	141	4.35	0 - 20

Lab Control Sample

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Alkalinity as CaCO3	mg/L	1.00	102	100	102	90 - 110

Lab Control Sample Duplicate

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Alkalinity as CaCO3	mg/L	1.00	102	100	102	90 - 110

Matrix Spike — Lab ID = 804733-005

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Alkalinity as CaCO3	mg/L	1.00	170	174(100)	96.0	75 - 125

Specific Conductivity - EPA 120.1

Batch 11EC12C

Parameter	Unit	Analyzed	DF	MDL	RL	Result
804722-001 Specific Conductivity	umhos/cm	11/08/2012	1.00	0.116	2.00	7250
804722-002 Specific Conductivity	umhos/cm	11/08/2012	1.00	0.116	2.00	7740

Method Blank

Parameter	Unit	DF	Result
Specific Conductivity	umhos	1.00	ND

Duplicate

Lab ID = 804723-002

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Specific Conductivity	umhos	1.00	8300	8300	0	0 - 10

Lab Control Sample

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Specific Conductivity	umhos	1.00	703	706	99.6	90 - 110

MRCCS - Secondary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Specific Conductivity	umhos	1.00	708	706	100	90 - 110

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Specific Conductivity	umhos	1.00	973	996	97.7	90 - 110

Chrome VI by EPA 218.6

Batch 11CrH12D

Parameter	Unit	Analyzed	DF	MDL	RL	Result
804722-001 Chromium, Hexavalent	ug/L	11/08/2012 08:54	1.00	0.00920	0.20	ND
804722-002 Chromium, Hexavalent	ug/L	11/08/2012 09:04	50.0	0.460	10.0	758

Method Blank

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

Duplicate — Lab ID = 804723-001

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	6.87	6.88	0.141	0 - 20

Low Level Calibration Verification

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	0.195	0.200	97.7	70 - 130

Lab Control Sample

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	4.95	5.00	99.0	90 - 110

Matrix Spike — Lab ID = 804722-001

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	1.07	1.09(1.00)	97.8	90 - 110

Matrix Spike — Lab ID = 804722-002

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	50.0	1720	1760(1000)	96.1	90 - 110

Matrix Spike — Lab ID = 804723-001

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	16.4	16.9(10.0)	95.4	90 - 110

Matrix Spike — Lab ID = 804724-001

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.0300	29.0	29.0(15.0)	99.7	90 - 110

Matrix Spike — Lab ID = 804724-002

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.0300	28.0	28.0(15.0)	100	90 - 110

Matrix Spike — Lab ID = 804725-001

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	5.00	8.10	8.35(5.00)	95.1	90 - 110

Metals by EPA 200.7, Total

Batch 113012A-Th2

Parameter	Unit	Analyzed	DF	MDL	RL	Result
804722-001 Aluminum	ug/L	11/30/2012 10:35	1.00	10.0	50.0	ND
Boron	ug/L	11/30/2012 10:35	1.00	2.70	200	940
Iron	ug/L	11/30/2012 10:35	1.00	9.50	20.0	ND
Zinc	ug/L	11/30/2012 10:35	1.00	7.00	20.0	ND
804722-002 Aluminum	ug/L	11/30/2012 10:41	1.00	10.0	50.0	ND
Boron	ug/L	11/30/2012 10:41	1.00	2.70	200	977
Iron	ug/L	11/30/2012 10:41	1.00	9.50	20.0	ND
Zinc	ug/L	11/30/2012 10:41	1.00	7.00	20.0	ND

Method Blank

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

Duplicate

Lab ID = 804722-002

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Aluminum	ug/L	1.00	ND	0	0	0 - 20
Iron	ug/L	1.00	ND	0	0	0 - 20
Zinc	ug/L	1.00	ND	0	0	0 - 20
Boron	ug/L	1.00	965	977	1.22	0 - 20

Lab Control Sample

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Aluminum	ug/L	1.00	2040	2000	102	85 - 115
Iron	ug/L	1.00	2080	2000	104	85 - 115
Zinc	ug/L	1.00	2150	2000	107	85 - 115
Boron	ug/L	1.00	1970	2000	98.6	85 - 115

Matrix Spike

Lab ID = 804722-002

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Aluminum	ug/L	1.00	1640	2000(2000)	82.1	75 - 125
Iron	ug/L	1.00	1820	2000(2000)	90.8	75 - 125
Zinc	ug/L	1.00	2230	2000(2000)	111	75 - 125
Boron	ug/L	1.00	2780	2980(2000)	90.2	75 - 125

Metals by EPA 200.8, Total Batch 112812C

Parameter	Unit	Analyzed	DF	MDL	RL	Result
804722-001 Barium	ug/L	11/29/2012 03:26	2.50	0.470	5.0	11.2
Chromium	ug/L	11/29/2012 03:26	2.50	0.230	1.0	ND
Copper	ug/L	11/29/2012 03:26	2.50	0.642	5.0	ND
804722-002 Barium	ug/L	11/29/2012 04:31	2.50	0.470	5.0	25.0
Chromium	ug/L	11/29/2012 04:45	10.0	0.920	2.0	716
Copper	ug/L	11/29/2012 04:31	2.50	0.642	5.0	ND

Method Blank

Parameter	Unit	DF	Result
Barium	ug/L	1.00	ND
Chromium	ug/L	1.00	ND
Copper	ug/L	1.00	ND

Low Level Calibration Verification

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Barium	ug/L	1.00	0.361	0.400	90.3	70 - 130
Chromium	ug/L	1.00	0.176	0.200	88.2	70 - 130
Copper	ug/L	1.00	0.836	1.00	83.6	70 - 130

Lab Control Sample

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Barium	ug/L	2.50	47.1	50.0	94.2	85 - 115
Chromium	ug/L	2.50	46.2	50.0	92.5	85 - 115
Copper	ug/L	2.50	46.8	50.0	93.7	85 - 115

Matrix Spike Lab ID = 804722-001

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Barium	ug/L	2.50	55.3	61.2(50.0)	88.1	75 - 125
Chromium	ug/L	2.50	47.4	50.0(50.0)	94.9	75 - 125
Copper	ug/L	2.50	43.9	50.0(50.0)	87.8	75 - 125

Matrix Spike Duplicate Lab ID = 804722-001

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Barium	ug/L	2.50	57.1	61.2(50.0)	91.7	75 - 125
Chromium	ug/L	2.50	48.4	50.0(50.0)	96.8	75 - 125
Copper	ug/L	2.50	43.1	50.0(50.0)	86.2	75 - 125

Client: E2 Consulting Engineers, Inc.

Project Name: PG&E Topock Project
Project Number: 456827.01.DM

Printed 12/11/2012

Serial Dilution

Lab ID = 804722-002

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Barium	ug/L	12.5	25.6	25.0	2.49	0 - 10
Chromium	ug/L	50.0	703	716	1.87	0 - 10

Metals by EPA 200.8, Total

Batch 112812D

Parameter	Unit	Analyzed	DF	MDL	RL	Result
804722-001 Antimony	ug/L	11/29/2012 13:45	2.50	0.830	2.0	ND
Arsenic	ug/L	11/29/2012 13:45	2.50	0.250	0.50	ND
Lead	ug/L	11/29/2012 13:45	2.50	0.185	1.0	ND
Manganese	ug/L	11/29/2012 13:45	2.50	0.215	0.50	1.1
Molybdenum	ug/L	11/29/2012 13:45	2.50	0.518	2.0	21.8
804722-002 Antimony	ug/L	11/29/2012 14:52	2.50	0.830	2.0	ND
Arsenic	ug/L	11/29/2012 14:52	2.50	0.250	0.50	3.4
Lead	ug/L	11/29/2012 14:52	2.50	0.185	1.0	ND
Manganese	ug/L	11/29/2012 14:52	2.50	0.215	0.50	3.7
Molybdenum	ug/L	11/29/2012 14:52	2.50	0.518	2.0	22.0

Method Blank

Parameter	Unit	DF	Result
Arsenic	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

Duplicate

Lab ID = 804722-001

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Arsenic	ug/L	2.50	ND	0	0	0 - 20
Antimony	ug/L	2.50	ND	0	0	0 - 20
Lead	ug/L	2.50	ND	0	0	0 - 20
Manganese	ug/L	2.50	1.08	1.10	1.56	0 - 20
Molybdenum	ug/L	2.50	21.4	21.8	1.85	0 - 20

Low Level Calibration Verification

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Arsenic	ug/L	1.00	0.244	0.200	122	70 - 130
Antimony	ug/L	1.00	0.745	0.800	93.2	70 - 130
Lead	ug/L	1.00	0.180	0.200	90.0	70 - 130
Manganese	ug/L	1.00	0.172	0.200	85.8	70 - 130
Molybdenum	ug/L	1.00	0.546	0.500	109	70 - 130

Lab Control Sample

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Arsenic	ug/L	2.50	46.0	50.0	92.0	85 - 115
Antimony	ug/L	2.50	57.0	50.0	114	85 - 115
Lead	ug/L	2.50	47.2	50.0	94.5	85 - 115
Manganese	ug/L	2.50	49.9	50.0	99.7	85 - 115
Molybdenum	ug/L	2.50	53.3	50.0	106	85 - 115

Matrix Spike — Lab ID = 804722-001

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Arsenic	ug/L	2.50	45.6	50.0(50.0)	91.2	75 - 125
Antimony	ug/L	2.50	51.4	50.0(50.0)	103	75 - 125
Lead	ug/L	2.50	39.6	50.0(50.0)	79.1	75 - 125
Manganese	ug/L	2.50	48.8	51.1(50.0)	95.4	75 - 125
Molybdenum	ug/L	2.50	72.5	71.8(50.0)	101	75 - 125

Matrix Spike Duplicate — Lab ID = 804722-001

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Arsenic	ug/L	2.50	48.5	50.0(50.0)	97.0	75 - 125
Antimony	ug/L	2.50	55.3	50.0(50.0)	110	75 - 125
Lead	ug/L	2.50	42.8	50.0(50.0)	85.6	75 - 125
Manganese	ug/L	2.50	51.9	51.1(50.0)	102	75 - 125
Molybdenum	ug/L	2.50	77.7	71.8(50.0)	112	75 - 125

MRCCS - Secondary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Arsenic	ug/L	1.00	20.1	20.0	100	90 - 110
Antimony	ug/L	1.00	21.6	20.0	108	90 - 110
Lead	ug/L	1.00	19.3	20.0	96.6	90 - 110
Manganese	ug/L	1.00	20.0	20.0	100	90 - 110
Molybdenum	ug/L	1.00	19.0	20.0	95.1	90 - 110

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Arsenic	ug/L	1.00	20.1	20.0	101	90 - 110

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Arsenic	ug/L	1.00	20.0	20.0	99.8	90 - 110

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Arsenic	ug/L	1.00	19.9	20.0	99.7	90 - 110

Metals by EPA 200.8, Total Batch 120412A

Parameter	Unit	Analyzed	DF	MDL	RL	Result
804722-001 Nickel	ug/L	12/04/2012 17:55	1.00	0.786	2.0	ND
804722-002 Nickel	ug/L	12/04/2012 18:31	1.00	0.786	2.0	ND

Method Blank

Parameter	Unit	DF	Result
Nickel	ug/L	1.00	ND

Duplicate — Lab ID = 804722-001

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

Low Level Calibration Verification

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Nickel	ug/L	1.00	1.83	2.00	91.6	70 - 130

Lab Control Sample

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Nickel	ug/L	2.50	47.5	50.0	94.9	85 - 115

Matrix Spike — Lab ID = 804722-001

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Nickel	ug/L	1.00	41.5	50.0(50.0)	83.0	75 - 125

Matrix Spike Duplicate — Lab ID = 804722-001

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Nickel	ug/L	1.00	44.2	50.0(50.0)	88.5	75 - 125

MRCCS - Secondary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Nickel	ug/L	1.00	19.0	20.0	95.1	90 - 110

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Nickel	ug/L	1.00	18.4	20.0	92.0	90 - 110

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Nickel	ug/L	1.00	18.5	20.0	92.4	90 - 110

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Nickel	ug/L	1.00	18.5	20.0	92.6	90 - 110

Reactive Silica by SM4500-Si D

Batch 11Si12A

Parameter	Unit	Analyzed	DF	MDL	RL	Result
804722-002 Silica	mg/L	11/09/2012	50.0	0.505	2.00	21.5

Method Blank

Parameter	Unit	DF	Result
Silica	mg/L	1.00	ND

Duplicate — Lab ID = 804722-002

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Silica	mg/L	50.0	22.0	21.5	2.24	0 - 20

Lab Control Sample

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Silica	mg/L	1.00	0.203	0.220	92.4	90 - 110

Matrix Spike — Lab ID = 804729-001

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Silica	mg/L	1.00	0.403	0.400(0.400)	101	75 - 125

MRCCS - Secondary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Silica	mg/L	1.00	0.104	0.110	94.1	90 - 110

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Silica	mg/L	1.00	0.403	0.400	101	90 - 110

Total Dissolved Solids by SM 2540 C

Batch 11TDS12A

Parameter	Unit	Analyzed	DF	MDL	RL	Result
804722-001 Total Dissolved Solids	mg/L	11/07/2012	1.00	0.757	250	4480
804722-002 Total Dissolved Solids	mg/L	11/07/2012	1.00	0.757	250	4550

Method Blank

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

Duplicate — Lab ID = 804696-010

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Total Dissolved Solids	mg/L	1.00	558	552	1.08	0 - 10

Lab Control Sample

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Total Dissolved Solids	mg/L	1.00	492	500	98.4	90 - 110

Total Organic Carbon (T/DOC) SM 5310 C Batch 11TOC12B

Parameter	Unit	Analyzed	DF	MDL	RL	Result
804722-002 Total Organic Carbon	mg/L	11/09/2012 11:59	1.00	0.0309	0.300	ND

Method Blank

Parameter	Unit	DF	Result
Total Organic Carbon	mg/L	1.00	ND

Duplicate — Lab ID = 804722-002

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Total Organic Carbon	mg/L	1.00	ND	0	0	0 - 20

Lab Control Sample

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Total Organic Carbon	mg/L	1.00	9.95	10.0	99.5	90 - 110

Matrix Spike — Lab ID = 804722-002

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Total Organic Carbon	mg/L	1.00	8.31	10.0(10.0)	83.1	75 - 125

MRCCS - Secondary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Total Organic Carbon	mg/L	1.00	10.3	10.0	103	90 - 110

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Total Organic Carbon	mg/L	1.00	9.56	10.0	95.6	90 - 110

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Total Organic Carbon	mg/L	1.00	9.24	10.0	92.4	90 - 110

Total Phosphate, SM 4500-PB,E

Batch 11TP12A

Parameter	Unit	Analyzed	DF	MDL	RL	Result
804722-002 Phosphate, Total As P	mg/L	11/08/2012	1.00	0.00648	0.0200	ND

Method Blank

Parameter	Unit	DF	Result
Phosphate, Total As P	mg/L	1.00	ND

Duplicate Lab ID = 804637-013

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Phosphate, Total As P	mg/L	1.00	0.0601	0.0614	2.14	0 - 20

Lab Control Sample

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Phosphate, Total As P	mg/L	1.00	0.134	0.130	103	90 - 110

Matrix Spike Lab ID = 804637-014

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Phosphate, Total As P	mg/L	1.00	0.0550	0.0650(0.0650)	84.6	75 - 125

MRCCS - Secondary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Phosphate, Total As P	mg/L	1.00	0.0643	0.0650	98.9	90 - 110

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Phosphate, Total As P	mg/L	1.00	0.0627	0.0650	96.5	90 - 110

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Phosphate, Total As P	mg/L	1.00	0.0627	0.0650	96.5	90 - 110

Ammonia Nitrogen by SM4500-NH3D Batch 11NH312B

Parameter	Unit	Analyzed	DF	MDL	RL	Result
804722-001 Ammonia as N	mg/L	11/14/2012	1.00	0.00980	0.500	ND
804722-002 Ammonia as N	mg/L	11/14/2012	1.00	0.00980	0.500	ND

Method Blank

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

Lab Control Sample

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Ammonia as N	mg/L	1.00	7.36	8.00	92.0	90 - 110

Lab Control Sample Duplicate

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Ammonia as N	mg/L	1.00	7.75	8.00	96.9	90 - 110

Matrix Spike — Lab ID = 804722-001

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Ammonia as N	mg/L	1.00	8.06	8.00(8.00)	101	75 - 125

MRCCS - Secondary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Ammonia as N	mg/L	1.00	5.92	6.00	98.6	90 - 110

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Ammonia as N	mg/L	1.00	6.33	6.00	106	90 - 110

Metals by EPA 200.8, Dissolved Batch 120712B

Parameter	Unit	Analyzed	DF	MDL	RL	Result
804722-002 Manganese	ug/L	12/08/2012 05:40	2.50	0.215	0.50	3.4

Method Blank

Parameter	Unit	DF	Result
Manganese	ug/L	1.00	ND

Duplicate — Lab ID = 804723-001

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Manganese	ug/L	2.50	43.2	43.9	1.58	0 - 20

Low Level Calibration Verification

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Manganese	ug/L	1.00	0.187	0.200	93.3	70 - 130

Lab Control Sample

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Manganese	ug/L	2.50	47.9	50.0	95.8	85 - 115

Matrix Spike — Lab ID = 804723-001

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Manganese	ug/L	2.50	83.5	93.9(50.0)	79.2	75 - 125

Matrix Spike Duplicate — Lab ID = 804723-001

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Manganese	ug/L	2.50	92.9	93.9(50.0)	98.0	75 - 125

MRCCS - Secondary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Manganese	ug/L	1.00	19.4	20.0	96.8	90 - 110

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Manganese	ug/L	1.00	18.3	20.0	91.6	90 - 110

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Manganese	ug/L	1.00	18.5	20.0	92.6	90 - 110

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Manganese	ug/L	1.00	18.5	20.0	92.4	90 - 110

Metals by 200.7, Dissolved Batch 113012A-Th2

Parameter	Unit	Analyzed	DF	MDL	RL	Result
804722-002 Iron	ug/L	11/30/2012 10:10	1.00	9.50	20.0	ND

Method Blank

Parameter	Unit	DF	Result
Iron	ug/L	1.00	ND

Duplicate — Lab ID = 804724-001

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

Lab Control Sample

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Iron	ug/L	1.00	2080	2000	104	85 - 115

Matrix Spike — Lab ID = 804724-001

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Iron	ug/L	1.00	1890	2000(2000)	94.6	75 - 125

MRCCS - Secondary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Iron	ug/L	1.00	5040	5000	101	95 - 105

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Iron	ug/L	1.00	4980	5000	99.6	90 - 110

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Iron	ug/L	1.00	4970	5000	99.3	90 - 110

Interference Check Standard A

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Iron	ug/L	1.00	2100	2000	105	80 - 120

Interference Check Standard A

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Iron	ug/L	1.00	2090	2000	105	80 - 120

Interference Check Standard AB

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Iron	ug/L	1.00	2080	2000	104	80 - 120

Interference Check Standard AB

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Iron	ug/L	1.00	2080	2000	104	80 - 120

Turbidity by SM 2130 B Batch 11TUC12D

Parameter	Unit	Analyzed	DF	MDL	RL	Result
804722-001 Turbidity	NTU	11/07/2012	1.00	0.0140	0.100	ND
804722-002 Turbidity	NTU	11/07/2012	1.00	0.0140	0.100	ND

Method Blank

Parameter	Unit	DF	Result
Turbidity	NTU	1.00	ND

Duplicate — Lab ID = 804722-002

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

Lab Control Sample

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Turbidity	NTU	1.00	7.85	8.00	98.1	90 - 110

Lab Control Sample Duplicate

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Turbidity	NTU	1.00	7.79	8.00	97.4	90 - 110

Respectfully submitted,
TRUESDAIL LABORATORIES, INC.

for Mona Nassimi
Manager, Analytical Services

ej
sc

Truesdail Laboratories, Inc.

Total Dissolved Solids by SM 2540 C

Calculations

Batch: 11TDS12A
Date Analyzed: 11/7/12

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	66.8065	66.8069	66.8065	0.0004	No	0.0000	0.0	25.0	ND	1
804680-17	100	77.7833	77.8391	77.8388	0.0003	No	0.0555	555.0	25.0	555.0	1
804683-1	50	74.9341	74.9818	74.9817	0.0001	No	0.0476	952.0	50.0	952.0	1
804683-2	100	74.6118	74.6663	74.6660	0.0003	No	0.0542	542.0	25.0	542.0	1
804683-3	50	67.2055	67.2361	67.2361	0.0000	No	0.0306	612.0	50.0	612.0	1
804696-9	100	72.0912	72.148	72.1477	0.0003	No	0.0565	565.0	25.0	565.0	1
804696-10	100	65.6243	65.6797	65.6795	0.0002	No	0.0552	552.0	25.0	552.0	1
804722-1	10	50.5009	50.5460	50.5457	0.0003	No	0.0448	4480.0	250.0	4480.0	1
804722-2	10	49.1760	49.2219	49.2215	0.0004	No	0.0455	4550.0	250.0	4550.0	1
804723-1	20	50.8333	50.8876	50.8875	0.0001	No	0.0542	2710.0	125.0	2710.0	1
804723-2	10	50.8652	50.9154	50.9154	0.0000	No	0.0502	5020.0	250.0	5020.0	1
804696-10D	100	69.4085	69.4645	69.4643	0.0002	No	0.0558	558.0	25.0	558.0	1
LCS	100	68.1277	68.1769	68.1769	0.0000	No	0.0492	492.0	25.0	492.0	1

Calculation as follows:

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

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?
LCS1	492	500	98.4%	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

Lab Number	Sample Weight, g	Sample Dup Weight, g	% RPD	Acceptance Limit	QC Within Control?
804696-10	0.0552	0.0558	0.5%	≤5%	Yes

Duplicate Determination Difference

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

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).

Jenny T.
Analyst Printed Name

Analyst Signature

Marsh
Hope T.
Reviewer Printed Name

Reviewer Signature

Total Dissolved Solids by SM 2540 C

TDS/EC CHECK

Batch: 11TDS12A
Date Analyzed: 11/7/12

Laboratory Number	EC	TDS/EC Ratio: 0.55-.9	Calculated TDS (EC*0.65)	Measured TDS / Calc TDS <1.3
804680-17	962	0.58	625.3	0.89
804683-1	1674	0.57	1088.1	0.87
804683-2	962	0.56	625.3	0.87
804683-3	1040	0.59	676	0.91
804696-9	922	0.61	599.3	0.94
804696-10	902	0.61	586.3	0.94
804722-1	7300	0.61	4745	0.94
804722-2	7750	0.59	5037.5	0.90
804723-1	4800	0.56	3120	0.87
804723-2	8330	0.60	5414.5	0.93
804696-10	902	0.62	586.3	0.95
LCS				

TRUESDAIL LABORATORIES, INC.

Alkalinity by SM 2320B

Calculations

Analytical Batch: 11ALK12E
Matrix: Water
Date of Analysis: 11/12/12

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 $CaCO_3$ (ppm)	CO3 Alkalinity as $CaCO_3$ (ppm)	OH Alkalinity as $CaCO_3$ (ppm)	Low Alkalinity as $CaCO_3$ (<20ppm)
BLANK	6.37	50	0.02		0.0	0.00		0.0	5	ND	ND	ND	ND	
804722-2	7.70	50	0.02		0.0	7.05		141.0	5	141.0	141.0	ND	ND	
804722-2 DUP	7.74	50	0.02		0.0	6.75		135.0	5	135.0	135.0	ND	ND	
804733-5	7.64	50	0.02		0.0	3.70		74.0	5	74.0	74.0	ND	ND	
804733-5 MS	9.79	50	0.02	2.15	43.0	8.50		170.0	5	170.0	84.0	86	ND	
LCS	10.60	50	0.02	2.4	47.0	5.10		102.0	5	102.0	8.0	94	ND	
LCSD	10.60	50	0.02	2.4	47.0	5.10		102.0	5	102.0	8.0	94	ND	

Calculations as follows:

T or P = $\left(\frac{A \times N \times 50000}{mL\ sample}\right)$

Where:

T = Total Alkalinity, mg CaCO3/L
P = Phenolphthalein Alkalinity, mg CaCO3/L
A = mL standard acid used
N = normality of standard acid

Low Alkalinity: as mg/L CaCO3 = $\frac{(2 \times B - C) \times N \times 50000}{mL\ sample}$

Where:
B = mL titrant to first recorded pH
C = Total mL titrant to reach pH 0.3 unit lower
N = Normality of standard acid

LCS = Laboratory Control Standard/Duplicate
MS/MSD = Matrix Spike/Duplicate
ND = Not Detected (below the reporting limit)

Blank Summary

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

Laboratory Control Sample (LCS/LCSD) Summary

QC Std I.D.	Measured Value, ppm	Theoretical Value, ppm	%Recovery	Accetance Limit	QC Within Control?
LCS	102	100	102.0%	90-110	Yes
LCSD	102	100	102.0%	90-110	Yes

Duplicate Determination Difference Summary

Lab Number I.D.	Measured Value, ppm	Dup Value, ppm	RPD	Accetance Limit	QC Within Control?
804722-2	141	135	4.3%	≤20%	Yes

Sample Matrix Spike (MS/MSD) Summary

Lab Number	Conc of Unspk spl	Dil Factor	Added Spk Conc	MS/MSD Amt	Measrd Conc of Spk Spl	Theor Conc of Spk Spl	MS/MSD %Rec	MS Accept Limit	QC Within Control?	RPD	RPD Accept Limit	QC Within Control?
804733-5	74	1	100	100	170	174.00	96%	75-125	Yes			
		1	100	100								

Melissa S.
Analyst Printed Name

Analyst Signature

Hope F.
Reviewer Printed Name

Reviewer Signature

111212c

057

Rec'd 11/06/12

S 804722

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-386]

COC Number 804722

TURNAROUND TIME 10 Days

DATE 11/06/12 PAGE 1 OF 1

COMPANY CH2M HILL /E2

PROJECT NAME PG&E Topock IM3

PHONE 530-229-3303 FAX 530-339-3303

ADDRESS 155 Grand Ave Ste 1000
Oakland, CA 94612

P.O. NUMBER 456827.01.DM

SAMPLERS (SIGNATURE P. Knight

	SAMPLE I.D.	DATE	TIME	DESCRIPTION	Cr(VI) (218.6) Lab Filtered	Alkalinity (2320-B)	EC (120.1)	TDS (2540 c)	Turb (2130)	Total Metals (200.7) See List Below	Ammonia (4500-NH3)	Total P (4500-P)	Anions (300.0) F, NO3, SO4	TOC (5310 C)	Dissolved Metals (200.7) Fe, Mn lab filtered	Soluable Silica - Reactive (4500-Si CorD)	NO2 (4500-NO2B)	NUMBER OF CONTAINERS	COMMENTS
-1	SC-700B-WDR-386	11/06/12	13:32		X		X	X	X	X	X		X				X	4	pH=2 (200.7)
-2	SC-100B-WDR-386	11/06/12	13:47		X	X	X	X	X	X	X	X	X	X	X	X	X	9	pH=2/pH=7 (200.7) (200.7 6/FH)
																		13	TOTAL NUMBER OF CONTAINERS

ALERT II
Level III QC

For Sample Conditions
See Form Attached

CHAIN OF CUSTODY SIGNATURE RECORD

	Signature	Printed Name	Company/ Agency	Date/ Time
1	(Relinquished) C. Knight	C. Knight	CH2MHill	11.6.12 14:00
2	(Received) Rafael Davila	Rafael	T.L.I	11-6-12 14:00
3	(Relinquished) Rafael Davila	Rafael	T.L.I	11-6-12 23:45
4	(Received) [illegible]	Shalemma	TLI	11/6/12 2345
5	(Relinquished)			
6	(Received)			

SAMPLE CONDITIONS

RECEIVED COOL ☑ WARM ☐ 4.6 °C

CUSTODY SEALED YES ☐ NO ☑

SPECIAL REQUIREMENTS:

The metals include: Cr, Al, Sb, As, Ba, B, Cu, Pb, Mn, Mo, Ni, Fe, Zn

122

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
10/31/12	804602	7	2mL / 100mL	9.5	11 Am	
2 11/2/12						
11/2/12	804636-1	9.5	N/A	N/A	N/A	
	-2					
	-3					
	-4					
	-5					
	-6					
	-7					
	-8					
	-9					
	-10					
	-11					
	-12					
	-13					
	-14					
	-15					
11/5/12	804652-1	9.5	N/A	N/A	N/A	
	-2					
	-5					
	-6					
	-7					
	-8					
	-9					
	-10					
	-12					
	-13					
11/7/12	804722-1	7	2mL / 100mL (Total)	9.5	11:00 Am	
	-2				11:10 Am	
	804723-1	7			11:15 Am	
	-2				11:20 Am	

TRUESDAIL LABORATORIES, INC.

Turbidity/pH Check

Sample Number	Turbidity	pH	Date	Analyst	Need Digest	pH2-Adjusted Time	Date/Time of 2nd pH check	Comments
804625	>1	<2	11-2-12	BE	3010A			
804626	↓	↓	↓	↓	↓			
804627	↓	↓	↓	↓	↓			
804600	<1	>2			NO	7:00 Am	11-4	PH<2
804617(10-12)	↓	↓	↓	↓	↓	↓	↓	↓
804635(1-3)	↓	↓	↓	↓	↓	↓	↓	↓
804636(1-15)	<1	<2	11/05/12	M-M	3010A			
804652(1-2,5,6)	↓	↓	↓	↓	↓			
804647	>1	<2	11/05/12	M M	3010A			
804648	↓	↓	↓	↓	↓			
804649	↓	↓	↓	↓	↓			
804658(1,2,4)	<1	>2	11/5/12	M M	NO	4 pm	11.6	PH<2
804683(1,2,3)	<1	>1	11-6-12	BE	NO	3 pm	11-7	↓
804726(1,5)	<1	<2	11-7-12	M.M	3010A			
804725(1,2)	↓	↓	↓	↓	↓			
804722(1,2)	↓	<2, diss, 272, total	↓	↓	↓			
804723(1,2)	↓	>2	↓	↓	↓			
804724(1,2)	↓	↓	↓	↓	↓			
804690	—	— M.M	11/07/12	M.M	TTLC	13:00	11/07/12	pH<2
804678-1	>1	~~>2~~ <2	11/07/12	M M	3010A			
804679	↓	<2	↓	↓	↓			
804680	↓	<2	↓	↓	↓			
804691	↓	↓	↓	↓	↓			
804692	↓	↓	↓	↓	↓			
804693	↓	↓	↓	↓	↓			
804694	↓	↓	↓	↓	↓			
804695	↓	↓	↓	↓	↓			
804706	↓	↓	↓	↓	↓			
804707	↓	↓	↓	↓	↓			
804708	↓	↓	↓	↓	↓			
804709	↓	↓	↓	↓	↓			
804721	↓	↓	↓	↓	↓			
804731	↓	~~>2~~	↓	↓	↓	13:00	11/07/12	pH<2
804678-2	>1	>2	11/07/12	M.M	3010A	13:00	11/07/12	pH<2
-3	↓	↓	↓	↓	↓	↓	↓	↓
~~804300-02, 804300~~								
804300	<1	<2	10/16/12	M.M	3010A			
804301-302	↓	↓	↓	↓	↓			
804304-305	↓	↓	↓	↓	↓			
804733(1-3)	<1	>2	11-8-12	B.E	NO	5:30pm	11-14	PH<2
804720	↓	↓	↓	↓	↓	↓	11-14	PH<2
804743(10-12)	↓	↓	↓	↓	↓	↓	↓	↓
804777(1-11)	<1	>2	11/09/12	M.M	3010A			
804778(1-4)	<1	<2	↓	↓	↓			

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

TRUESDAIL LABORATORIES, INC.

Sample Integrity & Analysis Discrepancy Form

Client: E2 **Lab #** 209722

Date Delivered: 11 / 06/ 12 **Time:** 23:45 **By:** ☐Mail ☑Field Service ☐Client

1.	Was a Chain of Custody received and signed?	☑Yes	☐No	☐N/A
2.	Does Customer require an acknowledgement of the COC?	☐Yes	☐No	☑N/A
3.	Are there any special requirements or notes on the COC?	☐Yes	☐No	☑N/A
4.	If a letter was sent with the COC, does it match the COC?	☐Yes	☐No	☑N/A
5.	Were all requested analyses understood and acceptable?	☑Yes	☐No	☐N/A
6.	Were samples received in a chilled condition? Temperature (if yes)? 4.6°C	☑Yes	☐No	☐N/A
7.	Were samples received intact (i.e. broken bottles, leaks, air bubbles, etc..)?	☑Yes	☐No	☐N/A
8.	Were sample custody seals intact?	☐Yes	☐No	☑N/A
9.	Does the number of samples received agree with COC?	☑Yes	☐No	☐N/A
10.	Did sample labels correspond with the client ID's?	☑Yes	☐No	☐N/A
11.	Did sample labels indicate proper preservation? Preserved (if yes) by: ☑Truesdail ☐Client	☑Yes	☐No	☐N/A
12.	Were samples pH checked? pH = see C.O.C.	☑Yes	☐No	☐N/A
13.	Were all analyses within holding time at time of receipt? If not, notify Project Manager.	☑Yes	☐No	☐N/A
14.	Have Project due dates been checked and accepted? Turn Around Time (TAT): ☐ RUSH ☑ Std	☑Yes	☐No	☐N/A

15. **Sample Matrix:** ☐Liquid ☐Drinking Water ☐Ground Water ☐Waste Water ☐Sludge ☐Soil ☐Wipe ☐Paint ☐Solid ☒Other Water

16. Comments: _____

17. Sample Check-In completed by **Truesdail** Log-In/Receiving: Linda

ALERT !!
Level III QC

TRUESDAIL LABORATORIES, INC.

EXCELLENCE IN INDEPENDENT TESTING

Established 1931

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

December 10, 2012

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-387 PROJECT, GROUNDWATER MONITORING, TLI NO.: 804841

Truesdail Laboratories, Inc. is pleased to submit this report summarizing the Topock IM3Plant-WDR-387 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 13, 2012, 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.

Total Chromium and Total Manganese were analyzed by EPA 200.8 rather than EPA 200.7 as requested on the chain of custody with Mr. Shawn Duffy's approval.

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.

f.- Mona Nassimi
Manager, Analytical Services

Michael Ngo
Quality Assurance/Quality Control Officer

TRUESDAIL LABORATORIES, INC.
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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.: 456827.01.DM

Laboratory No.: 804841
Date: December 10, 2012
Collected: November 13, 2012
Received: November 13, 2012

ANALYST LIST

METHOD	PARAMETER	ANALYST
EPA 120.1	Specific Conductivity	Gautam Savani
SM 2540C	Total Dissolved Solids	Jenny Tankunakorn
SM 2130B	Turbidity	Gautam Savani
EPA 200.8	Total Metals	Katia Kiarashpoor / Bita Emami
EPA 218.6	Hexavalent Chromium	George Wahba

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

Laboratory No.: 804841
Date Received: November 13, 2012

Project Name: PG&E Topock Project
Project No.: 456827.01.DM
P.O. No.: 456827.01.DM

Analytical Results Summary

Lab Sample ID	Field ID	Analysis Method	Extraction Method	Sample Date	Sample Time	Parameter	Result	Units	RL
804841-001	SC-700B-WDR-387	E120.1	NONE	11/13/2012	13:44	EC	7400	umhos/cm	2.00
804841-001	SC-700B-WDR-387	E200.8	NONE	11/13/2012	13:44	Chromium	ND	ug/L	1.0
804841-001	SC-700B-WDR-387	E200.8	NONE	11/13/2012	13:44	Manganese	1.3	ug/L	0.50
804841-001	SC-700B-WDR-387	E218.6	LABFLT	11/13/2012	13:44	Chromium, Hexavalent	ND	ug/L	0.20
804841-001	SC-700B-WDR-387	SM2130B	NONE	11/13/2012	13:44	Turbidity	ND	NTU	0.100
804841-001	SC-700B-WDR-387	SM2540C	NONE	11/13/2012	13:44	Total Dissolved Solids	4050	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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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: 456827.01.DM
P.O. Number: 456827.01.DM
Release Number:

Laboratory No. 804841

Printed 12/10/2012

Samples Received on 11/13/2012 11:00:00 PM

Field ID	Lab ID	Collected	Matrix
SC-700B-WDR-387	804841-001	11/13/2012 13:44	Water

Specific Conductivity - EPA 120.1

Batch 11EC12F

Parameter	Unit	Analyzed	DF	MDL	RL	Result
804841-001 Specific Conductivity	umhos/cm	11/16/2012	1.00	0.116	2.00	7400

Method Blank

Parameter	Unit	DF	Result
Specific Conductivity	umhos	1.00	ND

Duplicate — Lab ID = 804841-001

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Specific Conductivity	umhos	1.00	7390	7400	0.135	0 - 10

Lab Control Sample

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Specific Conductivity	umhos	1.00	698	706	98.9	90 - 110

Lab Control Sample Duplicate

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Specific Conductivity	umhos	1.00	700	706	99.2	90 - 110

MRCCS - Secondary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Specific Conductivity	umhos	1.00	702	706	99.4	90 - 110

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Specific Conductivity	umhos	1.00	984	996	98.8	90 - 110

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Specific Conductivity	umhos	1.00	987	996	99.1	90 - 110

Chrome VI by EPA 218.6

Batch 11CrH12H

Parameter	Unit	Analyzed	DF	MDL	RL	Result
804841-001 Chromium, Hexavalent	ug/L	11/16/2012 10:09	1.00	0.00920	0.20	ND

Method Blank

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

Duplicate — Lab ID = 804842-005

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Chromium, Hexavalent	ug/L	5.00	17.3	17.3	0.150	0 - 20

Low Level Calibration Verification

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	0.191	0.200	95.6	70 - 130

Lab Control Sample

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	4.95	5.00	99.0	90 - 110

Matrix Spike — Lab ID = 804841-001

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	1.04	1.07(1.00)	97.0	90 - 110

Matrix Spike — Lab ID = 804842-001

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	5.00	4.93	5.10(5.00)	96.7	90 - 110

Matrix Spike — Lab ID = 804842-001

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	1.01	1.10(1.00)	90.5	90 - 110

Matrix Spike — Lab ID = 804842-002

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	1.03	1.08(1.00)	94.9	90 - 110

Matrix Spike — Lab ID = 804842-002

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	5.00	4.94	5.12(5.00)	96.5	90 - 110

Matrix Spike — Lab ID = 804842-003

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	0.982	1.00(1.00)	98.2	90 - 110

Metals by EPA 200.8, Total

Batch 120412A

Parameter	Unit	Analyzed	DF	MDL	RL	Result
804841-001 Chromium	ug/L	12/04/2012 12:17	2.50	0.230	1.0	ND

Method Blank

Parameter	Unit	DF	Result
Chromium	ug/L	1.00	ND

Duplicate — Lab ID = 804841-001

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Chromium	ug/L	2.50	ND	0	0	0 - 20

Low Level Calibration Verification

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium	ug/L	1.00	0.168	0.200	84.2	70 - 130

Lab Control Sample

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium	ug/L	2.50	44.9	50.0	89.9	85 - 115

Matrix Spike — Lab ID = 804841-001

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium	ug/L	2.50	49.4	50.0(50.0)	98.9	75 - 125

Matrix Spike Duplicate — Lab ID = 804841-001

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium	ug/L	2.50	48.5	50.0(50.0)	97.0	75 - 125

MRCCS - Secondary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium	ug/L	1.00	19.4	20.0	97.2	90 - 110

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium	ug/L	1.00	18.3	20.0	91.4	90 - 110

Interference Check Standard A

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

Interference Check Standard A

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

Metals by EPA 200.8, Total

Batch 120212A

Parameter	Unit	Analyzed	DF	MDL	RL	Result
804841-001 Manganese	ug/L	12/03/2012 00:44	2.50	0.215	0.50	1.3

Method Blank

Parameter	Unit	DF	Result
Manganese	ug/L	1.00	ND

Duplicate Lab ID = 804841-001

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Manganese	ug/L	2.50	1.44	1.30	10.4	0 - 20

Low Level Calibration Verification

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Manganese	ug/L	1.00	0.182	0.200	91.1	70 - 130

Lab Control Sample

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Manganese	ug/L	2.50	43.9	50.0	87.8	85 - 115

Matrix Spike Lab ID = 804841-001

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Manganese	ug/L	2.50	48.2	51.3(50.0)	93.9	75 - 125

Matrix Spike Duplicate Lab ID = 804841-001

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Manganese	ug/L	2.50	49.0	51.3(50.0)	95.5	75 - 125

MRCCS - Secondary

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

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Manganese	ug/L	1.00	19.6	20.0	98.2	90 - 110

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Manganese	ug/L	1.00	19.6	20.0	98.2	90 - 110

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Manganese	ug/L	1.00	20.1	20.0	100	90 - 110

Total Dissolved Solids by SM 2540 C

Batch 11TDS12C

Parameter	Unit	Analyzed	DF	MDL	RL	Result
804841-001 Total Dissolved Solids	mg/L	11/15/2012	1.00	0.757	250	4050

Method Blank

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

Duplicate Lab ID = 804779-006

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Total Dissolved Solids	mg/L	1.00	1960	1940	1.02	0 - 10

Duplicate Lab ID = 804841-001

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Total Dissolved Solids	mg/L	1.00	4090	4050	0.983	0 - 10

Lab Control Sample

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Total Dissolved Solids	mg/L	1.00	489	500	97.8	90 - 110

Turbidity by SM 2130 B

Batch 11TUC12G

Parameter	Unit	Analyzed	DF	MDL	RL	Result
804841-001 Turbidity	NTU	11/15/2012	1.00	0.0140	0.100	ND

Method Blank

Parameter	Unit	DF	Result
Turbidity	NTU	1.00	ND

Duplicate Lab ID = 804841-001

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

Lab Control Sample

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Turbidity	NTU	1.00	7.68	8.00	96.0	90 - 110

Lab Control Sample Duplicate

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Turbidity	NTU	1.00	7.82	8.00	97.8	90 - 110

Respectfully submitted,
TRUESDAIL LABORATORIES, INC.

for Mona Nassimi
Manager, Analytical Services

Truesdail Laboratories, Inc.

ep
SC

Total Dissolved Solids by SM 2540 C

Calculations

Batch: 11TDS12C
Date Analyzed: 11/15/12

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	72.3862	72.3865	72.3864	0.0001	No	0.0002	2.0	25.0	ND	1
804778-1	100	73.5925	73.6252	73.6249	0.0003	No	0.0324	324.0	25.0	324.0	1
804778-2	100	68.8014	68.828	68.828	0.0000	No	0.0266	266.0	25.0	266.0	1
804778-3	100	74.1546	74.1808	74.1807	0.0001	No	0.0261	261.0	25.0	261.0	1
804778-4	100	67.1002	67.1340	67.1339	0.0001	No	0.0337	337.0	25.0	337.0	1
804779-1	50	52.0701	52.1342	52.1341	0.0001	No	0.0640	1280.0	50.0	1280.0	1
804779-2	100	76.5405	76.5837	76.5834	0.0003	No	0.0429	429.0	25.0	429.0	1
804779-3	100	65.6664	65.7079	65.7077	0.0002	No	0.0413	413.0	25.0	413.0	1
804779-4	100	74.7263	74.7689	74.7689	0.0000	No	0.0426	426.0	25.0	426.0	1
804779-5	100	74.7055	74.736	74.7359	0.0001	No	0.0304	304.0	25.0	304.0	1
804779-6	50	50.5707	50.6676	50.6675	0.0001	No	0.0968	1936.0	50.0	1936.0	1
804779-6D	50	51.8945	51.9925	51.9925	0.0000	No	0.0980	1960.0	50.0	1960.0	1
LCS	100	75.2763	75.3256	75.3252	0.0004	No	0.0489	489.0	25.0	489.0	1
804800-1	50	49.9071	49.9576	49.9575	0.0001	No	0.0504	1008.0	50.0	1008.0	1
804800-2	50	52.0432	52.1042	52.1039	0.0003	No	0.0607	1214.0	50.0	1214.0	1
804800-3	50	50.5602	50.6242	50.6242	0.0000	No	0.0640	1280.0	50.0	1280.0	1
804800-4	50	49.8219	49.8775	49.8772	0.0003	No	0.0553	1106.0	50.0	1106.0	1
804800-5	50	48.0043	48.0805	48.0802	0.0003	No	0.0759	1518.0	50.0	1518.0	1
804841	10	51.8588	51.8993	51.8993	0.0000	No	0.0405	4050.0	250.0	4050.0	1
804841D	10	49.5005	49.5414	49.5414	0.0000	No	0.0409	4090.0	250.0	4090.0	1

Calculation as follows:

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

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?
LCS1	489	500	97.8%	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

Lab Number	Sample Weight, g	Sample Dup Weight, g	% RPD	Acceptance Limit	QC Within Control?
804779-6	0.0968	0.098	0.6%	≤5%	Yes
804841	0.0405	0.0409	0.5%	5%	Yes

Duplicate Determination Difference

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

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).

Jenny T.
Analyst Printed Name

Analyst Signature

Hope T.
Reviewer Printed Name

Reviewer Signature

Total Dissolved Solids by SM 2540 C

TDS/EC CHECK

Batch: 11TDS12C
Date Analyzed: 11/15/12

Laboratory Number	EC	TDS/EC Ratio: 0.55-.9	Calculated TDS (EC*0.65)	Measured TDS / Calc TDS <1.3
804778-1	524	0.62	340.6	0.95
804778-2	444	0.60	288.6	0.92
804778-3	457	0.57	297.05	0.88
804778-4	525	0.64	341.25	0.99
804779-1	1811	0.71	1177.15	1.09
804779-2	651	0.66	423.15	1.01
804779-3	678	0.61	440.7	0.94
804779-4	695	0.61	451.75	0.94
804779-5	521	0.58	338.65	0.90
804779-6	2920	0.66	1898	1.02
804779-6D	2920	0.67	1898	1.03
LCS				
804800-1	1550	0.65	1007.5	1.00
804800-2	1820	0.67	1183	1.03
804800-3	1930	0.66	1254.5	1.02
804800-4	1740	0.64	1131	0.98
804800-5	2380	0.64	1547	0.98
804841	7420	0.55	4823	0.84
804841D	7420	0.55	4823	0.85

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CHAIN OF CUSTODY RECORD

[IM3Plant-WDR-387]

804841

COC Number

TURNAROUND TIME 10 Days

DATE 11/13/12 PAGE 1 OF 1

COMPANY	E2
PROJECT NAME	PG&E Topock
PHONE	(530) 229-3303 FAX (530) 339-3303
ADDRESS	155 Grand Ave Ste 1000 Oakland, CA 94612
P.O. NUMBER	456827.01.DM TEAM 1
SAMPLERS (SIGNATURE	C. Knight

SAMPLE I.D.	DATE	TIME	DESCRIPTION	Cr6 (218.6) Lab Filtered	Total Metals (200.7) Cr, Mn	Specific Conductance (120.1)	TDS (SM2540C)	Turbidity (SM2130)	NUMBER OF CONTAINERS	COMMENTS
SC-700B-WDR-387	11/13/12	1344	Water	X	X	X	X	X	3	pH=6 (200.7)
									3	TOTAL NUMBER OF CONTAINERS

ALERT !!
Level III QC

For Sample Conditions
See Form Attached

CHAIN OF CUSTODY SIGNATURE RECORD

	Signature	Printed Name	Company/ Agency	Date/ Time
Relinquished	C. Knight	C. Knight	CH2M HILL	11.13.12 15:07
Received	Rafael Davila	Rafael	T.L.I	11-13-12 15:07
Relinquished	Rafael Davila	Rafael	T.L.I	11-13-12 23:00
Received	Linda	Shakespring	TLI	11/13/12 23:00
Relinquished				
Received				

SAMPLE CONDITIONS

RECEIVED COOL ☑ WARM ☐ 2.9 °C

CUSTODY SEALED YES ☐ NO ☑

SPECIAL REQUIREMENTS:

0406

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
11/14/12	804841	7	2 ml / 100 mL (Total)	9.5	11 AM	
11/14/12	804842-1	9.5	N/A	N/A	N/A	
	-2					
	-3					
	-4					
	-5					
	-6					
	-7					
	-8					
11/14/12	804843-1	9.5	N/A	N/A	N/A	
	-2					
	-3					
	-4					
	-5					
	-6					
	-7					
	-8					
	-9					
	-10					
	-11					
	-12					
	-13					
	-14					
	-15					
	-16					
	-17					

TRUESDAIL LABORATORIES, INC.

Turbidity/pH Check

Sample Number	Turbidity	pH	Date	Analyst	Need Digest	pH2-Adjusted Time	Date/Time of 2nd pH check	Comments
804779 (1-6)	<1	<2	11/09/12	M.M	3010A			
804745	↓	↓	↓	↓	↓			
804749								
804781								
804793								
804795								
804794	↓	↓	↓	↓	↓			
804796	<1	<2	11/12/12	M.M	3010A			
804800	↓	↓	11/16	↓	↓			
804325	<1	<2	10/~~17~~12	M.M	3010A			M.M 11/12/12
804332 (1-5)	↓	↓	10/17/12	↓	↓			
804328 (1-5)			10/16/12			↓		
804325 (1-5)								
804330 (1-4)								
804331 (1-3)	↓	↓	↓	↓	↓			
804803 (1-2,4)	<1	>2	11/13/12	KK	NO	@ 1:30pm	11-14	PH<2
804815	<1	>2	11/13/12	↓	↓	↓	11/19/12 (23)	pH <2
804817	>1	<2	11/14/12	M.M	3010A			
804825	↓	↓	↓	↓	↓			
804834								
804835								
804849	↓	↓	↓	↓	↓			
804851	>1	>2	11/14/12	M.M	3010A			
804844	<1	>2	11/14/12	M.M	3010A			
804842 (1-18)	<1	<2	↓	↓	↓			
804843 (1-18)	↓	↓						
804844 (1-14)	↓	↓	↓	↓	↓			
804840 (1-3)	<1	>2	11/19/12	KK	NO	@ 1:30pm	PH<2	11-23-12
804839	↓	↓	↓	↓	↓	↓	↓	↓
804859 (10-12)								
804862 (1-3)	↓	↓	↓	↓	↓	↓	↓	↓
804820-6	<1	>2	11/19/12	ES	NO	04:00		
804887	<1	<1	↓	↓	yes			
804898	↓	↓			↓			
804896		↓						
804927 (1-3)	↓	>2	↓	↓	NO	@ 9:00	11-23-12	PH<2
804966	>1	<2	11/21/12	ES	yes 3010A	3010		
804957	↓	↓	↓		↓			
804873 (1-5)	<1	<2	11/21-12	BE	3010A			
804914 (1-2)	↓	↓	↓	↓	↓			
~~804955,6,7,8,9~~	↓							
804961 (1-3)	<1	>2	11-23-12	BE	NO	@ 9:00 AM		
804982 (10-12)	↓	↓	↓	↓	↓	↓		

11/29/12 KK

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.

TRUESDAIL LABORATORIES, INC.

Sample Integrity & Analysis Discrepancy Form

Client: E2 **Lab #** 809841

Date Delivered: 11 / 13 / 12 **Time:** 23:00 **By:** ☐Mail ☑Field Service ☐Client

1.	Was a Chain of Custody received and signed?	☑Yes	☐No	☐N/A
2.	Does Customer require an acknowledgement of the COC?	☐Yes	☐No	☑N/A
3.	Are there any special requirements or notes on the COC?	☐Yes	☐No	☑N/A
4.	If a letter was sent with the COC, does it match the COC?	☐Yes	☐No	☑N/A
5.	Were all requested analyses understood and acceptable?	☑Yes	☐No	☐N/A
6.	Were samples received in a chilled condition? Temperature (if yes)? 1.9 °C	☑Yes	☐No	☐N/A
7.	Were samples received intact (i.e. broken bottles, leaks, air bubbles, etc..)?	☑Yes	☐No	☐N/A
8.	Were sample custody seals intact?	☐Yes	☐No	☑N/A
9.	Does the number of samples received agree with COC?	☑Yes	☐No	☐N/A
10.	Did sample labels correspond with the client ID's?	☑Yes	☐No	☐N/A
11.	Did sample labels indicate proper preservation? Preserved (if yes) by: ☐Truesdail ☐Client	☐Yes	☐No	☑N/A
12.	Were samples pH checked? pH = See C.O.C.	☑Yes	☐No	☐N/A
13.	Were all analyses within holding time at time of receipt? If not, notify Project Manager.	☑Yes	☐No	☐N/A
14.	Have Project due dates been checked and accepted? Turn Around Time (TAT): ☐ RUSH ☑ Std	☑Yes	☐No	☐N/A

15. **Sample Matrix:** ☐Liquid ☐Drinking Water ☐Ground Water ☐Waste Water ☐Sludge ☐Soil ☐Wipe ☐Paint ☐Solid ☑Other Water

16. Comments: _____

17. Sample Check-In completed by **Truesdail** Log-In/Receiving: L. Shakespeare

C:\Users\Test\Desktop\Forms A - D\Discrp.FormBlank.doc

ALERT !!
Level III QC

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December 14, 2012

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-388 PROJECT, GROUNDWATER MONITORING, TLI NO.: 804967

Truesdail Laboratories, Inc. is pleased to submit this report summarizing the Topock IM3Plant-WDR-388 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 20, 2012, 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.

Total Chromium and Total Manganese were analyzed by EPA 200.8 rather than EPA 200.7 as requested on the chain of custody with Mr. Shawn Duffy's approval.

The sample receipt temperature was recorded as being 8°C.

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

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

Respectfully Submitted,
TRUESDAIL LABORATORIES, INC.

for Mona Nassimi
Manager, Analytical Services

Michael Ngo
Quality Assurance/Quality Control Officer

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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.: 456827.01.DM

Laboratory No.: 804967
Date: December 14, 2012
Collected: November 20, 2012
Received: November 20, 2012

ANALYST LIST

METHOD	PARAMETER	ANALYST
EPA 120.1	Specific Conductivity	Gautam Savani
SM 2540C	Total Dissolved Solids	Jenny Tankunakorn
SM 2130B	Turbidity	Gautam Savani
EPA 200.8	Total Metals	Bita Emami
EPA 218.6	Hexavalent Chromium	George Wahba

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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.: 456827.01.DM
P.O. No.: 456827.01.DM

Laboratory No.: 804967
Date Received: November 20, 2012

Analytical Results Summary

Lab Sample ID	Field ID	Analysis Method	Extraction Method	Sample Date	Sample Time	Parameter	Result	Units	RL
804967-001	SC-700B-WDR-388	E120.1	NONE	11/20/2012	11:30	EC	7390	umhos/cm	2.00
804967-001	SC-700B-WDR-388	E200.8	NONE	11/20/2012	11:30	Chromium	ND	ug/L	1.0
804967-001	SC-700B-WDR-388	E200.8	NONE	11/20/2012	11:30	Manganese	1.2	ug/L	0.50
804967-001	SC-700B-WDR-388	E218.6	LABFLT	11/20/2012	11:30	Chromium, Hexavalent	ND	ug/L	0.20
804967-001	SC-700B-WDR-388	SM2130B	NONE	11/20/2012	11:30	Turbidity	ND	NTU	0.100
804967-001	SC-700B-WDR-388	SM2540C	NONE	11/20/2012	11:30	Total Dissolved Solids	4170	mg/L	250

ND: Non Detected (below reporting limit)
mg/L: Milligrams per liter.
Note: The following "Significant Figures" rule has been applied to all results:
Results below 0.01ppm will have two (2) significant figures.
Result above or equal to 0.01ppm will have three (3) significant figures.
Quality Control data will always have three (3) significant figures.

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REPORT

Client: **E2 Consulting Engineers, Inc.**
155 Grand Avenue, Suite 800
Oakland, CA 94612
Attention: Jennifer Low
Project Name: PG&E Topock Project
Project Number: 456827.01.DM
P.O. Number: 456827.01.DM
Release Number:

Laboratory No. 804967

Printed 12/14/2012

Samples Received on 11/20/2012 8:30:00 PM

Field ID	Lab ID	Collected	Matrix
SC-700B-WDR-388	804967-001	11/20/2012 11:30	Water

Specific Conductivity - EPA 120.1 Batch 11EC12H

Parameter	Unit	Analyzed	DF	MDL	RL	Result
804967-001 Specific Conductivity	umhos/cm	11/23/2012	1.00	0.116	2.00	7390

Method Blank

Parameter	Unit	DF	Result
Specific Conductivity	umhos	1.00	ND

Duplicate — Lab ID = 804967-001

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Specific Conductivity	umhos	1.00	7400	7390	0.135	0 - 10

Lab Control Sample

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Specific Conductivity	umhos	1.00	701	706	99.3	90 - 110

MRCCS - Secondary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Specific Conductivity	umhos	1.00	692	706	98.0	90 - 110

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Specific Conductivity	umhos	1.00	970	996	97.4	90 - 110

Chrome VI by EPA 218.6

Batch 11CrH12L

Parameter	Unit	Analyzed	DF	MDL	RL	Result
804967-001 Chromium, Hexavalent	ug/L	11/23/2012 10:26	1.00	0.00920	0.20	ND

Method Blank

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

Duplicate Lab ID = 804968-003

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	10.5	10.6	0.937	0 - 20

Low Level Calibration Verification

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	0.185	0.200	92.5	70 - 130

Lab Control Sample

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	4.84	5.00	96.8	90 - 110

Matrix Spike Lab ID = 804844-013

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	5.00	174	177(100)	97.3	90 - 110

Matrix Spike Lab ID = 804844-014

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	5.00	178	181(100)	97.6	90 - 110

Matrix Spike Lab ID = 804967-001

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	1.14	1.15(1.00)	98.7	90 - 110

Matrix Spike Lab ID = 804968-001

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	19.1	19.8(10.0)	92.6	90 - 110

Matrix Spike Lab ID = 804968-002

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	5.00	30.4	31.4(25.0)	96.1	90 - 110

Matrix Spike Lab ID = 804968-003

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.0300	25.0	25.6(15.0)	95.8	90 - 110

Metals by EPA 200.8, Total Batch 120712B

Parameter	Unit	Analyzed	DF	MDL	RL	Result
804967-001 Chromium	ug/L	12/08/2012 08:33	2.50	0.230	1.0	ND
Manganese	ug/L	12/08/2012 08:33	2.50	0.215	0.50	1.2

Method Blank

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

Low Level Calibration Verification

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium	ug/L	1.00	0.200	0.200	99.8	70 - 130
Manganese	ug/L	1.00	0.187	0.200	93.3	70 - 130

Lab Control Sample

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium	ug/L	2.50	49.8	50.0	99.6	85 - 115
Manganese	ug/L	2.50	47.9	50.0	95.7	85 - 115

Matrix Spike — Lab ID = 804967-001

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium	ug/L	2.50	50.6	50.0(50.0)	101	75 - 125
Manganese	ug/L	2.50	47.6	51.2(50.0)	92.9	75 - 125

Matrix Spike Duplicate — Lab ID = 804967-001

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium	ug/L	2.50	49.5	50.0(50.0)	99.0	75 - 125
Manganese	ug/L	2.50	46.9	51.2(50.0)	91.4	75 - 125

MRCCS - Secondary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium	ug/L	1.00	20.2	20.0	101	90 - 110
Manganese	ug/L	1.00	19.4	20.0	96.8	90 - 110

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium	ug/L	1.00	18.8	20.0	94.2	90 - 110

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium	ug/L	1.00	19.3	20.0	96.7	90 - 110

Interference Check Standard AB

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Manganese	ug/L	1.00	19.7	20.0	98.3	80 - 120

Interference Check Standard AB

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Manganese	ug/L	1.00	19.6	20.0	97.8	80 - 120

Total Dissolved Solids by SM 2540 C

Batch 11TDS12E

Parameter	Unit	Analyzed	DF	MDL	RL	Result
804967-001 Total Dissolved Solids	mg/L	11/27/2012	1.00	0.757	250	4170

Method Blank

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

Duplicate — Lab ID = 804967-001

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Total Dissolved Solids	mg/L	1.00	4130	4170	0.964	0 - 10

Lab Control Sample

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Total Dissolved Solids	mg/L	1.00	496	500	99.2	90 - 110

Turbidity by SM 2130 B

Batch 11TUC12L

Parameter	Unit	Analyzed	DF	MDL	RL	Result
804967-001 Turbidity	NTU	11/21/2012	1.00	0.0140	0.100	ND

Method Blank

Parameter	Unit	DF	Result
Turbidity	NTU	1.00	ND

Duplicate — Lab ID = 804967-001

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

Lab Control Sample

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

Lab Control Sample Duplicate

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Turbidity	NTU	1.00	7.35	8.00	91.9	90 - 110

Respectfully submitted,
TRUESDAIL LABORATORIES, INC.

for Mona Nassimi
Manager, Analytical Services

ED

SC

Truesdail Laboratories, Inc.

Total Dissolved Solids by SM 2540 C

Calculations

Batch: 11TDS12E
Date Analyzed: 11/27/12

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	111.3976	111.3981	111.3979	0.0002	No	0.0003	3.0	25.0	ND	1
804967	10	46.9842	47.0262	47.0259	0.0003	No	0.0417	4170.0	250.0	4170.0	1
805003	100	76.8032	76.8708	76.8707	0.0001	No	0.0675	675.0	25.0	675.0	1
804967D	10	75.2924	75.334	75.3337	0.0003	No	0.0413	4130.0	250.0	4130.0	1
LCS	100	73.8032	73.8528	73.8528	0.0000	No	0.0496	496.0	25.0	496.0	1

Calculation as follows:

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

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?
LCS1	496	500	99.2%	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

Lab Number	Sample Weight, g	Sample Dup Weight, g	% RPD	Acceptance Limit	QC Within Control?
804967	0.0417	0.0413	0.5%	≤5%	Yes

Duplicate Determination Difference

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

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).

Jenny T.
Analyst Printed Name

Analyst Signature

Marlon
~~Hope T.~~
Reviewer Printed Name

Reviewer Signature

Total Dissolved Solids by SM 2540 C

TDS/EC CHECK

Batch: 11TDS12E
Date Analyzed: 11/27/12

Laboratory Number	EC	TDS/EC Ratio: 0.55-.9	Calculated TDS (EC*0.65)	Measured TDS / Calc TDS <1.3
804967	7400	0.56	4810	0.87
805003	982	0.69	638.3	1.06
804967D	7400	0.56	4810	0.86
LCS				

804967

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(714)730-6239 FAX: (714) 730-6462
www.truesdail.com

CHAIN OF CUSTODY RECORD

[IM3Plant-WDR-388]

COC Number

TURNAROUND TIME 10 Days

DATE 11/20/12 PAGE 1 OF 1

COMPANY E2

PROJECT NAME PG&E Topock

PHONE (530) 229-3303 FAX (530) 339-3303

ADDRESS 155 Grand Ave Ste 1000
Oakland, CA 94612

P.O. NUMBER 456827.01.DM TEAM 1

SAMPLERS (SIGNATURE

SAMPLE I.D.	DATE	TIME	DESCRIPTION	Cr6 (218.6) Lab Filtered	Total Metals (200.7) Cr, Mn	Specific Conductance (120.1)	TDS (SM2540C)		Turbidity (SM2130)									NUMBER OF CONTAINERS	COMMENTS
SC-700B-WDR-388	11/20/12	11:30	Water	X	X	X	X		X									3	pH = 7 (200.7)
																		3	TOTAL NUMBER OF CONTAINERS

For Sample Conditions
See Form Attached

ALERT !!
Level III QC

CHAIN OF CUSTODY SIGNATURE RECORD

	Signature	Printed Name	Company/ Agency	Date/ Time
Relinquished		Bon Pheng	OMI	11-20-12 14:50
Received		Hipolito	TL	11-20-12 14:50
Relinquished		Hipolito	TL	11-20-12 20:30
Received		Alex	TL	11-20-12 20:30
Relinquished				
Received				

SAMPLE CONDITIONS

RECEIVED COOL ☑ WARM ☐ 8 °C

CUSTODY SEALED YES ☐ NO ☑

SPECIAL REQUIREMENTS:

ONT

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
11/9/12	804799	9.5	N/A	N/A	N/A	
11/9/12	804800-1	9.5	N/A	N/A	N/A	
	-2					
	-3					
	-4					
	-5					
11/14/12	804843	9.5	N/A	N/A	N/A	11/14/12
11/21/12	804967	7	2mL/100mL (Total)	9.5	10:15 Am	
11/21/12	804968-1	9.5	N/A	N/A	N/A	
	-2					
	-3					
	-4					
	-5					
	-6					

12-3-12

TRUESDAIL LABORATORIES, INC.

Turbidity/pH Check

Sample Number	Turbidity	pH	Date	Analyst	Need Digest	pH2-Adjusted Time	Date/Time of 2nd pH check	Comments
805021 (1-5)	<1	<2	12/3/12	ES	yes			
805019 (1-2)	↓	↓	↓	↓	↓			
804967	↓	>2	↓	↓	↓	12:00p.m		
805017	↓	↓	↓	↓	↓	↓		
~~8050 [illegible]~~ 12/4								
805116 (1-4)	<1	<2	12/4/12	KK	YES			
804746	<1	<2	11/9/12	[illegible]	YES			
805022 (10)	<1	<2	12/4/12	BE	yes			
805117-1	<1	<2	12/4/12	ES	yes			
805145-(1-3)	<1	>2	12/6/12	AA	NO	8:30am		
805160 (1-3)	<1	>2	↓	↓	↓	↓		
805171 (10-12)	<1	>2						
805175-(1-3)	<1	>2						
805179	<1	<2	12/6/12	BE	yes			
805180 (1-5)	<1	<2	12/6/12	ES	yes			
805076	<1	>2	↓	↓	NO	10:00am		
805114 (17,24)	↓	↓	↓	↓	↓	↓		
~~80~~ 5152 (1-3	<1	<2	12/7/12	BE	yes			
12-7/12 805153 (1-2)	↓	↓	↓	↓	↓			
BE 805155 (1-2)	↓	>2	↓	↓	↓		Acidified after filt.	
805156 ~~80~~ BE ~~5156~~ (1-2)	↓	↓	↓	↓	↓			
805157 (1-9)	↓	<2	↓	↓	↓			
805159 (1-12)	↓	↓	↓	↓	↓			
805158 (1-13, 17-27, 31)	<1	↓	↓	↓	↓			
BE ~~805~~ 805182 (1-8)	↓	↓	↓	↓	↓			
805181 (6&7)	↓	↓	↓	↓	↓			
805219 (1-4)	↓	↓	↓	↓	↓			
805220 (1-3)	↓	↓	↓	↓	↓			
805221 (1-4)	↓	↓	↓	↓	↓			
~~805214~~ ES 12/7/12								
805095	<1	<2	12/7/12	ES	yes			
805098	↓	↓	↓	↓	↓			
805104	↓	↓	↓	↓	↓			
805106	↓	↓	↓	↓	↓			
805125	↓	↓	↓	↓	↓			
805126	↓	↓	↓	↓	↓			
805127	↓	↓	↓	↓	↓			
805128	↓	↓	↓	↓	↓			
805120	↓	↓	↓	↓	↓			
805190	↓	↓	↓	↓	↓			
805191	↓	↓	↓	↓	↓	↓		
805192	↓	↓	↓	↓	↓			
805200	↓	↓	↓	↓	↓			
805201	↓	↓	↓	↓	↓			

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.

TRUESDAIL LABORATORIES, INC.

ALERT !!
Level III QC

Sample Integrity & Analysis Discrepancy Form

Client: E2 **Lab #** 804967

Date Delivered: 11/20/12 **Time:** 20:30 **By:** ☐Mail ☒Field Service ☐Client

1.	Was a Chain of Custody received and signed?	☒Yes	☐No	☐N/A
2.	Does Customer require an acknowledgement of the COC?	☐Yes	☐No	☒N/A
3.	Are there any special requirements or notes on the COC?	☐Yes	☐No	☒N/A
4.	If a letter was sent with the COC, does it match the COC?	☐Yes	☐No	☒N/A
5.	Were all requested analyses understood and acceptable?	☒Yes	☐No	☐N/A
6.	Were samples received in a chilled condition? Temperature (if yes)? 8 °C	☒Yes	☐No	☐N/A
7.	Were samples received intact (i.e. broken bottles, leaks, air bubbles, etc..)?	☒Yes	☐No	☐N/A
8.	Were sample custody seals intact?	☐Yes	☐No	☒N/A
9.	Does the number of samples received agree with COC?	☒Yes	☐No	☐N/A
10.	Did sample labels correspond with the client ID's?	☒Yes	☐No	☐N/A
11.	Did sample labels indicate proper preservation? Preserved (if yes) by: ☐Truesdail ☐Client	☐Yes	☒No	☐N/A
12.	Were samples pH checked? pH = see COC	☒Yes	☐No	☐N/A
13.	Were all analyses within holding time at time of receipt? If not, notify Project Manager.	☒Yes	☐No	☐N/A
14.	Have Project due dates been checked and accepted? Turn Around Time (TAT): ☐ RUSH ☒ Std	☒Yes	☐No	☐N/A

15. **Sample Matrix:** ☐Liquid ☐Drinking Water ☐Ground Water ☐Waste Water ☐Sludge ☐Soil ☐Wipe ☐Paint ☐Solid ☒Other Water

16. Comments: _____

17. Sample Check-In completed by **Truesdail** Log-In/Receiving: Ale

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www.truesdail.com

December 12, 2012

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-389 PROJECT, GROUNDWATER MONITORING, TLI NO.: 805017

Truesdail Laboratories, Inc. is pleased to submit this report summarizing the Topock IM3Plant-WDR-389 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 27, 2012, 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.

Total Chromium and Total Manganese were analyzed by EPA 200.8 rather than EPA 200.7 as requested on the chain of custody with Mr. Shawn Duffy's approval.

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

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

Respectfully Submitted,
TRUESDAIL LABORATORIES, INC.

for Mona Nassimi
Manager, Analytical Services

Michael Ngo
Quality Assurance/Quality Control Officer

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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.: 456827.01.DM

Laboratory No.: 805017
Date: December 12, 2012
Collected: November 27, 2012
Received: November 27, 2012

ANALYST LIST

METHOD	PARAMETER	ANALYST
EPA 120.1	Specific Conductivity	Gautam Savani
SM 2540C	Total Dissolved Solids	Jenny Tankunakorn
SM 2130B	Turbidity	Gautam Savani
EPA 200.8	Total Metals	Bita Emami
EPA 218.6	Hexavalent Chromium	Himani Vaishnav

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

Laboratory No.: 805017
Date Received: November 27, 2012

Project Name: PG&E Topock Project
Project No.: 456827.01.DM
P.O. No.: 456827.01.DM

Analytical Results Summary

Lab Sample ID	Field ID	Analysis Method	Extraction Method	Sample Date	Sample Time	Parameter	Result	Units	RL
805017-001	SC-700B-WDR-389	E120.1	NONE	11/27/2012	14:10	EC	7440	umhos/cm	2.00
805017-001	SC-700B-WDR-389	E200.8	NONE	11/27/2012	14:10	Chromium	ND	ug/L	1.0
805017-001	SC-700B-WDR-389	E200.8	NONE	11/27/2012	14:10	Manganese	3.1	ug/L	0.50
805017-001	SC-700B-WDR-389	E218.6	LABFLT	11/27/2012	14:10	Chromium, Hexavalent	ND	ug/L	0.20
805017-001	SC-700B-WDR-389	SM2130B	NONE	11/27/2012	14:10	Turbidity	0.102	NTU	0.100
805017-001	SC-700B-WDR-389	SM2540C	NONE	11/27/2012	14:10	Total Dissolved Solids	4300	mg/L	250

ND: Non Detected (below reporting limit)
mg/L: Milligrams per liter.
Note: The following "Significant Figures" rule has been applied to all results:
Results below 0.01ppm will have two (2) significant figures.
Result above or equal to 0.01ppm will have three (3) significant figures.
Quality Control data will always have three (3) significant figures.

005

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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: 456827.01.DM
P.O. Number: 456827.01.DM
Release Number:

Laboratory No. 805017

Printed 12/12/2012

Samples Received on 11/27/2012 10:00:00 PM

Field ID	Lab ID	Collected	Matrix
SC-700B-WDR-389	805017-001	11/27/2012 14:10	Water

Specific Conductivity - EPA 120.1

Batch 11EC12I

Parameter	Unit	Analyzed	DF	MDL	RL	Result
805017-001 Specific Conductivity	umhos/cm	11/28/2012	1.00	0.116	2.00	7440

Method Blank

Parameter	Unit	DF	Result
Specific Conductivity	umhos	1.00	ND

Duplicate — Lab ID = 805017-001

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Specific Conductivity	umhos	1.00	7440	7440	0	0 - 10

Lab Control Sample

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Specific Conductivity	umhos	1.00	702	706	99.4	90 - 110

MRCCS - Secondary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Specific Conductivity	umhos	1.00	701	706	99.3	90 - 110

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Specific Conductivity	umhos	1.00	986	996	99.0	90 - 110

Chrome VI by EPA 218.6

Batch 12CrH12A

Parameter	Unit	Analyzed	DF	MDL	RL	Result
805017-001 Chromium, Hexavalent	ug/L	12/01/2012 12:20	1.00	0.00920	0.20	ND

Method Blank

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

Duplicate — Lab ID = 805019-001

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Chromium, Hexavalent	ug/L	10.0	209	209	0.0161	0 - 20

Low Level Calibration Verification

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	0.191	0.200	95.6	70 - 130

Lab Control Sample

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	4.80	5.00	95.9	90 - 110

Matrix Spike — Lab ID = 805017-001

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	1.08	1.12(1.00)	95.9	90 - 110

Matrix Spike — Lab ID = 805018-002

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	10.0	361	367(200)	97.0	90 - 110

Matrix Spike — Lab ID = 805019-002

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	5.00	146	149(75.0)	96.7	90 - 110

Matrix Spike — Lab ID = 805020-001

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	0.954	1.00(1.00)	95.4	90 - 110

Matrix Spike — Lab ID = 805020-003

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	50.0	1380	1430(750)	93.5	90 - 110

Matrix Spike — Lab ID = 805020-004

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	250	6650	6770(3750)	96.9	90 - 110

Metals by EPA 200.8, Total

Batch 120712B

Parameter	Unit	Analyzed	DF	MDL	RL	Result
805017-001 Chromium	ug/L	12/08/2012 09:09	2.50	0.230	1.0	ND
Manganese	ug/L	12/08/2012 09:09	2.50	0.215	0.50	3.1

Method Blank

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

Low Level Calibration Verification

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium	ug/L	1.00	0.200	0.200	99.8	70 - 130
Manganese	ug/L	1.00	0.187	0.200	93.3	70 - 130

Lab Control Sample

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium	ug/L	2.50	49.8	50.0	99.6	85 - 115
Manganese	ug/L	2.50	47.9	50.0	95.7	85 - 115

Matrix Spike

Lab ID = 804967-001

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium	ug/L	2.50	50.6	50.0(50.0)	101	75 - 125
Manganese	ug/L	2.50	47.6	51.2(50.0)	92.9	75 - 125

Matrix Spike Duplicate

Lab ID = 804967-001

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium	ug/L	2.50	49.5	50.0(50.0)	99.0	75 - 125
Manganese	ug/L	2.50	46.9	51.2(50.0)	91.4	75 - 125

MRCCS - Secondary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium	ug/L	1.00	20.2	20.0	101	90 - 110
Manganese	ug/L	1.00	19.4	20.0	96.8	90 - 110

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium	ug/L	1.00	18.8	20.0	94.2	90 - 110

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium	ug/L	1.00	19.3	20.0	96.7	90 - 110

Interference Check Standard AB

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Manganese	ug/L	1.00	19.7	20.0	98.3	80 - 120

Interference Check Standard AB

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Manganese	ug/L	1.00	19.6	20.0	97.8	80 - 120

Total Dissolved Solids by SM 2540 C

Batch 11TDS12F

Parameter	Unit	Analyzed	DF	MDL	RL	Result
805017-001 Total Dissolved Solids	mg/L	11/29/2012	1.00	0.757	250	4300

Method Blank

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

Duplicate — Lab ID = 805017-001

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Total Dissolved Solids	mg/L	1.00	4260	4300	0.934	0 - 10

Lab Control Sample

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Total Dissolved Solids	mg/L	1.00	490	500	98.0	90 - 110

Turbidity by SM 2130 B

Batch 12TUC12O

Parameter	Unit	Analyzed	DF	MDL	RL	Result
805017-001 Turbidity	NTU	11/28/2012	1.00	0.0140	0.100	0.102

Method Blank

Parameter	Unit	DF	Result
Turbidity	NTU	1.00	ND

Duplicate — Lab ID = 805017-001

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Turbidity	NTU	1.00	0.104	0.102	1.94	0 - 20

Lab Control Sample

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Turbidity	NTU	1.00	7.44	8.00	93.0	90 - 110

Lab Control Sample Duplicate

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

Respectfully submitted,
TRUESDAIL LABORATORIES, INC.

for Mona Nassimi
Manager, Analytical Services

Truesdail Laboratories, Inc.

Total Dissolved Solids by SM 2540 C

Calculations

Batch: 11TDS12F
Date Analyzed: 11/29/12

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	70.3202	70.3205	70.3204	0.0001	No	0.0002	2.0	25.0	ND	1
805017	10	72.6379	72.6812	72.6809	0.0003	No	0.0430	4300.0	250.0	4300.0	1
805024-1	490	103.4140	103.4164	103.4164	0.0000	No	0.0024	4.9	5.1	ND	1
805032-1	20	51.0530	51.0958	51.0958	0.0000	No	0.0428	2140.0	125.0	2140.0	1
805032-2	20	51.4317	51.4792	51.4788	0.0004	No	0.0471	2355.0	125.0	2355.0	1
805053	10	47.2202	47.2767	47.2766	0.0001	No	0.0564	5640.0	250.0	5640.0	1
805054	10	50.7017	50.7662	50.7659	0.0003	No	0.0642	6420.0	250.0	6420.0	1
805055	10	50.9449	51.0057	51.0057	0.0000	No	0.0608	6080.0	250.0	6080.0	1
805056	10	50.4922	50.5425	50.5423	0.0002	No	0.0501	5010.0	250.0	5010.0	1
805057	10	48.9966	49.0566	49.0566	0.0000	No	0.0600	6000.0	250.0	6000.0	1
805058	5	50.1537	50.2349	50.2347	0.0002	No	0.0810	16200.0	500.0	16200.0	1
805017D	10	50.9551	50.9982	50.9977	0.0005	No	0.0426	4260.0	250.0	4260.0	1
LCS	100	111.4192	111.4684	111.4682	0.0002	No	0.0490	490.0	25.0	490.0	1
805059	10	75.7565	75.8055	75.8054	0.0001	No	0.0489	4890.0	250.0	4890.0	1
805060	10	47.5141	47.5664	47.5662	0.0002	No	0.0521	5210.0	250.0	5210.0	1
805058D	5	50.1265	50.2066	50.2064	0.0002	No	0.0799	15980.0	500.0	15980.0	1

Calculation as follows:

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

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?
LCS1	490	500	98.0%	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

Lab Number	Sample Weight, g	Sample Dup Weight, g	% RPD	Acceptance Limit	QC Within Control?
805017	0.043	0.0426	0.5%	≤5%	Yes
805058	0.081	0.0799	0.7%	5%	Yes

Duplicate Determination Difference

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

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).

Jenny T.
Analyst Printed Name

Analyst Signature

Hope T.
Reviewer Printed Name

Reviewer Signature

WetChem TDS_2012.xls

Total Dissolved Solids by SM 2540 C

TDS/EC CHECK

Batch: 11TDS12F
Date Analyzed: 11/29/12

Laboratory Number	EC	TDS/EC Ratio: 0.55-.9	Calculated TDS (EC*0.65)	Measured TDS / Calc TDS <1.3
805017	7430	0.58	4829.5	0.89
805024-1	16.3	ND	10.595	ND
805032-1	3610	0.59	2346.5	0.91
805032-2	4120	0.57	2678	0.88
805053	7020	0.80	4563	1.24
805054	8350	0.77	5427.5	1.18
805055	8060	0.75	5239	1.16
805056	6520	0.77	4238	1.18
805057	8080	0.74	5252	1.14
805058	23200	0.70	15080	1.07
805017D	7430	0.57	4829.5	0.88
LCS				
805059	6420	0.76	4173	1.17
805060	6570	0.79	4270.5	1.22
805058D	23200	0.69	15080	1.06

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(714)730-6239 FAX: (714) 730-6462
www.truesdail.com

CHAIN OF CUSTODY RECORD

[IM3Plant-WDR-389] 805017

COC Number
TURNAROUND TIME 10 Days
DATE 11/27/12 PAGE 1 OF 1

COMPANY: E2
PROJECT NAME: PG&E Topock
PHONE: (530) 229-3303 FAX: (530) 339-3303
ADDRESS: 155 Grand Ave Ste 1000, Oakland, CA 94612
P.O. NUMBER: 456827.01.DM TEAM: 1
SAMPLERS (SIGNATURE: C. Knight

SAMPLE I.D.	DATE	TIME	DESCRIPTION	Cr6 (218.6) Lab Filtered	Total Metals (200.7) Cr, Mn	Specific Conductance (120.1)	TDS (SM2540C)		Turbidity (SM2130)	NUMBER OF CONTAINERS	COMMENTS
SC-700B-WDR-389	11/27/12	14:10	Water	x	x	x	x		x	3	PH=6 (200.7)

TOTAL NUMBER OF CONTAINERS: 3

ALERT !!
Level III QC

For Sample Conditions
See Form Attached

CHAIN OF CUSTODY SIGNATURE RECORD

Signature	Printed Name	Company/Agency	Date/Time
Signature (Relinquished) C. Knight	C. Knight	CH2M·Hill	11-27-12 15:30
Signature (Received) Rafael Davila	Rafael	T.L.I	11-27-12 15:30
Signature (Relinquished) Rafael Davila	Rafael	T.L.I	11-27-12 22:00
Signature (Received) Shaleemina	Luda	TLI	11/27/12 22:00
Signature (Relinquished)			
Signature (Received)			

SAMPLE CONDITIONS
RECEIVED COOL ☑ WARM ☐ 3.8°C
CUSTODY SEALED YES ☐ NO ☑
SPECIAL REQUIREMENTS:

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
11/28/12	805017	7	2ml/100ml (total)	9.5	10 Am	
11/28/12	805018-1	9.5	N/A	N/A	N/A	
	-2					
11/28/12	805019-1	9.5	N/A	N/A	N/A	
	-2					
11/28/12	805020-1	9.5	N/A	N/A	N/A	
	-2					
	-3					
	-4					
	-5					
	-6					
11/28/12	805021-1	9.5	N/A	N/A	N/A	
	-2					
	-3					
	-4					
	-5					
	-6					
	-7					
	-8					
	-9					
	-10					
11/28/12	805022-1	9.5	N/A	N/A	N/A	HAV
	-2					
	-3					
	-4					
	-5					
	-6					
	-7					
	-8					
	-9					
	-10					

HAV 12/04/12

12-10-12

HAV 12/08/12

TRUESDAIL LABORATORIES, INC.

Turbidity/pH Check

Sample Number	Turbidity	pH	Date	Analyst	Need Digest	pH2-Adjusted Time	Date/Time of 2nd pH check	Comments
805021 (1-5)	<1	<2	12/3/12	ES	yes			
805019 (1-2)	↓	↓	↓	↓	↓			
804967	↓	>2	↓	↓	↓	12:00p.m		
805017	↓	↓	↓	↓	↓	↓		
~~8050~~ VL 12/4								
805116 (1-4)	<1	<2	12/4/12	KK	YES			
804746	<1	<2	11/9/12	VL	YES			
805022 (10)	<1	<2	VL 11-12	BE	xes			
805117-1	<1	<2	12/4/12	ES	yes			
805145-(1-3)	<1	>2	12/6/12	AA	NO	8:30am		
805160 (1-3)	<1	>2	↓	↓	↓	↓		
805171 (10-12)	<1	>2						
805175-(1-3)	<1	>2	↓	↓	↓	↓		
805179	<1	<2	12/6/12	BE	xes			
805180 (1-5)	<1	<2	12/6/12	ES	yes			
805076	<1	>2	↓	↓	NO	10:00am		
805114 (17,24)	↓	↓	↓	↓	↓	↓		
~~80~~ 5152 (1-3	<1	<2	12/7/12	BE	xes			
12-7/12 BE 805153 (1-2)	↓	↓	↓	↓	↓			
805155 (1-2)	↓	>2	↓	↓	↓		Acidified after filt.	
805156 ~~805156~~ (1-2)	↓	↓	↓	↓	↓			
805157 (1-9)	↓	<2	↓	↓	↓			
805159 (1-12)	↓	↓	↓	↓	↓			
805158 (1-13, 17-27, 31)	<1	↓	↓	↓	↓			
BE ~~805~~ 805182 (1-8)	↓	↓	↓	↓	↓			
805181 (6,7)	↓	↓	↓	↓	↓			
805219 (-4)	↓	↓	↓	↓	↓			
805220 (1-3)	↓	↓	↓	↓	↓			
805221 (1-4)	↓	↓	↓	↓	↓			
~~805214~~ ES 12/7/12								
805095	<1	<2	12/7/12	ES	yes			
805098	↓	↓	↓	↓	↓			
805104	↓	↓	↓	↓	↓			
805106	↓	↓	↓	↓	↓			
805125	↓	↓	↓	↓	↓			
805126	↓	↓	↓	↓	↓			
805127	↓	↓	↓	↓	↓			
805128	↓	↓	↓	↓	↓			
805120	↓	↓	↓	↓	↓			
805190	↓	↓	↓	↓	↓			
805191	↓	↓	↓	↓	↓	↓		
805192	↓	↓	↓	↓	↓			
805 [illegible]	↓	↓	↓	↓	↓			
805201	↓	↓	↓	↓	↓			

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.

TRUESDAIL LABORATORIES, INC.

Sample Integrity & Analysis Discrepancy Form

Client: E2 **Lab #** 805017

Date Delivered: 11/27/12 **Time:** 22:00 **By:** ☐Mail ☑Field Service ☐Client

1.	Was a Chain of Custody received and signed?	☑Yes	☐No	☐N/A
2.	Does Customer require an acknowledgement of the COC?	☐Yes	☐No	☑N/A
3.	Are there any special requirements or notes on the COC?	☐Yes	☐No	☑N/A
4.	If a letter was sent with the COC, does it match the COC?	☐Yes	☐No	☑N/A
5.	Were all requested analyses understood and acceptable?	☑Yes	☐No	☐N/A
6.	Were samples received in a chilled condition? Temperature (if yes)? 3.8 °C	☑Yes	☐No	☐N/A
7.	Were samples received intact (i.e. broken bottles, leaks, air bubbles, etc..)?	☑Yes	☐No	☐N/A
8.	Were sample custody seals intact?	☐Yes	☐No	☑N/A
9.	Does the number of samples received agree with COC?	☑Yes	☐No	☐N/A
10.	Did sample labels correspond with the client ID's?	☑Yes	☐No	☐N/A
11.	Did sample labels indicate proper preservation? Preserved (if yes) by: ☐Truesdail ☐Client	☐Yes	☐No	☑N/A
12.	Were samples pH checked? pH = see c.o.e.	☑Yes	☐No	☐N/A
13.	Were all analyses within holding time at time of receipt? If not, notify Project Manager.	☑Yes	☐No	☐N/A
14.	Have Project due dates been checked and accepted? Turn Around Time (TAT): ☐ RUSH ☑ Std	☑Yes	☐No	☐N/A

ALERT!! Level III QC

15. **Sample Matrix:** ☐Liquid ☐Drinking Water ☐Ground Water ☐Waste Water ☐Sludge ☐Soil ☐Wipe ☐Paint ☐Solid ☑Other Water

16. Comments: _____

17. Sample Check-In completed by **Truesdail** Log-In/Receiving: L. Shalcuning

C:\Users\Test\Desktop\Forms A - D\Discrp.FormBlank.doc

Analytical Bench Log Book

WDR pH Results

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

	Sample Name	Date of sampling	Time of sampling	Date of analysis	Time of analysis	pH Meter #1, #2, or #3 etc. See cover Sheet for Serial Number	Date pH meter Calibrated	Time pH meter Calibrated	Slope of the Curve	Analyst Name (for the pH result)	pH Result
1	SC-700B	11-6-12	13:32	11-6-12	13:36	Meter #1	11-6-12	00:50	-55.1	C. Knight	7.0
Notes:											
2	SC-700B	11-6-12	13:47	11-6-12	13:52	Meter #1	11-6-12	00:50	-55.1	C Knight	7.4
Notes:											
3	SC-700-B	11-13-12	13:44	11-13-12	13:51	METER #1	11-13-12	0:05	-54.1	C-Knight	7.0
Notes:											
4	SC-700B	11-20-12	11:30	11-20-12	11:35	METER #1	11-20-12	00:45	-54.2	Ron Phelps	7.0
Notes:											
5	SC-700B-	11-27-12	14:10	11-27-12	14:17	METER #1	11-27-12	03:25	-54.8	C. Knight	7.7
Notes:											
6											
Notes:											
7											

The Effluent (SC-700B) is: 6.5 - 8.4

TRUESDAIL LABORATORIES, INC.

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Established 1931

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TUSTIN, CALIFORNIA 92780-7008
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www.truesdail.com

January 8, 2013

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-390 PROJECT, GROUNDWATER MONITORING,

TLI NO.: 805156

Truesdail Laboratories, Inc. is pleased to submit this report summarizing the Topock IM3Plant-WDR-390 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 4, 2012, 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 internal standard for samples SC-700B-WDR-390 and SC-100B-WDR-390 analyzed straight for Total Nickel by EPA 200.8 in batch 010213B was outside the recovery limits of 70% - 130%. Therefore, the sample was re-analyzed at a 2.50x dilution and the internal standards were within acceptable limits. Due to the dilution, the reporting limit for Total Nickel exceeds the Contract Required Detection Limit. All other QA/QC was within acceptable limits.

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

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

Respectfully Submitted,
TRUESDAIL LABORATORIES, INC.

for Mona Nassimi
Manager, Analytical Services

Michael Ngo
Quality Assurance/Quality Control Officer

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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.: 456827.01.DM

Laboratory No.: 805156
Date: January 8, 2013
Collected: December 4, 2012
Received: December 4, 2012

ANALYST LIST

METHOD	PARAMETER	ANALYST
EPA 120.1	Specific Conductivity	Gautam Savani
SM 2540C	Total Dissolved Solids	Jenny Tankunakorn
SM 2320B	Total Alkalinity	Melissa Scharfe
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	Gautam Savani
EPA 300.0	Anions	Giawad Ghenniwa
SM 4500-NH3 D	Ammonia	Melissa Scharfe
SM 4500-NO2 B	Nitrite as N	Jenny Tankunakorn
EPA 200.7	Metals by ICP	Ethel Suico
EPA 200.8	Metals by ICP/MS	Bita Emami
EPA 218.6	Hexavalent Chromium	Himani Vaishnav

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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.: 456827.01.DM
P.O. No.: 456827.01.DM

Laboratory No.: 805156
Date Received: December 4, 2012

Analytical Results Summary

Lab Sample ID	Field ID	Analysis Method	Extraction Method	Sample Date	Sample Time	Parameter	Result	Units	RL
805156-001	SC-700B-WDR-390	E120.1	NONE	12/4/2012	14:33	EC	7380	umhos/cm	2.00
805156-001	SC-700B-WDR-390	E200.7	NONE	12/4/2012	14:33	Aluminum	ND	ug/L	50.0
805156-001	SC-700B-WDR-390	E200.7	NONE	12/4/2012	14:33	BORON	1040	ug/L	200
805156-001	SC-700B-WDR-390	E200.7	NONE	12/4/2012	14:33	Iron	ND	ug/L	20.0
805156-001	SC-700B-WDR-390	E200.7	NONE	12/4/2012	14:33	Zinc	ND	ug/L	20.0
805156-001	SC-700B-WDR-390	E200.8	NONE	12/4/2012	14:33	Antimony	ND	ug/L	2.0
805156-001	SC-700B-WDR-390	E200.8	NONE	12/4/2012	14:33	Arsenic	ND	ug/L	0.50
805156-001	SC-700B-WDR-390	E200.8	NONE	12/4/2012	14:33	Barium	10.2	ug/L	5.0
805156-001	SC-700B-WDR-390	E200.8	NONE	12/4/2012	14:33	Chromium	ND	ug/L	1.0
805156-001	SC-700B-WDR-390	E200.8	NONE	12/4/2012	14:33	Copper	ND	ug/L	5.0
805156-001	SC-700B-WDR-390	E200.8	NONE	12/4/2012	14:33	Lead	ND	ug/L	1.0
805156-001	SC-700B-WDR-390	E200.8	NONE	12/4/2012	14:33	Manganese	0.52	ug/L	0.50
805156-001	SC-700B-WDR-390	E200.8	NONE	12/4/2012	14:33	Molybdenum	21.9	ug/L	5.0
805156-001	SC-700B-WDR-390	E200.8	NONE	12/4/2012	14:33	Nickel	ND	ug/L	5.0
805156-001	SC-700B-WDR-390	E218.6	LABFLT	12/4/2012	14:33	Chromium, Hexavalent	0.21	ug/L	0.20
805156-001	SC-700B-WDR-390	E300	NONE	12/4/2012	14:33	Fluoride	2.00	mg/L	0.500
805156-001	SC-700B-WDR-390	E300	NONE	12/4/2012	14:33	Nitrate as N	3.14	mg/L	0.500
805156-001	SC-700B-WDR-390	E300	NONE	12/4/2012	14:33	Sulfate	498	mg/L	25.0
805156-001	SC-700B-WDR-390	SM2130B	NONE	12/4/2012	14:33	Turbidity	0.102	NTU	0.100
805156-001	SC-700B-WDR-390	SM2540C	NONE	12/4/2012	14:33	Total Dissolved Solids	4380	mg/L	250
805156-001	SC-700B-WDR-390	SM4500NH3D	NONE	12/4/2012	14:33	Ammonia-N	ND	mg/L	0.500
805156-001	SC-700B-WDR-390	SM4500NO2B	NONE	12/4/2012	14:33	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
805156-002	SC-100B-WDR-390	E120.1	NONE	12/4/2012	14:41	EC	7810	umhos/cm	2.00
805156-002	SC-100B-WDR-390	E200.7	NONE	12/4/2012	14:41	Aluminum	ND	ug/L	50.0
805156-002	SC-100B-WDR-390	E200.7	NONE	12/4/2012	14:41	BORON	1090	ug/L	200
805156-002	SC-100B-WDR-390	E200.7	NONE	12/4/2012	14:41	Iron	ND	ug/L	20.0
805156-002	SC-100B-WDR-390	E200.7	LABFLT	12/4/2012	14:41	Iron	ND	ug/L	20.0
805156-002	SC-100B-WDR-390	E200.7	NONE	12/4/2012	14:41	Zinc	ND	ug/L	20.0
805156-002	SC-100B-WDR-390	E200.8	NONE	12/4/2012	14:41	Antimony	2.0	ug/L	2.0
805156-002	SC-100B-WDR-390	E200.8	NONE	12/4/2012	14:41	Arsenic	3.3	ug/L	0.50
805156-002	SC-100B-WDR-390	E200.8	NONE	12/4/2012	14:41	Barium	26.1	ug/L	5.0
805156-002	SC-100B-WDR-390	E200.8	NONE	12/4/2012	14:41	Chromium	746	ug/L	2.0
805156-002	SC-100B-WDR-390	E200.8	NONE	12/4/2012	14:41	Copper	ND	ug/L	5.0
805156-002	SC-100B-WDR-390	E200.8	NONE	12/4/2012	14:41	Lead	ND	ug/L	1.0
805156-002	SC-100B-WDR-390	E200.8	LABFLT	12/4/2012	14:41	Manganese	3.8	ug/L	0.50
805156-002	SC-100B-WDR-390	E200.8	NONE	12/4/2012	14:41	Manganese	3.6	ug/L	0.50
805156-002	SC-100B-WDR-390	E200.8	NONE	12/4/2012	14:41	Molybdenum	21.2	ug/L	5.0
805156-002	SC-100B-WDR-390	E200.8	NONE	12/4/2012	14:41	Nickel	ND	ug/L	5.0
805156-002	SC-100B-WDR-390	E218.6	LABFLT	12/4/2012	14:41	Chromium, Hexavalent	746	ug/L	10.0
805156-002	SC-100B-WDR-390	E300	NONE	12/4/2012	14:41	Fluoride	2.38	mg/L	0.500
805156-002	SC-100B-WDR-390	E300	NONE	12/4/2012	14:41	Nitrate as N	3.25	mg/L	0.500
805156-002	SC-100B-WDR-390	E300	NONE	12/4/2012	14:41	Sulfate	532	mg/L	25.0
805156-002	SC-100B-WDR-390	SM2130B	NONE	12/4/2012	14:41	Turbidity	0.166	NTU	0.100
805156-002	SC-100B-WDR-390	SM2320B	NONE	12/4/2012	14:41	Alkalinity	127	mg/L	5.00
805156-002	SC-100B-WDR-390	SM2320B	NONE	12/4/2012	14:41	Alkalinity, Bicarbonate (As CaCO3)	127	mg/L	5.00
805156-002	SC-100B-WDR-390	SM2320B	NONE	12/4/2012	14:41	Alkalinity, Carbonate (As CaCO3)	ND	mg/L	5.00
805156-002	SC-100B-WDR-390	SM2540C	NONE	12/4/2012	14:41	Total Dissolved Solids	4660	mg/L	250
805156-002	SC-100B-WDR-390	SM4500NH3D	NONE	12/4/2012	14:41	Ammonia-N	ND	mg/L	0.500
805156-002	SC-100B-WDR-390	SM4500NO2B	NONE	12/4/2012	14:41	Nitrite as N	ND	mg/L	0.0050
805156-002	SC-100B-WDR-390	SM4500-PB_E	NONE	12/4/2012	14:41	Total Phosphorous-P	ND	mg/L	0.0200
805156-002	SC-100B-WDR-390	SM4500SI	NONE	12/4/2012	14:41	Soluble Silica	20.6	mg/L	1.00
805156-002	SC-100B-WDR-390	SM5310C	NONE	12/4/2012	14:41	Total Organic Carbon	0.448	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.

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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: 456827.01.DM
P.O. Number: 456827.01.DM
Release Number:

Laboratory No. 805156

Printed 1/8/2013

Samples Received on 12/4/2012 10:30:00 PM

Field ID	Lab ID	Collected	Matrix
SC-700B-WDR-390	805156-001	12/04/2012 14:33	Water
SC-100B-WDR-390	805156-002	12/04/2012 14:41	Water

Anions By I.C. - EPA 300.0 Batch 12AN12D

Parameter	Unit	Analyzed	DF	MDL	RL	Result
805156-001 Fluoride	mg/L	12/05/2012 10:57	5.00	0.104	0.500	2.00
Nitrate as Nitrogen	mg/L	12/05/2012 10:57	5.00	0.0415	0.500	3.14
Sulfate	mg/L	12/05/2012 15:42	50.0	1.54	25.0	498
805156-002 Fluoride	mg/L	12/05/2012 11:08	5.00	0.104	0.500	2.38
Nitrate as Nitrogen	mg/L	12/05/2012 11:08	5.00	0.0415	0.500	3.25
Sulfate	mg/L	12/05/2012 15:54	50.0	1.54	25.0	532

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 = 805156-002

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Fluoride	mg/L	5.00	2.38	2.38	0.168	0 - 20
Nitrate as Nitrogen	mg/L	5.00	3.28	3.25	0.858	0 - 20

Duplicate — Lab ID = 805162-001

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Chloride	mg/L	1.00	ND	0	0	0 - 20
Sulfate	mg/L	1.00	ND	0	0	0 - 20

Lab Control Sample

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chloride	mg/L	1.00	3.96	4.00	99.0	90 - 110
Fluoride	mg/L	1.00	4.13	4.00	103	90 - 110
Sulfate	mg/L	1.00	20.2	20.0	101	90 - 110
Nitrate as Nitrogen	mg/L	1.00	4.03	4.00	101	90 - 110

Matrix Spike Lab ID = 805156-002

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Fluoride	mg/L	5.00	23.1	22.4(20.0)	104	85 - 115
Nitrate as Nitrogen	mg/L	5.00	23.7	23.2(20.0)	102	85 - 115

Matrix Spike Lab ID = 805162-001

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chloride	mg/L	1.00	2.06	2.00(2.00)	103	85 - 115
Sulfate	mg/L	1.00	2.02	2.00(2.00)	101	85 - 115

Matrix Spike Duplicate Lab ID = 805162-001

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chloride	mg/L	1.00	2.05	2.00(2.00)	102	85 - 115
Sulfate	mg/L	1.00	2.01	2.00(2.00)	100	85 - 115

MRCCS - Secondary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chloride	mg/L	1.00	3.98	4.00	99.6	90 - 110
Fluoride	mg/L	1.00	4.15	4.00	104	90 - 110
Sulfate	mg/L	1.00	20.3	20.0	101	90 - 110
Nitrate as Nitrogen	mg/L	1.00	4.04	4.00	101	90 - 110

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chloride	mg/L	1.00	2.98	3.00	99.3	90 - 110

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chloride	mg/L	1.00	2.94	3.00	98.1	90 - 110

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chloride	mg/L	1.00	2.94	3.00	98.1	90 - 110

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Fluoride	mg/L	1.00	3.11	3.00	104	90 - 110

Nitrite SM 4500-NO2 B Batch 12NO212B

Parameter	Unit	Analyzed	DF	MDL	RL	Result
805156-001 Nitrite as Nitrogen	mg/L	12/05/2012 15:50	1.00	0.000540	0.0050	ND
805156-002 Nitrite as Nitrogen	mg/L	12/05/2012 15:51	1.00	0.000540	0.0050	ND

Method Blank

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

Duplicate — Lab ID = 805114-010

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

Lab Control Sample

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Nitrite as Nitrogen	mg/L	1.00	0.0295	0.0308	95.8	90 - 110

Matrix Spike — Lab ID = 805156-001

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Nitrite as Nitrogen	mg/L	1.00	0.0185	0.0200(0.0200)	92.5	85 - 115

MRCCS - Secondary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Nitrite as Nitrogen	mg/L	1.00	0.0299	0.0308	97.1	90 - 110

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Nitrite as Nitrogen	mg/L	1.00	0.0184	0.0200	92.0	90 - 110

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Nitrite as Nitrogen	mg/L	1.00	0.0184	0.0200	92.0	90 - 110

Alkalinity by SM 2320B

Batch 12ALK12B

Parameter	Unit	Analyzed	DF	MDL	RL	Result
805156-002 Alkalinity as CaCO3	mg/L	12/06/2012	1.00	0.555	5.00	127
Bicarbonate (Calculated)	mg/L	12/06/2012	1.00	0.555	5.00	127
Carbonate (Calculated)	mg/L	12/06/2012	1.00	0.555	5.00	ND

Method Blank

Parameter	Unit	DF	Result
Alkalinity as CaCO3	mg/L	1.00	ND

Duplicate

Lab ID = 805181-007

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Alkalinity as CaCO3	mg/L	1.00	90.0	88.0	2.25	0 - 20

Lab Control Sample

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Alkalinity as CaCO3	mg/L	1.00	96.0	100	96.0	90 - 110

Lab Control Sample Duplicate

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Alkalinity as CaCO3	mg/L	1.00	95.0	100	95.0	90 - 110

Matrix Spike

Lab ID = 805181-007

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Alkalinity as CaCO3	mg/L	1.00	183	188(100)	95.0	75 - 125

Specific Conductivity - EPA 120.1

Batch 12EC12A

Parameter	Unit	Analyzed	DF	MDL	RL	Result
805156-001 Specific Conductivity	umhos/cm	12/06/2012	1.00	0.116	2.00	7380
805156-002 Specific Conductivity	umhos/cm	12/06/2012	1.00	0.116	2.00	7810

Method Blank

Parameter	Unit	DF	Result
Specific Conductivity	umhos	1.00	ND

Duplicate

Lab ID = 805156-001

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Specific Conductivity	umhos	1.00	7390	7380	0.135	0 - 10

Duplicate

Lab ID = 805156-002

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Specific Conductivity	umhos	1.00	7810	7810	0	0 - 10

Lab Control Sample

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Specific Conductivity	umhos	1.00	710	706	100	90 - 110

Lab Control Sample Duplicate

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Specific Conductivity	umhos	1.00	712	706	101	90 - 110

MRCCS - Secondary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Specific Conductivity	umhos	1.00	695	706	98.4	90 - 110

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Specific Conductivity	umhos	1.00	980	996	98.4	90 - 110

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Specific Conductivity	umhos	1.00	988	996	99.2	90 - 110

Chrome VI by EPA 218.6

Batch 12CrH12I

Parameter	Unit	Analyzed	DF	MDL	RL	Result
805156-001 Chromium, Hexavalent	ug/L	12/10/2012 13:48	1.00	0.00920	0.20	0.21
805156-002 Chromium, Hexavalent	ug/L	12/10/2012 13:59	50.0	0.460	10.0	746

Method Blank

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

Duplicate Lab ID = 805156-002

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Chromium, Hexavalent	ug/L	50.0	740	746	0.838	0 - 20

Low Level Calibration Verification

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	0.212	0.200	106	70 - 130

Lab Control Sample

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	4.80	5.00	96.1	90 - 110

Matrix Spike Lab ID = 805155-001

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	16.4	17.0(10.0)	93.6	90 - 110

Matrix Spike Lab ID = 805156-001

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	1.20	1.21(1.00)	98.5	90 - 110

Matrix Spike Lab ID = 805156-002

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	50.0	1470	1500(750)	97.1	90 - 110

Matrix Spike Lab ID = 805157-001

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	0.939	1.00(1.00)	93.9	90 - 110

Matrix Spike Lab ID = 805157-002

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	250	9220	9480(5000)	94.7	90 - 110

Matrix Spike Lab ID = 805157-003

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	250	8790	8980(5000)	96.1	90 - 110

Metals by EPA 200.7, Total

Batch 121412B-Th2

Parameter	Unit	Analyzed	DF	MDL	RL	Result
805156-001 Aluminum	ug/L	12/14/2012 18:27	1.00	10.0	50.0	ND
Zinc	ug/L	12/14/2012 18:27	1.00	7.00	20.0	ND
805156-002 Aluminum	ug/L	12/14/2012 18:34	1.00	10.0	50.0	ND
Zinc	ug/L	12/14/2012 18:34	1.00	7.00	20.0	ND

Method Blank

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

Duplicate

Lab ID = 805156-002

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

Lab Control Sample

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Aluminum	ug/L	1.00	2230	2000	111	85 - 115
Zinc	ug/L	1.00	2200	2000	110	85 - 115

Matrix Spike

Lab ID = 805156-002

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Aluminum	ug/L	1.00	1580	2000(2000)	79.2	75 - 125
Zinc	ug/L	1.00	2030	2000(2000)	102	75 - 125

MRCCS - Secondary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Aluminum	ug/L	1.00	5200	5000	104	95 - 105
Zinc	ug/L	1.00	5160	5000	103	95 - 105

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Aluminum	ug/L	1.00	5240	5000	105	90 - 110

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Aluminum	ug/L	1.00	5270	5000	105	90 - 110

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Zinc	ug/L	1.00	5180	5000	104	90 - 110

Metals by EPA 200.7, Total

Batch 121312A-Th2

Parameter	Unit	Analyzed	DF	MDL	RL	Result
805156-001 Boron	ug/L	12/13/2012 13:03	1.00	2.70	200	1040
Iron	ug/L	12/13/2012 13:03	1.00	9.50	20.0	ND
805156-002 Boron	ug/L	12/13/2012 13:10	1.00	2.70	200	1090
Iron	ug/L	12/13/2012 13:10	1.00	9.50	20.0	ND

Method Blank

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

Duplicate

Lab ID = 805156-002

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Iron	ug/L	1.00	ND	0	0	0 - 20
Boron	ug/L	1.00	1080	1090	1.29	0 - 20

Lab Control Sample

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Iron	ug/L	1.00	2260	2000	113	85 - 115
Boron	ug/L	1.00	2080	2000	104	85 - 115

Matrix Spike

Lab ID = 805156-002

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Iron	ug/L	1.00	2200	2000(2000)	110	75 - 125
Boron	ug/L	1.00	3340	3090(2000)	113	75 - 125

MRCCS - Secondary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Iron	ug/L	1.00	5110	5000	102	95 - 105
Boron	ug/L	1.00	5050	5000	101	95 - 105

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Iron	ug/L	1.00	5270	5000	105	90 - 110

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Iron	ug/L	1.00	5460	5000	109	90 - 110
Boron	ug/L	1.00	5400	5000	108	90 - 110

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Boron	ug/L	1.00	5200	5000	104	90 - 110

Metals by EPA 200.8, Total

Batch 121712A

Parameter	Unit	Analyzed	DF	MDL	RL	Result
805156-001 Barium	ug/L	12/17/2012 13:46	2.50	0.470	5.0	10.2
Chromium	ug/L	12/17/2012 13:46	2.50	0.230	1.0	ND
Copper	ug/L	12/17/2012 13:46	2.50	0.642	5.0	ND
Lead	ug/L	12/17/2012 13:46	2.50	0.185	1.0	ND
Manganese	ug/L	12/17/2012 13:46	2.50	0.215	0.50	0.52
Molybdenum	ug/L	12/17/2012 13:46	2.50	0.518	5.0	21.9
805156-002 Barium	ug/L	12/17/2012 14:21	2.50	0.470	5.0	26.1
Chromium	ug/L	12/17/2012 14:36	10.0	0.920	2.0	746
Copper	ug/L	12/17/2012 14:21	2.50	0.642	5.0	ND
Lead	ug/L	12/17/2012 14:21	2.50	0.185	1.0	ND
Manganese	ug/L	12/17/2012 14:21	2.50	0.215	0.50	3.6
Molybdenum	ug/L	12/17/2012 14:21	2.50	0.518	5.0	21.2

Method Blank

Parameter	Unit	DF	Result
Barium	ug/L	1.00	ND
Chromium	ug/L	1.00	ND
Copper	ug/L	1.00	ND
Lead	ug/L	1.00	ND
Manganese	ug/L	1.00	ND
Molybdenum	ug/L	1.00	ND

Duplicate

Lab ID = 805156-001

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Barium	ug/L	2.50	9.74	10.2	4.62	0 - 20
Chromium	ug/L	2.50	ND	0	0	0 - 20
Copper	ug/L	2.50	ND	0	0	0 - 20
Lead	ug/L	2.50	ND	0	0	0 - 20
Manganese	ug/L	2.50	0.500	0.516	3.19	0 - 20
Molybdenum	ug/L	2.50	21.0	21.9	4.43	0 - 20

Low Level Calibration Verification

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Barium	ug/L	1.00	1.02	1.00	102	70 - 130
Chromium	ug/L	1.00	0.201	0.200	101	70 - 130
Copper	ug/L	1.00	1.01	1.00	101	70 - 130
Lead	ug/L	1.00	0.224	0.200	112	70 - 130
Manganese	ug/L	1.00	0.252	0.200	126	70 - 130
Molybdenum	ug/L	1.00	0.578	0.500	116	70 - 130

Lab Control Sample

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Barium	ug/L	2.50	51.9	50.0	104	85 - 115
Chromium	ug/L	2.50	52.8	50.0	106	85 - 115
Copper	ug/L	2.50	52.1	50.0	104	85 - 115
Lead	ug/L	2.50	51.8	50.0	104	85 - 115
Manganese	ug/L	2.50	52.8	50.0	106	85 - 115
Molybdenum	ug/L	2.50	54.2	50.0	108	85 - 115

Matrix Spike — Lab ID = 805156-001

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Barium	ug/L	2.50	57.9	60.2(50.0)	95.4	75 - 125
Chromium	ug/L	2.50	50.4	50.0(50.0)	101	75 - 125
Copper	ug/L	2.50	45.0	50.0(50.0)	89.9	75 - 125
Lead	ug/L	2.50	43.3	50.0(50.0)	86.5	75 - 125
Manganese	ug/L	2.50	49.7	50.5(50.0)	98.3	75 - 125
Molybdenum	ug/L	2.50	73.8	71.9(50.0)	104	75 - 125

Matrix Spike Duplicate — Lab ID = 805156-001

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Barium	ug/L	2.50	56.7	60.2(50.0)	93.1	75 - 125
Chromium	ug/L	2.50	50.3	50.0(50.0)	100	75 - 125
Copper	ug/L	2.50	43.7	50.0(50.0)	87.3	75 - 125
Lead	ug/L	2.50	42.7	50.0(50.0)	85.4	75 - 125
Manganese	ug/L	2.50	48.5	50.5(50.0)	96.0	75 - 125
Molybdenum	ug/L	2.50	74.5	71.9(50.0)	105	75 - 125

Serial Dilution

Lab ID = 805156-002

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Barium	ug/L	12.5	27.5	26.1	5.15	0 - 10
Chromium	ug/L	50.0	723	746	3.16	0 - 10

Metals by EPA 200.8, Total

Batch 010213B

Parameter	Unit	Analyzed	DF	MDL	RL	Result
805156-001 Antimony	ug/L	01/02/2013 17:24	2.50	0.830	2.0	ND
Arsenic	ug/L	01/02/2013 17:24	2.50	0.250	0.50	ND
Nickel	ug/L	01/02/2013 17:24	2.50	1.96	5.0	ND
805156-002 Antimony	ug/L	01/02/2013 18:35	2.50	0.830	2.0	2.0
Arsenic	ug/L	01/02/2013 18:35	2.50	0.250	0.50	3.3
Nickel	ug/L	01/02/2013 18:35	2.50	1.96	5.0	ND

Method Blank

Parameter	Unit	DF	Result
Arsenic	ug/L	1.00	ND
Nickel	ug/L	1.00	ND
Antimony	ug/L	1.00	ND

Duplicate

Lab ID = 805156-001

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Arsenic	ug/L	2.50	ND	0	0	0 - 20
Nickel	ug/L	2.50	ND	0	0	0 - 20
Antimony	ug/L	2.50	ND	0	0	0 - 20

Low Level Calibration Verification

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Arsenic	ug/L	1.00	0.219	0.200	109	70 - 130
Nickel	ug/L	1.00	2.24	2.00	112	70 - 130
Antimony	ug/L	1.00	0.862	0.800	108	70 - 130

Lab Control Sample

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Arsenic	ug/L	2.50	47.1	50.0	94.2	85 - 115
Nickel	ug/L	2.50	49.2	50.0	98.5	85 - 115
Antimony	ug/L	2.50	53.7	50.0	107	85 - 115

Matrix Spike

Lab ID = 805156-001

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Arsenic	ug/L	2.50	46.7	50.0(50.0)	93.4	75 - 125
Nickel	ug/L	2.50	47.9	50.0(50.0)	95.8	75 - 125
Antimony	ug/L	2.50	52.0	50.0(50.0)	104	75 - 125

Matrix Spike Duplicate — Lab ID = 805156-001

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Arsenic	ug/L	2.50	47.8	50.0(50.0)	95.5	75 - 125
Nickel	ug/L	2.50	47.8	50.0(50.0)	95.7	75 - 125
Antimony	ug/L	2.50	53.8	50.0(50.0)	108	75 - 125

MRCCS - Secondary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Arsenic	ug/L	1.00	19.3	20.0	96.4	90 - 110
Nickel	ug/L	1.00	19.1	20.0	95.4	90 - 110
Antimony	ug/L	1.00	20.3	20.0	102	90 - 110

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Arsenic	ug/L	1.00	19.5	20.0	97.7	90 - 110

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Arsenic	ug/L	1.00	19.4	20.0	96.8	90 - 110

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Arsenic	ug/L	1.00	19.2	20.0	95.8	90 - 110

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Arsenic	ug/L	1.00	19.4	20.0	96.9	90 - 110

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Nickel	ug/L	1.00	19.8	20.0	99.1	90 - 110

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Nickel	ug/L	1.00	19.8	20.0	99.2	90 - 110

MRCVS - Primary

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

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Nickel	ug/L	1.00	19.8	20.0	98.8	90 - 110
Antimony	ug/L	1.00	20.0	20.0	100	90 - 110

Interference Check Standard AB

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Nickel	ug/L	1.00	19.0	20.0	94.8	80 - 120

Interference Check Standard AB

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

Interference Check Standard AB

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

Reactive Silica by SM4500-Si D Batch 12Si12A

Parameter	Unit	Analyzed	DF	MDL	RL	Result
805156-002 Silica	mg/L	12/12/2012	25.0	0.252	1.00	20.6

Method Blank

Parameter	Unit	DF	Result
Silica	mg/L	1.00	ND

Duplicate — Lab ID = 805156-002

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Silica	mg/L	25.0	22.3	20.6	8.08	0 - 20

Lab Control Sample

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Silica	mg/L	1.00	0.188	0.206	91.0	90 - 110

Matrix Spike — Lab ID = 805193-001

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Silica	mg/L	1.00	0.389	0.400(0.400)	97.3	75 - 125

MRCCS - Secondary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Silica	mg/L	1.00	0.103	0.103	100	90 - 110

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Silica	mg/L	1.00	0.423	0.400	106	90 - 110

Total Dissolved Solids by SM 2540 C Batch 12TDS12A

Parameter	Unit	Analyzed	DF	MDL	RL	Result
805156-001 Total Dissolved Solids	mg/L	12/06/2012	1.00	0.757	250	4380
805156-002 Total Dissolved Solids	mg/L	12/06/2012	1.00	0.757	250	4660

Method Blank

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

Duplicate — Lab ID = 805145-001

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Total Dissolved Solids	mg/L	1.00	560	565	0.889	0 - 10

Duplicate — Lab ID = 805156-002

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Total Dissolved Solids	mg/L	1.00	4670	4660	0.214	0 - 10

Lab Control Sample

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

Total Organic Carbon (T/DOC) SM 5310 C Batch 12TOC12F

Parameter	Unit	Analyzed	DF	MDL	RL	Result
805156-002 Total Organic Carbon	mg/L	12/11/2012 13:30	1.00	0.0309	0.300	0.448

Method Blank

Parameter	Unit	DF	Result
Total Organic Carbon	mg/L	1.00	ND

Duplicate — Lab ID = 805156-002

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Total Organic Carbon	mg/L	1.00	0.450	0.448	0.379	0 - 20

Lab Control Sample

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Total Organic Carbon	mg/L	1.00	9.86	10.0	98.6	90 - 110

Matrix Spike — Lab ID = 805265-020

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Total Organic Carbon	mg/L	1.00	11.9	12.1(10.0)	97.8	75 - 125

MRCCS - Secondary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Total Organic Carbon	mg/L	1.00	10.7	10.0	107	85 - 115

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Total Organic Carbon	mg/L	1.00	9.04	10.0	90.4	90 - 110

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Total Organic Carbon	mg/L	1.00	9.56	10.0	95.6	90 - 110

Total Phosphate, SM 4500-PB,E Batch 12TP12A

Parameter	Unit	Analyzed	DF	MDL	RL	Result
805156-002 Phosphate, Total As P	mg/L	12/05/2012	1.00	0.00648	0.0200	ND

Method Blank

Parameter	Unit	DF	Result
Phosphate, Total As P	mg/L	1.00	ND

Duplicate — Lab ID = 805032-002

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Phosphate, Total As P	mg/L	10.0	0.310	0.316	1.98	0 - 20

Lab Control Sample

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Phosphate, Total As P	mg/L	1.00	0.141	0.130	108	90 - 110

Matrix Spike — Lab ID = 805156-002

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Phosphate, Total As P	mg/L	1.00	0.0582	0.0650(0.0650)	89.5	75 - 125

MRCCS - Secondary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Phosphate, Total As P	mg/L	1.00	0.0624	0.0650	96.0	90 - 110

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Phosphate, Total As P	mg/L	1.00	0.0681	0.0650	105	90 - 110

Ammonia Nitrogen by SM4500-NH3D

Batch 12NH312A

Parameter	Unit	Analyzed	DF	MDL	RL	Result
805156-001 Ammonia as N	mg/L	12/19/2012	1.00	0.00980	0.500	ND
805156-002 Ammonia as N	mg/L	12/19/2012	1.00	0.00980	0.500	ND

Method Blank

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

Duplicate

Lab ID = 805156-001

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Ammonia as N	mg/L	1.00	ND	0	0	0 - 20

Lab Control Sample

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Ammonia as N	mg/L	1.00	8.02	8.00	100	90 - 110

Lab Control Sample Duplicate

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Ammonia as N	mg/L	1.00	7.54	8.00	94.3	90 - 110

Matrix Spike

Lab ID = 805156-002

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Ammonia as N	mg/L	1.00	6.09	8.00(8.00)	76.1	75 - 125

MRCCS - Secondary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Ammonia as N	mg/L	1.00	6.09	6.00	101	90 - 110

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Ammonia as N	mg/L	1.00	6.16	6.00	103	90 - 110

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Ammonia as N	mg/L	1.00	5.88	6.00	98.1	90 - 110

Metals by EPA 200.8, Dissolved

Batch 121712A

Parameter	Unit	Analyzed	DF	MDL	RL	Result
805156-002 Manganese	ug/L	12/17/2012 12:48	2.50	0.215	0.50	3.8

Method Blank

Parameter	Unit	DF	Result
Manganese	ug/L	1.00	ND

Duplicate Lab ID = 805152-001

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Manganese	ug/L	2.50	0.905	0.895	1.08	0 - 20

Low Level Calibration Verification

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Manganese	ug/L	1.00	0.252	0.200	126	70 - 130

Lab Control Sample

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Manganese	ug/L	2.50	52.8	50.0	106	85 - 115

Matrix Spike Lab ID = 805152-001

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Manganese	ug/L	2.50	51.6	50.9(50.0)	101	75 - 125

Matrix Spike Duplicate Lab ID = 805152-001

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Manganese	ug/L	2.50	50.8	50.9(50.0)	99.7	75 - 125

MRCCS - Secondary

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

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Manganese	ug/L	1.00	20.4	20.0	102	90 - 110

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Manganese	ug/L	1.00	19.8	20.0	99.2	90 - 110

Interference Check Standard A

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

Metals by 200.7, Dissolved

Batch 121312A-Th2

Parameter	Unit	Analyzed	DF	MDL	RL	Result
805156-002 Iron	ug/L	12/13/2012 14:08	1.00	9.50	20.0	ND

Method Blank

Parameter	Unit	DF	Result
Iron	ug/L	1.00	ND

Duplicate Lab ID = 805152-001

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

Lab Control Sample

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Iron	ug/L	1.00	2260	2000	113	85 - 115

Matrix Spike Lab ID = 805152-001

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Iron	ug/L	1.00	2420	2000(2000)	121	75 - 125

MRCCS - Secondary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Iron	ug/L	1.00	5110	5000	102	95 - 105

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Iron	ug/L	1.00	5460	5000	109	90 - 110

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Iron	ug/L	1.00	5270	5000	105	90 - 110

Interference Check Standard A

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Iron	ug/L	1.00	2210	2000	110	80 - 120

Interference Check Standard A

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Iron	ug/L	1.00	2380	2000	119	80 - 120

Interference Check Standard AB

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Iron	ug/L	1.00	2200	2000	110	80 - 120

Interference Check Standard AB

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Iron	ug/L	1.00	2220	2000	111	80 - 120

Turbidity by SM 2130 B Batch 12TUC12C

Parameter	Unit	Analyzed	DF	MDL	RL	Result
805156-001 Turbidity	NTU	12/05/2012	1.00	0.0140	0.100	0.102
805156-002 Turbidity	NTU	12/05/2012	1.00	0.0140	0.100	0.166

Method Blank

Parameter	Unit	DF	Result
Turbidity	NTU	1.00	ND

Duplicate — Lab ID = 805156-002

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Turbidity	NTU	1.00	0.168	0.166	1.20	0 - 20

Lab Control Sample

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Turbidity	NTU	1.00	7.88	8.00	98.5	90 - 110

Lab Control Sample Duplicate

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Turbidity	NTU	1.00	7.58	8.00	94.8	90 - 110

Respectfully submitted,
TRUESDAIL LABORATORIES, INC.

for Mona Nassimi
Manager, Analytical Services

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SC

Truesdail Laboratories, Inc.

Total Dissolved Solids by SM 2540 C

Calculations

Batch: 12TDS12A
Date Analyzed: 12/6/12

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	76.2806	76.2806	76.2806	0.0000	No	0.0000	0.0	25.0	ND	1
805073	100	72.7713	72.8154	72.8151	0.0003	No	0.0438	438.0	25.0	438.0	1
805076	100	74.2237	74.2517	74.2513	0.0004	No	0.0276	276.0	25.0	276.0	1
805114-17	100	78.8044	78.8653	78.8651	0.0002	No	0.0607	607.0	25.0	607.0	1
805117-1	100	77.2938	77.35	77.35	0.0000	No	0.0562	562.0	25.0	562.0	1
805117-2	100	74.9329	74.9691	74.9689	0.0002	No	0.0360	360.0	25.0	360.0	1
805117-3	50	47.7619	47.8335	47.8333	0.0002	No	0.0714	1428.0	50.0	1428.0	1
805117-4	100	68.3733	68.4104	68.4102	0.0002	No	0.0369	369.0	25.0	369.0	1
805137-9	100	66.7063	66.7667	66.7664	0.0003	No	0.0601	601.0	25.0	601.0	1
805137-10	100	77.9934	78.0502	78.0502	0.0000	No	0.0568	568.0	25.0	568.0	1
805145-1	100	77.7805	77.8374	77.837	0.0004	No	0.0565	565.0	25.0	565.0	1
805145-1D	100	72.0896	72.1457	72.1456	0.0001	No	0.0560	560.0	25.0	560.0	1
LCS	100	66.8022	66.8525	66.8525	0.0000	No	0.0503	503.0	25.0	503.0	1
805145-2	100	75.2763	75.3295	75.3292	0.0003	No	0.0529	529.0	25.0	529.0	1
805145-3	100	73.8010	73.8538	73.8534	0.0004	No	0.0524	524.0	25.0	524.0	1
805160-4	100	72.3814	72.4155	72.4155	0.0000	No	0.0341	341.0	25.0	341.0	1
805192	50	78.6179	78.7268	78.7268	0.0000	No	0.1089	2178.0	50.0	2178.0	1
805193	990	112.9662	112.9668	112.9668	0.0000	No	0.0006	0.6	2.5	ND	1
805194-1	100	74.5318	74.5862	74.5858	0.0004	No	0.0540	540.0	25.0	540.0	1
805155-1	20	49.8815	49.9373	49.9372	0.0001	No	0.0557	2785.0	125.0	2785.0	1
805155-2	10	49.1750	49.2258	49.2256	0.0002	No	0.0506	5060.0	250.0	5060.0	1
805156-1	10	50.7515	50.7955	50.7953	0.0002	No	0.0438	4380.0	250.0	4380.0	1
805156-2	10	47.4325	47.4791	47.4791	0.0000	No	0.0466	4660.0	250.0	4660.0	1
805156-2D	10	48.5867	48.6335	48.6334	0.0001	No	0.0467	4670.0	250.0	4670.0	1

Calculation as follows:

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

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?
LCS1	503	500	100.6%	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

Lab Number	Sample Weight, g	Sample Dup Weight, g	% RPD	Acceptance Limit	QC Within Control?
805145-1	0.0565	0.056	0.4%	≤5%	Yes
805156-2	0.0466	0.0467	0.1%	5%	Yes

Duplicate Determination Difference

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

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).

Jenny T.
Analyst Printed Name

Analyst Signature

Maksim G.
Reviewer Printed Name

Reviewer Signature

Total Dissolved Solids by SM 2540 C

TDS/EC CHECK

Batch: 12TDS12A
Date Analyzed: 12/6/12

Laboratory Number	EC	TDS/EC Ratio: 0.55-.9	Calculated TDS (EC*0.65)	Measured TDS / Calc TDS <1.3
805073	679	0.65	441.35	0.99
805076	427	0.65	277.55	0.99
805114-17	996	0.61	647.4	0.94
805117-1	823	0.68	534.95	1.05
805117-2	539	0.67	350.35	1.03
805117-3	2030	0.70	1319.5	1.08
805117-4	524	0.70	340.6	1.08
805137-9	925	0.65	601.25	1.00
805137-10	895	0.63	581.75	0.98
805145-1	899	0.63	584.35	0.97
805145-1D	899	0.62	584.35	0.96
LCS				
805145-2	862	0.61	560.3	0.94
805145-3	851	0.62	553.15	0.95
805160-4	564	0.60	366.6	0.93
805192	2620	0.83	1703	1.28
805193	3.19	ND	2.0735	ND
805194-1	677	0.80	440.05	1.23
805155-1	4750	0.59	3087.5	0.90
805155-2	8480	0.60	5512	0.92
805156-1	7380	0.59	4797	0.91
805156-2	7810	0.60	5076.5	0.92
805156-2D	7810	0.60	5076.5	0.92

TRUESDAIL LABORATORIES, INC.

Alkalinity by SM 2320B

Calculations

Analytical Batch: 12ALK12B
Matrix: Water
Date of Analysis: 12/6/12

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 $CaCO_3$ (ppm)	CO3 Alkalinity as $CaCO_3$ (ppm)	OH Alkalinity as $CaCO_3$ (ppm)	Low Alkalinity as $CaCO_3$ (<20ppm)
BLANK	6.90	50	0.02		0.0	0.00		0.0	5	ND	ND	ND	ND	
805076	7.83	50	0.02		0.0	4.75		95.0	5	95.0	95.0	ND	ND	
805114-21	7.87	50	0.02		0.0	4.00		80.0	5	80.0	80.0	ND	ND	
805117-1	7.55	50	0.02		0.0	9.00		180.0	5	180.0	180.0	ND	ND	
805153-1	7.67	50	0.02		0.0	5.80		116.0	5	116.0	116.0	ND	ND	
805153-2	7.74	50	0.02		0.0	5.15		103.0	5	103.0	103.0	ND	ND	
805155-1	7.60	50	0.02		0.0	9.75		195.0	5	195.0	195.0	ND	ND	
805155-2	7.29	50	0.02		0.0	6.00		120.0	5	120.0	120.0	ND	ND	
805160-7	7.66	50	0.02		0.0	3.80		76.0	5	76.0	76.0	ND	ND	
805181-6	7.94	50	0.02		0.0	7.60		152.0	5	152.0	152.0	ND	ND	
805181-7	7.40	50	0.02		0.0	4.40		88.0	5	88.0	88.0	ND	ND	
805181-7 DUP	7.40	50	0.02		0.0	4.50		90.0	5	90.0	90.0	ND	ND	
805181-7 MS	9.08	50	0.02	1.7	33.0	9.15		183.0	5	183.0	117.0	66	ND	
LCS	10.47	50	0.02	2.2	43.0	4.80		96.0	5	96.0	10.0	86	ND	
LCSD	10.50	50	0.02	2.2	44.0	4.75		95.0	5	95.0	7.0	88	ND	
805156-2	7.30	50	0.02		0.0	6.35		127.0	5	127.0	127.0	ND	ND	

Calculations as follows:

T or P = $\left(\frac{A \times N \times 50000}{mL\ sample}\right)$

Where:
T = Total Alkalinity, mg CaCO3/L
P = Phenolphthalein Alkalinity, mg CaCO3/L
A = mL standard acid used
N = normality of standard acid

Low Alkalinity: as mg/L CaCO3 = $\frac{(2 \times B - C) \times N \times 50000}{mL\ sample}$

Where:
B = mL titrant to first recorded pH
C = Total mL titrant to reach pH 0.3 unit lower
N = Normality of standard acid

LCS = Laboratory Control Standard/Duplicate
MS/MSD = Matrix Spike/Duplicate
ND = Not Detected (below the reporting limit)

Blank Summary

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

Laboratory Control Sample (LCS/LCSD) Summary

QC Std I.D.	Measured Value, ppm	Theoretical Value, ppm	%Recovery	Accetance Limit	QC Within Control?
LCS	96	100	96.0%	90-110	Yes
LCSD	95	100	95.0%	90-110	Yes

Duplicate Determination Difference Summary

Lab Number I.D.	Measured Value, ppm	Dup Value, ppm	RPD	Accetance Limit	QC Within Control?
805181-7	88	90	2.2%	≤20%	Yes

Sample Matrix Spike (MS/MSD) Summary

Lab Number	Conc of Unspk spl	Dil Factor	Added Spk Conc	MS/MSD Amt	Measrd Conc of Spk Spl	Theor Conc of Spk Spl	MS/MSD %Rec	MS Accept Limit	QC Within Control?	RPD	RPD Accept Limit	QC Within Control?
805181-7	88	1	100	100	183	188.00	95%	75-125	Yes			
		1	100	100								

Melissa S.
Analyst Printed Name

Analyst Signature

Hope T. Maksin
Reviewer Printed Name

Reviewer Signature

120612b

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ep SC

TRUESDAIL LABORATORIES, INC.
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(714)730-6239 FAX: (714) 730-6462
www.truesdail.com

CHAIN OF CUSTODY RECORD

[IM3Plant-WDR-390] 805156

COC Number
TURNAROUND TIME 10 Days
DATE 12/04/12 PAGE 1 OF 1

COMPANY	CH2M HILL /E2
PROJECT NAME	PG&E Topock IM3
PHONE	530-229-3303
FAX	530-339-3303
ADDRESS	155 Grand Ave Ste 1000, Oakland, CA 94612
P.O. NUMBER	456827.01.DM
SAMPLERS (SIGNATURE	C. Knight

	SAMPLE I.D.	DATE	TIME	DESCRIPTION	Cr(VI) (218.6) Lab Filtered	Alkalinity (2320-B)	EC (120.1)	TDS (2540 c)	Turb (2130)	Total Metals (200.7) See List Below pH=2	Ammonia (4500-NH3)	Total P (4500-P)	Anions (300.0) F, NO3, SO4	TOC (5310 C)	Dissolved Metals (200.7) Fe, Mn lab filtered pH=6	Soluable Silica - Reactive (4500-Si CorD)	NO2 (4500-NO2B)	NUMBER OF CONTAINERS	COMMENTS
-1	SC-700B-WDR-390	12/04/12	14:33		X		X	X	X	X	X		X				X	4	pH=2
-2	SC-100B-WDR-390	12/04/12	14:41		X	X	X	X	X	X	X	X	X	X	X	X	X	9	pH=2 / pH=6 } 200.7

For Sample Conditions See Form Attached

ALERT !! Level III QC

TOTAL NUMBER OF CONTAINERS: 13

CHAIN OF CUSTODY SIGNATURE RECORD

Signature	Printed Name	Company/ Agency	Date/ Time
Signature (Relinquished) C. Knight	C. Knight	CH2M Hill	12-4-12 15:30
Signature (Received) Rafael Davila	Rafael	T.L.I	12-4-12 15:30
Signature (Relinquished) Rafael Davila	Rafael	T.L.I	12-4-12 22:30
Signature (Received) Shabeenna	Linda	TLI	12/4/12 22:30
Signature (Relinquished)			
Signature (Received)			

SAMPLE CONDITIONS

RECEIVED COOL ☑ WARM ☐ 3.6 °C

CUSTODY SEALED YES ☐ NO ☑

SPECIAL REQUIREMENTS:

The metals include: Cr, Al, Sb, As, Ba, B, Cu, Pb, Mn, Mo, Ni, Fe, Zn

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
12/04/12	805116-1	9.5	N/A	N/A	N/A	HAV
↓	-2	↓	↓	↓	↓	↓
↓	-3	↓	↓	↓	↓	↓
↓	-4	↓	↓	↓	↓	↓
12/05/12	805154-1	7	2 ml	9.5	8:30 AM	HAV
↓	-2	9.5	N/A	N/A	N/A	HAV
↓	-3	7	2 ml	9.5	8:40 AM	HAV
↓	-4	9.5	N/A	N/A	N/A	HAV
↓	-5	7	2 ml	9.5	8:50 AM	HAV
↓	-6	↓	↓	↓	9:00 AM	HAV
↓	-7	↓	↓	↓	9:05 AM	HAV
↓	-8	↓	↓	↓	9:10 AM	HAV
↓	-9	↓	↓	↓	9:15 AM	HAV
↓	-10	↓	↓	↓	9:20 AM	HAV
↓	-11	↓	↓	↓	9:25 AM	HAV
↓	-12	↓	↓	↓	9:30 AM	HAV
12/05/12	805155-1	7	2 ml	9.5	10:00 AM	HAV
↓	-2	↓	↓	↓	↓	↓
12/05/12	805156-1	7	2 ml	9.5	10:30 AM	HAV
↓	-2	↓	↓	↓	10:40 AM	↓
12/05/12	805157-1	9.5	N/A	N/A	N/A	HAV
↓	-2	↓	↓	↓	↓	↓
↓	-3	↓	↓	↓	↓	↓
↓	-4	↓	↓	↓	↓	↓
↓	-5	↓	↓	↓	↓	↓
↓	-6	↓	↓	↓	↓	↓
↓	-7	↓	↓	↓	↓	↓
↓	-8	↓	↓	↓	↓	↓
↓	-9	↓	↓	↓	↓	↓

12-17-12

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Turbidity/pH Check

Sample Number	Turbidity	pH	Date	Analyst	Need Digest	pH2-Adjusted Time	Date/Time of 2nd pH check	Comments
805021 (1-5)	<1	<2	12/3/12	ES	yes			
805019 (1-2)	↓	↓	↓	↓	↓			
804967	↓	>2	↓	↓	↓	12:00p.m		
805017	↓	↓	↓	↓	↓	↓		
~~8050~~ KK 12/4								
805116 (1-4)	<1	<2	12/4/12	KK	YES			
804746	<1	<2	11/9/12	KK	YES			
805022 (10)	<1	<2	12/4/12	BE	yes			
805117-1	<1	<2	12/4/12	ES	yes			
805145-(1-3)	<1	>2	12/6/12	AA	NO	8:30am		
805160 (1-3)	<1	>2	↓	↓	↓	↓		
805171 (10-12)	<1	>2	↓	↓	↓	↓		
805175 (1-3)	<1	>2	↓	↓	↓	↓		
805179	<1	<2	12/6/12	BE	yes			
805180 (1-5)	<1	<2	12/6/12	ES	yes			
805076	<1	>2	↓	↓	NO	10:00am		
805114 (17,24)	↓	↓	↓	↓	↓	↓		
~~80~~ 5152 (1-3	<1	<2	12/7/12	BE	yes			
12-7/12 805153 (1-2)	↓	↓	↓	↓	↓			
BE 805155 (1-2)	↓	>2	↓	↓	↓		Acidified after filt.	
805156 ~~80 BE 5156~~ (1-2)	↓	↓	↓	↓	↓			
805157 (1-9)	↓	<2	↓	↓	↓			
805159 (1-12)	↓	↓	↓	↓	↓			
805158 (1-13, 17-27, 31)	<1	↓	↓	↓	↓			
BE ~~BE~~ 805182 (1-8)	↓	↓	↓	↓	↓			
805181 (6,9,7)	↓	↓	↓	↓	↓			
805219 (1-4,5)	↓	↓	↓	↓	↓			
805220 (1-3)	↓	↓	↓	↓	↓			
805221 (1-4)	↓	↓	↓	↓	↓			
~~805214~~ ES 12/7/12								
805095	<1	<2	12/7/12	ES	yes			
805098	↓	↓	↓	↓	↓			
805104	↓	↓	↓	↓	↓			
805106	↓	↓	↓	↓	↓			
805125	↓	↓	↓	↓	↓			
805126	↓	↓	↓	↓	↓			
805127	↓	↓	↓	↓	↓			
805128	↓	↓	↓	↓	↓			
805120	↓	↓	↓	↓	↓			
805130	↓	↓	↓	↓	↓			
805191	↓	↓	↓	↓	↓			
805192	↓	↓	↓	↓	↓			
805190	↓	↓	↓	↓	↓			
805201	↓	↓	↓	↓	↓			

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.

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Sample Integrity & Analysis Discrepancy Form

Client: E2 **Lab #** 905156

Date Delivered: 12/4/12 **Time:** 22:30 **By:** ☐Mail ☒Field Service ☐Client

1.	Was a Chain of Custody received and signed?	☒Yes	☐No	☐N/A
2.	Does Customer require an acknowledgement of the COC?	☐Yes	☐No	☒N/A
3.	Are there any special requirements or notes on the COC?	☐Yes	☐No	☒N/A
4.	If a letter was sent with the COC, does it match the COC?	☐Yes	☐No	☒N/A
5.	Were all requested analyses understood and acceptable?	☒Yes	☐No	☐N/A
6.	Were samples received in a chilled condition? Temperature (if yes)? 3.6 °C	☒Yes	☐No	☐N/A
7.	Were samples received intact (i.e. broken bottles, leaks, air bubbles, etc..)?	☒Yes	☐No	☐N/A
8.	Were sample custody seals intact?	☐Yes	☐No	☒N/A
9.	Does the number of samples received agree with COC?	☒Yes	☐No	☐N/A
10.	Did sample labels correspond with the client ID's?	☒Yes	☐No	☐N/A
11.	Did sample labels indicate proper preservation? Preserved (if yes) by: ☐Truesdail ☒Client	☒Yes	☐No	☐N/A
12.	Were samples pH checked? pH = see c.o.c.	☒Yes	☐No	☐N/A
13.	Were all analyses within holding time at time of receipt? If not, notify Project Manager.	☒Yes	☐No	☐N/A
14.	Have Project due dates been checked and accepted? Turn Around Time (TAT): ☐ RUSH ☒ Std	☒Yes	☐No	☐N/A

15. **Sample Matrix:** ☐Liquid ☐Drinking Water ☐Ground Water ☐Waste Water ☐Sludge ☐Soil ☐Wipe ☐Paint ☐Solid ☒Other Water

16. Comments: _____

17. Sample Check-In completed by **Truesdail** Log-In/Receiving: Linda

ALERT !!
Level III QC

C:\Users\Tes\Desktop\Forms A - D\Discrp.FormBlank.doc

TRUESDAIL LABORATORIES, INC.

EXCELLENCE IN INDEPENDENT TESTING

Established 1931

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

January 4, 2013

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-391 PROJECT, GROUNDWATER MONITORING, TLI NO.: 805303

Truesdail Laboratories, Inc. is pleased to submit this report summarizing the Topock IM3Plant-WDR-391 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 11, 2012, 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.

Total Chromium and Total Manganese were analyzed by EPA 200.8 rather than EPA 200.7 as requested on the chain of custody with Mr. Shawn Duffy's approval.

The straight run for the matrix spike for sample SC-700B-WDR-391 for Hexavalent Chromium analysis by EPA 218.6 was just outside the retention time window. Because the matrix spike recovery was within acceptable limits, the data from the straight run is reported.

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

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

Respectfully Submitted,
TRUESDAIL LABORATORIES, INC.

for Mona Nassimi
Manager, Analytical Services

Michael Ngo
Quality Assurance/Quality Control Officer

TRUESDAIL LABORATORIES, INC.

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REPORT

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.: 456827.01.DM

Laboratory No.: 805303
Date: January 4, 2013
Collected: December 11, 2012
Received: December 11, 2012

ANALYST LIST

METHOD	PARAMETER	ANALYST
EPA 120.1	Specific Conductivity	Melissa Scharfe
SM 2540C	Total Dissolved Solids	Jenny Tankunakorn
SM 2130B	Turbidity	Gautam Savani
EPA 200.8	Total Metals	Bita Emami
EPA 218.6	Hexavalent Chromium	Himani Vaishnav

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

Laboratory No.: 805303
Date Received: December 11, 2012

Project Name: PG&E Topock Project
Project No.: 456827.01.DM
P.O. No.: 456827.01.DM

Analytical Results Summary

Lab Sample ID	Field ID	Analysis Method	Extraction Method	Sample Date	Sample Time	Parameter	Result	Units	RL
805303-001	SC-700B-WDR-391	E120.1	NONE	12/11/2012	15:09	EC	7030	umhos/cm	2.00
805303-001	SC-700B-WDR-391	E200.8	NONE	12/11/2012	15:09	Chromium	ND	ug/L	1.0
805303-001	SC-700B-WDR-391	E200.8	NONE	12/11/2012	15:09	Manganese	0.98	ug/L	0.50
805303-001	SC-700B-WDR-391	E218.6	LABFLT	12/11/2012	15:09	Chromium, Hexavalent	ND	ug/L	0.20
805303-001	SC-700B-WDR-391	SM2130B	NONE	12/11/2012	15:09	Turbidity	ND	NTU	0.100
805303-001	SC-700B-WDR-391	SM2540C	NONE	12/11/2012	15:09	Total Dissolved Solids	4190	mg/L	250

ND: Non Detected (below reporting limit)
mg/L: Milligrams per liter.
Note: The following "Significant Figures" rule has been applied to all results:
Results below 0.01ppm will have two (2) significant figures.
Result above or equal to 0.01ppm will have three (3) significant figures.
Quality Control data will always have three (3) significant figures.

005

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www.truesdail.com

Client: **E2 Consulting Engineers, Inc.**
155 Grand Avenue, Suite 800
Oakland, CA 94612
Attention: Shawn Duffy
Project Name: PG&E Topock Project
Project Number: 456827.01.DM
P.O. Number: 456827.01.DM
Release Number:

Laboratory No. 805303

Printed 1/4/2013

Samples Received on 12/11/2012 10:30:00 PM

Field ID	Lab ID	Collected	Matrix
SC-700B-WDR-391	805303-001	12/11/2012 15:09	Water

Specific Conductivity - EPA 120.1

Batch 12EC12D

Parameter	Unit	Analyzed	DF	MDL	RL	Result
805303-001 Specific Conductivity	umhos/cm	12/14/2012	1.00	0.757	2.00	7030

Method Blank

Parameter	Unit	DF	Result
Specific Conductivity	umhos	1.00	ND

Duplicate Lab ID = 805303-001

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Specific Conductivity	umhos	1.00	7050	7030	0.284	0 - 10

Lab Control Sample

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Specific Conductivity	umhos	1.00	688	706	97.4	90 - 110

Lab Control Sample Duplicate

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Specific Conductivity	umhos	1.00	680	706	96.3	90 - 110

MRCCS - Secondary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Specific Conductivity	umhos	1.00	674	706	95.5	90 - 110

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Specific Conductivity	umhos	1.00	986	996	99.0	90 - 110

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Specific Conductivity	umhos	1.00	945	996	94.9	90 - 110

Chrome VI by EPA 218.6

Batch 12CrH12N

Parameter	Unit	Analyzed	DF	MDL	RL	Result
805303-001 Chromium, Hexavalent	ug/L	12/17/2012 12:51	1.00	0.00920	0.20	ND

Method Blank

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

Lab ID = 805305-002

Duplicate

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	0.0615	0.0713	14.8	0 - 20

Low Level Calibration Verification

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	0.196	0.200	98.2	70 - 130

Lab Control Sample

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	4.80	5.00	96.0	90 - 110

Matrix Spike Lab ID = 805303-001

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	1.15	1.15(1.00)	100	90 - 110

Matrix Spike Lab ID = 805305-002

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	1.02	1.07(1.00)	94.7	90 - 110

Matrix Spike Lab ID = 805305-003

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	0.871	1.00(1.00)	87.1	90 - 110

Matrix Spike Lab ID = 805305-003

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	5.00	4.74	5.00(5.00)	94.7	90 - 110

Matrix Spike Lab ID = 805305-004

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	0.949	1.00(1.00)	94.9	90 - 110

Matrix Spike Lab ID = 805305-005

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	5.00	4.18	5.00(5.00)	83.6	90 - 110

Metals by EPA 200.8, Total

Batch 121712C

Parameter	Unit	Analyzed	DF	MDL	RL	Result
805303-001 Chromium	ug/L	12/18/2012 06:05	2.50	0.230	1.0	ND
Manganese	ug/L	12/18/2012 06:05	2.50	0.215	0.50	0.98

Method Blank

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

Low Level Calibration Verification

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium	ug/L	1.00	0.213	0.200	107	70 - 130
Manganese	ug/L	1.00	0.220	0.200	110	70 - 130

Lab Control Sample

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium	ug/L	2.50	51.0	50.0	102	85 - 115
Manganese	ug/L	2.50	51.6	50.0	103	85 - 115

Matrix Spike

Lab ID = 805303-001

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium	ug/L	2.50	50.0	50.0(50.0)	99.9	75 - 125
Manganese	ug/L	2.50	50.2	51.0(50.0)	98.5	75 - 125

Matrix Spike Duplicate

Lab ID = 805303-001

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium	ug/L	2.50	48.3	50.0(50.0)	96.6	75 - 125
Manganese	ug/L	2.50	53.3	51.0(50.0)	105	75 - 125

MRCCS - Secondary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium	ug/L	1.00	18.2	20.0	90.9	90 - 110
Manganese	ug/L	1.00	19.0	20.0	95.2	90 - 110

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium	ug/L	1.00	19.1	20.0	95.5	90 - 110

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium	ug/L	1.00	18.9	20.0	94.4	90 - 110

Interference Check Standard AB

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Manganese	ug/L	1.00	19.5	20.0	97.4	80 - 120

Interference Check Standard AB

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Manganese	ug/L	1.00	19.1	20.0	95.6	80 - 120

Total Dissolved Solids by SM 2540 C

Batch 12TDS12C

Parameter	Unit	Analyzed	DF	MDL	RL	Result
805303-001 Total Dissolved Solids	mg/L	12/13/2012	1.00	0.757	250	4190

Method Blank

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

Duplicate — Lab ID = 805314-002

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Total Dissolved Solids	mg/L	1.00	2420	2410	0.620	0 - 10

Lab Control Sample

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Total Dissolved Solids	mg/L	1.00	491	500	98.2	90 - 110

Turbidity by SM 2130 B

Batch 12TUC12E

Parameter	Unit	Analyzed	DF	MDL	RL	Result
805303-001 Turbidity	NTU	12/12/2012	1.00	0.0140	0.100	ND

Method Blank

Parameter	Unit	DF	Result
Turbidity	NTU	1.00	ND

Duplicate — Lab ID = 805303-001

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

Lab Control Sample

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Turbidity	NTU	1.00	8.30	8.00	104	90 - 110

Lab Control Sample Duplicate

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Turbidity	NTU	1.00	8.05	8.00	101	90 - 110

Respectfully submitted,
TRUESDAIL LABORATORIES, INC.

for Mona Nassimi
Manager, Analytical Services

Truesdail Laboratories, Inc.

Total Dissolved Solids by SM 2540 C

Calculations

Batch: 12TDS12C
Date Analyzed: 12/13/12

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	75.9550	75.9550	75.9550	0.0000	No	0.0000	0.0	25.0	ND	1
805270-1	50	47.8631	47.9208	47.9204	0.0004	No	0.0573	1146.0	50.0	1146.0	1
805270-2	50	50.4990	50.5531	50.5527	0.0004	No	0.0537	1074.0	50.0	1074.0	1
805270-3	50	50.8289	50.8718	50.8717	0.0001	No	0.0428	856.0	50.0	856.0	1
805270-4	50	47.9484	47.9985	47.9983	0.0002	No	0.0499	998.0	50.0	998.0	1
805277	440	103.7334	103.7340	103.7340	0.0000	No	0.0006	1.4	5.7	ND	1
805285	200	109.8965	109.9088	109.9088	0.0000	No	0.0123	61.5	12.5	61.5	1
805286	50	51.9200	52.0411	52.041	0.0001	No	0.1210	2420.0	50.0	2420.0	1
805303	10	49.7756	49.8175	49.8175	0.0000	No	0.0419	4190.0	250.0	4190.0	1
805314-1	50	51.2378	51.3459	51.3455	0.0004	No	0.1077	2154.0	50.0	2154.0	1
805314-2	20	51.9365	51.985	51.9847	0.0003	No	0.0482	2410.0	125.0	2410.0	1
805314-2D	20	50.8517	50.9006	50.9002	0.0004	No	0.0485	2425.0	125.0	2425.0	1
LCS	100	76.5406	76.5897	76.5897	0.0000	No	0.0491	491.0	25.0	491.0	1
805320-1	100	78.3955	78.4224	78.4224	0.0000	No	0.0269	269.0	25.0	269.0	1
805345	10	51.8948	51.9488	51.9484	0.0004	No	0.0536	5360.0	250.0	5360.0	1
805346	10	51.8790	51.9377	51.9377	0.0000	No	0.0587	5870.0	250.0	5870.0	1
805347	10	49.9072	49.9639	49.9635	0.0004	No	0.0563	5630.0	250.0	5630.0	1
805348	10	52.0700	52.132	52.1317	0.0003	No	0.0617	6170.0	250.0	6170.0	1
805349	10	48.0022	48.0612	48.0609	0.0003	No	0.0587	5870.0	250.0	5870.0	1
805350	5	48.0309	48.0933	48.0933	0.0000	No	0.0624	12480.0	500.0	12480.0	1
805351	10	49.8219	49.87	49.8696	0.0004	No	0.0477	4770.0	250.0	4770.0	1
805352	10	49.6779	49.7273	49.7269	0.0004	No	0.0490	4900.0	250.0	4900.0	1
805350D	5	52.0432	52.1044	52.1044	0.0000	No	0.0612	12240.0	500.0	12240.0	1

Calculation as follows:

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

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?
LCS1	491	500	98.2%	90-110%	Yes
LCSD					

Duplicate Determinations Difference Summary

Lab Number	Sample Weight, g	Sample Dup Weight, g	% RPD	Acceptance Limit	QC Within Control?
805314-2	0.0482	0.0485	0.3%	≤5%	Yes
805350	0.0624	0.0612	1.0%	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

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

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).

Jenny T.
Analyst Printed Name

Analyst Signature

Maksim G.
Reviewer Printed Name

Reviewer Signature

Total Dissolved Solids by SM 2540 C

TDS/EC CHECK

Batch: 12TDS12C
Date Analyzed: 12/13/12

Laboratory Number	EC	TDS/EC Ratio: 0.55-.9	Calculated TDS (EC*0.65)	Measured TDS / Calc TDS <1.3
805270-1	1817	0.63	1181.05	0.97
805270-2	1687	0.64	1096.55	0.98
805270-3	1375	0.62	893.75	0.96
805270-4	1596	0.63	1037.4	0.96
805277	30.4	ND	19.76	ND
805285	94.5	0.65	61.425	1.00
805286	3130	0.77	2034.5	1.19
805303	7450	0.56	4842.5	0.87
805314-1	3640	0.59	2366	0.91
805314-2	4150	0.58	2697.5	0.89
805314-2D	4150	0.58	2697.5	0.90
LCS				
805320-1	487	0.55	316.55	0.85
805345	7030	0.76	4569.5	1.17
805346	7760	0.76	5044	1.16
805347	7740	0.73	5031	1.12
805348	8050	0.77	5232.5	1.18
805349	8090	0.73	5258.5	1.12
805350	18870	0.66	12265.5	1.02
805351	6550	0.73	4257.5	1.12
805352	6650	0.74	4322.5	1.13
805350D	18870	0.65	12265.5	1.00

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CHAIN OF CUSTODY RECORD

[IM3Plant-WDR-391]

805303

COC Number

TURNAROUND TIME 10 Days

DATE 12/11/12 PAGE 1 OF 1

COMPANY	E2
PROJECT NAME	PG&E Topock
PHONE	(530) 229-3303 FAX (530) 339-3303
ADDRESS	155 Grand Ave Ste 1000 Oakland, CA 94612
P.O. NUMBER	456827.01.DM TEAM 1
SAMPLERS (SIGNATURE	C. Knight

SAMPLE I.D.	DATE	TIME	DESCRIPTION	Cr6 (218.6) Lab Filtered	Total Metals (200.7) Cr, Mn	Specific Conductance (120.1)	TDS (SM2540C)	Turbidity (SM2130)	NUMBER OF CONTAINERS	COMMENTS
SC-700B-WDR-391	12/11/12	1509	Water	x	x	x	x	x	3	pH=6 (200.7)
									3	TOTAL NUMBER OF CONTAINERS

ALERT !!
Level III QC

For Sample Conditions
See Form Attached

CHAIN OF CUSTODY SIGNATURE RECORD

	Signature	Printed Name	Company/ Agency	Date/ Time
Relinquished	C. Knight	C. Knight	CH2M HILL	12-11-12 15:15
Received	Rafael Davila	Rafael	T.L.I	12-11-12 15:15
Relinquished	Rafael Davila	Rafael	T.L.I	12-11-12 22:30
Received	Linda	Shalemmme	TLI	12/11/12 2230
Relinquished				
Received				

SAMPLE CONDITIONS

RECEIVED COOL ☐ WARM ☐ °F

CUSTODY SEALED YES ☐ NO ☐

SPECIAL REQUIREMENTS:

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
12/07/12	805221-1	9.5	N/A	N/A	N/A	HAV
	-2					
	-3					
	-4					
12/07/12	805233	9.5	N/A	N/A	N/A	HAV
12/11/12	805270-1	7	2 ml	9.5	12:10 pm	HAV
	-2				12:15 pm	
	-3				12:20 pm	
	-4				12:25 pm	
12/12/12	805303	7	2 ml	9.5	10:00 AM	HAV
12/12/12	805304	9.5	N/A	N/A	N/A	HAV
12/12/12	805305-1	9.5	N/A	N/A	N/A	HAV
	-2					
	-3					
	-4					
	-5	8.5	5 drop 25% NaOH	9.5	10:30 AM	HAV
	-6	9.5	N/A	N/A	N/A	HAV
	-7					
	-8					
	-9					
	-10					
	-11					
	-12					
	-13					
	-14					
	-15					
	-16					
	-17					
	-18					
	-19					
	-20					

12-17-12

TRUESDAIL LABORATORIES, INC.

Turbidity/pH Check

Sample Number	Turbidity	pH	Date	Analyst	Need Digest	pH2-Adjusted Time	Date/Time of 2nd pH check	Comments
805213	<1	<2	12/7/12	ES	yes			
805214								
805215								
805239								
805241								
805242								
805244								
805245 - 255								
804968 (1-6)	<1	<2	11/30/12	KK	YES			
805018 (1-2)								
804930 (1-5)								
805023 (1-5)								
805259	>1	<2	12/12/12	AA	Yes			
805260		<2						
805261		<2						
805268-6		>2			NO			
805270 (1-4)		>2					12/17 PH<2	-2 For digestion
805217	<1	>2	12/12/12	AA	NO	8:30am	12-14	PH<2
805303	<1	>2		BE	Yes	9:30		
805304	<1	<2						
805293 (1-3)	<1	>2	12/13		NO	14:00	12-14	PH<2
805319 (10-12)						14:05		
805281	>1	<2			Yes			
805282								
805285								
805286								
805287								
805288								
805289								
805290								
805332								
805306 (20)	<1	<2			Yes			
805305 (19)								
805329 (1-5)								
805389 (19-24)		>2	12/17	BE	NO	13:00	12/18	PH<2
805353	>1	<2	12/17/12	MM	YES		3010A	
805372								
805378								
805380								
805382								
805383								
805384								
805394								
805396								

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.

TRUESDAIL LABORATORIES, INC.

Sample Integrity & Analysis Discrepancy Form

Client: E2 **Lab #** 805303

Date Delivered: 12/11/12 **Time:** 22:30 **By:** ☐Mail ☑Field Service ☐Client

1.	Was a Chain of Custody received and signed?	☑Yes ☐No ☐N/A
2.	Does Customer require an acknowledgement of the COC?	☐Yes ☐No ☑N/A
3.	Are there any special requirements or notes on the COC?	☐Yes ☐No ☑N/A
4.	If a letter was sent with the COC, does it match the COC?	☐Yes ☐No ☑N/A
5.	Were all requested analyses understood and acceptable?	☑Yes ☐No ☐N/A
6.	Were samples received in a chilled condition? Temperature (if yes)? 4.1 °C	☑Yes ☐No ☐N/A
7.	Were samples received intact (i.e. broken bottles, leaks, air bubbles, etc..)?	☑Yes ☐No ☐N/A
8.	Were sample custody seals intact?	☐Yes ☐No ☑N/A
9.	Does the number of samples received agree with COC?	☑Yes ☐No ☐N/A
10.	Did sample labels correspond with the client ID's?	☑Yes ☐No ☐N/A
11.	Did sample labels indicate proper preservation? Preserved (if yes) by: ☐Truesdail ☐Client	☐Yes ☐No ☑N/A
12.	Were samples pH checked? pH = see c.o.c	☑Yes ☐No ☐N/A
13.	Were all analyses within holding time at time of receipt? If not, notify Project Manager.	☑Yes ☐No ☐N/A
14.	Have Project due dates been checked and accepted? Turn Around Time (TAT): ☐ RUSH ☑ Std	☑Yes ☐No ☐N/A

ALERT !! Level III QC

15. **Sample Matrix:** ☐Liquid ☐Drinking Water ☐Ground Water ☐Waste Water ☐Sludge ☐Soil ☐Wipe ☐Paint ☐Solid ☑Other Water

16. Comments: _____

17. Sample Check-In completed by **Truesdail** Log-In/Receiving: Truesdail

C:\Users\Test\Desktop\Forms A - D\Discrp.FormBlank.doc

TRUESDAIL LABORATORIES, INC.

EXCELLENCE IN INDEPENDENT TESTING

Established 1931

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www.truesdail.com

January 8, 2013

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-392 PROJECT, GROUNDWATER MONITORING, TLI NO.: 805429

Truesdail Laboratories, Inc. is pleased to submit this report summarizing the Topock IM3Plant-WDR-392 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 18, 2012, 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.

Total Chromium and Total Manganese were analyzed by EPA 200.8 rather than EPA 200.7 as requested on the chain of custody with Mr. Shawn Duffy's approval.

The straight run for the matrix spike for sample SC-700B-WDR-392 for Hexavalent Chromium analysis by EPA 218.6 was just outside the retention time window. Because the matrix spike recovery was within acceptable limits, the data from the straight run is reported.

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

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

Respectfully Submitted,
TRUESDAIL LABORATORIES, INC.

for Mona Nassimi
Manager, Analytical Services

for 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.: 456827.01.DM

Laboratory No.: 805429
Date: January 8, 2013
Collected: December 18, 2012
Received: December 18, 2012

ANALYST LIST

METHOD	PARAMETER	ANALYST
EPA 120.1	Specific Conductivity	Gautam Savani
SM 2540C	Total Dissolved Solids	Jenny Tankunakorn
SM 2130B	Turbidity	Gautam Savani
EPA 200.8	Total Metals	Bita Emami
EPA 218.6	Hexavalent Chromium	Himani Vaishnav

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

Laboratory No.: 805429
Date Received: December 18, 2012

Project Name: PG&E Topock Project
Project No.: 456827.01.DM
P.O. No.: 456827.01.DM

Analytical Results Summary

Lab Sample ID	Field ID	Analysis Method	Extraction Method	Sample Date	Sample Time	Parameter	Result	Units	RL
805429-001	SC-700B-WDR-392	E120.1	NONE	12/18/2012	10:30	EC	7100	umhos/cm	2.00
805429-001	SC-700B-WDR-392	E200.8	NONE	12/18/2012	10:30	Chromium	ND	ug/L	1.0
805429-001	SC-700B-WDR-392	E200.8	NONE	12/18/2012	10:30	Manganese	1.5	ug/L	0.50
805429-001	SC-700B-WDR-392	E218.6	LABFLT	12/18/2012	10:30	Chromium, Hexavalent	ND	ug/L	0.20
805429-001	SC-700B-WDR-392	SM2130B	NONE	12/18/2012	10:30	Turbidity	ND	NTU	0.100
805429-001	SC-700B-WDR-392	SM2540C	NONE	12/18/2012	10:30	Total Dissolved Solids	4280	mg/L	250

ND: Non Detected (below reporting limit)
mg/L: Milligrams per liter.
Note: The following "Significant Figures" rule has been applied to all results:
Results below 0.01ppm will have two (2) significant figures.
Result above or equal to 0.01ppm will have three (3) significant figures.
Quality Control data will always have three (3) significant figures.

005

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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: 456827.01.DM
P.O. Number: 456827.01.DM
Release Number:

Laboratory No. 805429

Printed 1/8/2013

Samples Received on 12/18/2012 9:30:00 PM

Field ID	Lab ID	Collected	Matrix
SC-700B-WDR-392	805429-001	12/18/2012 10:30	Water

Specific Conductivity - EPA 120.1 Batch 01EC13A

Parameter	Unit	Analyzed	DF	MDL	RL	Result
805429-001 Specific Conductivity	umhos/cm	01/02/2013	1.00	0.116	2.00	7100

Method Blank

Parameter	Unit	DF	Result
Specific Conductivity	umhos	1.00	ND

Duplicate — Lab ID = 805429-001

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Specific Conductivity	umhos	1.00	7100	7100	0	0 - 10

Lab Control Sample

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Specific Conductivity	umhos	1.00	698	706	98.9	90 - 110

Lab Control Sample Duplicate

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Specific Conductivity	umhos	1.00	701	706	99.3	90 - 110

MRCCS - Secondary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Specific Conductivity	umhos	1.00	674	706	95.5	90 - 110

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Specific Conductivity	umhos	1.00	940	996	94.4	90 - 110

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Specific Conductivity	umhos	1.00	932	996	93.6	90 - 110

Chrome VI by EPA 218.6

Batch 12CrH12Q

Parameter	Unit	Analyzed	DF	MDL	RL	Result
805429-001 Chromium, Hexavalent	ug/L	12/20/2012 11:56	1.00	0.00920	0.20	ND

Method Blank

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

Duplicate Lab ID = 805374-002

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	20.1	20.2	0.574	0 - 20

Low Level Calibration Verification

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	0.210	0.200	105	70 - 130

Lab Control Sample

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	4.82	5.00	96.5	90 - 110

Matrix Spike Lab ID = 805306-006

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	10.0	9.41	10.0(10.0)	94.1	90 - 110

Matrix Spike Lab ID = 805306-017

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	10.0	9.44	10.0(10.0)	94.4	90 - 110

Matrix Spike Lab ID = 805373-001

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	10.0	459	478(250)	92.3	90 - 110

Matrix Spike Lab ID = 805373-002

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	5.00	143	148(75.0)	93.6	90 - 110

Matrix Spike Lab ID = 805374-002

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.0526	45.4	46.5(26.3)	95.8	90 - 110

Matrix Spike Lab ID = 805374-004

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	5.00	6.08	6.35(5.00)	94.6	90 - 110

Matrix Spike — Lab ID = 805374-005

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	5.00	5.59	5.89(5.00)	94.0	90 - 110

Matrix Spike — Lab ID = 805374-006

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	5.00	4.54	5.00(5.00)	90.8	90 - 110

Matrix Spike — Lab ID = 805374-006

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

Matrix Spike — Lab ID = 805374-007

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	50.0	1870	1900(1000)	96.4	90 - 110

Matrix Spike — Lab ID = 805374-008

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	0.926	1.00(1.00)	92.6	90 - 110

Matrix Spike — Lab ID = 805374-008

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	5.00	4.67	5.17(5.00)	90.1	90 - 110

Matrix Spike — Lab ID = 805374-009

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1000	45000	45200(25000)	99.0	90 - 110

Matrix Spike — Lab ID = 805374-010

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1000	44900	45400(25000)	98.2	90 - 110

Matrix Spike — Lab ID = 805374-011

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	5.00	4.86	5.17(5.00)	93.8	90 - 110

Matrix Spike — Lab ID = 805374-011

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	0.928	1.00(1.00)	92.8	90 - 110

Matrix Spike — Lab ID = 805429-001

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	5.00	4.83	5.20(5.00)	92.6	90 - 110

Matrix Spike — Lab ID = 805429-001

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	1.14	1.10(1.00)	104	90 - 110

Metals by EPA 200.8, Total Batch 010713B

Parameter	Unit	Analyzed	DF	MDL	RL	Result
805429-001 Chromium	ug/L	01/08/2013 04:58	2.50	0.230	1.0	ND
Manganese	ug/L	01/08/2013 04:58	2.50	0.215	0.50	1.5

Method Blank

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

Duplicate — Lab ID = 805221-001

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Chromium	ug/L	2.50	1.03	1.03	0.389	0 - 20
Manganese	ug/L	2.50	2.51	2.50	0.359	0 - 20

Low Level Calibration Verification

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium	ug/L	1.00	0.210	0.200	105	70 - 130
Manganese	ug/L	1.00	0.238	0.200	119	70 - 130

Lab Control Sample

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium	ug/L	2.50	50.2	50.0	100	85 - 115
Manganese	ug/L	2.50	47.5	50.0	95.1	85 - 115

Matrix Spike — Lab ID = 805221-001

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium	ug/L	2.50	51.5	51.0(50.0)	101	75 - 125
Manganese	ug/L	2.50	49.8	52.5(50.0)	94.6	75 - 125

Matrix Spike Duplicate — Lab ID = 805221-001

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium	ug/L	2.50	52.9	51.0(50.0)	104	75 - 125
Manganese	ug/L	2.50	51.0	52.5(50.0)	97.1	75 - 125

MRCCS - Secondary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium	ug/L	1.00	19.7	20.0	98.4	90 - 110
Manganese	ug/L	1.00	19.0	20.0	95.0	90 - 110

MRCVS - Primary

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

Interference Check Standard AB

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Manganese	ug/L	1.00	18.9	20.0	94.6	80 - 120

Total Dissolved Solids by SM 2540 C Batch 12TDS12E

Parameter	Unit	Analyzed	DF	MDL	RL	Result
805429-001 Total Dissolved Solids	mg/L	12/20/2012	1.00	0.757	250	4280

Method Blank

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

Duplicate — Lab ID = 805429-001

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Total Dissolved Solids	mg/L	1.00	4460	4280	4.12	0 - 10

Lab Control Sample

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Total Dissolved Solids	mg/L	1.00	514	500	103	90 - 110

Turbidity by SM 2130 B Batch 12TUC12K

Parameter	Unit	Analyzed	DF	MDL	RL	Result
805429-001 Turbidity	NTU	12/19/2012	1.00	0.0140	0.100	ND

Method Blank

Parameter	Unit	DF	Result
Turbidity	NTU	1.00	ND

Duplicate — Lab ID = 805429-001

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

Lab Control Sample

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Turbidity	NTU	1.00	8.13	8.00	102	90 - 110

Lab Control Sample Duplicate

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Turbidity	NTU	1.00	8.02	8.00	100	90 - 110

Respectfully submitted,
TRUESDAIL LABORATORIES, INC.

for Mona Nassimi
Manager, Analytical Services

e2

Truesdail Laboratories, Inc.

Total Dissolved Solids by SM 2540 C

Calculations

Batch: 12TDS12E
Date Analyzed: 12/20/12

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	66.7126	66.7128	66.7128	0.0000	No	0.0002	2.0	25.0	ND	1
805404	100	102.7195	102.7655	102.7651	0.0004	No	0.0456	456.0	25.0	456.0	1
805422	50	49.3981	49.4422	49.4421	0.0001	No	0.0440	880.0	50.0	880.0	1
805429	10	51.3367	51.3799	51.3795	0.0004	No	0.0428	4280.0	250.0	4280.0	1
805443	50	49.3515	49.3874	49.387	0.0004	No	0.0355	710.0	50.0	710.0	1
805465	1000	111.6475	111.6475	111.6475	0.0000	No	0.0000	0.0	2.5	ND	1
805429D	10	51.9262	51.9708	51.9708	0.0000	No	0.0446	4460.0	250.0	4460.0	1
LCS	100	77.2962	77.3477	77.3476	0.0001	No	0.0514	514.0	25.0	514.0	1

Calculation as follows:

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

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?
LCS1	514	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

Lab Number	Sample Weight, g	Sample Dup Weight, g	% RPD	Acceptance Limit	QC Within Control?
MVG 805429	0.0428	0.0446	2.1%	≤5%	Yes
805424					

Duplicate Determination Difference

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

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).

Jenny T.
Analyst Printed Name

Analyst Signature

Maksim G.
Reviewer Printed Name

Reviewer Signature

Total Dissolved Solids by SM 2540 C

TDS/EC CHECK

Batch: 12TDS12E
Date Analyzed: 12/20/12

Laboratory Number	EC	TDS/EC Ratio: 0.55-.9	Calculated TDS (EC*0.65)	Measured TDS / Calc TDS <1.3
805404	732	0.62	475.8	0.96
805422	1374	0.64	893.1	0.99
805429	7120	0.60	4628	0.92
805443	1095	0.65	711.75	1.00
805465	6.53	ND	4.2445	ND
805429D	7120	0.63	4628	0.96
LCS				

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CHAIN OF CUSTODY RECORD

[IM3Plant-WDR-392]

805429

COC Number

TURNAROUND TIME 10 Days

DATE 12/18/12 PAGE 1 OF 1

COMPANY E2

PROJECT NAME PG&E Topock

PHONE (530) 229-3303 FAX (530) 339-3303

ADDRESS 155 Grand Ave Ste 1000
Oakland, CA 94612

P.O. NUMBER 456827.01.DM TEAM 1

SAMPLERS (SIGNATURE

SAMPLE I.D.	DATE	TIME	DESCRIPTION	Cr6 (218.6) Lab Filtered	Total Metals (200.7) Cr, Mn	Specific Conductance (120.1)	TDS (SM2540C)	Turbidity (SM2130)								NUMBER OF CONTAINERS	COMMENTS
SC-700B-WDR-392	12/18/12	1030	Water	X	X	X	X		X							3	DM = 6 (200.7)
																3	TOTAL NUMBER OF CONTAINERS

Rec'd 12/18/12
Sld 805429

ALERT !!
Level III QC

For Sample Conditions
See Form Attached

CHAIN OF CUSTODY SIGNATURE RECORD

	Printed Name	Company/ Agency	Date/ Time
Signature (Relinquished) Scott O'Donnell	Scott O'Donnell	Chemhill	12-18-12 15:30
Signature (Received) Rafael Davila	Rafael	T.L.I	12-18-12 15:30
Signature (Relinquished) Scott O'Donnell	Scott O'Donnell	Chemhill	12-18-12 15
Signature (Received)	Printed Name	Company/ Agency	Date/ Time
Signature (Relinquished) Rafael Davila	Rafael	T.L.I	12-18-12 21:30
Signature (Received) Shabnam	Linda	TLI	12/18/12 21:30

SAMPLE CONDITIONS

RECEIVED COOL ☑ WARM ☐ 3.6 °C

CUSTODY SEALED YES ☐ NO ☑

SPECIAL REQUIREMENTS:

805429

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
12/18/12	805429	7	2 ml	9.5	9:15 AM	HAV

Mr
1-2-13

HAV
12/27/12

TRUESDAIL LABORATORIES, INC.

Turbidity/pH Check

Sample Number	Turbidity	pH	Date	Analyst	Need Digest 3010A	pH2-Adjusted Time	Date/Time of 2nd pH check	Comments
805397	>1	<2	12/17/12	MM	Yes			
~~705~~ ES 12/17/12								
700870 (1-6)	<1	>2	12/17/12	ES	No	10:00	12/18/12 <2	
805415 (1-3)			12/20/12	BE	No	8:00	1-2-13	PH<2
805425 (1-3,4)								
BE ~~805~~ 805401 (1-3								
805443								
805404								
805429		>2			XCS			
805373		<2						
805375 (1-12)								
805374 (1-12								
805462	>1	<2						
805417								
805418								
805419								
805420								
805421								
805427 (1-3)								
805446								
805442								
805455								
805471								
805472								
805473								
805518	<1	>2	12-21-12	BG	NO	15:00	1-2-13	PH<2
805514 (1-4)	<1	>2	1-02-13	BE	No	9:00 AM		
805519								
805520 (1-4)								
805535 (4-6)						14:00		
805498 (10-12)						14:00		
805505	<1	>2	1-03-13	BG	Yes	14:00		
805581		<2						
805508			1-4-13	BG	Yes			
805503			12-27-12					
805501								

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.

TRUESDAIL LABORATORIES, INC.

Sample Integrity & Analysis Discrepancy Form

Client: E2 **Lab #** 805429

Date Delivered: 12/18/12 **Time:** 21:30 **By:** ☐Mail ☒Field Service ☐Client

1.	Was a Chain of Custody received and signed?	☑Yes	☐No	☐N/A
2.	Does Customer require an acknowledgement of the COC?	☐Yes	☐No	☑N/A
3.	Are there any special requirements or notes on the COC?	☐Yes	☐No	☑N/A
4.	If a letter was sent with the COC, does it match the COC?	☐Yes	☐No	☑N/A
5.	Were all requested analyses understood and acceptable?	☑Yes	☐No	☐N/A
6.	Were samples received in a chilled condition? Temperature (if yes)? 3.6 °C	☑Yes	☐No	☐N/A
7.	Were samples received intact (i.e. broken bottles, leaks, air bubbles, etc..)?	☑Yes	☐No	☐N/A
8.	Were sample custody seals intact?	☐Yes	☐No	☑N/A
9.	Does the number of samples received agree with COC?	☑Yes	☐No	☐N/A
10.	Did sample labels correspond with the client ID's?	☑Yes	☐No	☐N/A
11.	Did sample labels indicate proper preservation? Preserved (if yes) by: ☐Truesdail ☐Client	☐Yes	☐No	☑N/A
12.	Were samples pH checked? pH = See C.O.C.	☑Yes	☐No	☐N/A
13.	Were all analyses within holding time at time of receipt? If not, notify Project Manager.	☑Yes	☐No	☐N/A
14.	Have Project due dates been checked and accepted? Turn Around Time (TAT): ☐ RUSH ☒ Std	☑Yes	☐No	☐N/A

15. **Sample Matrix:** ☐Liquid ☐Drinking Water ☐Ground Water ☐Waste Water ☐Sludge ☐Soil ☐Wipe ☐Paint ☐Solid ☒Other Water

16. Comments: _____

17. Sample Check-In completed by Truesdail Log-In/Receiving: Linda

C:\Users\Test\Desktop\Forms A - D\Discrp.FormBlank.doc

ALERT !!
Level III QC

TRUESDAIL LABORATORIES, INC.

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www.truesdail.com

January 7, 2013

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-393 PROJECT, GROUNDWATER MONITORING, TLI NO.: 805505

Truesdail Laboratories, Inc. is pleased to submit this report summarizing the Topock IM3Plant-WDR-393 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 26, 2012, 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.

Total Chromium and Total Manganese were analyzed by EPA 200.8 rather than EPA 200.7 as requested on the chain of custody with Mr. Shawn Duffy's approval.

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

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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.: 456827.01.DM

Laboratory No.: 805505
Date: January 7, 2013
Collected: December 26, 2012
Received: December 26, 2012

ANALYST LIST

METHOD	PARAMETER	ANALYST
EPA 120.1	Specific Conductivity	Gautam Savani
SM 2540C	Total Dissolved Solids	Maksim Gorbunov
SM 2130B	Turbidity	Maksim Gorbunov
EPA 200.8	Total Metals	Bita Emami
EPA 218.6	Hexavalent Chromium	Himani Vaishnav

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

Laboratory No.: 805505
Date Received: December 26, 2012

Project Name: PG&E Topock Project
Project No.: 456827.01.DM
P.O. No.: 456827.01.DM

Analytical Results Summary

Lab Sample ID	Field ID	Analysis Method	Extraction Method	Sample Date	Sample Time	Parameter	Result	Units	RL
805505-001	SC-700B-WDR-393	E120.1	NONE	12/26/2012	6:50	EC	7080	umhos/cm	2.00
805505-001	SC-700B-WDR-393	E200.8	NONE	12/26/2012	6:50	Chromium	ND	ug/L	1.0
805505-001	SC-700B-WDR-393	E200.8	NONE	12/26/2012	6:50	Manganese	5.4	ug/L	0.50
805505-001	SC-700B-WDR-393	E218.6	LABFLT	12/26/2012	6:50	Chromium, Hexavalent	ND	ug/L	0.20
805505-001	SC-700B-WDR-393	SM2130B	NONE	12/26/2012	6:50	Turbidity	ND	NTU	0.100
805505-001	SC-700B-WDR-393	SM2540C	NONE	12/26/2012	6:50	Total Dissolved Solids	4680	mg/L	250

ND: Non Detected (below reporting limit)
mg/L: Milligrams per liter.
Note: The following "Significant Figures" rule has been applied to all results:
Results below 0.01ppm will have two (2) significant figures.
Result above or equal to 0.01ppm will have three (3) significant figures.
Quality Control data will always have three (3) significant figures.

005

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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: 456827.01.DM
P.O. Number: 456827.01.DM
Release Number:

Laboratory No. 805505

Printed 1/7/2013

Samples Received on 12/26/2012 8:00:00 PM

Field ID	Lab ID	Collected	Matrix
SC-700B-WDR-393	805505-001	12/26/2012 06:50	Water

Specific Conductivity - EPA 120.1 Batch 01EC13B

Parameter	Unit	Analyzed	DF	MDL	RL	Result
805505-001 Specific Conductivity	umhos/cm	01/02/2013	1.00	0.116	2.00	7080

Method Blank

Parameter	Unit	DF	Result
Specific Conductivity	umhos	1.00	ND

Duplicate — Lab ID = 805505-001

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Specific Conductivity	umhos	1.00	7080	7080	0	0 - 10

Lab Control Sample

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Specific Conductivity	umhos	1.00	703	706	99.6	90 - 110

MRCCS - Secondary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Specific Conductivity	umhos	1.00	670	706	94.9	90 - 110

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Specific Conductivity	umhos	1.00	980	996	98.4	90 - 110

Chrome VI by EPA 218.6

Batch 01CrH13A

Parameter	Unit	Analyzed	DF	MDL	RL	Result
805505-001 Chromium, Hexavalent	ug/L	01/02/2013 14:53	1.00	0.00920	0.20	ND

Method Blank

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

Duplicate Lab ID = 805508-001

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	0.0322	0.0334	3.66	0 - 20

Low Level Calibration Verification

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	0.199	0.200	99.4	70 - 130

Lab Control Sample

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	4.68	5.00	93.7	90 - 110

Matrix Spike Lab ID = 805374-006

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	10.0	9.22	10.0(10.0)	92.2	90 - 110

Matrix Spike Lab ID = 805505-001

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	0.976	1.06(1.00)	91.8	90 - 110

Matrix Spike Lab ID = 805506-001

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	5.00	4.60	5.00(5.00)	92.0	90 - 110

Matrix Spike Lab ID = 805506-001

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	0.942	1.00(1.00)	94.2	90 - 110

Matrix Spike Lab ID = 805506-002

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	0.959	1.02(1.00)	94.3	90 - 110

Matrix Spike Lab ID = 805506-003

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	1.08	1.01(1.00)	106	90 - 110

Metals by EPA 200.8, Total

Batch 010413C

Parameter	Unit	Analyzed	DF	MDL	RL	Result
805505-001 Chromium	ug/L	01/05/2013 01:07	2.50	0.230	1.0	ND
Manganese	ug/L	01/05/2013 01:07	2.50	0.215	0.50	5.4

Method Blank

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

Duplicate

Lab ID = 805505-001

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Chromium	ug/L	2.50	ND	0	0	0 - 20
Manganese	ug/L	2.50	5.84	5.42	7.51	0 - 20

Low Level Calibration Verification

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium	ug/L	1.00	0.200	0.200	99.9	70 - 130
Manganese	ug/L	1.00	0.223	0.200	112	70 - 130

Lab Control Sample

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium	ug/L	2.50	50.2	50.0	100	85 - 115
Manganese	ug/L	2.50	52.9	50.0	106	85 - 115

Matrix Spike

Lab ID = 805505-001

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium	ug/L	2.50	53.0	50.0(50.0)	106	75 - 125
Manganese	ug/L	2.50	58.5	55.4(50.0)	106	75 - 125

Matrix Spike Duplicate

Lab ID = 805505-001

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium	ug/L	2.50	52.6	50.0(50.0)	105	75 - 125
Manganese	ug/L	2.50	58.3	55.4(50.0)	106	75 - 125

MRCCS - Secondary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium	ug/L	1.00	20.9	20.0	104	90 - 110
Manganese	ug/L	1.00	21.6	20.0	108	90 - 110

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium	ug/L	1.00	19.6	20.0	98.0	90 - 110

Total Dissolved Solids by SM 2540 C

Batch 12TDS12F

Parameter	Unit	Analyzed	DF	MDL	RL	Result
805505-001 Total Dissolved Solids	mg/L	12/31/2012	1.00	0.757	250	4680

Method Blank

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

Duplicate Lab ID = 805505-001

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Total Dissolved Solids	mg/L	1.00	4560	4680	2.60	0 - 10

Lab Control Sample

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Total Dissolved Solids	mg/L	1.00	527	500	105	90 - 110

Turbidity by SM 2130 B

Batch 12TUC12N

Parameter	Unit	Analyzed	DF	MDL	RL	Result
805505-001 Turbidity	NTU	12/27/2012	1.00	0.0140	0.100	ND

Method Blank

Parameter	Unit	DF	Result
Turbidity	NTU	1.00	ND

Duplicate Lab ID = 805499-006

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

Lab Control Sample

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Turbidity	NTU	1.00	8.09	8.00	101	90 - 110

Lab Control Sample Duplicate

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Turbidity	NTU	1.00	8.14	8.00	102	90 - 110

Respectfully submitted,
TRUESDAIL LABORATORIES, INC.

for Mona Nassimi
Manager, Analytical Services

Truesdail Laboratories, Inc.

Total Dissolved Solids by SM 2540 C

Calculations

Batch: 12TDS12F
Date Analyzed: 12/31/2012

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	74.1466	74.1466	74.1466	0.0000	No	0.0000	0.0	25.0	ND	1
805505	10	74.6690	74.7156	74.7158	-0.0002	No	0.0468	4680.0	250.0	4680.0	1
805509	50	65.6618	65.7702	65.7701	0.0001	No	0.1083	2166.0	50.0	2166.0	1
80514-2	150	66.9200	66.9346	66.9342	0.0004	No	0.0142	94.7	16.7	94.7	1
80514-4	100	67.6887	67.7193	67.7191	0.0002	No	0.0304	304.0	25.0	304.0	1
805505D	10	74.7264	74.7720	74.7720	0.0000	No	0.0456	4560.0	250.0	4560.0	1
LCS	100	74.6021	74.6544	74.6548	-0.0004	No	0.0527	527.0	25.0	527.0	1

Calculation as follows:

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

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?
LCS1	527	500	105.4%	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

Lab Number	Sample Weight, g	Sample Dup Weight, g	% RPD	Acceptance Limit	QC Within Control?
805929	0.0466	0.0456	1.1%	≤5%	Yes

Duplicate Determination Difference

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

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
~~Jenny T.~~
Analyst Printed Name

Analyst Signature

for Maksim G.
Reviewer Printed Name

Reviewer Signature

Total Dissolved Solids by SM 2540 C

TDS/EC CHECK

Batch: 12TDS12F
Date Analyzed: 12/31/2012

Laboratory Number	EC	TDS/EC Ratio: 0.55-.9	Calculated TDS (EC*0.65)	Measured TDS / Calc TDS <1.3
805505	7080	0.66	4602	1.02
805509	2600	0.83	1690	1.28
80514-2	130	0.73	84.5	1.12
80514-4	560	0.54	364	0.84
805505D	7080	0.64	4602	0.99
LCS				

Rec'd 12/26/12
S15d 805505

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

805 505

CHAIN OF CUSTODY RECORD

[IM3Plant-WDR-393]

COC Number
TURNAROUND TIME 7 Days
DATE 12/26/12 PAGE 1 OF 1

COMPANY E2
PROJECT NAME PG&E Topock
PHONE (530) 229-3303 FAX 5 (530) 339-3303
ADDRESS 155 Grand Ave Ste 1000, Oakland, CA 94612
P.O. NUMBER 456827.01.DM TEAM 1
SAMPLERS (SIGNATURE [signature]

SAMPLE I.D.	DATE	TIME	DESCRIPTION	Cr6 (218.6) Lab Filtered	Total Metals (200.7) Cr, Mn	Specific Conductance (120.1)	TDS (SM2540C)		Turbidity (SM2130)									NUMBER OF CONTAINERS	COMMENTS
SC-700B-WDR-393	12/26/12	6:30	Water	x	x	x	x		x									3	pH 7 (200.7)

3 TOTAL NUMBER OF CONTAINERS

RUSH

For Sample Conditions See Form Attached

ALERT !! Level III QC

CHAIN OF CUSTODY SIGNATURE RECORD

Signature	Printed Name	Company/Agency	Date/Time
(Relinquished) [signature]	Ryan Phelps	CH2M HILL	12-26-12 13:00
(Received) Rafael Davila	Rafael	T.L.I	12-26-12 13:00
(Relinquished) Rafael Davila	Rafael	T.L.I	12-26-12 20:00
(Received) Linda	Shakeenine	TLI	12/26/12 20:00
(Relinquished)			
(Received)			

SAMPLE CONDITIONS
RECEIVED COOL ☑ WARM ☐ 3.1 ℃
CUSTODY SEALED YES ☐ NO ☑
SPECIAL REQUIREMENTS:

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
12/18/12	805429	7	2 ml	9.5	9:15 AM	HAV
12/27/12	805505	7	2 ml	9.5	10:15 AM	HAV
12/27/12	805506-1	9.5	N/A	N/A	N/A	HAV
↓	↓ -2	↓	↓	↓	↓	↓
↓	↓ -3	↓	↓	↓	↓	↓
12/27/12	805507	9.5	N/A	N/A	N/A	HAV
12/27/12	805508	9.5	N/A	N/A	N/A	HAV

TRUESDAIL LABORATORIES, INC.

Turbidity/pH Check

Sample Number	Turbidity	pH	Date	Analyst	Need Digest	pH2-Adjusted Time	Date/Time of 2nd pH check	Comments
805397	>1	<2	12/17/12	MM	3010A Yes			
~~805~~ ES 12/17/12								
700830 (1-6)	<1	>2	12/17/12	ES	No	10:00	12/18/12 <2	
805456 (1-3)			12/20/12	BE	No	8:00	1-2-13	PH<2
805425 (1-3,4)								
BE ~~805~~ 805401 (1-3								
805443								
805404								
805429		>2			Yes			
805373		<2						
805375 (1-12)								
805374 (1-12								
805462	>1	<2						
805417								
805418								
805419								
805420								
805421								
805427 (1-3)								
805446								
805442								
805455								
805471								
805472								
805473								
805548	<1	>2	12-21-12	BG	No	15:00	1-2-13	PH<2
805514 (1-4)	<1	>2	1-02-13	BE	No	9:00 AM		
805519								
805520 (1-4)								
805535 (4-6)						14:00		
805498 (10-12)						14:00		
805505	<1	>2	1-03-13	BG	Yes	14:00		
805581		<2						
805508			1-4-13	BG	Yes			
805503			12-27-12					
805507								

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.

TRUESDAIL LABORATORIES, INC.

Sample Integrity & Analysis Discrepancy Form

Client: E2 **Lab #** 805505

Date Delivered: 12/26/12 **Time:** 20:00 **By:** ☐Mail ☑Field Service ☐Client

1.	Was a Chain of Custody received and signed?	☑Yes	☐No	☐N/A
2.	Does Customer require an acknowledgement of the COC?	☐Yes	☐No	☑N/A
3.	Are there any special requirements or notes on the COC?	☐Yes	☐No	☑N/A
4.	If a letter was sent with the COC, does it match the COC?	☐Yes	☐No	☑N/A
5.	Were all requested analyses understood and acceptable?	☑Yes	☐No	☐N/A
6.	Were samples received in a chilled condition? Temperature (if yes)? 3.1 °C	☑Yes	☐No	☐N/A
7.	Were samples received intact (i.e. broken bottles, leaks, air bubbles, etc..)?	☑Yes	☐No	☐N/A
8.	Were sample custody seals intact?	☐Yes	☐No	☑N/A
9.	Does the number of samples received agree with COC?	☑Yes	☐No	☐N/A
10.	Did sample labels correspond with the client ID's?	☑Yes	☐No	☐N/A
11.	Did sample labels indicate proper preservation? Preserved (if yes) by: ☐Truesdail ☐Client	☐Yes	☐No	☑N/A
12.	Were samples pH checked? pH = see c.o.c	☑Yes	☐No	☐N/A
13.	Were all analyses within holding time at time of receipt? If not, notify Project Manager.	☑Yes	☐No	☐N/A
14.	Have Project due dates been checked and accepted? Turn Around Time (TAT): ☑ RUSH ☐ Std.	☑Yes	☐No	☐N/A

ALERT Level III Q

RUSH

15. **Sample Matrix:** ☐Liquid ☐Drinking Water ☐Ground Water ☐Waste Water ☐Sludge ☐Soil ☐Wipe ☐Paint ☐Solid ☒Other Water

16. Comments: _____

17. Sample Check-In completed by **Truesdail** Log-In/Receiving: Linda

Analytical Bench Log Book

WDR pH Results

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

	Sample Name	Date of sampling	Time of sampling	Date of analysis	Time of analysis	pH Meter #1, #2, or #3 etc. See cover Sheet for Serial Number	Date pH meter Calibrated	Time pH meter Calibrated	Slope of the Curve	Analyst Name (for the pH result)	pH Result
1	SC-100B	12-4-12	14:41	12-4-12	14:46	METER #1	12-4-12	04:20	-54.5	C. Knight	7.4
	Notes:										
2	SC-700B	12-4-12	14:33	12-4-12	14:38	METER #1	12-4-12	04:20	-54.5	C. Knight	6.8
	Notes:										
3	SC-700B	12-11-12	15:09	12-11-12	15:14	METER #1	12-11-12	03:25	-54.8	C. Knight	7.0
	Notes:										
4	SC-700B	12-18-12	10:30	12-18-12	10:35	METER #1	12-18-12	01:00	-54.8	Ron Fields	7.1
	Notes:										
5	SC-700B	12-26-12	6:50	12-26-12	7:00	METER #1	12-26-12	1:30	-54.2	Ron Fields	7.1
	Notes:										
6											
	Notes:										
7											
	Notes:										

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