

Topock Project Executive Abstract

<p>Document Title:</p> <p>Combined Compliance Monitoring Program, Semiannual Groundwater Monitoring Report, Second Half 2012, and Performance Assessment Report, Interim Measures No. 3, Injection Well Field (PGE20130115A)</p> <p>Submitting Agency: DOI</p> <p>Final Document? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No</p>	<p>Date of Document: January 15, 2013</p> <p>Who Created this Document?: (i.e. PG&E, DTSC, DOI, Other) – PG&E</p>
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<p>What is the consequence of NOT doing this item? What is the consequence of DOING this item?</p> <p>Submittal of this report is a compliance requirement under DOI's ARARs beginning August 2011.</p>	<p>Is this a Regulatory Requirement?</p> <p><input checked="" type="checkbox"/> Yes</p> <p><input type="checkbox"/> No</p> <p>If no, why is the document needed?</p>
<p>Other Justification/s:</p> <p><input type="checkbox"/> Permit <input type="checkbox"/> Other / Explain:</p>	
<p>Brief Summary of attached document:</p> <p><u>IM-3 Injection Well Field PAR, December 2012.</u> The purpose of this IM-3 Injection Well Field PAR is to document the performance of injection wells operation and the influence of treated water on aquifer quality through December 2012. Injection of IM-3 treated water began in August 2005. There are no indications of adverse effects to aquifer water quality as a result of the injection. Operating the injection wells reduces the adverse environmental and safety impacts associated with the trucking of treated groundwater to a permitted offsite facility. Reduced truck traffic results in lower vehicle emissions and reduces the chance of accidents.</p> <p><u>Topock Compliance Monitoring Program (CMP), Second Half 2012.</u> Purpose of CMP is twofold: (1) to monitor changes in groundwater hydraulics and/or water quality of the aquifer in the injection well area and (2) to ensure that the quality of the aquifer is not adversely affected by the injected water. The monitoring network consists of multiple observation wells (OW series) and compliance wells (CW series) screened in the shallow, middle, and/or deep zones of the alluvial aquifer. The injection of treated groundwater in the area began in 2005. As of the Second Half 2012, wells that exhibit water quality similar to the injected water include the middle and deep-zone observation wells and certain middle and all deep-zone compliance wells. Two of the three shallow-zone observation wells have not yet shown characteristics approaching injected water quality.</p> <p>This report presents groundwater analytical results and groundwater level data collected from the Second Half 2012 CMP monitoring event conducted in October 2012. During the Second Half 2012 monitoring event, the 28.0 µg/L chromium result in OW-2S was at the chromium WQO trigger level. For this exceedance, the result is not considered to be the result of the injection of treated groundwater, as the average concentration of chromium from the IM-3 treatment plant is approximately 1.0 µg/L or less. Cr(VI) and background chromium concentrations at OW-2S have been frequently been above the WQOs since November 2005. The results are thus considered reflective of the background water quality. In a letter dated January 5, 2007, DTSC stated</p>	

that it was not necessary to follow contingency plan requirements for hexavalent and background chromium with respect to OW-2S and OW-5S. The Colorado River Basin RWQCB concurred with this decision in a letter dated March 2, 2007. As such, the contingency plan was not triggered due to the chromium concentration detected in OW-2S. No other samples exceeded the water quality objectives for Cr(VI), chromium, pH, or TDS. The next CMP event is scheduled to occur in April 2013.

Written by: PG&E

Recommendations:

This report is for your information only.

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

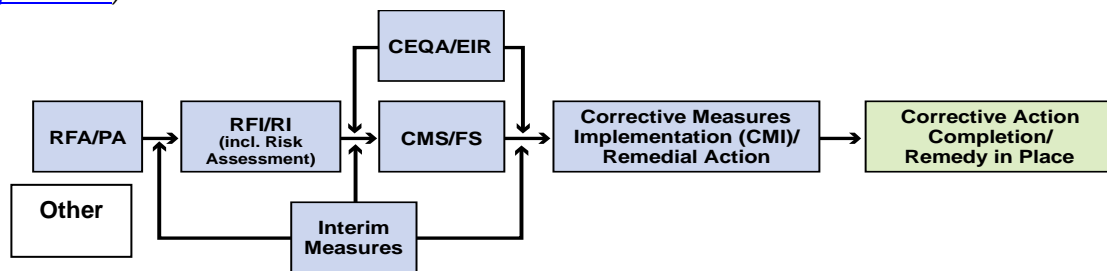
Submittal of this report is a compliance requirement under DOI ARARs beginning August 2011.

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

CEQA/EIR – California Environmental Quality Act/Environmental Impact Report



**Pacific Gas and
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January 15, 2013

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Mr. Aaron Yue
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Department of Toxic Substances Control
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Subject: *Combined Compliance Monitoring Program, Semiannual Groundwater Monitoring Report, Second Half 2012, and Performance Assessment Report Injection Well Field, Interim Measures No. 3, Injection Well Field, PG&E Topock Compressor Station, Needles, California (Document ID: PGE20130115A)*

Dear Ms. Innis and Mr. Yue:

This letter presents the *Combined Compliance Monitoring Program, Semiannual Groundwater Monitoring Report, Second Half 2012, and the Performance Assessment Report for the Interim Measures No. 3 at the Pacific Gas and Electric Company Topock Compressor Station*.

The first performance assessment report (PAR) for the Interim Measure No. 3 (IM-3) injection well field was submitted on November 30, 2006, in accordance with the California Environmental Protection Agency, Department of Toxic Substances Control (DTSC) conditional authorization (Condition 18) to begin operating the IM-3 facilities, dated July 15, 2005. In response to the submitted report, DTSC in its January 5, 2007 letter, approved continued operation of the IM-3 injection wells and required Pacific Gas and Electric Company to continue submitting a PAR every 2 years to evaluate the injection well operations and the influence of treated water on aquifer quality.

This PAR documents performance of the injection well operations and the influence of treated water on aquifer quality through December 2012. With agency concurrence, this report is submitted on January 15, 2013 to be consistent with the compliance monitoring report (CMP) already scheduled for submittal on January 15, 2013.

This CMP presents the results of the Second Half 2012 compliance monitoring program groundwater monitoring event and has been prepared in conformance with the United States Department of the Interior August 18, 2011 letter stating that the IM-3 Waste Discharge Requirements are applicable or relevant and appropriate requirements.

The current contingency plan specifies the concentrations and values for hexavalent chromium [Cr(VI)], chromium, total dissolved solids (TDS), and pH to be used to determine if contingency plan actions are necessary based on sample results. The water quality objectives concentrations that are used to trigger the contingency plan

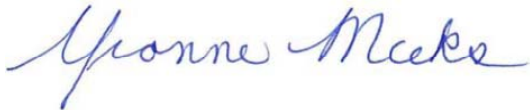
Ms. Pam Innis
Mr. Aaron Yue
January 15, 2013
Page 2

are Cr(VI) greater than 32.6 micrograms per liter ($\mu\text{g/L}$), chromium greater than 28.0 $\mu\text{g/L}$, TDS greater than 10,800 milligrams per liter, and pH outside of the range of 6.2 to 9.2.

During the Second Half 2012 sampling event, the 28.0 $\mu\text{g/L}$ chromium result in OW-2S was at the chromium water quality objective trigger level. For this exceedance, the result is not considered to be the result of the injection of treated groundwater because the average concentration of chromium from the IM-3 treatment plant is approximately 1.0 $\mu\text{g/L}$ or less. Cr(VI) and background chromium concentrations at OW-2S have frequently been above the water quality objectives since November 2005. In addition, other parameters that would indicate arrival of the injected water at OW-2S (such as a change in sulfate or TDS concentrations) are not observed in samples from this well. The results are thus considered reflective of the variance in background water quality. In a letter dated January 5, 2007, DTSC stated that it was not necessary to follow contingency plan requirements for hexavalent and chromium with respect to OW-2S and OW-5S. The California Regional Water Quality Control Board, Colorado River Basin concurred with this decision in a letter dated March 2, 2007. As such, the contingency plan was not triggered due to the background chromium concentration detected in OW-2S. No other sample results exceeded the water quality objectives for Cr(VI), chromium, pH, or TDS during the Second Half 2012 sampling event. The next CMP event is scheduled to occur in April 2013.

If you have any questions regarding the PAR or the CMP report, please call me at (805) 546-5243.

Sincerely,

A handwritten signature in blue ink that reads "Yvonne Meeks". The signature is fluid and cursive, with the first name "Yvonne" and last name "Meeks" clearly distinguishable.

Yvonne Meeks
Topock Remediation Project Manager

cc: Robert Perdue, Water Board
Jose Cortez, Water Board
Christopher Guerre, DTSC

Enclosures: *Combined Compliance Monitoring Program Semiannual Groundwater Monitoring Report, Second Half 2012, and Performance Assessment Report, Interim Measures No. 3, Injection Well Field, PG&E Topock Compressor Station, Needles, California*

**Combined Compliance Monitoring
Program Semiannual Groundwater
Monitoring Report, Second Half 2012,
and Performance Assessment Report,**

**Interim Measures No. 3,
Injection Well Field,
PG&E Topock Compressor Station,
Needles, California**

Document ID: PGE20130115A

United States Department of the Interior

Prepared for

Pacific Gas and Electric Company

On behalf of

January 15, 2013

CH2MHILL®

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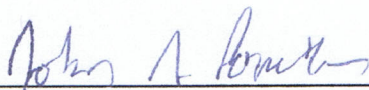
**Combined Compliance Monitoring Program Semiannual Groundwater
Monitoring Report, Second Half 2012, and Performance Assessment Report,
Interim Measures No. 3, Injection Well Field,**

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

Prepared for
**California Environmental Protection Agency,
Department of Toxic Substance Control**
on Behalf of
Pacific Gas and Electric Company

January 15, 2013

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

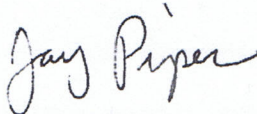


John Porcella, P.E.
Project Engineer

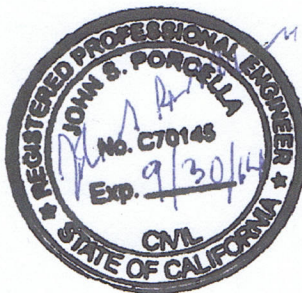
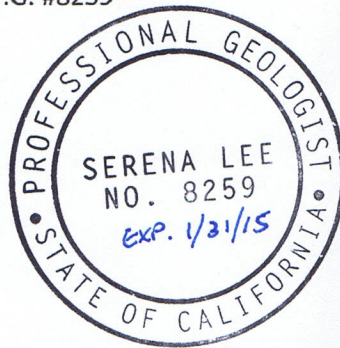
This report was prepared under the supervision of a
California Professional Geologist



Serena Lee
Professional Geologist, P.G. #8259



Jay Piper
Project Manager



Contents

Section	Page
Acronyms and Abbreviations.....	v
1.0 Introduction.....	1-1
1.1 History and Purpose of the Topock Interim Measure	1-1
1.2 Description of Groundwater Injection Well Field	1-2
1.3 Compliance Monitoring Program	1-3
1.3.1 Status of Monitoring Activities	1-5
2.0 Summary of CMP Second Half 2012 Results	2-1
2.1 Analytical Results	2-1
2.1.1 Hexavalent Chromium and Chromium	2-1
2.1.2 Other Metals and General Chemistry	2-1
2.1.3 ARAR Monitoring Requirements	2-2
2.2 Analytical Data Quality Review	2-2
3.0 Injection Well Operational Assessment.....	3-1
3.1 Injection Well Performance	3-1
3.2 Effect of Injection on Groundwater Levels	3-2
3.2.1 Groundwater Gradient Characteristics.....	3-3
4.0 Influence of Treated Water on Aquifer Water Quality	4-1
4.1 Treatment Plant Effluent Water Quality and Groundwater Quality Before and After Injection	4-1
4.2 Water Quality Trends	4-2
5.0 Summary and Recommendations.....	5-1
6.0 References	6-1
7.0 Certification	7-1

Appendices

A	Laboratory Reports, Second Half 2012 (provided on CD-ROM only)
B	Field Sheets (provided on CD-ROM only)
C	ARAR Monitoring Information for Groundwater Samples, Second Half 2012

Exhibits

1-1	Summary of Injection, Observation, and Compliance Wells Design Information and Installation Dates	1-3
1-2	Summary of Injection Field Monitoring Wells	1-3
1-3	Historical Modifications to the Compliance Monitoring Program	1-4

Tables

1-1	Operational Status of Interim Measures No. 3 Injection Wells from July 2005 through December 2012
1-2	Well Construction and Sampling Summary for Groundwater Samples, Second Half 2012
2-1	Chromium Results for Groundwater Samples, Second Half 2012
2-2	Metals and Cation Results for Groundwater Samples, Second Half 2012
2-3	Other Inorganics Results for Groundwater Samples, Second Half 2012
3-1	Injection Rates and Volumes
3-2	Manual Water Level Measurements and Elevations, Second Half 2012

- 3-3 Vertical Gradients within the OW and CW Clusters
- 3-4 Field Parameter Measurements and Manual Water Level Measures for Groundwater Samples, Second Half 2012
- 4-1 Treated Water Quality Compared to OW and CW Pre-injection Water Quality
- 4-2 Treated Water Quality Compared to Second Half 2012 Sampling Event Water Quality

Figures

- 1-1 Site Location and Interim Measures No. 3 Treatment System
- 1-2 Monitoring Locations for CMP and Injection Well Field
- 3-1 IM-3 Operation Data Injection Well Performance August 2005 – December 2012
- 3-2A CW-1 Hydrographs and IW Injection Rate
- 3-2B CW-2 Hydrographs and IW Injection Rate
- 3-2C CW-3 Hydrographs and IW Injection Rate
- 3-2D CW-4 Hydrographs and IW Injection Rate
- 3-2E OW-1 Hydrographs and IW Injection Rate
- 3-2F OW-2 Hydrographs and IW Injection Rate
- 3-2G OW-5 Hydrographs and IW Injection Rate
- 3-3A Average Groundwater Elevation Contours for Shallow Wells, October 23, 2012
- 3-3B Average Groundwater Elevation Contours for Mid-Depth Wells, October 23, 2012
- 3-3C Average Groundwater Elevation Contours for Deep Wells, October 23, 2012
- 3-4A Average Groundwater Elevation Contours for Mid-Depth Wells, November 29, 2010
- 3-4B Average Groundwater Elevation Contours for Deep Wells, November 29, 2010
- 3-5A Average Groundwater Elevation Contours for Mid-Depth Wells, October 1 to October 31, 2008
- 3-5B Average Groundwater Elevation Contours for Deep Wells, October 1 to October 31, 2008
- 4-1A OW-1S, OW-2S, OW-5S Water Quality Hydrographs
- 4-1B OW-1M, OW-2M, OW-5M Water Quality Hydrographs
- 4-1C OW-1D, OW-2D, OW-5D Water Quality Hydrographs
- 4-1D CW-1M, CW-2M, CW-3M, CW-4M Water Quality Hydrographs
- 4-1E CW-1D, CW-2D, CW-3D, CW-4D Water Quality Hydrographs

Acronyms and Abbreviations

ARAR	applicable or relevant and appropriate requirement
Cr	chromium
Cr(VI)	hexavalent chromium
CMP	compliance monitoring program
CW	compliance well
DOI	United States Department of the Interior
DTSC	California Environmental Protection Agency, Department of Toxic Substances Control
gpm	gallons per minute
IM	Interim Measure
IM-3	Interim Measure No. 3
IW	injection well
µg/L	micrograms per liter
mg/L	milligrams per liter
OW	observation well
PAR	performance assessment report
PG&E	Pacific Gas and Electric Company
QAPP	quality assurance project plan
TDS	total dissolved solids
USEPA	United States Environmental Protection Agency
Water Board	California Regional Water Quality Control Board, Colorado River Basin
WDR	Waste Discharge Requirements
WQO	water quality objective

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 is implemented under the oversight of California Environmental Protection Agency, Department of Toxic Substances Control (DTSC) and consists of groundwater extraction for hydraulic control of the plume boundaries near the Colorado River floodplain and management of extracted groundwater. The groundwater extraction, treatment, and injection systems collectively are 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 (IW) field for the discharge of the treated groundwater. Figure 1-1 shows the location of the IM extraction, conveyance, treatment, and injection facilities. (All figures and tables are located at the end of this report.) The injection well field comprises two injection wells and a network of monitoring wells.

On July 15, 2005, DTSC conditionally authorized PG&E to begin operating the IM-3 facilities, including the injection well field (DTSC, 2005a). As part of the authorization, DTSC considered the injection of treated water from the IM-3 system as a limited-duration pilot study authorized through January 31, 2007. DTSC further directed that PG&E assess the performance of the injection well field and submit a report by November 30, 2006.

As directed, on November 30, 2006, PG&E submitted the first biennial *Performance Assessment Report IM3 Injection Well Field, PG&E Topock Compressor Station, Needles, California* (PAR) (CH2M HILL, 2006a), documenting performance of the IM-3 injection well field during the DTSC-mandated temporary operation period. Based on data presented in the November 2006 PAR, in a letter dated January 5, 2007 (DTSC, 2007a), DTSC approved the continued operations of the IM-3 injection wells and required PG&E to continue to submit a performance assessment report every 2 years to evaluate the injection well operations and the influence of treated water on aquifer quality.

This fourth biennial PAR documents performance of the injection well operations and the influence of treated water on aquifer quality through December 2012. As done previously (DTSC, 2010a), DTSC concurred via an email dated November 29, 2012 (DTSC, 2012), with the PG&E proposal to defer the submission of the biennial report until January 15, 2013 and to combine this report with the *Compliance Monitoring Program Semiannual Groundwater Monitoring Report, Second Half 2012, Interim Measures No. 3, PG&E Topock Compressor Station, Needles, California*.

The submission of this fourth biennial report meets the requirement of Condition 18 in DTSC's July 15, 2005 and January 5, 2007 letters to assess the performance of the injection well field as a methodology for management of treated water from the IM-3 system beyond the pilot study period. This report briefly describes the background of the project and the IM-3 system, including the design basis. The report also discusses injection system operational performance, injection system maintenance activities, and groundwater quality and hydraulic changes associated with the injection system to provide the rationale for continued subsurface injection of treated groundwater.

1.1 History and Purpose of the Topock Interim Measure

The purpose of the IM at the Topock Compressor Station is to maintain hydraulic control of the groundwater plume boundaries in the Colorado River floodplain until the time that a final corrective action is in place at the site. As defined by DTSC, the performance standard for the IM is to "establish and maintain a net landward hydraulic gradient, both horizontally and vertically, that ensures that hexavalent chromium [Cr(VI)] concentrations at or greater than 20 micrograms per liter [µg/L] in the floodplain are contained for removal and treatment" (DTSC, 2005b).

PG&E began implementing the IM at the PG&E Topock site in March 2004. Initially, groundwater was extracted from a monitoring well cluster, MW-20, located on a bench above and to the west of the Colorado River floodplain (commonly referred to as the MW-20 bench). Prior to the construction and operation of the current groundwater treatment and injection system, a batch treatment plant was located on the MW-20 bench, and

treated groundwater was transported offsite for disposal at a permitted facility. While this operation was effective in controlling hydraulic gradients in the vicinity of the floodplain, it also generated a large number of truck trips from the site to the permitted disposal facility to manage the entire flow of extracted groundwater, and the treatment capacity was limited to approximately 80 gallons per minute (gpm) due to space limitations on the MW-20 bench.

This operation was eventually replaced by the current groundwater extraction well system. Groundwater extraction began at wells TW-2S and TW-2D in May 2004, at well TW-3D in December 2005, and at well PE-1 in early 2006. Of the four extraction wells, two are currently in normal operation (TW-3D and PE-1).

Construction of the current IM-3 treatment and injection system began in September 2004 and was completed in July 2005. The existing groundwater treatment system is a continuous, multi-step process that involves removing chromium by chemical reduction, precipitation, and filtration, and reducing total dissolved solids (TDS) using reverse osmosis. The treatment plant is designed to treat up to 135 gpm of extracted groundwater. Treatment plant operation yields an effluent (injection) flow rate of approximately 125 gpm. The remaining flow (up to 15 gpm) becomes a reverse osmosis brine stream that is transported offsite for disposal at a permitted facility. Additional information on the treatment process performance and capacities is contained in the *Interim Measures No. 3 Treatment and Extraction System Operation and Maintenance Plan Rev. 1*, PG&E Topock Compressor Station, Needles, California (CH2M HILL, 2006b) and the *Construction Completion Report*, PG&E Topock Compressor Station, Needles, California (CH2M HILL, 2005a).

Treated groundwater is returned to the aquifer through an injection system consisting of two wells, IW-2 and IW-3. Injection of treated groundwater from IM-3 began on July 31, 2005, as authorized by Waste Discharge Requirements (WDR) Order R7-2004-0103 (California Regional Water Quality Control Board, Colorado River Basin Region [Water Board], 2004). Treated groundwater from the Topock IM-3 has been continuously managed through injection since that time.

WDR Order R7-2006-0060 (Water Board, 2006) was issued September 20, 2006 and was the successor to WDR Order No. R7-2004-0103. The Waste Discharge Requirements (WDR Order No. R7-2006-0060) expired on September 20, 2011 and was replaced by the United States Department of the Interior (DOI) enforcement of the WDR as applicable or relevant and appropriate requirements (ARARs), as documented in correspondence between the Water Board, DOI, and PG&E during the summer of 2011, and as further discussed in Section 1.3.

In compliance with ARARs, PG&E collects treated effluent samples from the IM-3 treatment plant and analyzes for dissolved chromium (Cr), Cr(VI), metals, specific conductance, TDS, turbidity, flow rate, major inorganic cations and anions, and water quality indicator parameters. The results of these analyses are reported quarterly to the DOI and the Water Board, along with other required information and a summary of operations.

1.2 Description of Groundwater Injection Well Field

Treated effluent from the IM-3 treatment plant is pumped through an aboveground pipeline to the injection well field located nearly 2,000 feet west of the plant. The well field, located on what is referred to as the East Mesa, comprises two injection wells (IW-2 and IW-3). Surrounding the injection wells are three observation well (OW) clusters (OW-1, OW-2, and OW-5) located on the East Mesa. Surrounding the East Mesa are four additional monitoring well clusters, known as the compliance wells (CWs): CW-1, CW-2, CW-3, and CW-4. The locations of the injection wells, observation well clusters, and the compliance well clusters are shown in Figure 1-2.

Information for the three different well types is summarized in Exhibit 1-1. The injection wells, observation well clusters, and compliance well clusters were installed between December 2004 and February 2005.

EXHIBIT 1-1

Summary of Injection, Observation, and Compliance Wells Design Information and Installation Dates*Combined CMP Semiannual Groundwater Monitoring Report, Second Half 2012, and**PAR, Interim Measures No. 3, Injection Well Field, PG&E Topock Compressor Station, Needles, California*

Well Type (IDs)	Description	Work Plan	Installation Date	Installation Report
Injection (IW-2, IW-3)	Six-inch diameter stainless-steel louvered screens connected to mild steel risers using a mechanical coupling device. One hundred and sixty-foot screened interval. Total depth of injection wells: 340 and 330 feet deep, respectively. Two hundred gpm each design injection capacity.	CH2M HILL, 2004a	December 2004	CH2M HILL, 2005c
Observation (OW-1, OW-2, OW-5)	Monitoring well clusters consisting of three individual completions at various depths. Two-inch Schedule 40 polyvinyl chloride casing and screen. Twenty-foot screened interval.	CH2M HILL, 2004b	September to December 2004	CH2M HILL, 2005c
Compliance (CW-1, CW-2, CW-3, CW-4)	Monitoring well clusters consisting of two individual completions at various depths. Two-inch Schedule 40 polyvinyl chloride casing and screen. Fifty-foot screened interval.	CH2M HILL, 2005b	January to February 2005	CH2M HILL, 2005c

The design injection capacity of 200-gpm each for IW-2 and IW-3 provides 50-percent excess capacity above the plant design capacity in each injection well, and the two wells also provide 100-percent injection well redundancy as only one well is in service at a time.

Two types of monitoring wells have been installed in the injection well field. Exhibit 1-2 lists the name, well identifications, and monitoring zone of each type.

EXHIBIT 1-2

Summary of Injection Field Monitoring Wells*Combined CMP Semiannual Groundwater Monitoring Report, Second Half 2012, and**PAR, Interim Measures No. 3, Injection Well Field, PG&E Topock Compressor Station, Needles, California*

Group Name	Well IDs	Distance from Injection Wells, feet	Monitoring Zones		
			Shallow	Mid-depth	Deep
Observation Wells	OW-1, OW-2, and OW-5	50 to 100	X	X	X
Compliance Wells	CW-1, CW-2, CW-3, and CW-4	300 to 550		X	X

Source: CH2M HILL, 2005c.

The procedures for maintaining the injection wells are described in the *Interim Measures No. 3 Injection Well Operation and Maintenance Plan, PG&E Topock Compressor Station, Needles, California* (CH2M HILL, 2005d) and its revision (CH2M HILL, 2006b).

1.3 Compliance Monitoring Program

The *Groundwater Compliance Monitoring Plan for Interim Measures No. 3 Injection Area, Topock Compressor Station, Needles, California* (CH2M HILL, 2005e) (herein referred to as the Compliance Monitoring Plan) was submitted to the Water Board and the DTSC on June 17, 2005. The Compliance Monitoring Plan and its Addendum (CH2M HILL, 2005f) provide the objectives, proposed monitoring program, data evaluation methods, and reporting requirements for the compliance monitoring program (CMP). Several modifications of the sampling and reporting procedures have been approved since 2005, as outlined in Exhibit 1-3.

EXHIBIT 1-3

Historical Modifications to the Compliance Monitoring Program*Combined CMP Semiannual Groundwater Monitoring Report, Second Half 2012, and**PAR, Interim Measures No. 3, Injection Well Field, PG&E Topock Compressor Station, Needles, California*

Modification	Approval Date	Reference
Modification of reporting requirements	DTSC: June 9, 2006	DTSC, 2006
Reduction of constituents analyzed during quarterly sampling of CMP observation wells	Water Board: January 23, 2007	Water Board, 2007a
	DTSC: January 22, 2007	DTSC, 2007b
		CH2M HILL, 2006c
Change from laboratory pH to field-collected pH for reporting	Water Board: October 16, 2007	Water Board, 2007b
	DTSC: January 22, 2008	DTSC, 2008a
Modification of hexavalent chromium analytical methods to extend hold time to 28 days	Water Board: November 13, 2007	Water Board, 2007c
	DTSC: January 22, 2008	DTSC, 2008a
Modification of sampling and reporting frequency and the field pH trigger range for the CMP contingency plan	Water Board: August 28, 2008	Water Board, 2008
	DTSC: December 12, 2008 (pH), September 3, 2009	DTSC, 2008b, 2009
DOI adopts WDRs as ARARs	DOI: August 18, 2011	DOI, 2011
	Water Board: July 26, 2011	Water Board, 2011
		PG&E, 2011

PG&E is currently performing the CMP, as authorized by the DOI waste discharge ARARs. Specifically, the letter agreement issued July 26, 2011 from the Water Board to DOI (Water Board, 2011) requested:

- DOI concurrence that the WDRs are ARARs under the Comprehensive Environmental Response, Compensation and Liability Act of 1980 response action ongoing at the site.
- DOI confirmation that it will enforce these WDRs pursuant to the Administrative Consent Agreement entered into by DOI and PG&E in 2005 in lieu of the Water Board's adoption of a new Board Order to replace the expiring Board Order that set forth the WDRs.
- DOI concurrence with the roles and responsibilities between DOI and the Water Board for monitoring and enforcement.

In its letter dated August 18, 2011, the DOI provided concurrence and confirmation as requested (DOI, 2011). PG&E confirmed these changes with a letter to the DOI and the Water Board dated September 7, 2011 (PG&E, 2011). These changes add the DOI as the receiving regulatory agency for the CMP reports, with the Water Board continuing to receive report copies. Work described in this report was performed in accordance with the ARARs established in the July 26, 2011 letter (Water Board, 2011).

The ARARs specify effluent limitations, prohibitions, specifications, and provisions for subsurface injection. The monitoring and reporting program contained within the ARARs specifies the requirements for the CMP to monitor the aquifer in the injection well area to ensure that the injection of treated groundwater is not causing an adverse effect on the aquifer water quality.

Operation of the treatment system was conditionally approved on July 15, 2005 (DTSC, 2005a), and injection into IW-2 began on July 31, 2005. Table 1-1 provides a summary of the history of injection for IM-3.

Figure 1-2 shows the locations of the injection wells and the groundwater monitoring wells (OWs and CWs) in the CMP. Table 1-2 provides a summary of information on well construction and sampling methods for all wells in the CMP.

As of October 2012, samples are collected from OWs and CWs according to the following schedule:

- Three OWs (OW-1S, OW-2S, and OW-5S) located near the IM-3 injection well field are sampled semiannually (during the second and fourth quarters) for a limited suite of constituents.
- Six OWs (OW-1M, OW-1D, OW-2M, OW-2D, OW-5M, and OW-5D) are:
 - Sampled annually for a limited suite of constituents during the fourth quarter.
 - Sampled for a full suite of constituents one cluster at a time on a triennial (once every 3 years) schedule. Within each 3-year period, all OW middle and deep wells will be sampled for a full suite of constituents. The triennial sampling will occur during the annual event (fourth quarter).
- Eight CWs are sampled semiannually for a limited suite of constituents and annually (during the fourth quarter) for a full suite of constituents.

For semiannual events, laboratory analyses include TDS, turbidity, specific conductance, a reduced suite of metals, and several inorganic cations and anions. Annual and triennial sampling events for CWs and select OWs include chromium, Cr(VI), metals, specific conductance, TDS, turbidity, and major inorganic cations and anions. Groundwater elevation data and field water quality data—including specific conductance, temperature, pH, oxidation-reduction potential, dissolved oxygen, turbidity and salinity—are also measured during each monitoring event (CH2M HILL, 2005e).

This report presents the results of the Second Half 2012 CMP groundwater monitoring event. The Second Half 2012 event was a semiannual event conducted from October 15 through October 18, 2012. The monitoring and sampling activities completed during the Second Half 2012 consisted of the following activities:

- Water quality samples were collected from nine observation and eight compliance monitoring wells.
- Groundwater elevations and field water quality data were collected prior to sampling.
- Two duplicate samples were collected at wells CW-2D and OW-5M to assess field sampling and analytical quality control.

Continuous groundwater elevation data were collected using pressure transducers/data loggers at five of the 17 CMP wells and were downloaded monthly during the reporting period.

The sampling methods, procedures, field documentation of the CMP sampling, water level measurements, and field water quality monitoring were performed in accordance with the *Sampling, Analysis, and Field Procedures Manual, Revision 1, PG&E Topock Compressor Station, Needles, California* (CH2M HILL, 2005g) and standard operating procedure addendums.

CMP groundwater samples were analyzed by California-certified analytical laboratories: Truesdail Laboratories, Inc. in Tustin, California, Advanced Technology Laboratories in Las Vegas, Nevada, and Advanced Sciences in Corvallis, Oregon. Analytical methods, sample volumes and containers, sample preservation, and quality control sample requirements were in accordance with the *Sampling, Analysis, and Field Procedures Manual, Revision 1, PG&E Topock Compressor Station, Needles, California* (CH2M HILL, 2005g) and standard operating procedure addendums. Data validation and management were conducted in accordance with the *PG&E Program Quality Assurance Project Plan [QAPP]* (CH2M HILL, 2012a) and the *Addendum to the PG&E Program Quality Assurance Project Plan for the Topock Groundwater Monitoring and Investigation Projects* (CH2M HILL, 2008) and revisions.

1.3.1 Status of Monitoring Activities

1.3.1.1 Semiannual Monitoring

The next semiannual CMP monitoring event will occur in April during the first half of 2013. This CMP monitoring event will include the sampling and analysis scope presented in Attachment A of DOI's November 18, 2011 letter (DOI, 2011). The groundwater monitoring report for this CMP monitoring event will be submitted by July 15, 2013.

1.3.1.2 Annual Monitoring

The next annual CMP monitoring event will occur in October during the second half of 2013. The groundwater monitoring report for this annual CMP monitoring event will be submitted by January 15, 2014.

2.0 Summary of CMP Second Half 2012 Results

This section is a summary of the results of the CMP groundwater sampling conducted during the Second Half 2012. Figure 1-2 presents the locations of the CMP groundwater wells.

The data presented include results for Cr(VI), chromium, specific conductance, metals, TDS, turbidity, and major inorganic cations and anions. Laboratory data quality review, water level measurements, and water quality field parameter data are also presented in this section. The laboratory reports and field data sheets for the Second Half 2012 monitoring event are presented in Appendices A and B, respectively.

2.1 Analytical Results

Nine observation wells and eight compliance wells were sampled during the Second Half 2012 sampling event. Analytical results for Cr(VI), chromium, other metals, and general chemistry parameters are shown in Tables 2-1, 2-2, and 2-3 and are discussed below. Interim action levels/water quality objectives (WQOs) were updated on August 8, 2006 when PG&E submitted a revised contingency plan flowchart for groundwater quality changes associated with the injection system. The contingency plan specifies the concentrations and values for Cr(VI), chromium, TDS, and pH to be used to determine if contingency plan actions were necessary based on sample results. A modification of the CMP contingency plan pH range was approved by the Water Board and DTSC in 2008 (Water Board, 2008; DTSC, 2008b).

2.1.1 Hexavalent Chromium and Chromium

Table 2-1 shows the Cr(VI) and chromium analytical results for groundwater in the shallow, middle, and deep wells from the Second Half 2012 CMP sampling event. During the Second Half 2012 sampling event, no Cr(VI) sample results exceeded the WQO trigger level for Cr(VI) of 32.6 µg/L. For shallow wells, the maximum detected Cr(VI) concentration was 26.8 µg/L in well OW-2S on October 18, 2012. For the middle wells, the maximum detected Cr(VI) concentration was 7.2 µg/L in well CW-4M on October 16, 2012. For the deep wells, the maximum detected Cr(VI) concentration was 1.1 µg/L in well CW-4D on October 16, 2012.

For shallow wells, the maximum detected chromium concentration was 28.0 µg/L in well OW-2S on October 18, 2012. For the middle wells, the maximum detected chromium concentration was 6.6 µg/L in well CW-4M on October 16, 2012. For the deep wells, all concentrations were nondetect [ND (1.0)]. During the Second Half 2012 sampling event, the 28.0 µg/L background chromium result in OW-2S was at the chromium WQO trigger level. This result is not considered to be the result of the injection of treated groundwater because the average concentration of chromium from the IM-3 treatment plant is approximately 1.0 µg/L or less (CH2M HILL, 2012b). Cr(VI) and background chromium concentrations at OW-2S have frequently been above the WQOs since November 2005. In addition, other parameters that would indicate arrival of the injected water at OW-2S (such as a change in sulfate or TDS concentrations) are not observed in samples from this well. The results are thus considered reflective of the variance in background water quality. In a letter dated January 5, 2007 (DTSC, 2007a), DTSC stated that it was not necessary to follow contingency plan requirements for hexavalent and chromium with respect to OW-2S and OW-5S. The Water Board concurred with this decision in a letter dated March 2, 2007 (Water Board, 2007d). As such, the contingency plan was not triggered due to the background chromium concentration detected in OW-2S. No other sample results exceeded the WQOs for Cr(VI), Cr, pH, or TDS during the Second Half 2012 sampling event.

2.1.2 Other Metals and General Chemistry

Table 2-2 presents the other metals and cation results for the CMP groundwater wells sampled during the Second Half 2012. Metals and cations detected in the Second Half 2012 sampling event included arsenic, barium, boron, calcium, magnesium, molybdenum, potassium, selenium, silver, sodium, vanadium, and zinc. In general, concentrations of metals and cations detected during the Second Half 2012 sampling event are similar to those detected in previous sampling events.

Table 2-3 presents other inorganic analyte and anion results from the CMP well samples. During the Second Half 2012, the sampling results from all wells were within the WQOs for TDS (less than 10,800 milligrams per liter [mg/L]) and pH (within 6.2 to 9.2). Sampling results for TDS varied from 1,030 mg/L in well OW-2S to 4,600 mg/L in well CW-3M. Field pH varied from 7.6 in wells OW-1S and OW-1M to 8.1 in wells CW-2D, CW-3D, and OW-2S.

Tables 2-2 and 2-3 also include results from a subset of wells being analyzed for contaminants of potential concern, including molybdenum, selenium, and nitrate. In an email dated March 3, 2010, DTSC directed monitoring of these contaminants of potential concern and potential in situ byproducts at select CMP wells (DTSC, 2010b).

2.1.3 ARAR Monitoring Requirements

Table C-1 in Appendix C identifies the laboratory that performed each analysis and lists the following information as required by the ARARs for the Second Half 2012 CMP monitoring event:

- Sample location
- Sample identification number
- Sampler name
- Sample date
- Sample time
- Laboratory performing analysis
- Analysis method
- Parameter
- Analysis date
- Laboratory technician
- Result unit
- Sample result
- Reporting limit
- Method detection limit

2.2 Analytical Data Quality Review

The laboratory analytical data generated from the Second Half 2012 CMP monitoring event were independently reviewed by project chemists to assess data quality and identify deviations from analytical requirements. The quality assurance and quality control requirements are outlined in the QAPP and QAPP addendums (CH2M HILL, 2008, 2012a). A detailed discussion of data quality for CMP sampling data is presented in the data validation reports, which are kept in the project file and are available upon request.

2.2.1 Matrix Interference

Matrix interference that affected the sensitivity for Cr(VI) when using United States Environmental Protection Agency (USEPA) Method E218.6 was encountered in one of the groundwater samples. The Cr(VI) sample result reflects an adjusted reporting limit of 1.0 µg/L as a result of the serial dilution that was required to overcome the matrix interference and provide an acceptable matrix spike recovery. No qualifier flags were applied.

2.2.2 Matrix Spike Samples

All matrix spike acceptance criteria were met.

2.2.3 Quantitation and Sensitivity

With the exception of the matrix interference issues discussed in Section 2.2.1, all method and analyte combinations met the project reporting limit objectives.

2.2.4 Holding-time Data Qualification

For the current semiannual sampling event, all method holding-time requirements were met, except for following:

- Five samples analyzed for mercury (USEPA Method 200.8) one day outside holding time. The nondetect sample results were qualified and flagged "UJ" or nondetect with an estimated reporting limit.
- Six samples were analyzed for turbidity (SM 2130B) one day outside holding time. The nondetect sample result was qualified and flagged "UJ," and the detect sample results were qualified and flagged "J."

All other method analytical holding-time requirements were met.

2.2.5 Field Duplicates

All field duplicate acceptance criteria were met.

2.2.6 Method Blanks

All method blank acceptance criteria were met.

2.2.7 Equipment Blanks

All equipment blank acceptance criteria were met.

2.2.8 Laboratory Duplicates

All laboratory duplicate acceptance criteria for the analytical methods were met.

2.2.9 Calibration

Initial and continuing calibrations were performed as required by the analytical methods. All calibration criteria were met.

2.2.10 Temperature

Five samples analyzed for Nitrate/Nitrite (USEPA 353.2) were received in the subcontract laboratory at a temperature greater than 6 degrees Celsius. The detected sample results were qualified and flagged "J."

2.2.11 Conclusion

For the Second Half 2012 CMP sampling event, the completeness objectives were met for all method and analyte combinations. The analyses and data quality met the QAPP and laboratory method quality control criteria except as noted above. Overall, the analytical data are considered acceptable for the purpose of the CMP.

3.0 Injection Well Operational Assessment

3.1 Injection Well Performance

The injection well field is designed to accept all of the treated water from the IM-3 treatment plant. This is the primary performance metric. Table 3-1 lists the average injection rate, monthly and cumulative total volume of water injected, and the primary wells in service from August 2005 through December 2012.

The injection well performance has been monitored since they were put into service. A summary of operational status of IM-3 injection wells from July 2005 through December 2012 is presented in Table 1-1. Injection well performance is measured in terms of specific injectivity, which is measured in gallons per minute of flow per foot of increased head in the well (water level rise). Over time, the specific injectivity of injection wells typically declines due to plugging of pores from suspended solids in the injectate, precipitation of minerals in the well bore, air entrapment in the formation, biofouling, or a combination of these factors.

As indicated in Table 3-1, for the first reporting period (August 2005 through October 2006), IW-2 was used almost exclusively. The initial specific injectivity of IW-2 was approximately 33 gpm per foot; however, by October 2005, the specific injectivity was measured at 18 to 20 gpm per foot, as shown on Figure 3-1. Backwashing was conducted between July and November 2006 in an effort to restore the specific injectivity of IW-2; however, over time, IW-2 exhibited progressive loss in specific injectivity that backwashing was unable to reverse. IW-2 was removed from service from September 2006 through August 2008 in preparation for well rehabilitation (IW-3 was put into service during this time). The specific injectivity of IW-2 ranged from roughly 9 to 13 gpm per foot before it was removed from service in September 2006.

Based on the IW-2 well video survey conducted on November 13, 2007, moderate geochemical fouling in the form of a black-colored precipitate (believed to be manganese) was observed throughout the well. The precipitation of the black material was believed to be the principal cause of the decrease in IW-2's specific injectivity. Mechanical well rehabilitation efforts were conducted during February and March 2008 at IW-2 in an effort to restore the specific injectivity using less aggressive rehabilitation methods compared to chemical treatment methods. Mechanical rehabilitation methods, including brushing, bailing, over-pumping and surging, and airlift swabbing were employed to remove the solids and precipitate buildup. These efforts resulted in a measured increase in the specific capacity from 9 to 19 gpm per foot once the well was returned to service in August 2008.

Despite mechanical well rehabilitation and backwashing efforts conducted at IW-2 during 2008, the specific injectivity increase was short-lived, and specific injectivity declined from 19 to roughly 3 gpm per foot between September 2008 and November 2009; therefore, a second mechanical rehabilitation effort was conducted at IW-2 during February 2010. The specific injectivity increased from 3 to 12 gpm per foot but the increase in the specific capacity was again short-lived and declined to roughly 9 between February and November 2010. Injection well IW-3 was in service from September 2006 through August 2008 and was used almost exclusively during this time, as indicated in Table 3-1. The initial specific injectivity of IW-3 was approximately 35 to 38 gpm per foot, but specific injectivity declined to roughly 8 to 13 gpm per foot by September 2008 despite routine backwashing. IW-2 was returned to service in September 2008, and the two injection wells were alternated until November 2009 when mechanical well rehabilitation efforts were conducted at IW-3. The specific injectivity increased from roughly 8 to 19 gpm per foot after completing mechanical well rehabilitation at IW-3, but the increase in specific injectivity was also short lived; it declined to 5 gpm per foot by February 2010.

Manganese was believed to be the primary cause of injection well plugging throughout the life of both injection wells. Manganese is a byproduct in the treatment plant at IM-3 and, before March 2010, the effluent manganese concentrations varied sporadically, ranging from nondetect ($< 10 \mu\text{g/L}$) up to $100 \mu\text{g/L}$. Since February 2010, changes were implemented at the IM-3 treatment plant to reduce manganese in the effluent. The effluent manganese concentrations during May 2010 through December 2010 were more stable and were less than $15 \mu\text{g/L}$. The reduction in manganese may be the reason for the slight upward trend observed in the specific

injectivity after March 2010, as seen in both IW-3 and IW-2, shown on Figure 3-1. The specific injectivity of IW-3 increased from roughly 5 to 9 gpm per foot from March to October 2010.

More aggressive rehabilitation efforts were conducted at both wells during October and November 2010 using chemical treatment. A 10-percent hydrochloric acid solution was injected and agitated into the well screen sections before aggressive and extensive swabbing and removal of dissolved manganese by pumping and surging were conducted. The specific injectivity in both wells increased from about 9 to 25 gpm per foot after chemical rehabilitation efforts were completed, as shown on Figure 3-1.

During the 2010 chemical well rehabilitation event, equipment was installed in the injection wells so that the Aqua Gard method (a nonintrusive well maintenance method) could be conducted in the future without having to modify the well heads. The Aqua Gard method uses liquid carbon dioxide that is injected into the well. Once injected into the well, the rapid expansion of the carbon-dioxide-phase change from liquid to gas results in an agitation mechanism that loosens geochemical deposits, silt, and biological plugging material that had reduced the specific injectivity of the well. Carbon dioxide injection is then followed by aggressive backwashing (or pumping) to remove the material that was loosened during carbon dioxide injection.

By May 2012, specific injectivity had declined to approximately 16.5 gpm per foot in IW-02 and 18 gpm per foot in IW-03 so the Aqua Gard treatment was conducted at both wells. After completing Aqua Gard, the specific injectivity increased to 22 gpm per foot in IW-02 and to 30 gpm per foot in IW-03. The specific injectivity has remained relatively constant since the treatment.

Backwashing of the injection wells will continue to maintain the specific injectivity of the injection wells. The injection wells will be operated on an alternating schedule, with each well receiving injection for roughly 2 to 4 weeks then offline for 2 to 4 weeks, with a backwash event occurring before being returned to service. This schedule will result in 6 months of idle time and 6 to 12 backwash events per well per year. If performance indicates a drop in specific injectivity, then the wells will either be backwashed more frequently or be rehabilitated using Aqua Gard or aggressive chemical methods.

It is important to note that each individual injection well currently has sufficient capacity to inject the entire treatment plant effluent flow. The system has adequate spare capacity, and the maintenance program is implemented to maintain sufficient capacity for operation.

3.2 Effect of Injection on Groundwater Levels

Table 3-2 presents the manual water level measurements and groundwater elevations from snapshots taken during Third and Fourth Quarters 2012 per the DOI ARAR requirements (DOI, 2011). In compliance with Condition No. 2 of DTSC's 2009 conditional approval letter (DTSC, 2009), confirmation was obtained from the IM-3 Plant Manager that the IM-3 plant was operating normally on both the day before and the day of CMP sample collection, with no backwash or unplanned shutdowns (see Appendix B for field notes).

Water level measurements were collected continuously (measurements collected every half hour) with pressure transducers in select wells to produce hydrographs. Figures 3-2A through 3-2G present hydrographs that illustrate groundwater elevation trends and vertical hydraulic gradients observed over the Second Half 2012 reporting period at specified observation monitoring wells.

Groundwater elevation maps for shallow, middle, and deep wells are provided as Figures 3-3A through 3-3C. A snapshot of water level elevations was used to produce the groundwater elevation contour plots. The measurement date is shown on each figure title.

Table 3-3 presents a summary of the manual water levels and field water quality data measured during the Second Half 2012 monitoring event. A field water quality instrument and flow-through cell were used to measure water quality parameters during well purging and before groundwater sampling.

A discussion of the collected data follows in the sections below.

3.2.1 Groundwater Gradient Characteristics

The monitoring wells in the middle and deep zone categories are screened over a wide elevation range (74 feet in the middle zone wells and 59 feet in the deep wells). Because there are natural vertical gradients as well as vertical gradients induced by injection, the groundwater elevations for wells in each category will reflect a mixture of vertical and horizontal gradients in groundwater elevation. Therefore, the groundwater contours in Figures 3-3B and 3-3C should be viewed as approximate.

The injection well field is located in the East Mesa area of the Topock site, as shown on Figure 1-2. Overall sitewide water level contour maps for shallow wells are prepared annually under a separate report, with flow consistently being shown to move to the east/northeast across the uplands portions of the site (CH2M HILL, 2012c).

The effects of injection in the IM-3 injection well field are superimposed on the more regional Topock site flow system and, as expected, a groundwater mound can be seen around the injection wells. This mound is centered on the active injection wells IW-2 and IW-3. The potentiometric surfaces in prior CMP reports mapped the growth of the groundwater mound over time and show that, after 86 months of injection, the mound increased and then stabilized in height at approximately 1 foot or less in elevation above the surrounding water level elevations. Figures 3-3B and 3-3C present groundwater elevation contours for the average groundwater elevation of the mound within the middle and deep wells using October 23, 2012 groundwater elevations. Similarly, Figures 3-4A and 3-4B present water level contour maps for middle and deep wells using November 2010 data. For the past 2 years, the injection rate at IM-3 injection well field has averaged approximately 127 gpm. Figure 3-5A and 3-5B present water-level contour maps for middle and deep wells using October 2008 data. Over the past 4 years of injection, the water level contour patterns are comparable for both middle and deep wells, respectively, indicating that the groundwater levels in the middle and deep zones are currently in near hydraulic steady-state with the current rate of injection. Comparison between these figure sets does not show significant change in water level contours over 4 years of IM-3 operation. It is not anticipated that continued injection at the current rate will result in any further significant changes in groundwater level, flow directions, or velocities in the injection well field.

The groundwater mound associated with injection is broader and flatter in the deep zone. The mound in the middle zone is more localized around the injection wells. This is consistent with the spinner log results from both injection wells, which showed higher permeability in the deep zone. The mound displays approximately 1 foot or less of total height in either middle or deep zones, as measured by the difference between OW and CW groundwater elevations, as shown in Figures 3-3B and 3-3C. This represents a slight increase in the magnitude of the horizontal gradient, although this increase is restricted to the area of the mound itself. Outside of the defined mound area, there is no significant effect of injection on groundwater levels.

The mound is elliptical in shape, with the major axis running in a southwest to northeast direction. The lower gradients (more widely spaced contours) in the direction of the major axis are an indication that the aquifer permeabilities are greater in this direction, indicating that there may be a preferred direction to flow in this area. In aquifers in alluvial fan depositional environments, the permeability is often higher in the down-fan direction and lower in the cross-fan direction. This is due to the higher degree of connectedness of the sand and gravel layers in the direction of stream flow on the former fans (Fetter, 1994). The orientation of the long axis of the mound near the injection well field is northeast-southwest and generally consistent with the likely alignment of alluvial fans in the area.

As shown in Table 3-1, the combined injection rates at IW-2 and IW-3 have ranged between 113.5 and 134.2 gpm since December 2010. Groundwater levels have been monitored in all observation and compliance wells since several months before starting injection. Figures 3-2A through 3-2G are hydrographs that illustrate groundwater elevation trends and vertical hydraulic gradients observed since June 2005 at the observation and compliance monitoring wells. Average vertical gradients in the IM-3 injection well field area have been upward at the OW and CW clusters since injection began and also generally upward between each of the depth intervals in those same well clusters. Table 3-4 presents the vertical gradient data calculated using the May 2, 2012 groundwater elevations. The observed gradients from Second Half 2012 and since injection began are consistent with IM-3

design expectations. Because the injection wells are screened in the deeper portions of the aquifer, the injection of treated water into the deep zone of the aquifer tends to increase the head in the deep and middle portions of the aquifer more than in the shallow portion. Groundwater levels in the middle and deep observation and compliance wells respond more quickly to changes in injection rate than shallow water levels. This is partially due to the semiconfined nature of the aquifer in middle and lower zones. Confined and semiconfined aquifers typically have storage coefficients several orders of magnitude smaller than unconfined aquifer systems and therefore respond much more quickly to changes in hydraulic stress. The other reason for this observation is that the vast majority of injected water is flowing into the deep zone, based on spinner log borehole flow profile data collected shortly after the injection well installation. Moreover, the aquifer response of the middle and deep wells to the injected water is generally comparable for all the biennial reporting periods (first biennial reporting period August 2005 through October 2006, second biennial reporting period November 2006 through December 2008, third biennial reporting period January 2009 through December 2010, and the fourth biennial reporting period January 2011 through December 2012).

The magnitude of the vertical gradients is similar between clusters and between the depth intervals, indicating that the vertical gradient is generally of the same order of magnitude throughout the injection area. The observed groundwater gradients in the IM-3 injection well field are consistent with expected regional groundwater flow within the southern Mohave Valley.

4.0 Influence of Treated Water on Aquifer Water Quality

4.1 Treatment Plant Effluent Water Quality and Groundwater Quality Before and After Injection

Injection of treated water began on July 31, 2005. Previously, under WDR No. R7-2006-0060 for the IM-3 groundwater treatment system and now under the DOI's ARARs, PG&E is required to submit quarterly monitoring reports regarding operation of the system. These reports contain the analytical results of treated water effluent sampling and, as such, the reports are useful in determining the baseline water quality of the treated water being injected into the IM-3 injection well field.

Table 4-1 lists the results of baseline sampling for the observation wells and compliance wells. A full set of nine OW groundwater samples was collected on July 27 and 28, 2005, and a full set of eight CW groundwater samples was collected on September 15, 2005. These samples are considered representative of conditions unaffected by injection and serve to characterize the pre-injection water quality. In comparing these sampling results to the treated injection water sampling results, there are some similarities in the constituent concentrations. For example, most of the pre-injection OW or CW deep well samples (OW-1D, OW-2D, OW-5D, CW-3D, and CW-4D) contain no detectable Cr(VI) or chromium, which is similar to the treated injection water. Most of the well samples show concentrations similar to the treated water for two or three constituents but observable differences in concentration from the treated water for the remaining four or five. By considering the entire suite of seven analytes and focusing on those parameters that show differences, it is relatively easy to distinguish between the pre-injection water quality at the monitoring wells and the treated water effluent quality.

Table 4-1 also provides selected effluent water analytical results from three of the monthly reports: August 29, 2005, October 7, 2007, and October 2, 2012. While there are differences among some parameters in these samples, a number of parameters show relatively consistent concentrations in the effluent. Analytes that are relatively consistent over the injection time period include Cr(VI), chromium, fluoride, molybdenum, nitrate/nitrite as nitrogen, sulfate, and TDS. These seven constituents provide a characterization of the effluent that does not appear to vary greatly over time and can serve as a basis for determining whether a groundwater monitoring well is being affected by injection. In general terms, treated water has the following characteristics (based on review of October 2010 through October 2012 effluent characteristics):

- Cr(VI): typically nondetect (or below 1.0 µg/L)
- Chromium: typically nondetect (1.0 µg/L)
- Fluoride: approximately 2 mg/L
- Molybdenum: approximately 20 µg/L
- Nitrate/nitrite as nitrogen: approximately 3.0 mg/L
- Sulfate: approximately 500 mg/L
- TDS: approximately 4,000 mg/L

These treated water quality characteristics are meant to serve as a general guideline and not as a statistically representative summary of the treated water quality over time.

Table 4-2 presents a comparison between the treated water quality and the results from the most recent sampling event (the Second Half 2012 sampling event). These samples were collected after approximately 86 months of injection. While the pre-injection OW and CW sample results were significantly different from the treated water quality, a number of the Second Half 2012 sample results show a marked similarity to the treated water results. The following wells display the general characteristics of treated water: OW-1M, OW-1D, OW-2M, OW-2D, OW-5M, OW-5D, CW-1M, CW-1D, CW-2D, CW-3D, and CW-4D. These wells are at locations and depths where the treated water injection front has largely replaced the local pre-injection groundwater. Wells OW-1S, CW-2M, and CW-4M have chemical characteristics approaching that of treated water. To date, shallow

observation wells OW-2S and OW-5S and compliance well CW-3M do not show water quality effects due to injection of treated water, indicating that injected water has not yet reached these depths and locations. However, well OW-5S has increased in TDS since injection began in 2005, and CW-3M has increased in nitrate/nitrite as nitrogen, suggesting that the injection front is approaching these wells. Field-measured chemical parameters for the monitoring wells are presented in Table 3-3.

4.2 Water Quality Trends

Trend data can be used to determine when a rapid change has occurred between sampling events, such as the arrival of the injection front. It can also be used to look at more gradual changes that occur over several sampling events, such as seasonal effects or the interaction of treated water with local groundwater and host aquifer material. Eleven analytes were selected for time-series analysis; these analytes are considered to be most representative of the IM-3 injection well field area and have sufficient detections to make time-series analysis useful. The analytes include chloride, chromium, fluoride, Cr(VI), molybdenum, nitrate/nitrite as nitrogen, pH, sodium, sulfate, TDS, and vanadium. Water quality hydrographs (time-series plots) of these 11 analytes in each observation well during the second half 2010 within the IM-3 injection well field are presented in Figures 4-1A through 4-1E.

The graphs are divided into the three depth (shallow, mid, and deep) intervals for the observation wells, followed by the two intervals for the compliance wells. The effluent water quality information is also presented on these figures for comparative purposes. (Starting with First Quarter 2008, pH measurements on groundwater samples were no longer made through laboratory analysis due to the new 15-minute holding time for laboratory measurements with USEPA Method 150.1).

Observation well water quality hydrographs are presented in Figures 4-1A through 4-1C. These hydrographs show the same overall patterns: wells that are identified as affected by treated water injection show a shift in water quality for characteristic parameters, while those identified as being unaffected by injection show no net trends. The water quality change brought on by the arrival of the treated water injection front can be either gradual (OW-5M) or step-wise (OW-2M), with most affected wells showing a pattern of change somewhere between the two. Based on the variability in response, it is inferred that the movement of treated water is nonuniform laterally between wells. This variability in lateral movement can be inferred from differences in the water quality hydrographs in both the mid-depth and deep wells. The OW shallow-depth wells (OW-2S and OW-5S) show little water quality variation over time. Sodium, chloride, vanadium, and molybdenum are particularly consistent with baseline pre-injection concentrations and show that the local groundwater quality at these shallow depths is not being affected by injection of treated water or outside water sources.

Compliance well water quality hydrographs are presented in Figures 4-1D and 4-1E. Wells CW-1M, CW-1D, CW-2D, CW-3D, and CW-4D show trends in TDS, sulfate, nitrate/nitrite as nitrogen, chromium, molybdenum, and Cr(VI) similar to the treated water. Wells CW-1M, CW-2M, and CW-4M show decreasing trends in Cr(VI) and chromium. These changes are attributed to the arrival of treated injection water.

5.0 Summary and Recommendations

The IM-3 groundwater injection system has operated successfully since July 31, 2005 and has been shown to be an effective strategy for management of treated groundwater generated through implementation of the IM at the PG&E Topock Compressor Station. The following summarizes the performance highlights of the injection system.

- **Predicted aquifer response:** The aquifer has responded hydraulically to the injection as expected. The groundwater mound near the injection wells is predominantly in the middle and deep aquifer zones and appears to show the influence of preferential permeability in the deep zone. The magnitude of the mound in the area of the nearby OW wells is approximately 0.8 foot in the deep zone and 1.0 foot in the middle zone based on the Second Half 2012 October snapshot data, and the magnitude dissipates with distance from the injection well. The direction of preferential flow appears to be in a northeast/southwest direction parallel with the depositional grain of the alluvial fan in the area of the injection wells. Preferential flow along the axis of an alluvial fan results from the alignment of sand and gravel layers along the stream channels as the fan is deposited (Fetter, 1994). Sand and gravel grains will tend to align with their long sides in the direction of the flow of water that deposits them off the fan. This alignment results in higher hydraulic conductivity in this direction than in the transverse or vertical directions.
- **No adverse affect to aquifer water quality:** There are no indications of adverse effects to aquifer water quality as a result of the injection. No unexpected or adverse geochemical reactions have been observed. The water quality in the middle and deep zones is generally improving in areas where the injected water has displaced the native groundwater. Injected water has not directly affected the shallow aquifer zone, although some water quality changes observed in the shallow zone may be associated with changes in localized groundwater flow directions associated with the injection.
- **Limited effect on shallow groundwater:** As expected, injected water is moving through the aquifer almost entirely in the middle and deep zones. Only minor effects in two shallow observation wells have been observed. Adverse effects of injection, if any, would therefore be seen first in the middle and deep zones, with a significant lag in time before arriving at shallower depths.
- **Successful injection well operation:** The injection wells have performed without significant problems for the fourth biennial reporting period, maintaining sufficient injection capacity throughout operation even though injection well performance declined during the life of the wells. Well rehabilitation, including Aqua Gard treatment and backwashing implemented at both wells, has improved and sustained the specific injectivity, as shown on Figure 3-1. Moreover, alternate use of both the injection wells has allowed smooth operation of the IM-3 injection well field. Backwashing will be performed regularly at each well to sustain the efficiency and well performance at both injection wells.
- **Improved environment and safer operations:** Operating the injection wells reduces the adverse environmental and safety impacts associated with the trucking of treated groundwater to a permitted offsite facility (offsite disposal of the 470 million gallons injected through December 2012 would have required over 70,000 tanker truck trips). Reduced truck traffic results in lower vehicle emissions and reduces the chance of accidents.
- **Water quality objectives achieved:** During the Second Half 2012 monitoring event, the 28.0 µg/L background chromium result in OW-2S was at the chromium WQO trigger level. For this exceedance, the result is not considered to be the result of the injection of treated groundwater because the average concentration of chromium from the IM-3 treatment plant is approximately 1.0 µg/L or less. Cr(VI) and background chromium concentrations at OW-2S have frequently been above the WQOs since November 2005. The results are thus considered reflective of background water quality. In a letter dated January 5, 2007 (DTSC, 2007a), DTSC stated that it was not necessary to follow contingency plan requirements for hexavalent and background chromium with respect to OW-2S and OW-5S. The Water Board concurred with this decision in a letter dated March 2, 2007 (Water Board, 2007d). As such, the contingency plan was not triggered due to the background

chromium concentration detected in OW-2S. No other samples exceeded the water quality objectives for Cr(VI), pH, or TDS.

For these reasons, PG&E plans continued operation of the injection system under DTSC and DOI oversight as an effective method for managing the treated water and as an integral part of IM-3 system operations.

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7.0 Certification

PG&E submitted a signature delegation letter to the Water Board on August 2, 2005. The letter delegated PG&E signature authority to Mr. Curt Russell and Ms. Yvonne Meeks for correspondence regarding ARARs.

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: Yvonne J. Meeks

Company: Pacific Gas and Electric Company

Title: Topock Project Manager

Date: January 15, 2013

TABLE 1-1

Operational Status of Interim Measures No. 3 Injection Wells From July 2005 Through December 2012*Combined CMP Semiannual Groundwater Monitoring Report, Second Half 2012, and**PAR, Interim Measures No. 3, Injection Well Field, PG&E Topock Compressor Station, Needles, California*

Time Period	Injection Status
July 31, 2005 to Fourth Quarter 2005	Injection occurred at IW-2.
First Quarter 2006	Injection occurred primarily at IW-2 except during intervals of operational testing, when injection was divided equally between IW-2 and IW-3.
Second Quarter 2006	Injection occurred at IW-2.
Third Quarter 2006	In August 2006, IW-2 went offline for routine maintenance, and injection commenced at IW-3.
Fourth Quarter 2006	Injection occurred at IW-3, except during routine maintenance.
First Quarter 2007	Injection occurred at IW-3 and transitioned over to IW-2 on March 8.
Second Quarter 2007	Injection occurred at IW-3 from April 3 through June 20. Injection switched to IW-2 on June 20 and continued through July 20, 2007.
Third Quarter 2007	Injection occurred at IW-3 after July 20. Injection occurred at IW-2 on August 30 for an injection test and then returned to IW-3 after August 31.
Fourth Quarter 2007	Injection occurred at IW-3 and then switched to IW-2 on September 25 for routine maintenance. Injection returned to IW-3 after October 9.
First Quarter 2008	Injection occurred at IW-3 only. From February 5 through February 13, well maintenance activities were conducted at IW-2.
Second Quarter 2008	Injection occurred at IW-3 only. IM-3 system offline from April 21 through April 28 due to routine maintenance. Backwashing was performed at IW-3 on April 9, May 7, May 15, May 22, June 3, and June 4, 2008.
Third Quarter 2008	Injection occurred primarily at IW-3. Injection also occurred at IW-2 for short interval on July 25 and from August 12 – August 31, 2008. Backwashing was performed at IW-3 on June 17, June 27, July 9, July 15, July 17, July 18, August 12, August 13, September 2, and September 3, 2008. Backwashing was performed at IW-2 on September 9 - September 11, 2008.
Fourth Quarter 2008	Injection occurred at IW-3 and then switched to IW-2 on September 23. Injection returned to IW-3 on October 7 and switched back to IW-2 on October 21. Injection primarily occurred at IW-2 until November 11 when it switched to IW-3 until December 3, 2008. Injection continued at IW-2 until December 16, 2008 and occurred concurrently and continued at IW-3 on December 11, 2008.
First Quarter 2009	Injection switched to IW-2 on December 30, 2008. On January 13, 2009 injection transitioned to IW-3. Backwashing events were performed periodically during the intervals when each injection well was offline. Routine and scheduled maintenance occurred 12/18/08 and 1/21/09 at which time both wells were offline.
Second Quarter 2009	Injection continued at IW-3 until April 20, 2009. Injection ceased from April 20, 2009 to April 27, 2009 due to routine maintenance after which injection continued at IW-3 until May 26, 2009 when it transitioned to IW-2. Injection continued at IW-2 until June 9, 2009 when it switched to IW-3. Injection returned to IW-2 on June 24, 2009.
Third Quarter 2009	IM3 injection alternates between the two wells approximately every two weeks. Injection continued at IW-2 until July 8, when it transitioned to IW-3. Injection ceased from July 23 to 27, 2009 when it continued at IW-3 until September 9, 2009. Unplanned downtime occurred from September 9-14, 2009. On September 16, 2009 injection continued at IW-2, except during times of routine maintenance or otherwise mentioned.
Fourth Quarter 2009	Injection occurred at IW-2 until November 25, 2009 when it switched to IW-3. Injection continued at IW-3, except during times of routine maintenance.
First Half 2010	Injection occurred mainly at IW-3 until March 3, 2010. Beginning March 3, 2010, IM3 injection alternated between the two wells approximately every two weeks until April 20, 2010 for a

TABLE 1-1

Operational Status of Interim Measures No. 3 Injection Wells From July 2005 Through December 2012*Combined CMP Semiannual Groundwater Monitoring Report, Second Half 2012, and**PAR, Interim Measures No. 3, Injection Well Field, PG&E Topock Compressor Station, Needles, California*

Time Period	Injection Status
	planned shutdown. On April 22, 2010, injection resumed at IW-3 and alternated between the two wells approximately every two weeks. Backwashing was performed periodically during the intervals when each injection well was offline.
Second Half 2010	Injection occurred primarily at IW-2 with the exception of the following periods when it primarily occurred at IW-3: July 22 - August 25, August 30 - September 7, September 16 - October 15, November 5 -18, and December 17- 31, 2010.
First Half 2011	Injection occurred primarily at IW-3 with the exception of the following periods when it primarily occurred at IW-2: January 27 - February 10, February 23 - March 7, March 30 - April 20, May 6 – June 7, and June 22-28, 2011. Backwashing was performed periodically during the intervals when each injection well was offline. A planned shutdown occurred April 25-29 and June 28-30.
Second Half 2011	Injection occurred primarily at IW-3 with the exception of the following periods when it primarily occurred at IW-2: July 14 through August 3, August 10 through 13, September 11 through 22, October 6 through10; and October 27 Through December 31. Backwashing was performed periodically during the intervals when each injection well was offline.
First Half 2012	Injection occurred primarily at IW-3 with the exception of the following periods when it primarily occurred at IW-2: January 1 through January 6, 2012; February 2 through February 16, 2012; March 2 through April 5, 2012; May 10 through May 21, 2012; May 29 through June 1, 2012, June 14,2012 and June 21 through June 27, 2012.
Second Half 2012	Injection occurred primarily at IW-3 with the exception of the following periods when it primarily occurred at IW-2: July 18 through July 25, 2012; August 1 through August 13, 2012; August 17 through August 22, 2012; August 31 through September 26, 2012; and September 29 through October 9, 2012.

TABLE 1-2

Well Construction and Sampling Summary for Groundwater Samples, Second Half 2012
*Combined CMP Semiannual Groundwater Monitoring Report, Second Half 2012, and
 PAR, Interim Measures No. 3, Injection Well Field
 PG&E Topock Compressor Station, Needles, California*

Well ID	Site Area	Measuring Point Elevation (ft AMSL)	Screen Interval (ft bgs)	Well Casing (inches)	Well Depth (ft btoc)	Depth to Water (ft btoc)	Sampling System	Typical Purge Rate (gpm)	Typical Purge Volume (gallons)	Pump Depth (ft bgs)	Transducer Status	Remarks
IM Compliance Wells												
CW-01M	East Mesa	566.07	140 - 190	2 (PVC)	190.0	109.3	Temp Redi-Flo AR	2	42	165		
CW-01D	East Mesa	566.46	250 - 300	2 (PVC)	300.2	109.5	Temp Redi-Flo AR	3	98	180		
CW-02M	East Mesa	549.45	152 - 202	2 (PVC)	208.3	93.1	Temp Redi-Flo AR	2	56	195		
CW-02D	East Mesa	549.43	285 - 335	2 (PVC)	355.0	92.6	Temp Redi-Flo AR	3	134	159		
CW-03M	East Mesa	534.10	172 - 222	2 (PVC)	222.0	78.0	Temp Redi-Flo AR	2	74	180		
CW-03D	East Mesa	534.14	270 - 320	2 (PVC)	340.0	77.3	Temp Redi-Flo AR	3	134	143		
CW-04M	East Mesa	518.55	119.5 - 169.5	2 (PVC)	169.8	61.8	Temp Redi-Flo AR	2	56	160		
CW-04D	East Mesa	518.55	233 - 283	2 (PVC)	303.0	61.6	Temp Redi-Flo AR	3	124	134		
IM Observation Wells												
OW-01S	East Mesa	550.21	83.5 - 113.5	2 (PVC)	113.5	93.9	Temp Redi-Flo AR	1	10.2	100	Active	
OW-01M	East Mesa	550.36	165 - 185	2 (PVC)	185.8	93.7	Temp Redi-Flo AR	3	48	109.6		
OW-01D	East Mesa	550.36	257 - 277	2 (PVC)	277.3	93.4	Temp Redi-Flo AR	3	94	111.4		
OW-02S	East Mesa	548.88	71 - 101	2 (PVC)	103.6	92.6	Temp Redi-Flo AR	1	15	100	Active	
OW-02M	East Mesa	548.52	190 - 210	2 (PVC)	210.3	91.8	Temp Redi-Flo AR	2	61	111.4		
OW-02D	East Mesa	549.01	310 - 330	2 (PVC)	340.0	91.8	Temp Redi-Flo AR	2	127	110.3		
OW-05S	East Mesa	551.83	70 - 110	2 (PVC)	110.3	95.4	Temp Redi-Flo AR	1	8	100	Active	
OW-05M	East Mesa	551.81	210 - 250	2 (PVC)	250.3	94.4	Temp Redi-Flo AR	2	80	112.5	Active	
OW-05D	East Mesa	552.41	300 - 320	2 (PVC)	350.0	95.0	Temp Redi-Flo AR	3	131	113.2	Active	

Notes:

AMSL above mean sea level
 BGS below ground surface
 BTOC below top of polyvinyl chloride (PVC) casing
 Redi-Flo AR adjustable-rate electric submersible pump
 Temp temporary
 gpm gallons per minute

Depth to water for each well was collected on May 2, 2012.
 All wells were purged and sampled using 3 well-volume method.

TABLE 2-1

Chromium Results for Groundwater Samples, Second Half 2012
*Combined CMP Semiannual Groundwater Monitoring Report, Second Half 2012, and
 PAR, Interim Measures No. 3, Injection Well Field
 PG&E Topock Compressor Station, Needles, California*

Method:		E218.6	E200.8
Location ID	Sample Date	Hexavalent Chromium (µg/L)	Chromium (µg/L)
CW-01M	10/16/2012	1.50	1.30
CW-01D	10/16/2012	0.46	ND (1.0)
CW-02M	10/15/2012	2.40	2.10
CW-02D	10/15/2012	0.76	ND (1.0)
CW-02D	10/15/2012 (FD)	0.79	ND (1.0)
CW-03M	10/15/2012	6.40	6.50
CW-03D	10/15/2012	0.90	ND (1.0)
CW-04M	10/16/2012	7.20	6.60
CW-04D	10/16/2012	1.10	ND (1.0)
OW-01S	10/16/2012	14.0	14.0
OW-01M	10/18/2012	1.20	ND (1.0)
OW-01D	10/16/2012	0.85	ND (1.0)
OW-02S	10/18/2012	26.8	28.0
OW-02M	10/18/2012	1.20	ND (1.0)
OW-02D	10/18/2012	0.54	ND (1.0)
OW-05S	10/18/2012	17.0	18.0
OW-05M	10/18/2012	0.44	ND (1.0)
OW-05M	10/18/2012 (FD)	0.44	ND (1.0)
OW-05D	10/18/2012	0.38	ND (1.0)

Notes:

FD field duplicate
 ND parameter not detected at the listed reporting limit
 µg/L micrograms per liter

Hexavalent Chromium and Chromium are field filtered.

TABLE 2-2
Metals and Cation Results for Groundwater Samples, Second Half 2012
Combined CMP Semiannual Groundwater Monitoring Report, Second Half 2012, and
PAR, Interim Measures No. 3, Injection Well Field
PG&E Topock Compressor Station, Needles, California

Method:		Dissolved E200.7, E200.8																									
Location ID	Sample Date	Aluminum	Antimony	Arsenic	Barium	Beryllium	Cadmium	Cobalt	Copper	Lead	Manganese µg/L	Mercury	Molybdenum	Nickel	Selenium	Silver	Thallium	Vanadium	Zinc	Boron	Calcium	Iron ^a	Iron ^b	Potassium	Magnesium	Sodium	
CW-01M	10/16/2012	ND (50)	ND (0.5)	1.70	94.0	ND (3.0)	ND (3.0)	ND (3.0)	ND (5.0)	ND (10)	ND (0.5)	ND (0.5)	19.0	ND (5.0)	3.50	3.20	ND (0.5)	3.40	ND (20)	0.923	170	ND (0.02)	ND (0.02)	14.0	13.4	1440	
CW-01D	10/16/2012	ND (50)	ND (0.5)	1.50	27.0	ND (3.0)	ND (3.0)	ND (3.0)	ND (5.0)	ND (10)	ND (0.5)	ND (0.5)	20.0	ND (5.0)	3.50	3.60	ND (0.5)	ND (3.0)	ND (20)	0.918	190	ND (0.02)	ND (0.02)	14.0	17.0	1410	
CW-02M	10/15/2012	ND (50)	ND (0.5)	2.10	71.0	ND (3.0)	ND (3.0)	ND (3.0)	ND (5.0)	ND (10)	ND (0.5)	ND (0.5) J	19.0	ND (5.0)	2.40	ND (3.0)	ND (0.5)	4.20	ND (20)	1.08	143	ND (0.02)	ND (0.02)	13.1	10.6	1470	
CW-02D	10/15/2012	ND (50)	ND (0.5)	3.70	13.0	ND (3.0)	ND (3.0)	ND (3.0)	ND (5.0)	ND (10)	ND (0.5)	ND (0.5) J	12.0	ND (5.0)	3.00	ND (3.0)	ND (0.5)	5.30	ND (20)	0.975	83.1	ND (0.02)	ND (0.02)	11.1	4.39	1660	
CW-02D	10/15/2012 FD	ND (50)	ND (0.5)	3.40	13.0	ND (3.0)	ND (3.0)	ND (3.0)	ND (5.0)	ND (10)	ND (0.5)	ND (0.5) J	11.0	ND (5.0)	3.20	ND (3.0)	ND (0.5)	5.20	ND (20)	0.976	83.4	ND (0.02)	ND (0.02)	12.1	4.38	1580	
CW-03M	10/15/2012	ND (50)	ND (0.5)	1.40	49.0	ND (3.0)	ND (3.0)	ND (3.0)	ND (5.0)	ND (10)	ND (0.5)	ND (0.5) J	24.0	ND (5.0)	1.60	3.80	ND (0.5)	ND (3.0)	ND (20)	1.03	209	ND (0.02)	ND (0.02)	16.2	16.6	1640	
CW-03D	10/15/2012	ND (50)	ND (0.5)	1.70	14.0	ND (3.0)	ND (3.0)	ND (3.0)	ND (5.0)	ND (10)	ND (0.5)	ND (0.5) J	17.0	ND (5.0)	3.30	ND (3.0)	ND (0.5)	ND (3.0)	32.2	1.11	78.2	ND (0.02)	ND (0.02)	12.5	5.74	1570	
CW-04M	10/16/2012	ND (50)	ND (0.5)	2.30	97.0	ND (3.0)	ND (3.0)	ND (3.0)	ND (5.0)	ND (10)	ND (0.5)	ND (0.5)	10.0	ND (5.0)	1.90	3.40	ND (0.5)	4.00	ND (20)	0.845	179	ND (0.02)	ND (0.02)	12.8	14.2	1300	
CW-04D	10/16/2012	ND (50)	ND (0.5)	4.00	20.0	ND (3.0)	ND (3.0)	ND (3.0)	ND (5.0)	ND (10)	ND (0.5)	ND (0.5)	24.0	ND (5.0)	2.70	ND (3.0)	ND (0.5)	4.50	ND (20)	1.11	117	ND (0.02)	ND (0.02)	12.6	7.23	1590	
OW-01S	10/16/2012	---	---	---	---	---	---	---	---	---	---	---	14.0	---	---	---	---	---	---	---	---	---	---	---	---	515	
OW-01M	10/18/2012	ND (50)	ND (0.5)	2.30	78.0	ND (3.0)	ND (3.0)	ND (3.0)	ND (5.0)	ND (10)	ND (0.5)	ND (0.5)	23.0	ND (5.0)	3.30	ND (3.0)	ND (0.5)	3.60	ND (20)	0.823	152	ND (0.02)	ND (0.02)	16.2	20.7	1360	
OW-01D	10/16/2012	ND (50)	ND (0.5)	1.30	34.0	ND (3.0)	ND (3.0)	ND (3.0)	ND (5.0)	ND (10)	ND (0.5)	ND (0.5)	20.0	ND (5.0)	3.50	3.30	ND (0.5)	3.20	ND (20)	0.954	184	0.026	ND (0.02)	13.4	16.5	1440	
OW-02S	10/18/2012	---	---	---	---	---	---	---	---	---	---	---	46.0	---	---	---	---	---	---	---	---	---	---	---	---	298	
OW-02M	10/18/2012	---	---	---	---	---	---	---	---	---	---	---	23.0	---	---	---	---	---	---	---	---	---	---	---	---	1250	
OW-02D	10/18/2012	---	---	---	---	---	---	---	---	---	---	---	21.0	---	---	---	---	---	---	---	---	---	---	---	---	1290	
OW-05S	10/18/2012	---	---	---	---	---	---	---	---	---	---	---	17.0	---	---	---	---	---	---	---	---	---	---	---	---	364	
OW-05M	10/18/2012	---	---	---	---	---	---	---	---	---	---	---	21.0	---	---	---	---	---	---	---	---	---	---	---	---	1330	
OW-05M	10/18/2012 FD	---	---	---	---	---	---	---	---	---	---	---	21.0	---	---	---	---	---	---	---	---	---	---	---	---	1260	
OW-05D	10/18/2012	---	---	---	---	---	---	---	---	---	---	---	22.0	---	---	---	---	---	---	---	---	---	---	---	---	1350	

NOTES:
FD field duplicate
ND parameter not detected at the listed reporting limit
mg/L milligrams per liter
µg/L micrograms per liter
--- data not collected or available
J concentration estimated by laboratory or data validation

^a Total Iron
^b Dissolved Iron

TABLE 2-3
Other Inorganics Results for Groundwater Samples, Second Half 2012
Combined CMP Semiannual Groundwater Monitoring Report, Second Half 2012, and
PAR, Interim Measures No. 3, Injection Well Field
PG&E Topock Compressor Station, Needles, California

Method:		E120.1	Field	SM2540C	SM2130B	E300.0	E300.0	E300.0	E353.3	SM2320B	SM4500NH3D
Location ID	Sample Date	Specific Conductance (µmhos/cm)	pH (pH units)	Total Dissolved Solids (mg/L)	Turbidity (NTU)	Chloride (mg/L)	Fluoride (mg/L)	Sulfate (mg/L)	Nitrate/Nitrite as Nitrogen (mg/L)	Alkalinity, total as CaCo3 (mg/L)	Ammonia as Nitrogen (mg/L)
CW-01M	10/16/2012	7190	7.8	4440	0.142 J	2130	2.01	492	2.86	58.0	ND (0.5)
CW-01D	10/16/2012	7180	7.8	4270	ND (0.1) J	2120	2.46	496	2.69	53.0	ND (0.5)
CW-02M	10/15/2012	7250	7.9	4000	0.136	2080	2.80	479	2.78 J	49.0	ND (0.5)
CW-02D	10/15/2012	7420	8.1	4100	ND (0.1)	2240	2.92	503	2.80 J	61.0	ND (0.5)
CW-02D	10/15/2012 (FD)	7470	FD	4180	ND (0.1)	2120	2.90	502	2.79 J	62.0	ND (0.5)
CW-03M	10/15/2012	8440	7.8	4600	ND (0.1)	2530	2.88	458	1.76 J	46.0	ND (0.5)
CW-03D	10/15/2012	7440	8.1	4190	ND (0.1)	2120	4.37	499	2.95 J	59.0	ND (0.5)
CW-04M	10/16/2012	6720	7.8	4170	0.120 J	1970	1.86	419	2.33	51.0	ND (0.5)
CW-04D	10/16/2012	7620	8.0	4430	0.127 J	2200	3.46	505	2.63	52.0	ND (0.5)
OW-01S	10/16/2012	4100	7.6	2690	0.487 J	1160	2.34	258	3.20	---	---
OW-01M	10/18/2012	7070	7.6	4340	0.101	2110	2.56	480	2.78	45.0	ND (0.5)
OW-01D	10/16/2012	7200	7.8	4510	0.336 J	2090	2.34	489	2.71	56.0	ND (0.5)
OW-02S	10/18/2012	1610	8.1	1030	0.419	378	5.06	98.3	3.95	---	---
OW-02M	10/18/2012	7150	7.9	4360	ND (0.1)	2060	2.58	482	2.73	---	---
OW-02D	10/18/2012	7150	8.0	4300	ND (0.1)	2090	2.15	480	2.84	---	---
OW-05S	10/18/2012	2770	7.7	1800	0.290	1140	1.85	141	2.62	---	---
OW-05M	10/18/2012	7170	7.8	4430	0.145	2040	2.42	488	2.74	---	---
OW-05M	10/18/2012 (FD)	7170	FD	4440	ND (0.1)	2070	2.27	488	2.78	---	---
OW-05D	10/18/2012	7120	8.0	4200	ND (0.1)	2050	2.29	479	2.79	---	---

NOTES:
ND parameter not detected at the listed reporting limit
FD field duplicate
µmhos/cm micro-mhos per centimeter
NTU Nephelometric Turbidity Unit
mg/L milligrams per liter
--- data not collected or available
J concentration estimated by laboratory or data validation

TABLE 3-1

Injection Rates and Volumes

*Combined CMP Semiannual Groundwater Monitoring Report, Second Half 2012, and
PAR, Interim Measures No. 3, Injection Well Field, PG&E Topock Compressor Station, Needles, California*

Date	Average Injection Rate (gpm)	Monthly Total (gallons)	Cumulative Total (gallons)	Primary Injection Well in Service
August-05	58.8	2,626,360	2,626,360	IW-2
September-05	67.2	2,904,094	5,530,454	IW-2
October-05	80.6	3,597,275	9,127,729	IW-2
November-05	74.5	3,216,979	12,344,708	IW-2
December-05	103.5	4,622,252	16,966,960	IW-2
January-06	113.5	5,067,560	22,034,520	IW-2
February-06	121.4	4,896,522	26,931,042	IW-2
March-06	121.1	5,405,223	32,336,265	IW-2
April-06	116.7	5,039,655	37,375,920	IW-2
May-06	118.9	5,305,831	42,681,751	IW-2
June-06	116.9	5,050,593	47,732,344	IW-2
July-06	119.2	5,322,857	53,055,201	IW-2
August-06	121.6	5,429,628	58,484,829	IW-3
September-06	121	5,229,047	63,713,876	IW-3
October-06	122.6	5,473,384	69,187,260	IW-3
November-06	122.1	5,275,516	74,462,776	IW-3
December-06	124.1	5,542,012	80,004,788	IW-3
January-07	123.5	5,510,915	85,515,703	IW-3
February-07	126	5,079,402	90,595,105	IW-3
March-07	123.8	5,525,669	96,120,774	IW-2
April-07	96.5	4,169,396	100,290,170	IW-3
May-07	126.8	5,658,656	105,948,826	IW-3
June-07	127.3	5,499,332	111,448,158	IW-3
July-07	122.1	5,448,764	116,896,922	IW-2
August-07	125.8	5,614,418	122,511,340	IW-3
September-07	128.1	5,531,784	128,043,124	IW-3
October-07	128.1	5,717,776	133,760,900	IW-3
November-07	124.1	5,361,317	139,122,217	IW-3
December-07	124.6	5,560,689	144,682,906	IW-3
January-08	123.1	5,492,958	150,175,864	IW-3
February-08	126.5	5,283,674	155,459,538	IW-3
March-08	124.3	5,550,583	161,010,121	IW-3
April-08	93.5	4,040,973	165,051,094	IW-3

TABLE 3-1

Injection Rates and Volumes

*Combined CMP Semiannual Groundwater Monitoring Report, Second Half 2012, and
PAR, Interim Measures No. 3, Injection Well Field, PG&E Topock Compressor Station, Needles, California*

Date	Average Injection Rate (gpm)	Monthly Total (gallons)	Cumulative Total (gallons)	Primary Injection Well in Service
May-08	124.2	5,542,847	170,593,941	IW-3
June-08	128.6	5,553,857	176,147,798	IW-3
July-08	127.4	5,685,501	181,833,299	IW-3
August-08	127.7	5,702,022	187,535,321	IW-2
September-08	120.2	5,193,691	192,729,012	IW-3
October-08	125.7	5,613,447	198,342,459	IW-2
November-08	128.4	5,548,109	203,890,568	IW-3
December-08	124.2	5,542,252	209,432,820	IW-3
January-09	123.6	5,517,257	214,950,079	IW-3
February-09	131.5	5,303,429	220,253,508	IW-3
March-09	125.9	5,618,103	225,871,612	IW-3
April-09	101.2	4,372,758	230,244,370	IW-3
May-09	122.8	5,482,349	235,726,719	IW-3
June-09	125.5	5,420,397	241,147,116	IW-2
July-09	83.4	3,725,059	244,872,175	IW-3
August-09	127.3	5,680,943	250,553,118	IW-3
September-09	93.7	4,046,699	254,599,817	IW-2
October-09	131.1	5,853,536	260,453,352	IW-2
November-09	130.5	5,639,433	266,092,786	IW-2
December-09	120.5	5,377,155	271,469,941	IW-3
January-10	126.3	5,637,472	277,107,412	IW-3
February-10	124.8	5,031,840	282,139,252	IW-3
March-10	126.0	5,625,524	287,764,777	IW-3
April-10	112.0	4,839,690	292,604,467	IW-3
May-10	131.8	5,882,290	298,486,757	IW-3
June-10	123.9	5,354,115	303,840,872	IW-3
July-10	120.8	5,390,898	309,231,770	IW-2
August-10	118.8	5,302,122	314,533,892	IW-3
September-10	131.2	5,667,255	320,201,147	IW-3
October-10	126.8	5,658,794	325,859,940	IW-2
November-10	130.3	5,629,913	331,489,853	IW-2
December-10	129.4	5,774,967	337,264,820	IW-3
January-11	126.5	5,647,947	342,912,767	IW-3

TABLE 3-1

Injection Rates and Volumes

*Combined CMP Semiannual Groundwater Monitoring Report, Second Half 2012, and
PAR, Interim Measures No. 3, Injection Well Field, PG&E Topock Compressor Station, Needles, California*

Date	Average Injection Rate (gpm)	Monthly Total (gallons)	Cumulative Total (gallons)	Primary Injection Well in Service
February-11	129.2	5,208,707	348,121,474	IW-2
March-11	128.8	5,747,411	353,868,885	IW-3
April-11	113.5	4,903,434	358,772,319	IW-2
May-11	130.5	5,825,578	364,597,897	IW-2
June-11	121.2	5,236,904	369,834,802	IW-2
July-11	125.0	5,580,178	375,414,979	IW-2
August-11	114.7	5,120,270	380,535,249	IW-3
September-11	130.0	5,614,683	386,149,933	IW-3
October-11	128.8	5,748,120	391,898,052	IW-3
November-11	129.7	5,603,492	397,501,544	IW-2
December-11	129.6	5,784,322	403,285,866	IW-2
January-12	130.8	5,837,548	409,123,414	IW-3
February-12	130.1	5,432,832	414,556,246	IW-2
March-12	128.8	5,747,601	420,303,847	IW-2
April-12	115.2	4,975,734	425,279,582	IW-3
May-12	133.3	5,951,440	431,231,022	IW-3
June-12	134.2	5,795,380	437,026,402	IW-3
July-12	133.4	5,954,462	442,980,863	IW-3
August-12	114.0	5,091,104	448,071,968	IW-2
September-12	130.9	5,654,269	453,726,237	IW-2
October-12	132.1	5,896,425	459,622,662	IW-3
November-12	131.6	5,686,609	465,309,270	IW-3
December-12	130.9	5,841,981	471,151,251	IW-3

Source: The injection flow rate is measured by flow meters mounted in the piping leading into IW-02 and IW-03. Data are logged in the IM No. 3 control system, from which this information is reported.

TABLE 3-2

Manual Water Level Measurements and Elevations, Second Half 2012
 Combined CMP Semiannual Groundwater Monitoring Report, Second Half 2012, and
 PAR, Interim Measures No. 3, Injection Well Field
 PG&E Topock Compressor Station, Needles, California

Location ID	Well Depth (feet BTOC)	Measuring Point Elevation (feet AMSL)	Monitoring Date & Time		Water Level Measurement (feet BTOC)	Salinity (%)	Groundwater/Water Elevation Adjusted for Salinity (feet AMSL)
CW-01M	190.0	566.07	17-Jul-12	7:57 AM	108.21	0.49	457.80
			23-Oct-12	9:43 AM	109.35	0.49	456.66
CW-01D	300.2	566.46	17-Jul-12	7:59 AM	108.37	0.48	457.94
			23-Oct-12	9:46 AM	109.50	0.48	456.81
CW-02M	208.3	549.45	17-Jul-12	8:03 AM	91.85	0.49	457.50
			23-Oct-12	9:35 AM	93.07	0.49	456.29
CW-02D	355.0	549.43	17-Jul-12	8:04 AM	91.47	0.48	457.69
			23-Oct-12	9:38 AM	92.60	0.48	456.56
CW-03M	222.0	534.10	17-Jul-12	8:08 AM	76.79	0.60	457.31
			23-Oct-12	9:32 AM	77.97	0.60	456.13
CW-03D	340.0	534.14	17-Jul-12	8:10 AM	76.20	0.50	457.69
			23-Oct-12	9:29 AM	77.29	0.50	456.60
CW-04M	169.8	518.55	17-Jul-12	8:16 AM	60.63	0.46	457.83
			23-Oct-12	9:55 AM	61.77	0.46	456.69
CW-04D	303.0	518.55	17-Jul-12	8:18 AM	60.53	0.52	457.85
			23-Oct-12	9:53 AM	61.63	0.52	456.75
OW-01S	113.5	550.21	17-Jul-12	8:23 AM	92.72	0.28	457.45
			23-Oct-12	10:01 AM	93.93	0.28	456.24
OW-01M	185.8	550.36	17-Jul-12	8:25 AM	92.52	0.47	457.75
			23-Oct-12	10:04 AM	93.67	0.47	456.60
OW-01D	277.3	550.36	17-Jul-12	8:26 AM	92.30	0.48	457.89
			23-Oct-12	10:06 AM	93.40	0.48	456.79
OW-02S	103.6	548.88	17-Jul-12	8:29 AM	91.35	0.12	457.49
			23-Oct-12	10:09 AM	92.60	0.12	456.25
OW-02M	210.3	548.52	17-Jul-12	8:30 AM	90.66	0.48	457.74
			23-Oct-12	10:11 AM	91.81	0.48	456.59
OW-02D	340.0	549.01	17-Jul-12	8:32 AM	90.74	0.48	458.01
			23-Oct-12	10:14 AM	91.78	0.48	456.97
OW-05S	110.3	551.83	17-Jul-12	8:36 AM	94.20	0.17	457.59
			23-Oct-12	10:17 AM	95.37	0.17	456.42
OW-05M	250.3	551.81	17-Jul-12	8:38 AM	93.27	0.48	458.48
			23-Oct-12	10:19 AM	94.36	0.48	457.39
OW-05D	350.0	552.41	17-Jul-12	8:40 AM	93.95	0.52	458.45
			23-Oct-12	10:22 AM	94.98	0.52	457.43

TABLE 3-2

Manual Water Level Measurements and Elevations, Second Half 2012

Combined CMP Semiannual Groundwater Monitoring Report, Second Half 2012, and

PAR, Interim Measures No. 3, Injection Well Field

PG&E Topock Compressor Station, Needles, California

Notes:

AMSL above mean sea level

BTOC below top of polyvinyl chloride (PVC) casing

% percentage

Salinity used to adjust water level to freshwater equivalent. Salinity values have been averaged in accordance with the Performance Monitoring Program.

TABLE 3-3

Field Parameters and Manual Water Level Measurements for Groundwater Samples, Second Half 2012
 Combined CMP Semiannual Groundwater Monitoring Report, Second Half 2012, and
 PAR, Interim Measures No. 3, Injection Well Field
 PG&E Topock Compressor Station, Needles, California

Location ID	Sampling Date	Specific Conductance (µmhos/cm)	Temperature (°C)	pH	ORP (mV)	Dissolved Oxygen (mg/L)	Turbidity (NTU)	Salinity (%)	Depth To Water (feet BTOC)
CW-01M	10/16/2012	7314	29.7	7.8	66.7	9.3	0.2	0.47	109.07
CW-01D	10/16/2012	7283	28.74	7.8	66.6	7.92	0.2	0.47	109.22
CW-02M	10/15/2012	7302	36.08	7.9	29.8	7.48	0.2	0.47	92.82
CW-02D	10/15/2012	7507	30.51	8.1	37.6	7.28	0.2	0.48	92.38
CW-03M	10/15/2012	8495	30.19	7.8	-1.7	3.43	0.2	0.55	78.60
CW-03D	10/15/2012	7509	30.67	8.1	12.2	7.43	0.2	0.48	77.95
CW-04M	10/16/2012	6823	29.81	7.8	64.7	5.2	0.4	0.44	61.50
CW-04D	10/16/2012	7717	30.48	8.0	80.7	8.61	0.7	0.5	61.32
OW-01S	10/16/2012	4295	29.66	7.6	61.9	8.26	1	0.28	93.46
OW-01M	10/18/2012	7123	28.06	7.6	77.2	8	0.5	0.46	93.55
OW-01D	10/16/2012	7277	27.8	7.8	56.4	7.6	0.9	0.47	93.08
OW-02S	10/18/2012	1716	29.55	8.1	43.2	7.92	1	0.11	92.40
OW-02M	10/18/2012	7154	29.63	7.9	47	7.67	1	0.46	91.66
OW-02D	10/18/2012	7181	29.56	8.0	48.4	6.4	0.2	0.46	91.69
OW-05S	10/18/2012	2954	30.01	7.7	46.6	6.28	2	0.19	95.10
OW-05M	10/18/2012	7183	28.93	7.8	51.2	9.06	1	0.46	94.14
OW-05D	10/18/2012	7138	29.54	8.0	42.9	8.05	2	0.46	94.76

Notes:

µmhos/cm micro-mhos per centimeter
 °C degree centigrade
 ORP oxidation reduction potential
 mV millivolts
 mg/L milligrams per liter
 NTU Nephelometric Turbidity Unit
 % percentage

Salinity is calculated using the specific conductance field measurement, the last measurement before sampling.

TABLE 3-4

Vertical Gradients within the OW and CW Clusters

Combined CMP Semiannual Groundwater Monitoring Report, Second Half 2012, and PAR, Interim Measures No. 3, Injection Well Field, PG&E Topock Compressor Station, Needles, California

Well Pairs	Vertical Gradient (ft/ft) ^a
CW-01D to CW-01M	0.0014
CW-02D to CW-02M	0.0020
CW-03D to CW-03M	0.0048
CW-04D to CW-04M	0.0005
OW-01M to OW-01S	0.0047
OW-01D to OW-01M	0.0021
OW-02M to OW-02S	0.0030
OW-02D to OW-02M	0.0032
OW-05M to OW-05S	0.0069
OW-05D to OW-05M	0.0005

^a Positive value signifies an upward gradient.

Gradients calculated using October 23, 2012 groundwater levels.

TABLE 4-1

Treated Water Quality Compared to OW and CW Pre-injection Water Quality*Combined CMP Semiannual Groundwater Monitoring Report, Second Half 2012, and**PAR, Interim Measures No. 3, Injection Well Field, PG&E Topock Compressor Station, Needles, California*

Location ID	Sample Date	Hexavalent Chromium (µg/L)	Chromium (µg/L)	Fluoride (mg/L)	Dissolved Molybdenum (µg/L)	Nitrate/Nitrite as Nitrogen (mg/L)	Sulfate (mg/L)	TDS (mg/L)
Treated Water	8/29/2005	ND (1.0)	ND (2.1)	1.95	8.3	3.70	450	3620
Treated Water	10/7/2009	ND (0.2)	ND (1.0)	2.39	15.5	2.72	500	4310
Treated Water	10/2/2012	0.21	ND (1.0)	2.10	20.4	3.00	497	4350
OW-01S	7/28/2005	19.4	23.5	2.45	17.2	3.2	114	1320
OW-01M	7/27/2005	16.3	18.9	2.31	27	1.01	311	3450
OW-01D	7/27/2005	ND(1.0)	ND(1.3)	1.14	46.1	0.321	441	6170
OW-02S	7/28/2005	15.3	14.8	3.79	35.6	3.81	126	1090
OW-02M	7/28/2005	5.4	5.7	2.19	32.4	0.735	342	4380
OW-02D	7/28/2005	ND(1.0)	ND(1.2)	0.966	51.2	0.1	616	9550
OW-05S	7/28/2005	23.4	25.6	2.3	17.1	3.55	105	1060
OW-05M	7/28/2005	8.6	8.8	2.74	35.4	0.621	417	5550
OW-05D	7/28/2005	ND(1.0)	ND(1.2)	1.11	57	0.151	480	8970
CW-01M	9/15/2005	18.1	17.8	2.34	21.6	1.11	318	2990
CW-01D	9/15/2005	ND(1.0)	1.6	0.951	32.1	0.972	379	6230
CW-02M	9/15/2005	15.8	15.5	2.3	23.1	0.908	342	3500
CW-02D	9/15/2005	ND(1.0)	1.6	0.982	41.6	0.28	601	8770
CW-03M	9/15/2005	8.8	8.1	2.57	24.2	0.642	464	4740
CW-03D	9/15/2005	ND(1.0)	ND(1.0)	1.4	29.2	0.304	672	9550
CW-04M	9/15/2005	19.2	19	1.5	12.3	1.18	240	3310
CW-04D	9/15/2005	ND(1.0)	ND(1.0)	1.01	26	0.188	534	7470

NOTES:

ND = Not detected at the listed reporting limit.

mg/L = milligrams per liter.

µg/L = micrograms per liter.

Hexavalent chromium samples were analyzed using method 7199 in 2005 and then by method E218.6.

Chromium samples were analyzed using method 6020A for samples collected on 7/28/2005, by method 6010B for samples collected on 9/15/2005, by method 6020B for samples collected on 8/29/2005 and by method E200.8 for all other chromium samples.

Chromium samples of the treated water were unfiltered.

TABLE 4-2

Treated Water Quality Compared to Second Half 2012 Sampling Event Water Quality
*Combined CMP Semiannual Groundwater Monitoring Report, Second Half 2012, and
 PAR, Interim Measures No. 3, Injection Well Field
 PG&E Topock Compressor Station, Needles, California*

Location ID	Sample Date	Hexavalent Chromium (µg/L)	Chromium (µg/L)	Fluoride (mg/L)	Molybdenum (µg/L)	Nitrate/Nitrite as Nitrogen (mg/L)	Sulfate (mg/L)	Total Dissolved Solids (mg/L)
Treated Water	10/5/2010	0.31	ND (1.0)	2.05	17.6	2.89	497	4190
Treated Water	10/4/2011	ND (1.0)	ND (1.0)	2.09	18.6	2.92	501	4260
Treated Water	10/2/2012	0.21	ND (1.0)	2.10	20.4	3.00	497	4350
CW-01M	10/16/2012	1.50	1.30	2.01	19.0	2.86	492	4440
CW-01D	10/16/2012	0.46	ND (1.0)	2.46	20.0	2.69	496	4270
CW-02M	10/15/2012	2.40	2.10	2.80	19.0	2.78 J	479	4000
CW-02D	10/15/2012 (FD)	0.79	ND (1.0)	2.90	11.0	2.79 J	502	4180
CW-02D	10/15/2012	0.76	ND (1.0)	2.92	12.0	2.80 J	503	4100
CW-03M	10/15/2012	6.40	6.50	2.88	24.0	1.76 J	458	4600
CW-03D	10/15/2012	0.90	ND (1.0)	4.37	17.0	2.95 J	499	4190
CW-04M	10/16/2012	7.20	6.60	1.86	10.0	2.33	419	4170
CW-04D	10/16/2012	1.10	ND (1.0)	3.46	24.0	2.63	505	4430
OW-01S	10/16/2012	14.0	14.0	2.34	14.0	3.20	258	2690
OW-01M	10/18/2012	1.20	ND (1.0)	2.56	23.0	2.78	480	4340
OW-01D	10/16/2012	0.85	ND (1.0)	2.34	20.0	2.71	489	4510
OW-02S	10/18/2012	26.8	28.0	5.06	46.0	3.95	98.3	1030
OW-02M	10/18/2012	1.20	ND (1.0)	2.58	23.0	2.73	482	4360
OW-02D	10/18/2012	0.54	ND (1.0)	2.15	21.0	2.84	480	4300
OW-05S	10/18/2012	17.0	18.0	1.85	17.0	2.62	141	1800
OW-05M	10/18/2012 (FD)	0.44	ND (1.0)	2.27	21.0	2.78	488	4440
OW-05M	10/18/2012	0.44	ND (1.0)	2.42	21.0	2.74	488	4430
OW-05D	10/18/2012	0.38	ND (1.0)	2.29	22.0	2.79	479	4200

Notes:

FD field duplicate
 ND parameter not detected at the listed reporting limit
 mg/L milligrams per liter
 µg/L micrograms per liter
 --- not sampled or required for this event

All hexavalent chromium samples were analyzed with method E218.6

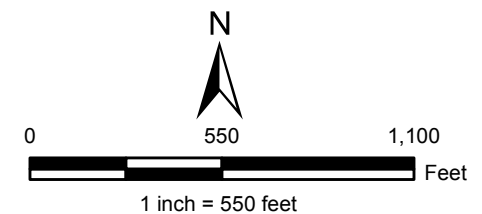
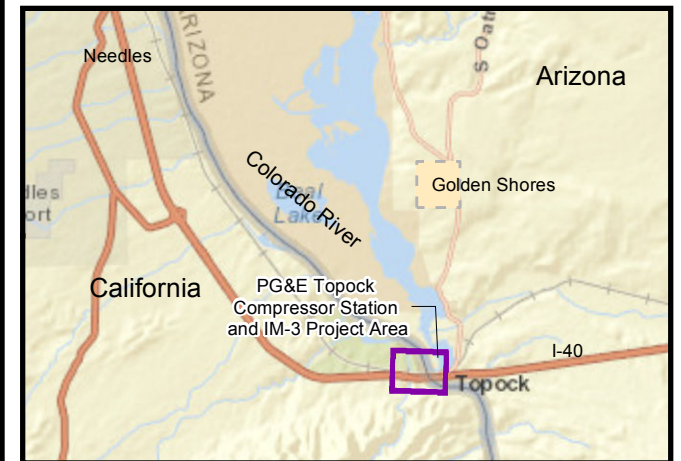
All chromium and molybdenum samples were analyzed with methods E200.8 and E200.7, respectively. Chromium and molybdenum samples were field filtered, except for the treated water.

Fluoride and Sulfate samples were analyzed with method E300.0.

All nitrate/nitrite as nitrogen samples were analyzed with method E353.2, except for treated water which used method E300.

All total dissolved solid samples were analyzed with method SM2540C.

Figures

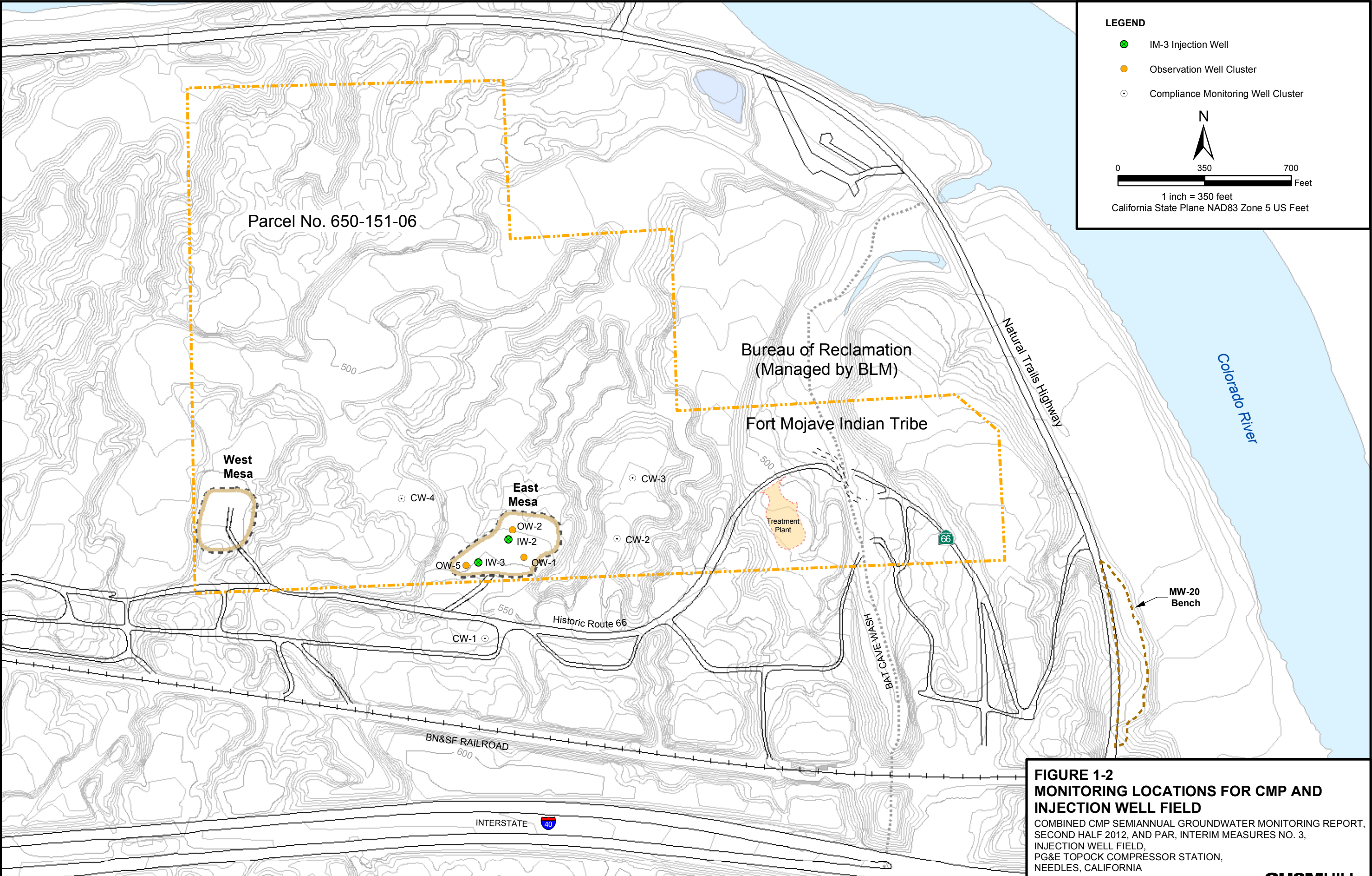


LEGEND

- Property Line
- Existing IM Extraction Well
- Existing IM Injection Well
- Influent Treatment Facility Pipeline (below ground)
- Effluent Treatment Facility Pipeline (above ground)

Notes: Location map shows Interim Measures No.3 (IM-3) facilities as of January 2006. Aerial photography taken November 2011.

FIGURE 1-1
SITE LOCATION AND INTERIM
MEASURES NO. 3 TREATMENT SYSTEM
 COMBINED CMP SEMIANNUAL GROUNDWATER
 MONITORING REPORT, SECOND HALF 2012, AND PAR,
 INTERIM MEASURES NO. 3, INJECTION WELL FIELD,
 PG&E TOPOCK COMPRESSOR STATION, NEEDLES, CALIFORNIA



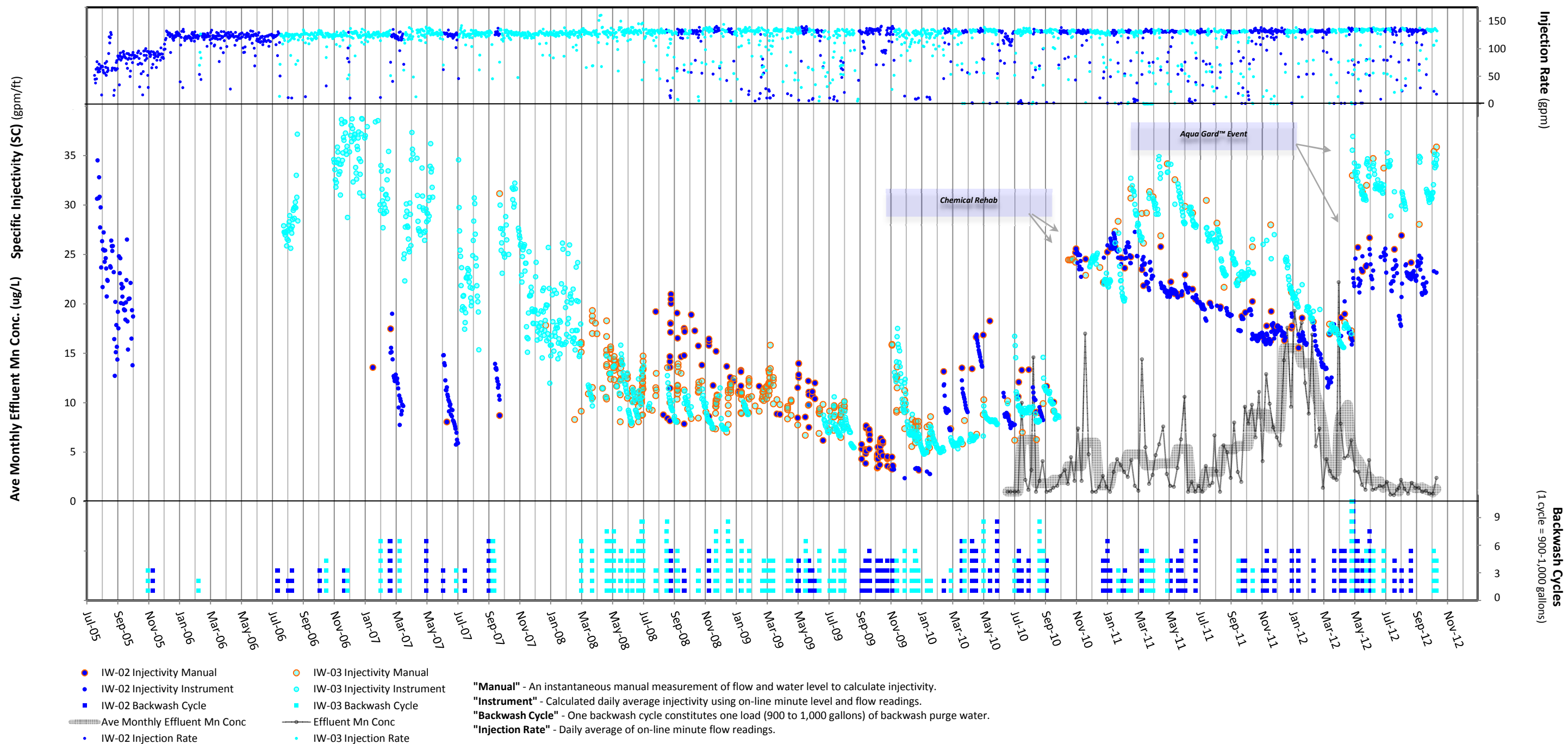
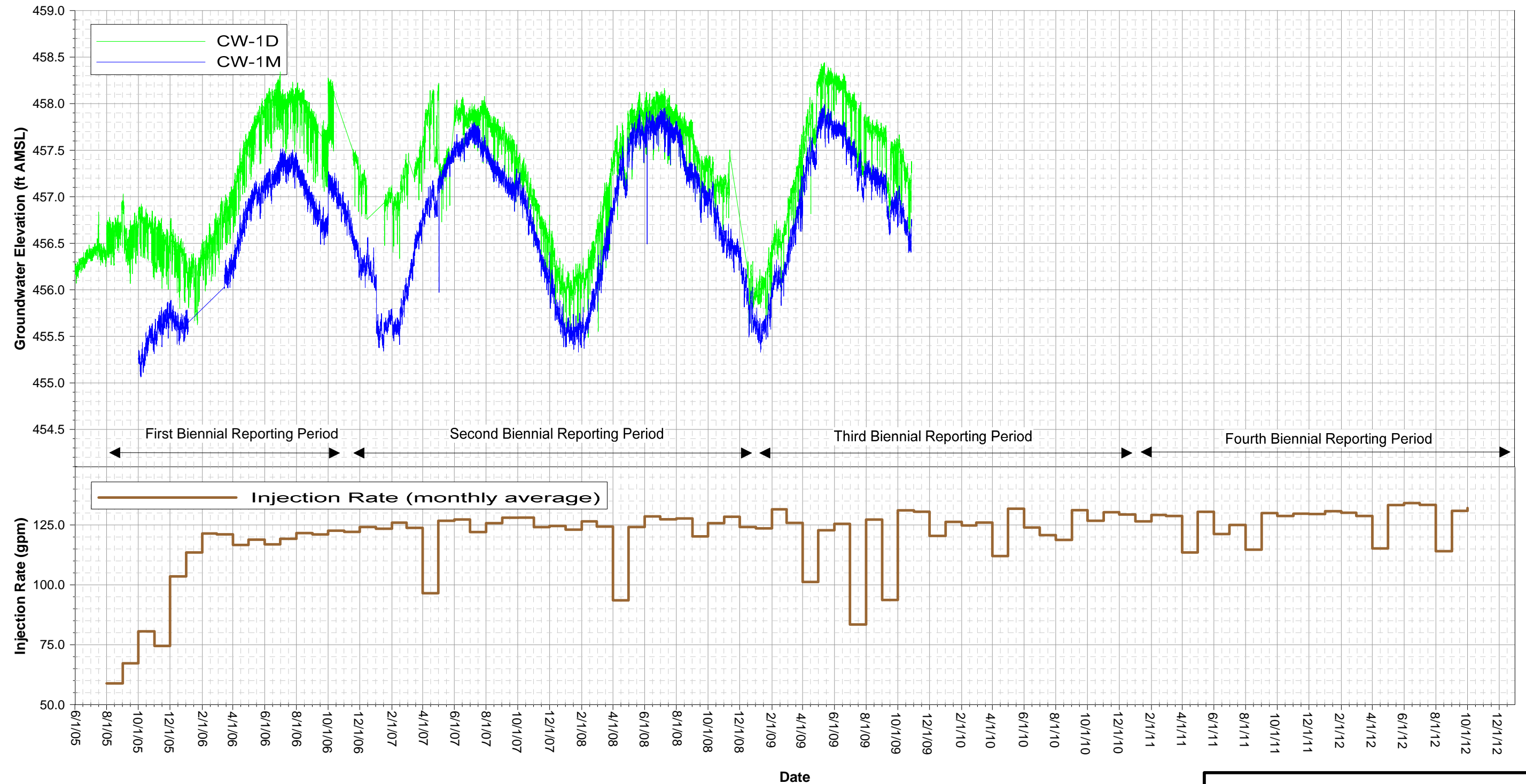


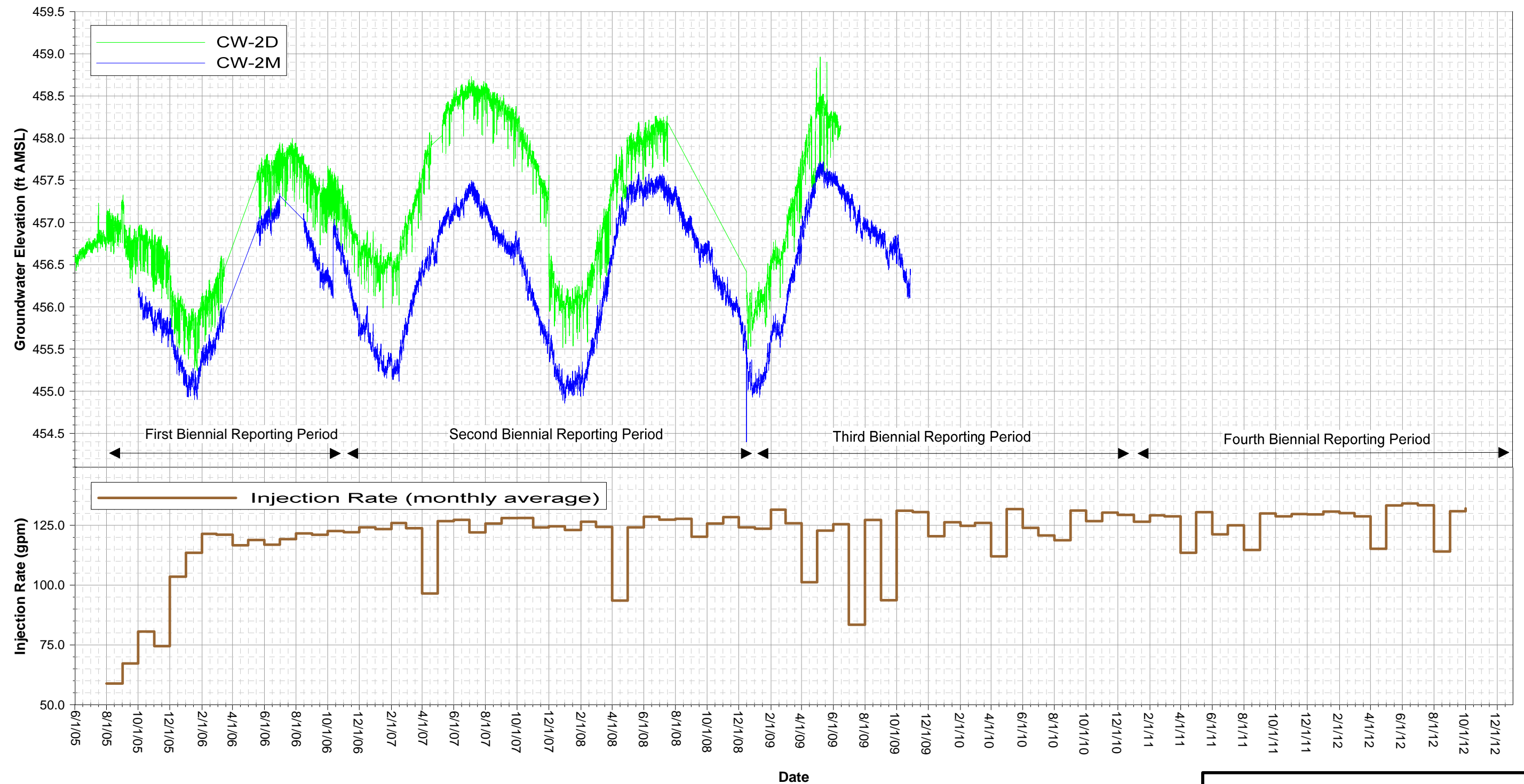
FIGURE 3-1
IM-3 OPERATION DATA
INJECTION WELL PERFORMANCE AUGUST 2005 –
DECEMBER 2012
 COMBINED CMP SEMIANNUAL GROUNDWATER MONITORING REPORT, SECOND
 HALF 2012, AND PAR, INTERIM MEASURES NO. 3, INJECTION WELL FIELD,
 PG&E TOPOCK COMPRESSOR STATION, NEEDLES, CALIFORNIA



Note: Data subject to review.
See Table 1-1 and Table 3-1 for primary injection wells in service for the reporting period.

On September 3, 2009, DTSC approved modifications to the CMP Monitoring and Reporting Program that no longer required continuous groundwater elevation measurements at CW-1D and CW-1M.

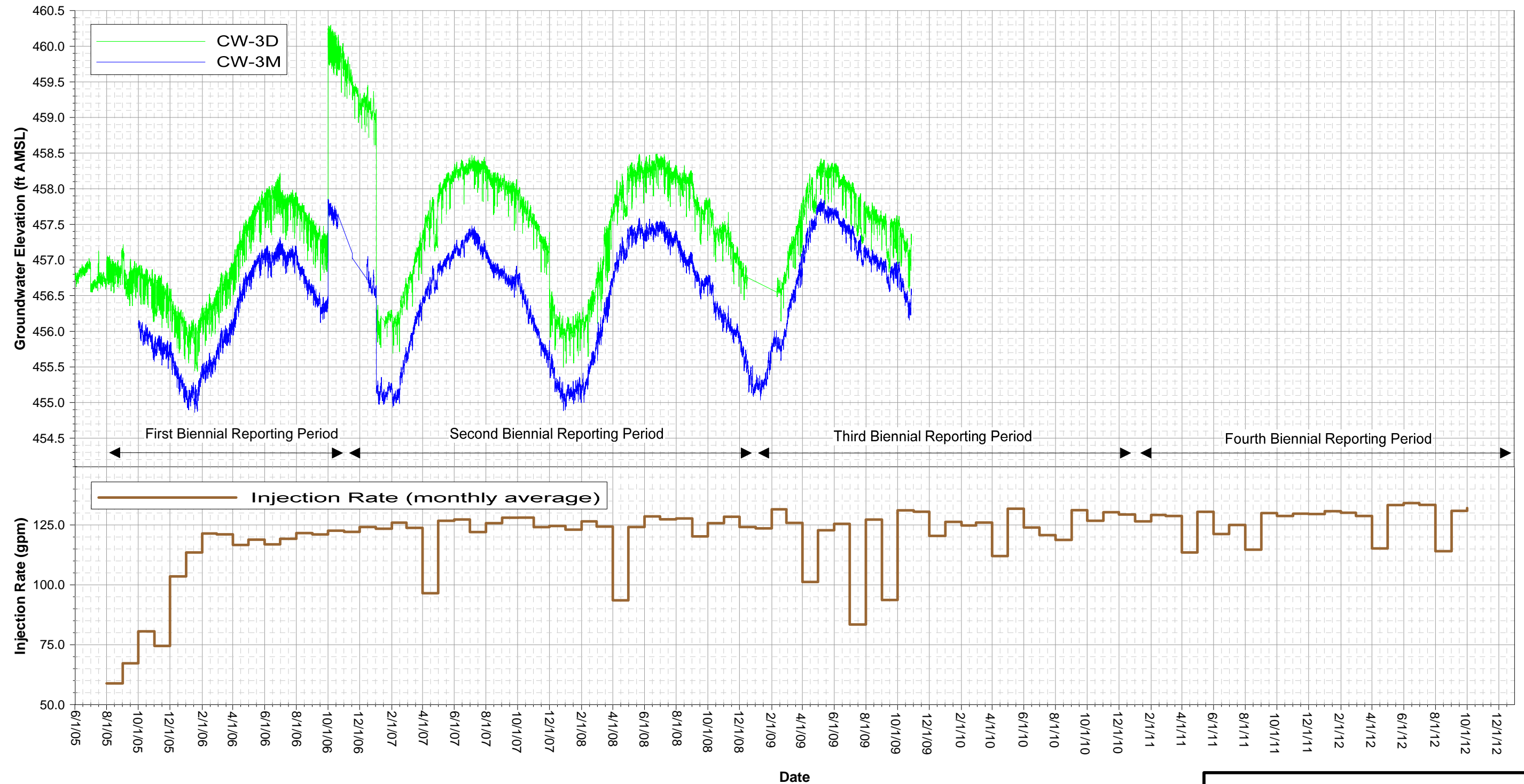
FIGURE 3-2A
CW-1 HYDROGRAPHS AND IW
INJECTION RATE
COMBINED CMP SEMIANNUAL GROUNDWATER
MONITORING REPORT, SECOND HALF 2012, AND
PAR, INTERIM MEASURES NO. 3, INJECTION WELL
FIELD, PG&E TOPOCK COMPRESSOR STATION,
NEEDLES, CALIFORNIA



Note: Data subject to review.
See Table 1-1 and Table 3-1 for primary injection wells in service for the reporting period.

On September 3, 2009, DTSC approved modifications to the CMP Monitoring and Reporting Program that no longer required continuous groundwater elevation measurements at CW-2D and CW-2M.

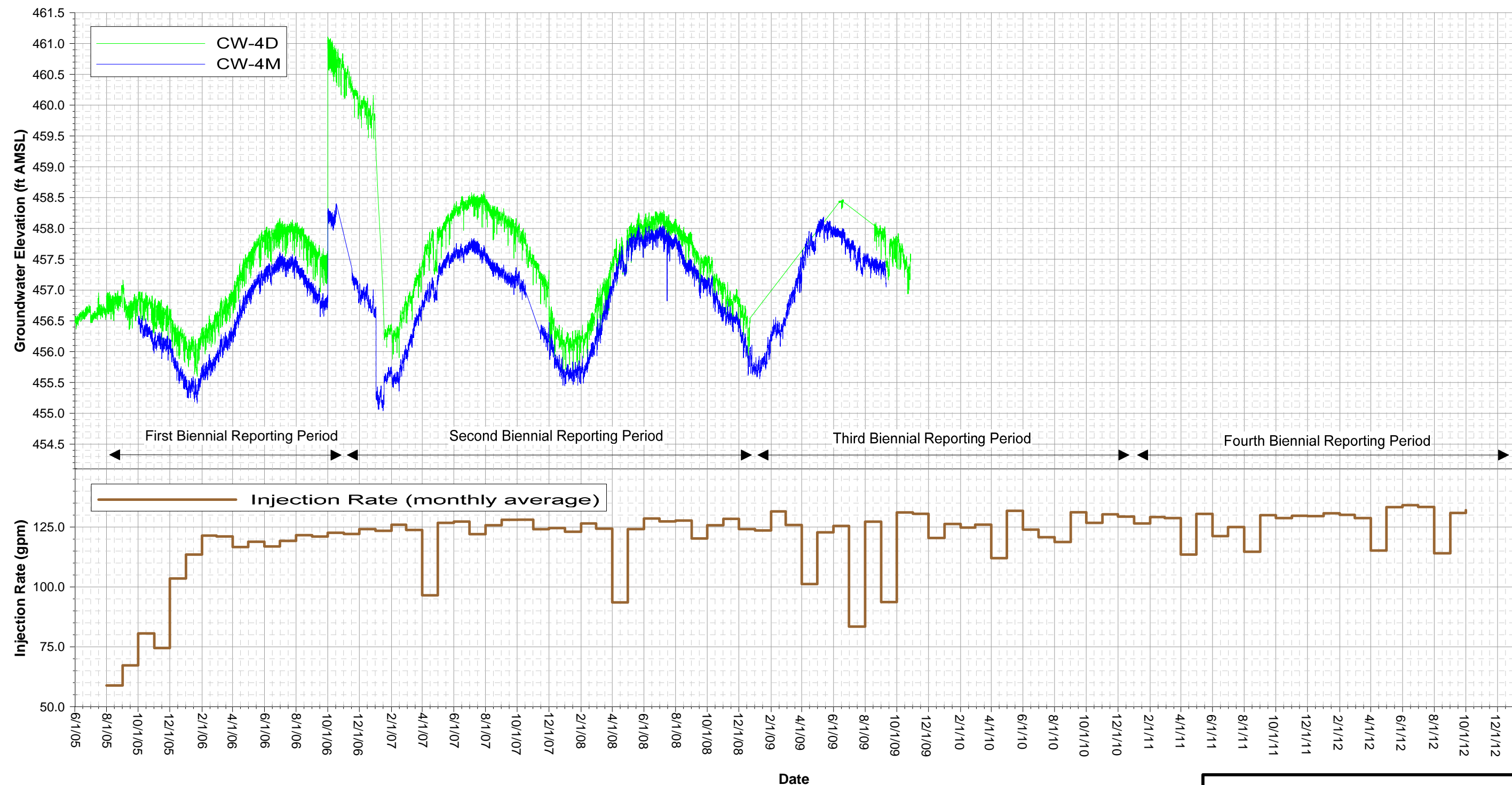
FIGURE 3-2B
CW-2 HYDROGRAPHS AND IW
INJECTION RATE
 COMBINED CMP SEMIANNUAL GROUNDWATER
 MONITORING REPORT, SECOND HALF 2012, AND
 PAR, INTERIM MEASURES NO. 3, INJECTION WELL
 FIELD, PG&E TOPOCK COMPRESSOR STATION,
 NEEDLES, CALIFORNIA



Note: Data subject to review.
See Table 1-1 and Table 3-1 for primary injection wells in service for the reporting period.

On September 3, 2009, DTSC approved modifications to the CMP Monitoring and Reporting Program that no longer required continuous groundwater elevation measurements at CW-3D and CW-3M.

FIGURE 3-2C
CW-3 HYDROGRAPHS AND IW
INJECTION RATE
COMBINED CMP SEMIANNUAL GROUNDWATER
MONITORING REPORT, SECOND HALF 2012, AND
PAR, INTERIM MEASURES NO. 3, INJECTION WELL
FIELD, PG&E TOPOCK COMPRESSOR STATION,
NEEDLES, CALIFORNIA

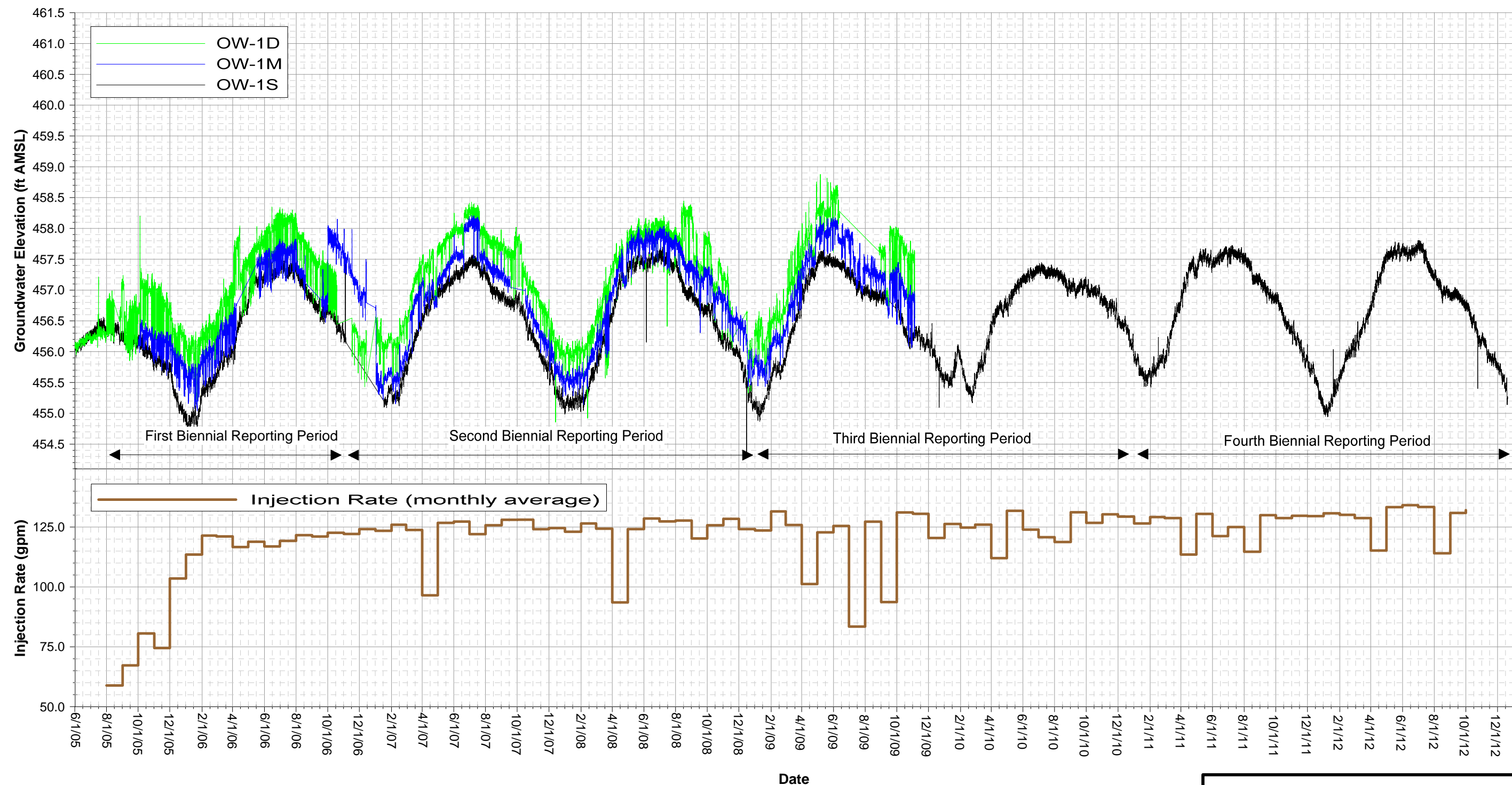


Note: Data subject to review.
See Table 1-1 and Table 3-1 for primary injection wells in service for the reporting period.

On September 3, 2009, DTSC approved modifications to the CMP Monitoring and Reporting Program that no longer required continuous groundwater elevation measurements at CW-4D and CW-4M.

**FIGURE 3-2D
CW-4 HYDROGRAPHS AND IW
INJECTION RATE**

COMBINED CMP SEMIANNUAL GROUNDWATER MONITORING REPORT, SECOND HALF 2012, AND PAR, INTERIM MEASURES NO. 3, INJECTION WELL FIELD, PG&E TOPOCK COMPRESSOR STATION, NEEDLES, CALIFORNIA

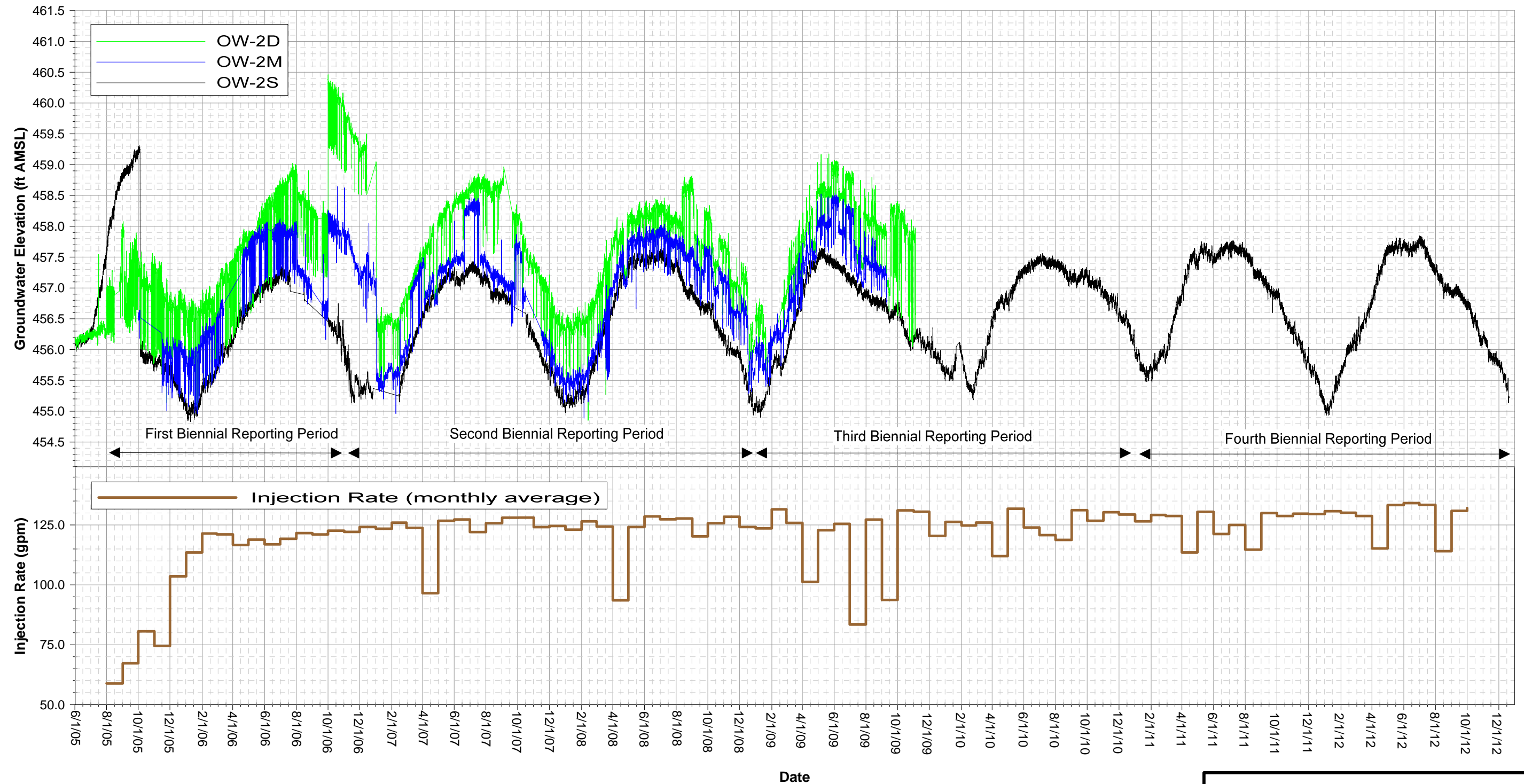


Note: Data subject to review.
See Table 1-1 and Table 3-1 for primary injection wells in service for the reporting period.

On September 3, 2009, DTSC approved modifications to the CMP Monitoring and Reporting Program that no longer required continuous groundwater elevation measurements at OW-1D and OW-1M.

**FIGURE 3-2E
OW-1 HYDROGRAPHS AND IW
INJECTION RATE**

COMBINED CMP SEMIANNUAL GROUNDWATER
MONITORING REPORT, SECOND HALF 2012, AND
PAR, INTERIM MEASURES NO. 3, INJECTION WELL
FIELD, PG&E TOPOCK COMPRESSOR STATION,
NEEDLES, CALIFORNIA

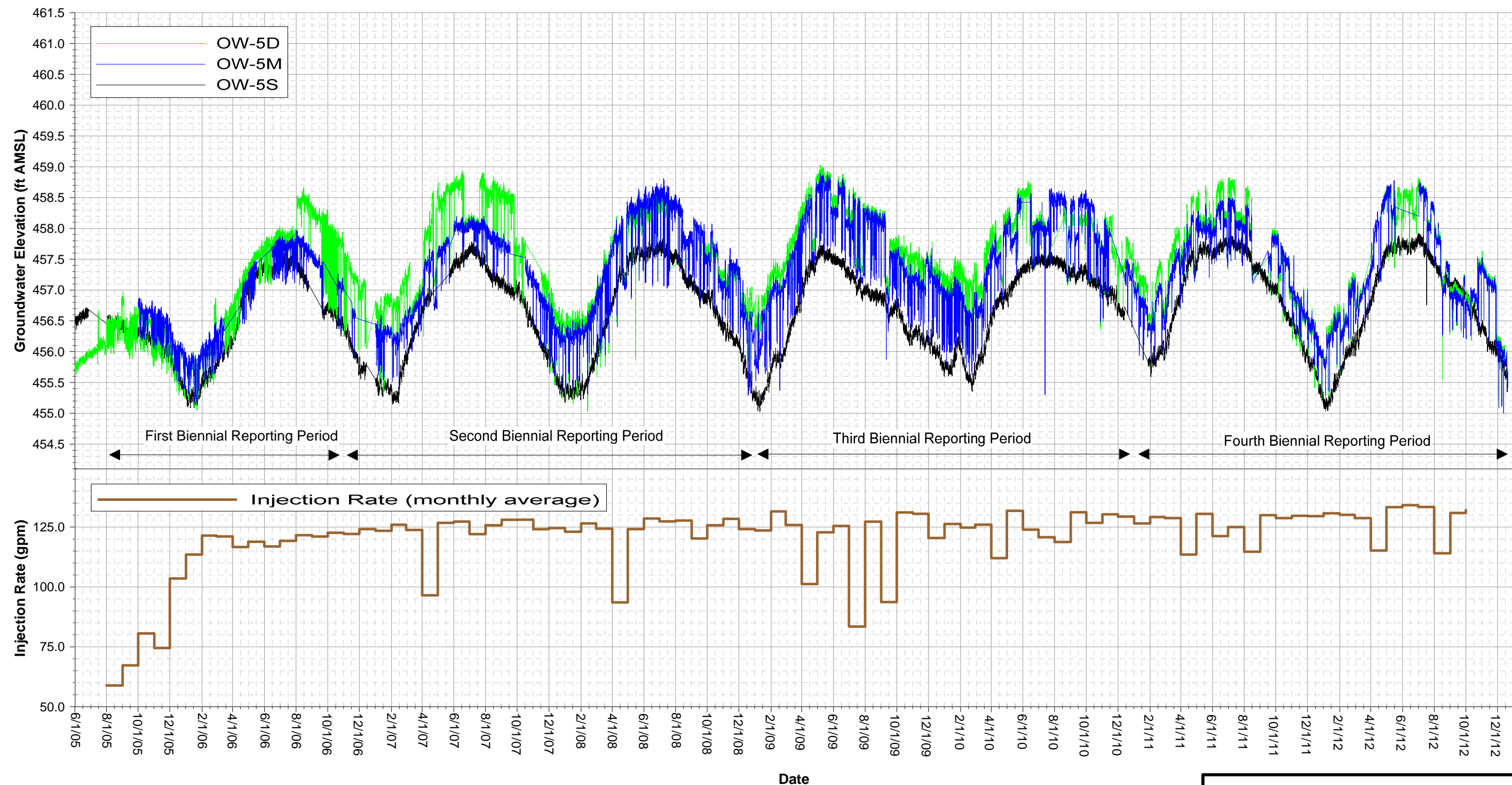


Note: Data subject to review.
See Table 1-1 and Table 3-1 for primary injection wells in service for the reporting period.

On September 3, 2009, DTSC approved modifications to the CMP Monitoring and Reporting Program that no longer required continuous groundwater elevation measurements at OW-2D and OW-2M.

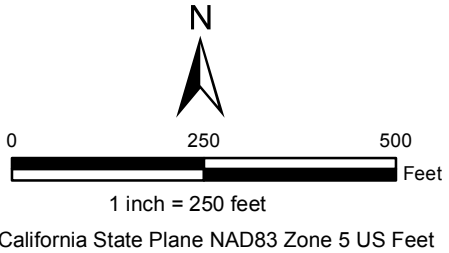
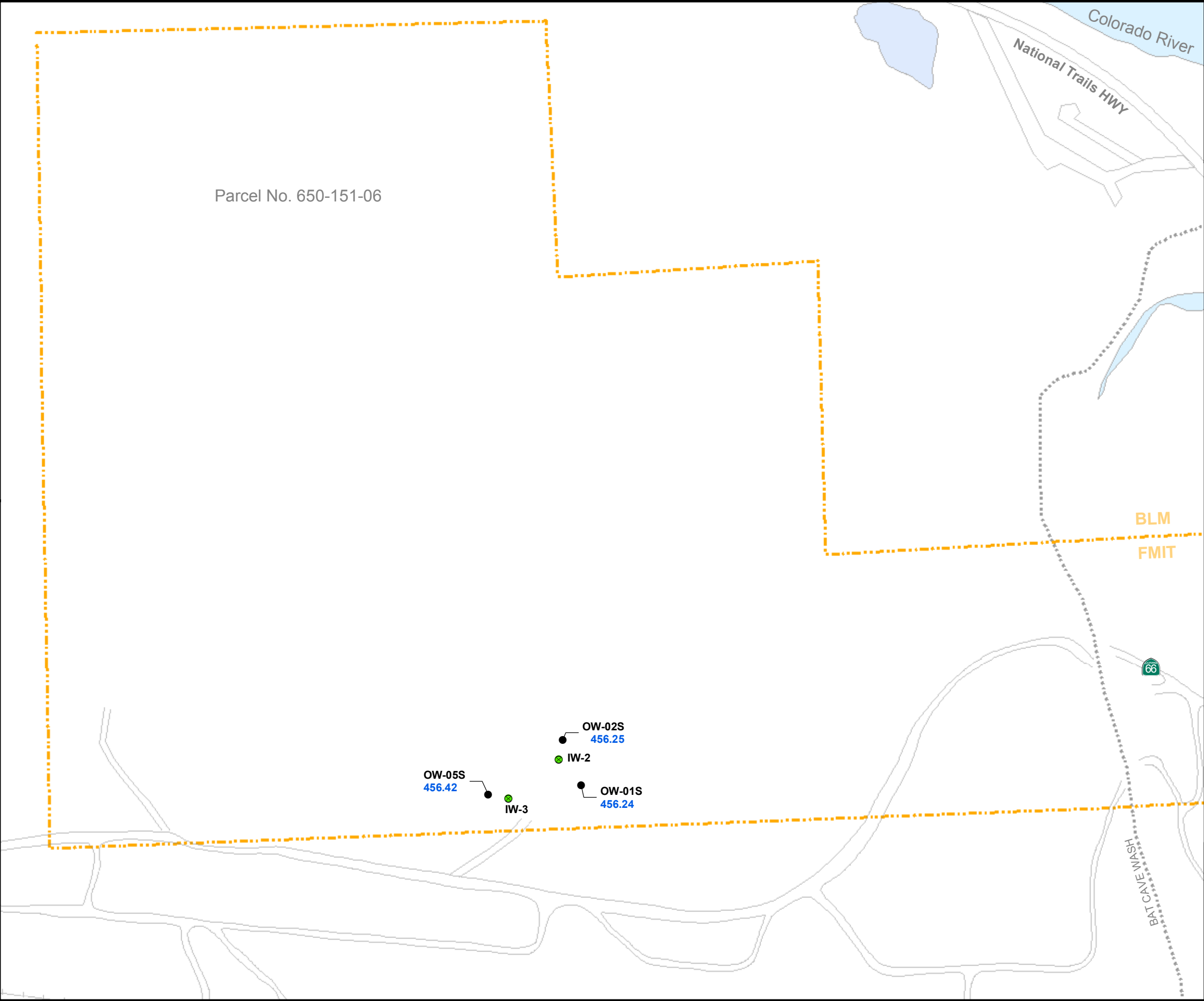
**FIGURE 3-2F
OW-2 HYDROGRAPHS AND IW
INJECTION RATE**

COMBINED CMP SEMIANNUAL GROUNDWATER MONITORING REPORT, SECOND HALF 2012, AND PAR, INTERIM MEASURES NO. 3, INJECTION WELL FIELD, PG&E TOPOCK COMPRESSOR STATION, NEEDLES, CALIFORNIA



Note: Data subject to review.
 See Table 1-1 and Table 3-1 for primary injection wells in service for the reporting period.
 OW-5M Data unavailable from May 17, 2012 through July 2, 2012 due to transducer malfunction.

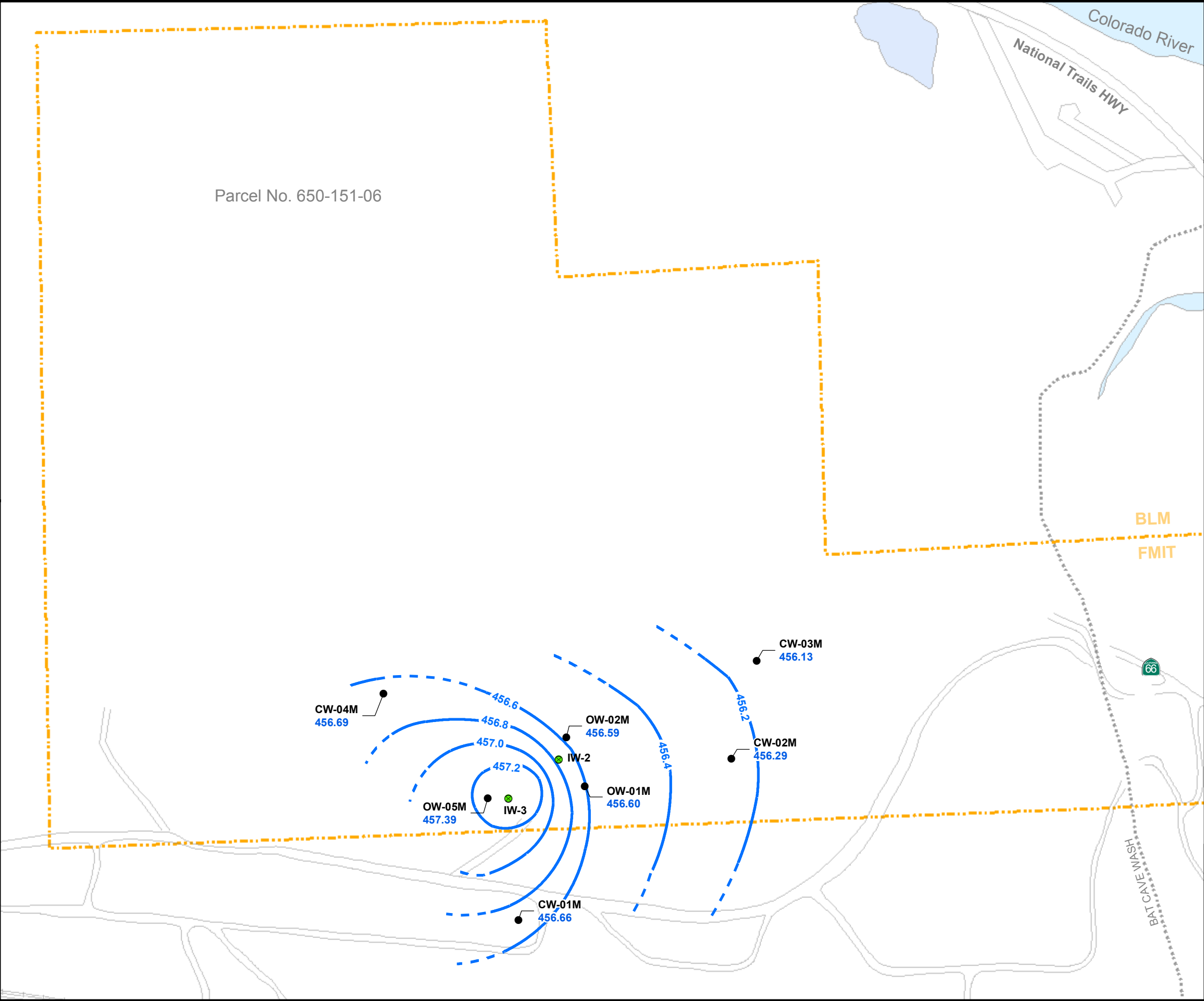
FIGURE 3-2G
OW-5 HYDROGRAPHS AND IW
INJECTION RATE
 COMBINED CMP SEMIANNUAL GROUNDWATER
 MONITORING REPORT, SECOND HALF 2012, AND
 PAR, INTERIM MEASURES NO. 3, INJECTION WELL
 FIELD, PG&E TOPOCK COMPRESSOR STATION,
 NEEDLES, CALIFORNIA



- LEGEND**
- Groundwater Monitoring, Compliance, and Observation Well
 - IM-3 Injection Well
- Groundwater Elevations for Shallow Wells in IM-3 Injection Area**
- **OW-05S** Salinity and temperature adjusted groundwater head elevation in feet above mean sea level (MSL).
 - **457.63**

Notes:
Data posted and contoured from monthly average heads measured with transducers at 30 minute intervals.

FIGURE 3-3A
AVERAGE GROUNDWATER ELEVATION
CONTOURS FOR SHALLOW WELLS,
OCTOBER 23, 2012
COMBINED CMP SEMIANNUAL GROUNDWATER MONITORING REPORT,
SECOND HALF 2012, AND PAR, INTERIM MEASURES NO. 3,
INJECTION WELL FIELD,
PG&E TOPOCK COMPRESSOR STATION,
NEEDLES, CALIFORNIA



N

0 250 500 Feet

1 inch = 250 feet

California State Plane NAD83 Zone 5 US Feet

LEGEND

- Groundwater Monitoring, Compliance, and Observation Well
- IM-3 Injection Well

Groundwater Elevations for Mid-depth Wells in IM-3 Injection Area

- OW-05M** Salinity and temperature adjusted groundwater head elevation in feet above mean sea level (MSL).
- 457.39**

Groundwater elevation contour in feet above MSL (0.2 foot interval). Dashed where inferred.

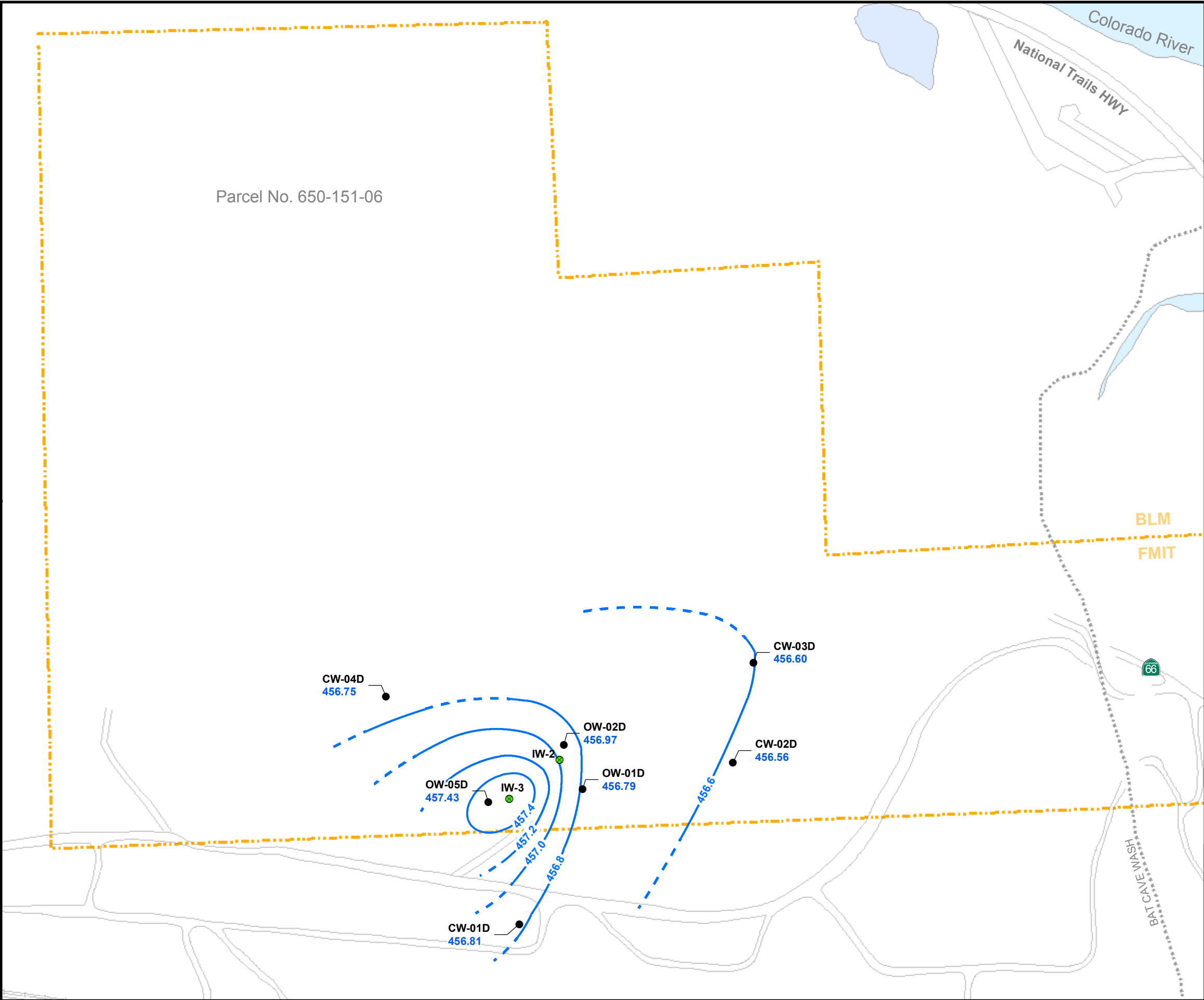
Notes:

Average monthly groundwater elevations are calculated with pressure transducer data measured at 30 minute intervals.

FIGURE 3-3B

AVERAGE GROUNDWATER ELEVATION CONTOURS FOR MID-DEPTH WELLS, OCTOBER 23, 2012

COMBINED CMP SEMIANNUAL GROUNDWATER MONITORING REPORT, SECOND HALF 2012, AND PAR, INTERIM MEASURES NO. 3, INJECTION WELL FIELD, PG&E TOPOCK COMPRESSOR STATION, NEEDLES, CALIFORNIA



N

0 250 500 Feet

1 inch = 250 feet

California State Plane NAD83 Zone 5 US Feet

LEGEND

- Groundwater Monitoring, Compliance, and Observation Well
- IM-3 Injection Well

Groundwater Elevations for Deep Wells in IM-3 Injection Area

- OW-05D** Salinity and temperature adjusted groundwater head elevation in feet above mean sea level (MSL).
- 458.38**

Groundwater elevation contour in feet above MSL (0.2 foot interval). Dashed where inferred.

Notes:

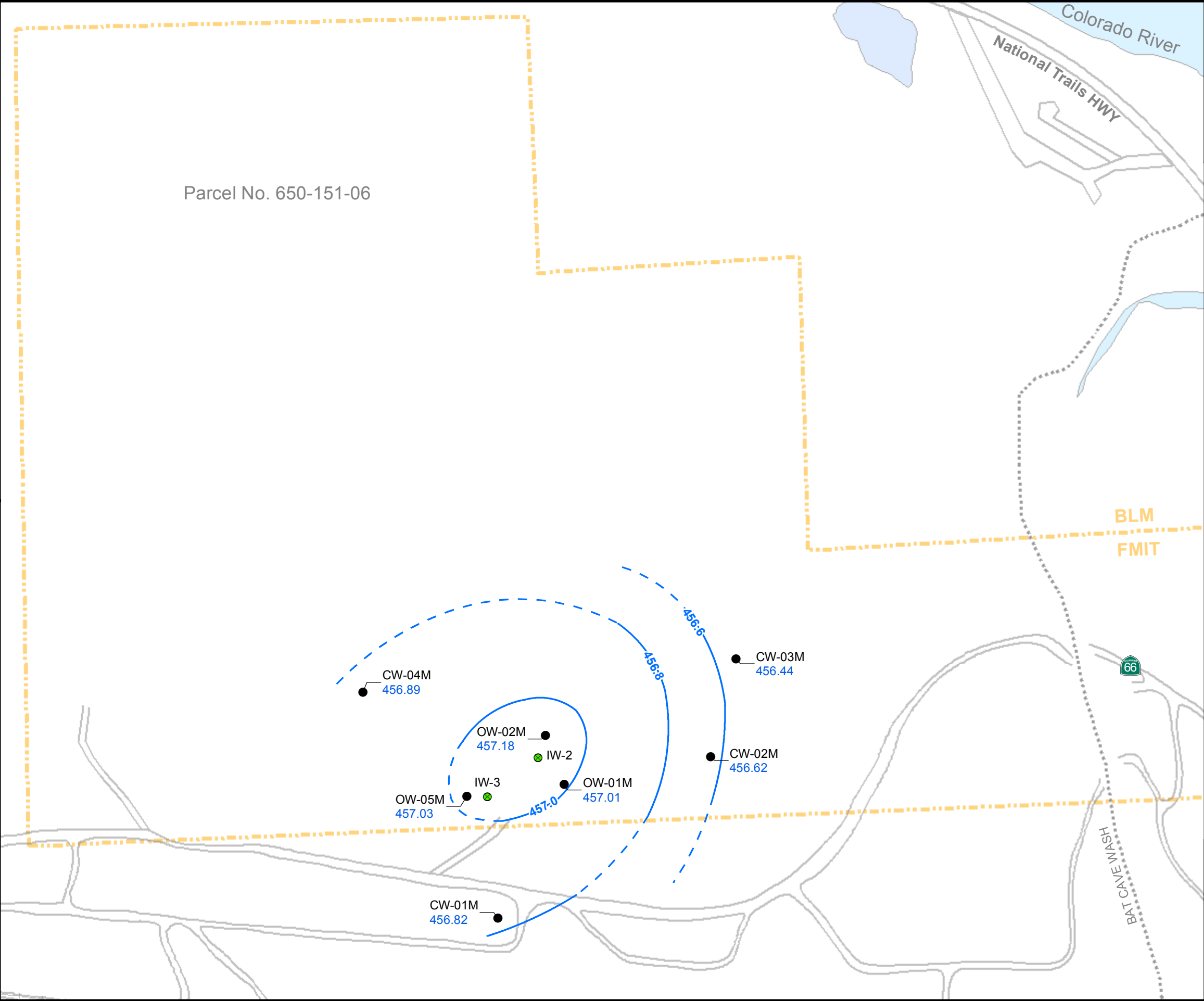
Average monthly groundwater elevations are calculated with pressure transducer data measured at 30 minute intervals.

FIGURE 3-3C

AVERAGE GROUNDWATER ELEVATION CONTOURS FOR DEEP WELLS, OCTOBER 23, 2012

COMBINED CMP SEMIANNUAL GROUNDWATER MONITORING REPORT SECOND HALF 2012, AND PAR, INTERIM MEASURES NO. 3, INJECTION WELL FIELD, PG&E TOPOCK COMPRESSOR STATION, NEEDLES, CALIFORNIA

CH2MHILL



N

0

250

500

Feet

1 inch = 250 feet

California State Plane NAD83 Zone 5 US Feet

LEGEND

IM-3 Injection Well

Groundwater Monitoring, Compliance, and Observation Well

Groundwater Elevations for Mid-Depth Wells in IM-3 Injection Area

OW-05M

457.03

Salinity and temperature adjusted groundwater head elevation in feet above mean sea level (MSL)

Groundwater elevation contour in feet above MSL (0.2 foot interval), dashed where inferred

Notes:

Data posted and contoured from monthly average heads measured with transducers at 30 minute intervals.

FIGURE 3-4A

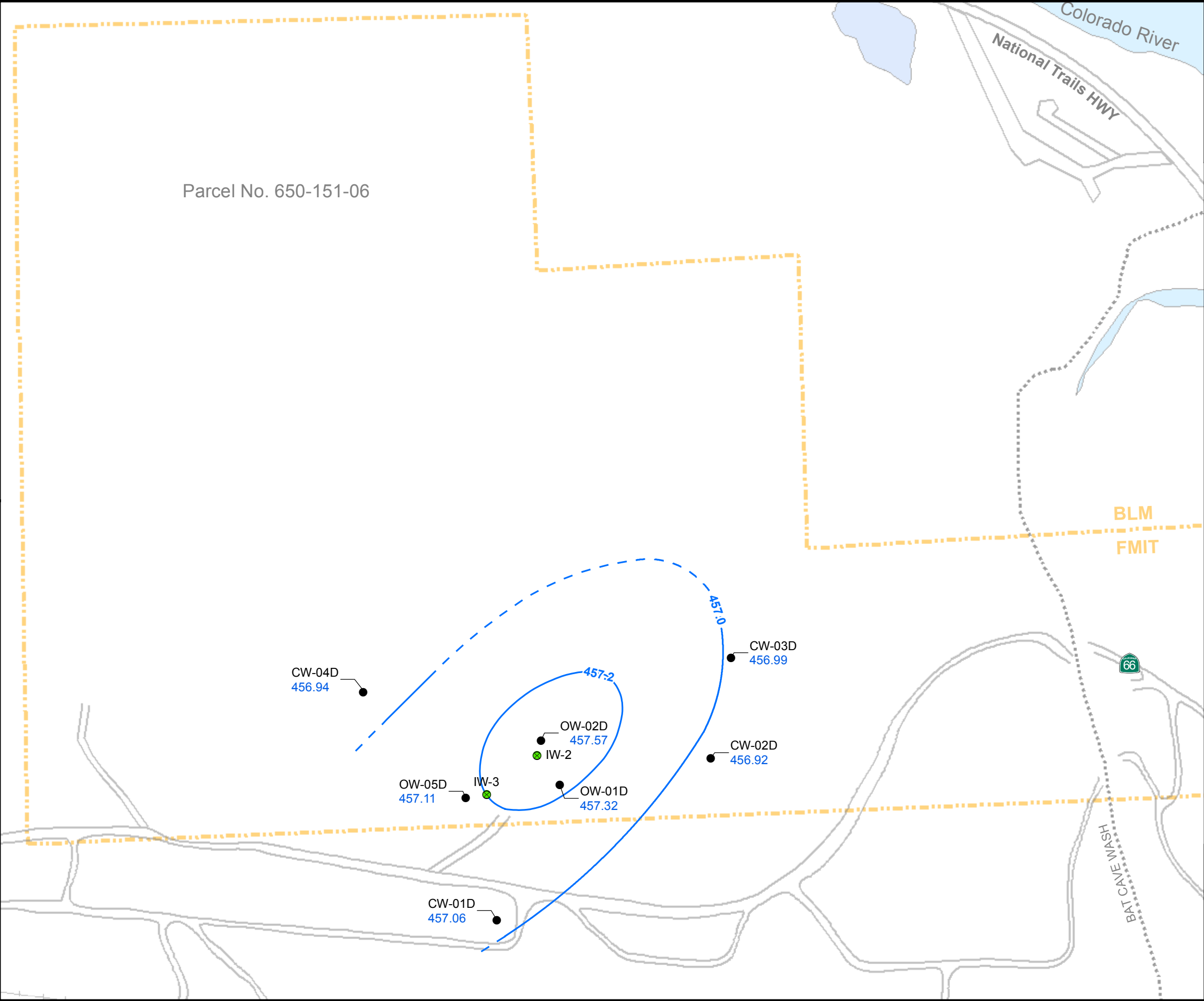
AVERAGE GROUNDWATER ELEVATION CONTOURS FOR MID DEPTH WELLS

NOVEMBER 29, 2010

COMBINED CMP SEMIANNUAL GROUNDWATER MONITORING REPORT, SECOND HALF 2012, AND PAR, INTERIM MEASURES NO. 3, INJECTION WELL FIELD, PG&E TOPOCK COMPRESSOR STATION, NEEDLES, CALIFORNIA

CH2MHILL

Document Path: D:\Projects\Topock\MapFiles\2012\CMP\CMPGWE_MA_Dec2010.mxd



N

0 250 500 Feet

1 inch = 250 feet

California State Plane NAD83 Zone 5 US Feet

LEGEND

- Groundwater Monitoring, Compliance, and Observation Well
- IM-3 Injection Well

Groundwater Elevations for Deep Wells in IM-3 Injection Area

- **OW-05D** Salinity and temperature adjusted groundwater head elevation in feet above mean sea level (MSL)
- **458.34**
- Groundwater elevation contour in feet above MSL (0.2 foot interval), dashed where inferred

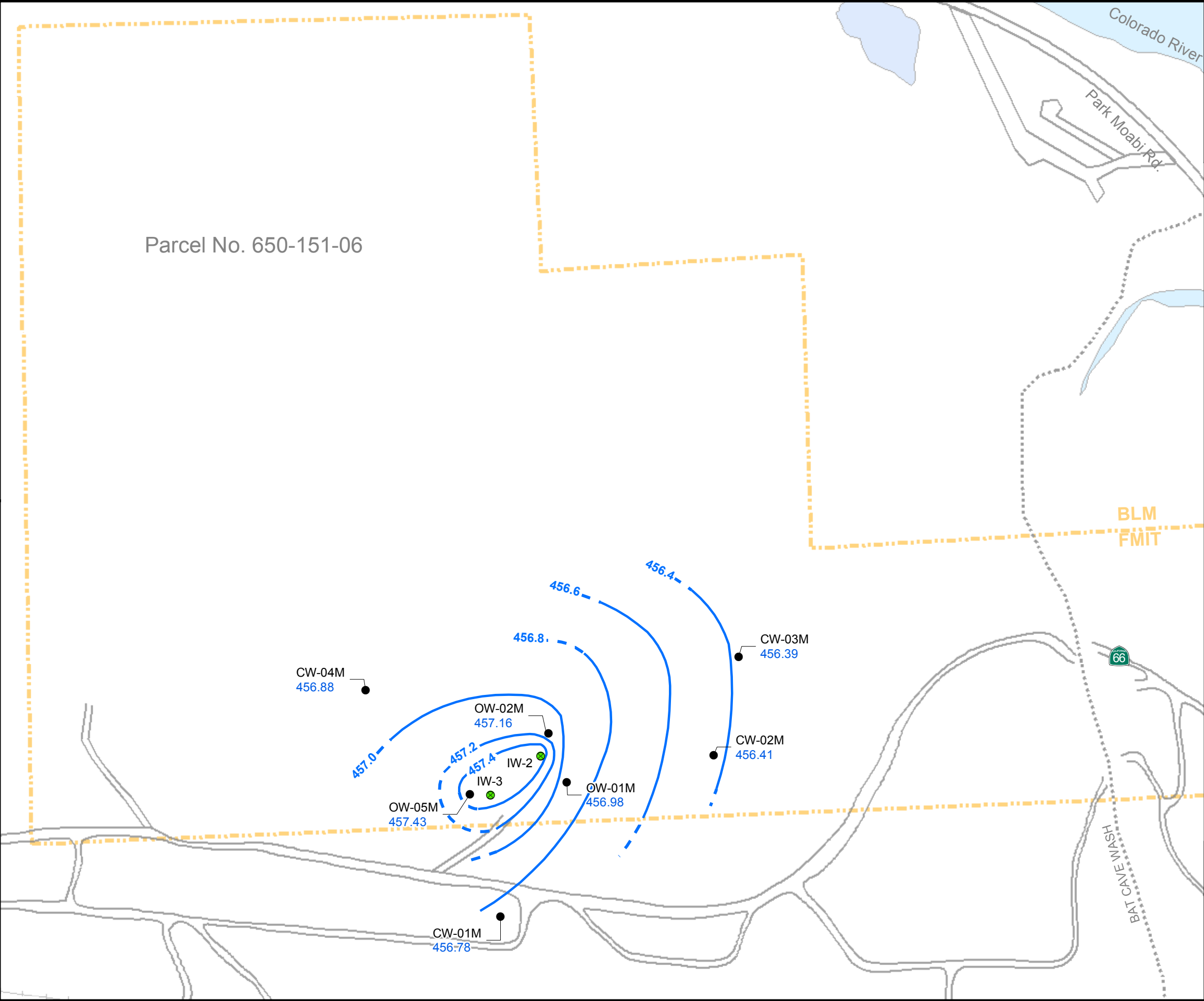
Notes:

Data posted and contoured from monthly average heads measured with transducers at 30 minute intervals.

FIGURE 3-4B

AVERAGE GROUNDWATER ELEVATION CONTOURS FOR DEEP WELLS, NOVEMBER 29, 2010

COMBINED CMP SEMIANNUAL GROUNDWATER MONITORING REPORT, SECOND HALF 2012, AND PAR, INTERIM MEASURES NO. 3, INJECTION WELL FIELD, PG&E TOPOCK COMPRESSOR STATION, NEEDLES, CALIFORNIA



N

0 250 500 Feet

1 inch = 250 feet

California State Plane NAD83 Zone 5 US Feet

LEGEND

- Groundwater Monitoring, Compliance, and Observation Well
- IM-3 Injection Well

Groundwater Elevations for Mid-depth Wells in IM-3 Injection Area

- OW-02M Salinity and temperature adjusted groundwater head elevation in feet above mean sea level (MSL)
457.16
- Groundwater elevation contour in feet above MSL (0.2 foot interval), dashed where inferred

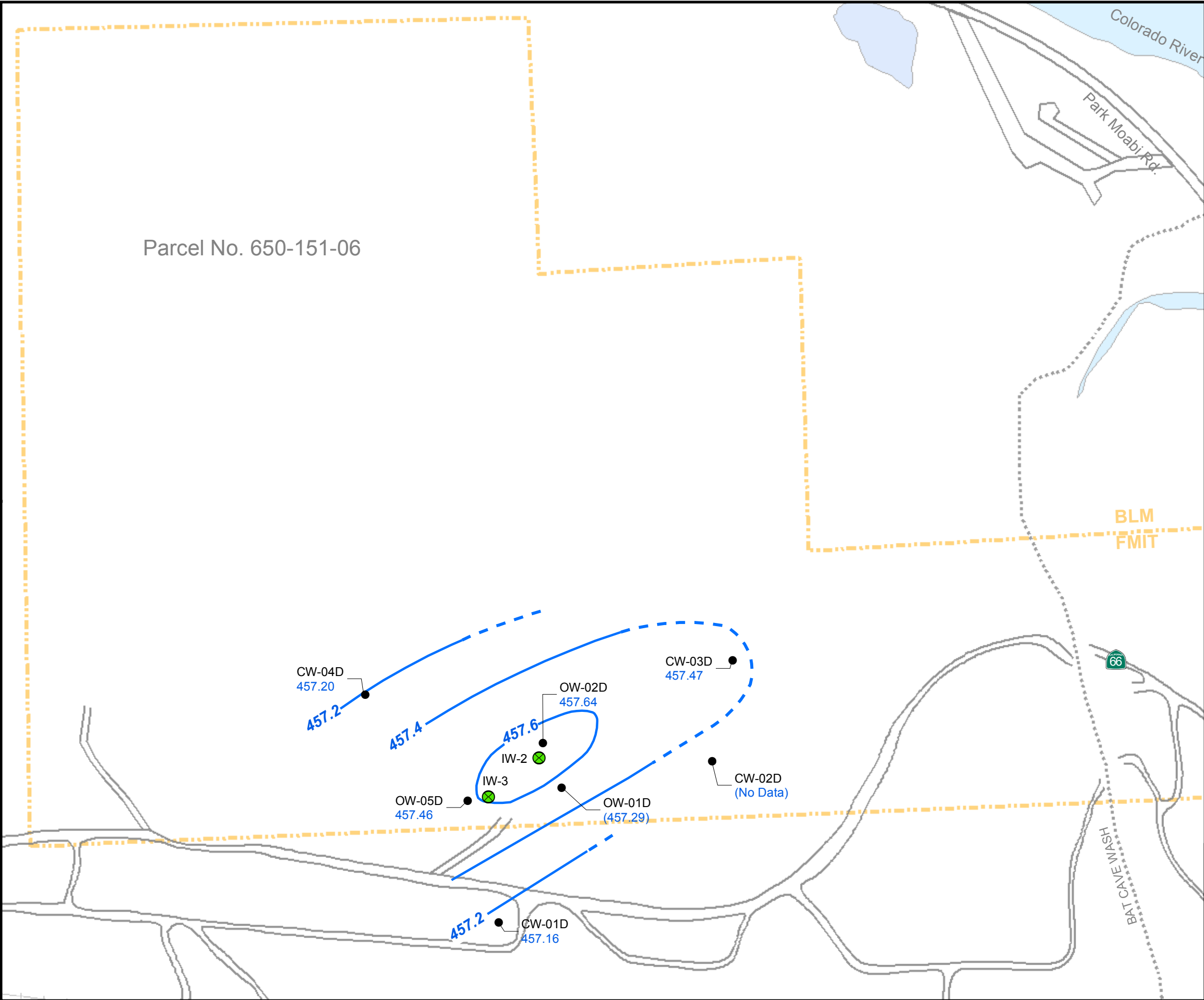
Notes:

Data posted and contoured from monthly average heads measured with transducers at 30 minute intervals.

FIGURE 3-5A

AVERAGE GROUNDWATER ELEVATION CONTOURS FOR MID-DEPTH WELLS, OCTOBER 1 TO OCTOBER 31, 2008

COMBINED CMP SEMIANNUAL GROUNDWATER MONITORING REPORT, SECOND HALF 2012, AND PAR, INTERIM MEASURES NO. 3, INJECTION WELL FIELD, PG&E TOPOCK COMPRESSOR STATION, NEEDLES, CALIFORNIA



N

0 250 500 Feet

1 inch = 250 feet

California State Plane NAD83 Zone 5 US Feet

LEGEND

- Groundwater Monitoring, Compliance and Observation Well
- IM-3 Injection Well

Groundwater Elevations for Deep Wells in IM-3 Injection Area

- OW-05D 457.46 Salinity and temperature adjusted groundwater head elevation in feet above mean sea level (MSL)
- Groundwater elevation contour in feet above MSL (0.2 foot interval), dashed where inferred

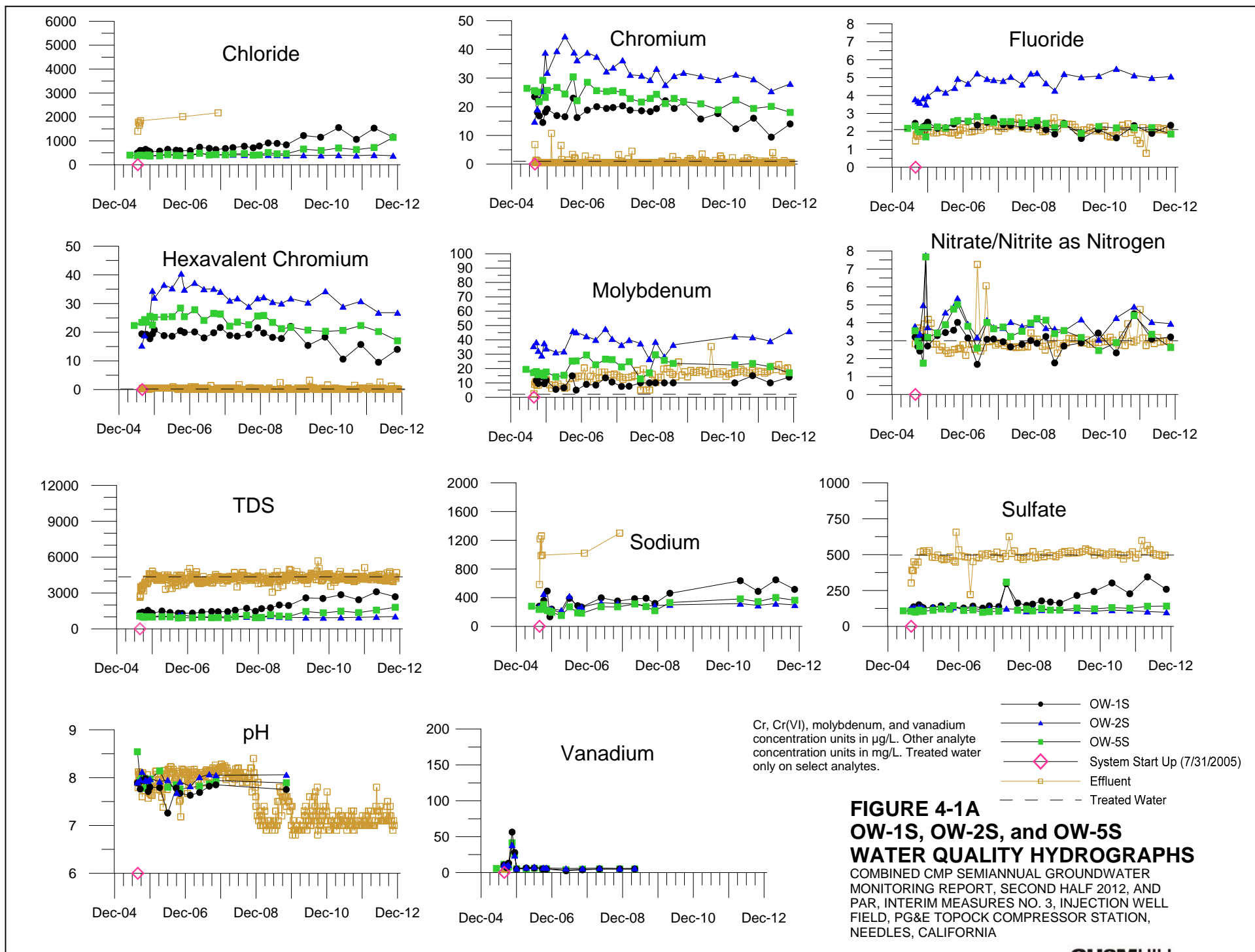
Notes:

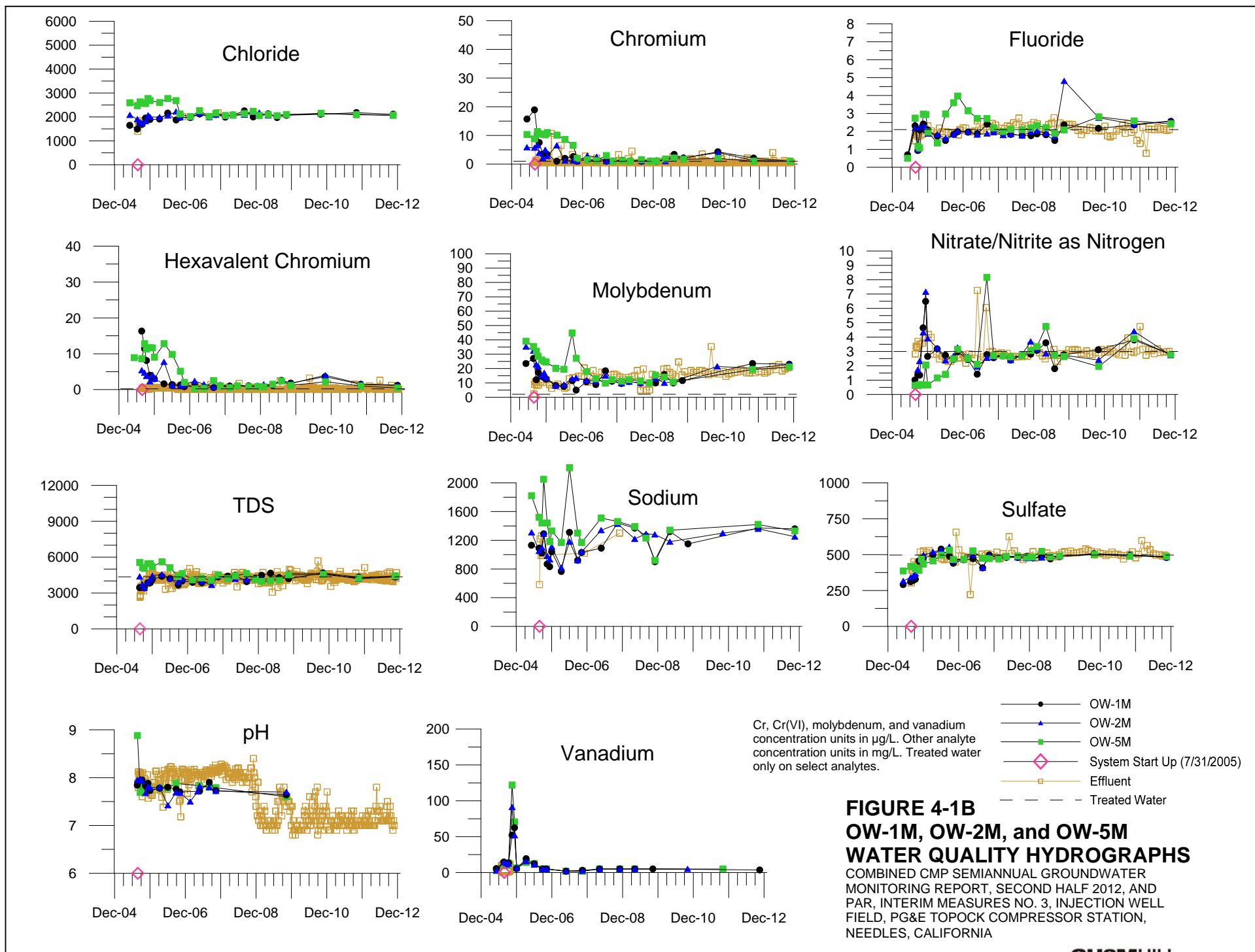
Data posted and contoured from monthly average heads measured with transducers at 30 minute intervals. (OW-01D) andexcluded from contouring. CW-02D transducer failed.

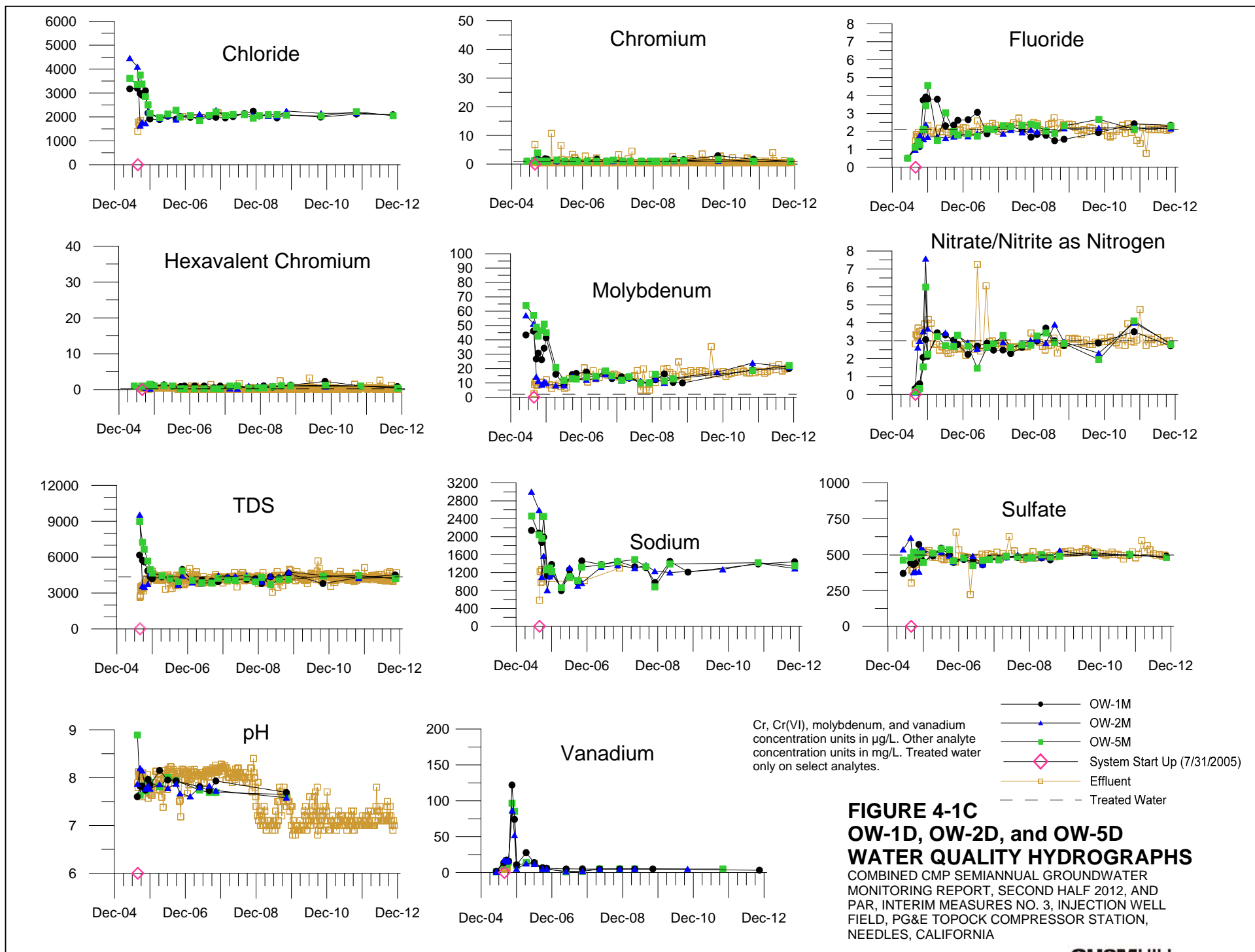
FIGURE 3-5B

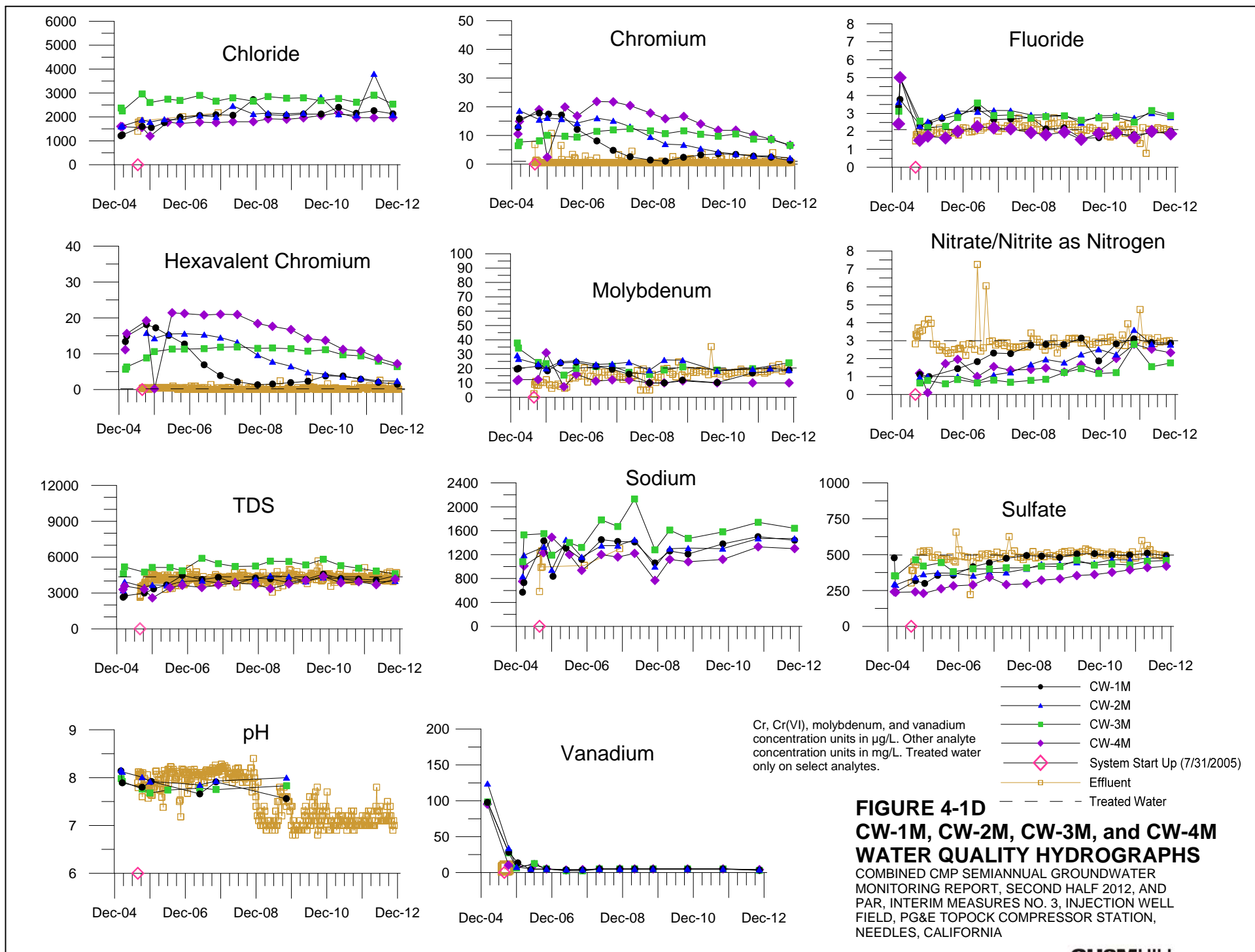
AVERAGE GROUNDWATER ELEVATION CONTOURS FOR DEEP WELLS, OCTOBER 1 TO OCTOBER 31, 2008

COMBINED CMP SEMIANNUAL GROUNDWATER MONITORING REPORT, SECOND HALF 2012, AND PAR, INTERIM MEASURES NO. 3, INJECTION WELL FIELD, PG&E TOPOCK COMPRESSOR STATION, NEEDLES, CALIFORNIA









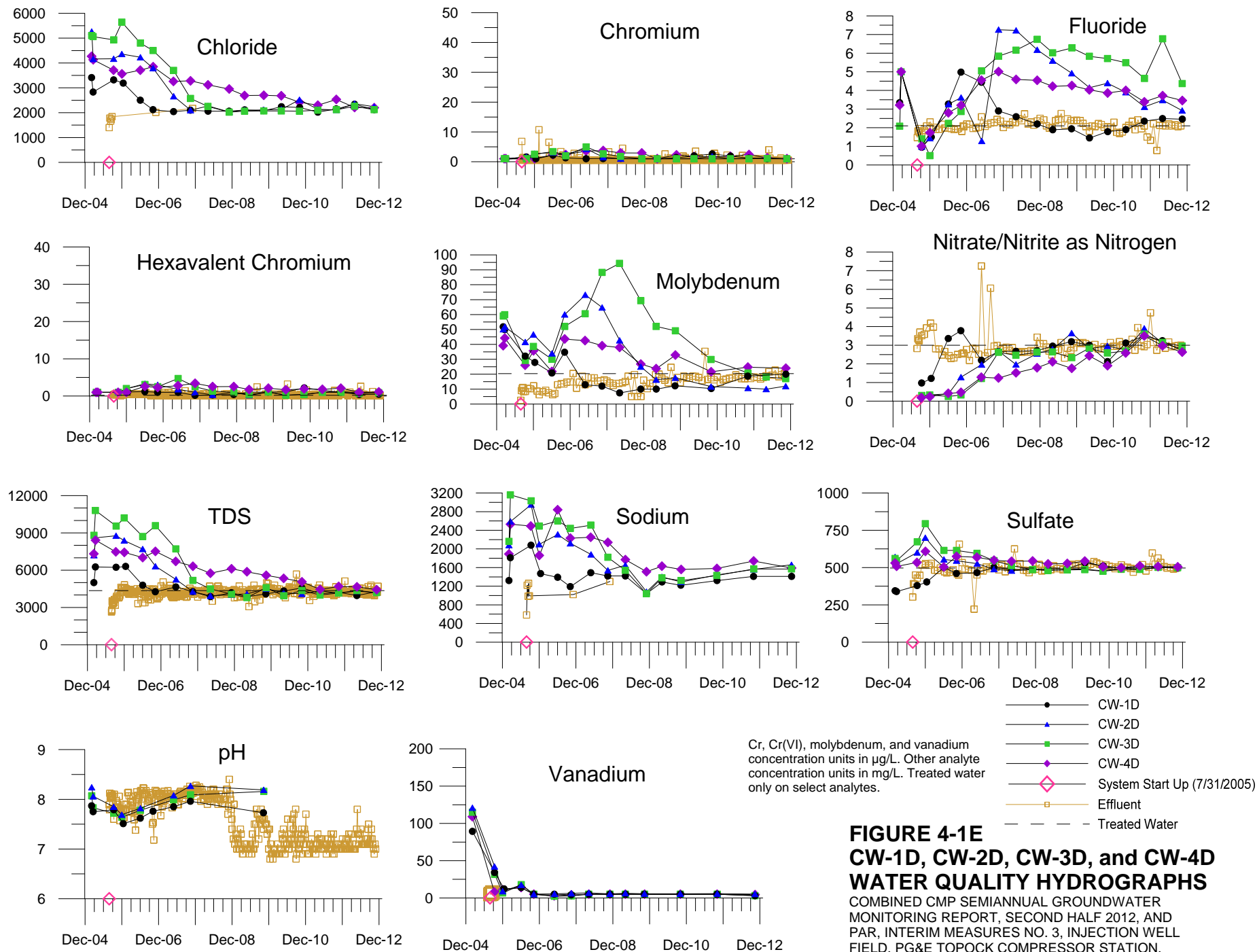


FIGURE 4-1E
CW-1D, CW-2D, CW-3D, and CW-4D
WATER QUALITY HYDROGRAPHS

COMBINED CMP SEMI-ANNUAL GROUNDWATER MONITORING REPORT, SECOND HALF 2012, AND PAR, INTERIM MEASURES NO. 3, INJECTION WELL FIELD, PG&E TOPOCK COMPRESSOR STATION, NEEDLES, CALIFORNIA

Appendix A
Laboratory Reports, Second Half 2012
(provided on CD-ROM only)

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 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 2012-CMP-028, GROUNDWATER MONITORING
PROJECT; TLI NO.: 804408

Truesdail Laboratories, Inc. is pleased to submit this report summarizing the Topock 2012-CMP-028 groundwater-monitoring project. 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 are under Section 5.

The samples were received and delivered with the chain of custody 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.


On October 17, 2012, Mr. Shawn Duffy updated the metals analyte list and provided a revised chain of custody.


Due to instrument problems, samples for Total Dissolved Metals analysis by EPA 200.8 (except Mercury) were sub-contracted to Advanced Technology Laboratories – Las Vegas with Mr. Duffy's approval. The results will be forwarded when they become available.

No other violations or non-conformance actions occurred for this data package.

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

Respectfully Submitted,
TRUESDAIL LABORATORIES, INC.


Mona Nassimi
Manager, Analytical Services


Michael Ngo
Quality Assurance/Quality Control Officer

TRUESDAIL LABORATORIES, INC.

EXCELLENCE IN INDEPENDENT TESTING



Established 1931

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

Attention: Shawn Duffy

Sample: Five (5) Groundwater Samples

Project Name: PG&E Topock Project

Project No.: 423575.MP.02.CM

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

Laboratory No.: 804408

Date: December 2, 2012

Collected: October 15, 2012

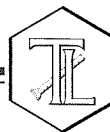
Received: October 16, 2012

ANALYST LIST

METHOD	PARAMETER	ANALYST
EPA 120.1	Specific Conductivity	Gautam Savani
SM 2540C	Total Dissolved Solids	Jenny Tankunakorn
SM 2320B	Total Alkalinity	Melissa Scharfe
SM 2130B	Turbidity	Gautam Savani
EPA 300.0	Anions	Giawad Ghenniwa
SM 4500-NH3 D	Ammonia	Melissa Scharfe
SW 6010B	Metals by ICP	Ethel Suico
EPA 200.7	Metals by ICP	Ethel Suico
EPA 200.8	Metals by ICP/MS	Bitra Emami
EPA 218.6	Hexavalent Chromium	George Wahba

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

Project Name: PG&E Topock Project
Project No.: 423575.MP.02.CM
P.O. No.: 423575.MP.02.CM

Laboratory No.: 804408
Date Received: October 16, 2012

Analytical Results Summary

Lab Sample ID	Field ID	Analysis Method	Extraction Method	Sample Date	Sample Time	Parameter	Result	Units	RL
804408-001	CW-02D-028	E120.1	NONE	10/15/2012	10:36	EC	7420	umhos/cm	2.0
804408-001	CW-02D-028	E200.7	FLDFLT	10/15/2012	10:36	Aluminum	ND	ug/L	50.0
804408-001	CW-02D-028	E200.7	FLDFLT	10/15/2012	10:36	BORON	975	ug/L	200
804408-001	CW-02D-028	E200.7	FLDFLT	10/15/2012	10:36	Calcium	83100	ug/L	5000
804408-001	CW-02D-028	E200.7	FLDFLT	10/15/2012	10:36	Iron	ND	ug/L	20.0
804408-001	CW-02D-028	E200.7	FLDFLT	10/15/2012	10:36	Magnesium	4.39	mg/L	0.500
804408-001	CW-02D-028	E200.7	FLDFLT	10/15/2012	10:36	Potassium	11100	ug/L	5000
804408-001	CW-02D-028	E200.7	FLDFLT	10/15/2012	10:36	Sodium	1660000	ug/L	500000
804408-001	CW-02D-028	E200.7	FLDFLT	10/15/2012	10:36	Zinc	ND	ug/L	20.0
804408-001	CW-02D-028	E200.8	FLDFLT	10/15/2012	10:36	Mercury	ND	ug/L	0.50
804408-001	CW-02D-028	E218.6	FLDFLT	10/15/2012	10:36	Chromium, Hexavalent	0.76	ug/L	0.20
804408-001	CW-02D-028	E300	NONE	10/15/2012	10:36	Chloride	2240	mg/L	100
804408-001	CW-02D-028	E300	NONE	10/15/2012	10:36	Fluoride	2.92	mg/L	0.500
804408-001	CW-02D-028	E300	NONE	10/15/2012	10:36	Sulfate	503	mg/L	25.0
804408-001	CW-02D-028	SM2130B	NONE	10/15/2012	10:36	Turbidity	ND	NTU	0.100
804408-001	CW-02D-028	SM2320B	NONE	10/15/2012	10:36	Alkalinity	61.0	mg/L	5.00
804408-001	CW-02D-028	SM2320B	NONE	10/15/2012	10:36	Alkalinity, Bicarbonate (As	61.0	mg/L	5.00
804408-001	CW-02D-028	SM2320B	NONE	10/15/2012	10:36	Alkalinity, Carbonate (As C	ND	mg/L	5.00
804408-001	CW-02D-028	SM2540C	NONE	10/15/2012	10:36	Total Dissolved Solids	4100	mg/L	250
804408-001	CW-02D-028	SM4500NH3D	NONE	10/15/2012	10:36	Ammonia-N	ND	mg/L	0.500
804408-001	CW-02D-028	SW6010B	NONE	10/15/2012	10:36	Iron	ND	ug/L	20.0

005

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



Lab Sample ID	Field ID	Analysis Method	Extraction Method	Sample Date	Sample Time	Parameter	Result	Units	RL
804408-003	CW-03D-028	E120.1	NONE	10/15/2012	14:26	EC	7440	umhos/cm	2.00
804408-003	CW-03D-028	E200.7	FLDFLT	10/15/2012	14:26	Aluminum	ND	ug/L	50.0
804408-003	CW-03D-028	E200.7	FLDFLT	10/15/2012	14:26	BORON	1110	ug/L	200
804408-003	CW-03D-028	E200.7	FLDFLT	10/15/2012	14:26	Calcium	78200	ug/L	10000
804408-003	CW-03D-028	E200.7	FLDFLT	10/15/2012	14:26	Iron	ND	ug/L	20.0
804408-003	CW-03D-028	E200.7	FLDFLT	10/15/2012	14:26	Magnesium	5.74	mg/L	0.500
804408-003	CW-03D-028	E200.7	FLDFLT	10/15/2012	14:26	Potassium	12500	ug/L	2000
804408-003	CW-03D-028	E200.7	FLDFLT	10/15/2012	14:26	Sodium	1570000	ug/L	100000
804408-003	CW-03D-028	E200.7	FLDFLT	10/15/2012	14:26	Zinc	32.2	ug/L	20.0
804408-003	CW-03D-028	E200.8	FLDFLT	10/15/2012	14:26	Mercury	ND	ug/L	0.50
804408-003	CW-03D-028	E218.6	FLDFLT	10/15/2012	14:26	Chromium, Hexavalent	0.90	ug/L	0.20
804408-003	CW-03D-028	E300	NONE	10/15/2012	14:26	Chloride	2120	mg/L	100
804408-003	CW-03D-028	E300	NONE	10/15/2012	14:26	Fluoride	4.37	mg/L	0.500
804408-003	CW-03D-028	E300	NONE	10/15/2012	14:26	Sulfate	499	mg/L	25.0
804408-003	CW-03D-028	SM2130B	NONE	10/15/2012	14:26	Turbidity	ND	NTU	0.100
804408-003	CW-03D-028	SM2320B	NONE	10/15/2012	14:26	Alkalinity	59.0	mg/L	5.00
804408-003	CW-03D-028	SM2320B	NONE	10/15/2012	14:26	Alkalinity, Bicarbonate (As	59.0	mg/L	5.00
804408-003	CW-03D-028	SM2320B	NONE	10/15/2012	14:26	Alkalinity, Carbonate (As C	ND	mg/L	5.00
804408-003	CW-03D-028	SM2540C	NONE	10/15/2012	14:26	Total Dissolved Solids	4190	mg/L	250
804408-003	CW-03D-028	SM4500NH3D	NONE	10/15/2012	14:26	Ammonia-N	ND	mg/L	0.500
804408-003	CW-03D-028	SW6010B	NONE	10/15/2012	14:26	Iron	ND	ug/L	20.0



Lab Sample ID	Field ID	Analysis Method	Extraction Method	Sample Date	Sample Time	Parameter	Result	Units	RL
804408-002	CW-02M-028	E120.1	NONE	10/15/2012	12:04	EC	7250	umhos/cm	2.00
804408-002	CW-02M-028	E200.7	FLDFLT	10/15/2012	12:04	Aluminum	ND	ug/L	50.0
804408-002	CW-02M-028	E200.7	FLDFLT	10/15/2012	12:04	BORON	1080	ug/L	200
804408-002	CW-02M-028	E200.7	FLDFLT	10/15/2012	12:04	Calcium	143000	ug/L	10000
804408-002	CW-02M-028	E200.7	FLDFLT	10/15/2012	12:04	Iron	ND	ug/L	20.0
804408-002	CW-02M-028	E200.7	FLDFLT	10/15/2012	12:04	Magnesium	10.6	mg/L	0.500
804408-002	CW-02M-028	E200.7	FLDFLT	10/15/2012	12:04	Potassium	13100	ug/L	2000
804408-002	CW-02M-028	E200.7	FLDFLT	10/15/2012	12:04	Sodium	1470000	ug/L	100000
804408-002	CW-02M-028	E200.7	FLDFLT	10/15/2012	12:04	Zinc	ND	ug/L	20.0
804408-002	CW-02M-028	E200.8	FLDFLT	10/15/2012	12:04	Mercury	ND	ug/L	0.50
804408-002	CW-02M-028	E218.6	FLDFLT	10/15/2012	12:04	Chromium, Hexavalent	2.4	ug/L	0.20
804408-002	CW-02M-028	E300	NONE	10/15/2012	12:04	Chloride	2080	mg/L	100
804408-002	CW-02M-028	E300	NONE	10/15/2012	12:04	Fluoride	2.80	mg/L	0.500
804408-002	CW-02M-028	E300	NONE	10/15/2012	12:04	Sulfate	479	mg/L	25.0
804408-002	CW-02M-028	SM2130B	NONE	10/15/2012	12:04	Turbidity	0.136	NTU	0.100
804408-002	CW-02M-028	SM2320B	NONE	10/15/2012	12:04	Alkalinity	49.0	mg/L	5.00
804408-002	CW-02M-028	SM2320B	NONE	10/15/2012	12:04	Alkalinity, Bicarbonate (As	49.0	mg/L	5.00
804408-002	CW-02M-028	SM2320B	NONE	10/15/2012	12:04	Alkalinity, Carbonate (As C	ND	mg/L	5.00
804408-002	CW-02M-028	SM2540C	NONE	10/15/2012	12:04	Total Dissolved Solids	4000	mg/L	250
804408-002	CW-02M-028	SM4500NH3D	NONE	10/15/2012	12:04	Ammonia-N	ND	mg/L	0.500
804408-002	CW-02M-028	SW6010B	NONE	10/15/2012	12:04	Iron	ND	ug/L	20.0



Lab Sample ID	Field ID	Analysis Method	Extraction Method	Sample Date	Sample Time	Parameter	Result	Units	RL
804408-004	CW-03M-028	E120.1	NONE	10/15/2012	15:34	EC	8440	umhos/cm	2.00
804408-004	CW-03M-028	E200.7	FLDFLT	10/15/2012	15:34	Aluminum	ND	ug/L	50.0
804408-004	CW-03M-028	E200.7	FLDFLT	10/15/2012	15:34	BORON	1030	ug/L	200
804408-004	CW-03M-028	E200.7	FLDFLT	10/15/2012	15:34	Calcium	209000	ug/L	10000
804408-004	CW-03M-028	E200.7	FLDFLT	10/15/2012	15:34	Iron	ND	ug/L	20.0
804408-004	CW-03M-028	E200.7	FLDFLT	10/15/2012	15:34	Magnesium	16.6	mg/L	0.500
804408-004	CW-03M-028	E200.7	FLDFLT	10/15/2012	15:34	Potassium	16200	ug/L	2000
804408-004	CW-03M-028	E200.7	FLDFLT	10/15/2012	15:34	Sodium	1640000	ug/L	100000
804408-004	CW-03M-028	E200.7	FLDFLT	10/15/2012	15:34	Zinc	ND	ug/L	20.0
804408-004	CW-03M-028	E200.8	FLDFLT	10/15/2012	15:34	Mercury	ND	ug/L	0.500
804408-004	CW-03M-028	E218.6	FLDFLT	10/15/2012	15:34	Chromium, Hexavalent	6.4	ug/L	1.0
804408-004	CW-03M-028	E300	NONE	10/15/2012	15:34	Chloride	2530	mg/L	100
804408-004	CW-03M-028	E300	NONE	10/15/2012	15:34	Fluoride	2.88	mg/L	0.500
804408-004	CW-03M-028	E300	NONE	10/15/2012	15:34	Sulfate	458	mg/L	25.0
804408-004	CW-03M-028	SM2130B	NONE	10/15/2012	15:34	Turbidity	ND	NTU	0.100
804408-004	CW-03M-028	SM2320B	NONE	10/15/2012	15:34	Alkalinity	46.0	mg/L	5.00
804408-004	CW-03M-028	SM2320B	NONE	10/15/2012	15:34	Alkalinity, Bicarbonate (As	46.0	mg/L	5.00
804408-004	CW-03M-028	SM2320B	NONE	10/15/2012	15:34	Alkalinity, Carbonate (As C	ND	mg/L	5.00
804408-004	CW-03M-028	SM2540C	NONE	10/15/2012	15:34	Total Dissolved Solids	4600	mg/L	250
804408-004	CW-03M-028	SM4500NH3D	NONE	10/15/2012	15:34	Ammonia-N	ND	mg/L	0.500
804408-004	CW-03M-028	SW6010B	NONE	10/15/2012	15:34	Iron	ND	ug/L	20.0



Lab Sample ID	Field ID	Analysis Method	Extraction Method	Sample Date	Sample Time	Parameter	Result	Units	RL
804408-005	OW-90-028	E120.1	NONE	10/15/2012	7:10	EC	7470	umhos/cm	2.00
804408-005	OW-90-028	E200.7	FLDFLT	10/15/2012	7:10	Aluminum	ND	ug/L	50.0
804408-005	OW-90-028	E200.7	FLDFLT	10/15/2012	7:10	BORON	976	ug/L	200
804408-005	OW-90-028	E200.7	FLDFLT	10/15/2012	7:10	Calcium	83400	ug/L	10000
804408-005	OW-90-028	E200.7	FLDFLT	10/15/2012	7:10	Iron	ND	ug/L	20.0
804408-005	OW-90-028	E200.7	FLDFLT	10/15/2012	7:10	Magnesium	4.38	mg/L	0.500
804408-005	OW-90-028	E200.7	FLDFLT	10/15/2012	7:10	Potassium	12100	ug/L	2000
804408-005	OW-90-028	E200.7	FLDFLT	10/15/2012	7:10	Sodium	1580000	ug/L	100000
804408-005	OW-90-028	E200.7	FLDFLT	10/15/2012	7:10	Zinc	ND	ug/L	20.0
804408-005	OW-90-028	E200.8	FLDFLT	10/15/2012	7:10	Mercury	ND	ug/L	0.50
804408-005	OW-90-028	E218.6	FLDFLT	10/15/2012	7:10	Chromium, Hexavalent	0.79	ug/L	0.20
804408-005	OW-90-028	E300	NONE	10/15/2012	7:10	Chloride	2120	mg/L	100
804408-005	OW-90-028	E300	NONE	10/15/2012	7:10	Fluoride	2.90	mg/L	0.500
804408-005	OW-90-028	E300	NONE	10/15/2012	7:10	Sulfate	502	mg/L	25.0
804408-005	OW-90-028	SM2130B	NONE	10/15/2012	7:10	Turbidity	ND	NTU	0.100
804408-005	OW-90-028	SM2320B	NONE	10/15/2012	7:10	Alkalinity	62.0	mg/L	5.00
804408-005	OW-90-028	SM2320B	NONE	10/15/2012	7:10	Alkalinity, Bicarbonate (As	62.0	mg/L	5.00
804408-005	OW-90-028	SM2320B	NONE	10/15/2012	7:10	Alkalinity, Carbonate (As C	ND	mg/L	5.00
804408-005	OW-90-028	SM2540C	NONE	10/15/2012	7:10	Total Dissolved Solids	4180	mg/L	250
804408-005	OW-90-028	SM4500NH3D	NONE	10/15/2012	7:10	Ammonia-N	ND	mg/L	0.500
804408-005	OW-90-028	SW6010B	NONE	10/15/2012	7:10	Iron	ND	ug/L	20.0

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: 423575.MP.02.CM

P.O. Number: 423575.MP.02.CM

Release Number:

Laboratory No. 804408

Page 1 of 27

Printed 12/2/2012

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

Field ID	Lab ID	Collected	Matrix
CW-02D-028	804408-001	10/15/2012 10:36	Water
CW-02M-028	804408-002	10/15/2012 12:04	Water
CW-03D-028	804408-003	10/15/2012 14:26	Water
CW-03M-028	804408-004	10/15/2012 15:34	Water
OW-90-028	804408-005	10/15/2012 07:10	Water

Anions By I.C. - EPA 300.0

Batch 10AN12Z

Parameter	Unit	Analyzed	DF	MDL	RL	Result
804408-001 Chloride	mg/L	10/24/2012 13:36	500	17.4	100	2240
Sulfate	mg/L	10/24/2012 15:51	50.0	1.54	25.0	503
804408-002 Chloride	mg/L	10/24/2012 13:48	500	17.4	100	2080
Sulfate	mg/L	10/24/2012 16:02	50.0	1.54	25.0	479
804408-003 Chloride	mg/L	10/24/2012 13:59	500	17.4	100	2120
Sulfate	mg/L	10/24/2012 16:13	50.0	1.54	25.0	499
804408-004 Chloride	mg/L	10/24/2012 14:10	500	17.4	100	2530
Sulfate	mg/L	10/24/2012 16:25	50.0	1.54	25.0	458
804408-005 Chloride	mg/L	10/24/2012 14:22	500	17.4	100	2120
Sulfate	mg/L	10/24/2012 16:36	50.0	1.54	25.0	502

Method Blank

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



TRUESDAIL LABORATORIES, INC.

Report Continued

Client: E2 Consulting Engineers, Inc.

Project Name: PG&E Topock Project

Page 2 of 27

Project Number: 423575.MP.02.CM

Printed 12/2/2012

Duplicate

Lab ID = 804485-004

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Chloride	mg/L	50.0	107	107	0.371	0 - 20
Sulfate	mg/L	50.0	110	112	1.38	0 - 20

Duplicate

Lab ID = 804492-014

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Nitrate as Nitrogen	mg/L	1.00	ND	0.243	0	0 - 20

Lab Control Sample

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

Matrix Spike

Lab ID = 804485-004

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chloride	mg/L	50.0	298	307(200)	95.7	85 - 115
Sulfate	mg/L	50.0	315	312(200)	102	85 - 115

Matrix Spike

Lab ID = 804492-014

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Nitrate as Nitrogen	mg/L	1.00	2.31	2.24(2.00)	103	85 - 115

MRCCS - Secondary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chloride	mg/L	1.00	4.01	4.00	100	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
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	2.99	3.00	99.7	90 - 110

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chloride	mg/L	1.00	2.97	3.00	98.9	90 - 110

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Sulfate	mg/L	1.00	15.0	15.0	99.8	90 - 110



Client: E2 Consulting Engineers, Inc.

Project Name: PG&E Topock Project

Page 4 of 27

Project Number: 423575.MP.02.CM

Printed 12/2/2012

Anions By I.C. - EPA 300.0

Batch 10AN12V

Parameter	Unit	Analyzed	DF	MDL	RL	Result
804408-001 Fluoride	mg/L	10/20/2012 16:48	5.00	0.104	0.500	2.92
804408-002 Fluoride	mg/L	10/20/2012 16:59	5.00	0.104	0.500	2.80
804408-003 Fluoride	mg/L	10/20/2012 17:34	5.00	0.104	0.500	4.37
804408-004 Fluoride	mg/L	10/20/2012 17:45	5.00	0.104	0.500	2.88
804408-005 Fluoride	mg/L	10/20/2012 17:56	5.00	0.104	0.500	2.90

Method Blank

Parameter	Unit	DF	Result
Bromide	mg/L	1.00	ND
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 = 804411-006

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Chloride	mg/L	10.0	25.5	25.6	0.376	0 - 20
Sulfate	mg/L	10.0	39.0	39.2	0.412	0 - 20

Duplicate

Lab ID = 804436-001

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Bromide	mg/L	5.00	ND	0	0	0 - 20
Fluoride	mg/L	5.00	ND	0	0	0 - 20

Duplicate

Lab ID = 804460-011

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Nitrate as Nitrogen	mg/L	1.00	2.09	2.08	0.527	0 - 20

Lab Control Sample

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Bromide	mg/L	1.00	3.98	4.00	99.5	90 - 110
Chloride	mg/L	1.00	4.02	4.00	100	90 - 110
Fluoride	mg/L	1.00	4.14	4.00	104	90 - 110
Sulfate	mg/L	1.00	20.0	20.0	100	90 - 110
Nitrate as Nitrogen	mg/L	1.00	4.00	4.00	100	90 - 110

Matrix Spike

Lab ID = 804411-006

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chloride	mg/L	10.0	66.0	65.6(40.0)	101	85 - 115
Sulfate	mg/L	10.0	143	139(100)	104	85 - 115



Client: E2 Consulting Engineers, Inc.

Project Name: PG&E Topock Project

Page 7 of 27

Project Number: 423575.MP.02.CM

Printed 12/2/2012

Alkalinity by SM 2320B

Batch 10ALK12C

Parameter	Unit	Analyzed	DF	MDL	RL	Result
804408-001 Alkalinity as CaCO ₃	mg/L	10/18/2012	1.00	0.555	5.00	61.0
Bicarbonate (Calculated)	mg/L	10/18/2012	1.00	0.555	5.00	61.0
Carbonate (Calculated)	mg/L	10/18/2012	1.00	0.555	5.00	ND
804408-002 Alkalinity as CaCO ₃	mg/L	10/18/2012	1.00	0.555	5.00	49.0
Bicarbonate (Calculated)	mg/L	10/18/2012	1.00	0.555	5.00	49.0
Carbonate (Calculated)	mg/L	10/18/2012	1.00	0.555	5.00	ND
804408-003 Alkalinity as CaCO ₃	mg/L	10/18/2012	1.00	0.555	5.00	59.0
Bicarbonate (Calculated)	mg/L	10/18/2012	1.00	0.555	5.00	59.0
Carbonate (Calculated)	mg/L	10/18/2012	1.00	0.555	5.00	ND
804408-004 Alkalinity as CaCO ₃	mg/L	10/18/2012	1.00	0.555	5.00	46.0
Bicarbonate (Calculated)	mg/L	10/18/2012	1.00	0.555	5.00	46.0
Carbonate (Calculated)	mg/L	10/18/2012	1.00	0.555	5.00	ND
804408-005 Alkalinity as CaCO ₃	mg/L	10/18/2012	1.00	0.555	5.00	62.0
Bicarbonate (Calculated)	mg/L	10/18/2012	1.00	0.555	5.00	62.0
Carbonate (Calculated)	mg/L	10/18/2012	1.00	0.555	5.00	ND

Method Blank

Parameter	Unit	DF	Result
Alkalinity as CaCO ₃	mg/L	1.00	ND

Duplicate

Lab ID = 804295-005

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Alkalinity as CaCO ₃	mg/L	1.00	35.0	36.0	2.82	0 - 20

Lab Control Sample

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Alkalinity as CaCO ₃	mg/L	1.00	101	100	101	90 - 110

Lab Control Sample Duplicate

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Alkalinity as CaCO ₃	mg/L	1.00	102	100	102	90 - 110

Matrix Spike

Lab ID = 804408-005

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Alkalinity as CaCO ₃	mg/L	1.00	155	162(100)	93.0	75 - 125



Client: E2 Consulting Engineers, Inc.

Project Name: PG&E Topock Project

Page 8 of 27

Project Number: 423575.MP.02.CM

Printed 12/2/2012

Specific Conductivity - EPA 120.1

Batch 10EC12C

Parameter	Unit	Analyzed	DF	MDL	RL	Result
804408-001 Specific Conductivity	umhos/cm	10/18/2012	1.00	0.116	2.00	7420
804408-002 Specific Conductivity	umhos/cm	10/18/2012	1.00	0.116	2.00	7250
804408-003 Specific Conductivity	umhos/cm	10/18/2012	1.00	0.116	2.00	7440
804408-004 Specific Conductivity	umhos/cm	10/18/2012	1.00	0.116	2.00	8440
804408-005 Specific Conductivity	umhos/cm	10/18/2012	1.00	0.116	2.00	7470

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

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Specific Conductivity	umhos	1.00	968	998	97.0	90 - 110



TRUESDAIL LABORATORIES, INC.

Report Continued

Client: E2 Consulting Engineers, Inc.

Project Name: PG&E Topock Project

Page 9 of 27

Project Number: 423575.MP.02.CM

Printed 12/2/2012

Metals by EPA 6010B, Total

Batch 102912A-Th2

Parameter	Unit	Analyzed	DF	MDL	RL	Result
804408-001 Iron	ug/L	10/29/2012 15:37	1.00	0.900	20.0	ND
804408-002 Iron	ug/L	10/29/2012 15:54	1.00	0.900	20.0	ND
804408-003 Iron	ug/L	10/29/2012 16:00	1.00	0.900	20.0	ND
804408-004 Iron	ug/L	10/29/2012 16:06	1.00	0.900	20.0	ND
804408-005 Iron	ug/L	10/29/2012 16:12	1.00	0.900	20.0	ND

Method Blank

Parameter	Unit	DF	Result
Iron	ug/L	1.00	ND

Duplicate

Lab ID = 804408-001

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	2220	2000	111	85 - 115

Matrix Spike

Lab ID = 804408-001

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Iron	ug/L	1.00	2060	2000(2000)	103	75 - 125

MRCCS - Secondary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Iron	ug/L	1.00	5220	5000	104	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	5250	5000	105	90 - 110

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Iron	ug/L	1.00	5400	5000	108	90 - 110

Interference Check Standard A

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Iron	ug/L	1.00	2180	2000	109	80 - 120



Client: E2 Consulting Engineers, Inc.

Project Name: PG&E Topock Project

Page 11 of 27

Project Number: 423575.MP.02.CM

Printed 12/2/2012

Chrome VI by EPA 218.6

Batch 10CrH12R

Parameter	Unit	Analyzed	DF	MDL	RL	Result
804408-001 Chromium, Hexavalent	ug/L	10/24/2012 04:26	1.00	0.00920	0.20	0.76
804408-002 Chromium, Hexavalent	ug/L	10/24/2012 04:37	1.00	0.00920	0.20	2.4
804408-003 Chromium, Hexavalent	ug/L	10/24/2012 04:47	1.00	0.00920	0.20	0.90
804408-004 Chromium, Hexavalent	ug/L	10/24/2012 10:51	5.00	0.0460	1.0	6.4
804408-005 Chromium, Hexavalent	ug/L	10/24/2012 05:08	1.00	0.00920	0.20	0.79

Method Blank

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

Duplicate

Lab ID = 804413-005

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	10.6	10.6	0.194	0 - 20

Low Level Calibration Verification

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	0.186	0.200	93.0	70 - 130

Lab Control Sample

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	4.95	5.00	98.9	90 - 110

Matrix Spike

Lab ID = 804408-001

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	1.74	1.76(1.00)	97.9	90 - 110

Matrix Spike

Lab ID = 804408-002

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	7.31	7.43(5.00)	97.5	90 - 110

Matrix Spike

Lab ID = 804408-003

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	1.87	1.90(1.00)	97.0	90 - 110

Matrix Spike

Lab ID = 804408-004

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	5.00	30.3	31.7(25.0)	94.3	90 - 110

Matrix Spike

Lab ID = 804408-004

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	16.2	16.4(10.0)	98.0	90 - 110

**Client: E2 Consulting Engineers, Inc.****Project Name: PG&E Topock Project****Page 12 of 27****Project Number: 423575.MP.02.CM****Printed 12/2/2012**

Matrix Spike						Lab ID = 804408-005
Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	1.75	1.79(1.00)	95.7	90 - 110
Matrix Spike						Lab ID = 804413-001
Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	6.26	6.50(5.00)	95.1	90 - 110
Matrix Spike						Lab ID = 804413-002
Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	6.32	6.50(5.00)	96.5	90 - 110
Matrix Spike						Lab ID = 804413-003
Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	8.60	8.90(5.00)	93.9	90 - 110
Matrix Spike						Lab ID = 804413-006
Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	1.36	1.42(1.00)	93.2	90 - 110
Matrix Spike						Lab ID = 804413-007
Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	1.37	1.41(1.00)	95.7	90 - 110
Matrix Spike						Lab ID = 804413-008
Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	16.8	17.7(10.0)	91.8	90 - 110
Matrix Spike						Lab ID = 804413-009
Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	17.4	18.3(10.0)	91.4	90 - 110
Matrix Spike						Lab ID = 804413-010
Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	5.00	6.09	6.36(5.00)	94.6	90 - 110
Matrix Spike						Lab ID = 804413-010
Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	6.12	6.44(5.00)	93.5	90 - 110
Matrix Spike						Lab ID = 804413-011
Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	15.3	16.2(10.0)	91.5	90 - 110
Matrix Spike						Lab ID = 804413-014
Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	8.37	8.79(5.00)	91.6	90 - 110



TRUESDAIL LABORATORIES, INC.

Report Continued

Client: E2 Consulting Engineers, Inc.

Project Name: PG&E Topock Project

Page 13 of 27

Project Number: 423575.MP.02.CM

Printed 12/2/2012

MRCCS - Secondary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	4.96	5.00	99.2	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	10.1	10.0	101	95 - 105

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	9.93	10.0	99.3	95 - 105

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	9.71	10.0	97.1	95 - 105

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	9.68	10.0	96.8	95 - 105

Total Dissolved Solids by SM 2540 C

Batch 10TDS12E

Parameter	Unit	Analyzed	DF	MDL	RL	Result
804408-001 Total Dissolved Solids	mg/L	10/18/2012	1.00	0.757	250	4100
804408-002 Total Dissolved Solids	mg/L	10/18/2012	1.00	0.757	250	4000
804408-003 Total Dissolved Solids	mg/L	10/18/2012	1.00	0.757	250	4190

Method Blank

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

Duplicate

Lab ID = 804332-004

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Total Dissolved Solids	mg/L	1.00	335	331	1.20	0 - 10

Lab Control Sample

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Total Dissolved Solids	mg/L	1.00	498	500	99.6	90 - 110

*Report Continued***Client: E2 Consulting Engineers, Inc.****Project Name: PG&E Topock Project****Page 14 of 27****Project Number: 423575.MP.02.CM****Printed 12/2/2012****Total Dissolved Solids by SM 2540 C**

Batch 10TDS12F

Parameter	Unit	Analyzed	DF	MDL	RL	Result
804408-004 Total Dissolved Solids	mg/L	10/19/2012	1.00	0.757	250	4600
804408-005 Total Dissolved Solids	mg/L	10/19/2012	1.00	0.757	250	4180

Method Blank

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

Duplicate

Lab ID = 804408-005

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Total Dissolved Solids	mg/L	1.00	4140	4180	0.962	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



Client: E2 Consulting Engineers, Inc.

Project Name: PG&E Topock Project

Page 15 of 27

Project Number: 423575.MP.02.CM

Printed 12/2/2012

Ammonia Nitrogen by SM4500-NH3D

Batch 10NH312C

Parameter	Unit	Analyzed	DF	MDL	RL	Result
804408-001 Ammonia as N	mg/L	10/22/2012	1.00	0.00980	0.500	ND
804408-002 Ammonia as N	mg/L	10/22/2012	1.00	0.00980	0.500	ND
804408-003 Ammonia as N	mg/L	10/22/2012	1.00	0.00980	0.500	ND
804408-004 Ammonia as N	mg/L	10/22/2012	1.00	0.00980	0.500	ND
804408-005 Ammonia as N	mg/L	10/22/2012	1.00	0.00980	0.500	ND

Method Blank

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

Duplicate

Lab ID = 804303-001

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	7.96	8.00	99.5	90 - 110

Lab Control Sample Duplicate

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

Matrix Spike

Lab ID = 804408-001

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Ammonia as N	mg/L	1.00	7.22	8.00(8.00)	90.2	75 - 125

MRCCS - Secondary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Ammonia as N	mg/L	1.00	6.14	6.00	102	90 - 110

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Ammonia as N	mg/L	1.00	5.99	6.00	99.8	90 - 110

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Ammonia as N	mg/L	1.00	5.46	6.00	90.9	90 - 110



Client: E2 Consulting Engineers, Inc.

Project Name: PG&E Topock Project

Page 16 of 27

Project Number: 423575.MP.02.CM

Printed 12/2/2012

Metals by EPA 200.8, Dissolved		Batch 111312A				
Parameter	Unit	Analyzed	DF	MDL	RL	Result
804408-001 Mercury	ug/L	11/13/2012 16:33	2.50	0.0600	0.50	ND
804408-002 Mercury	ug/L	11/13/2012 16:40	2.50	0.0600	0.50	ND
804408-003 Mercury	ug/L	11/13/2012 16:47	2.50	0.0600	0.50	ND
804408-004 Mercury	ug/L	11/13/2012 16:55	2.50	0.0600	0.50	ND
804408-005 Mercury	ug/L	11/13/2012 17:02	2.50	0.0600	0.50	ND

Method Blank

Parameter	Unit	DF	Result
Mercury	ug/L	1.00	ND

Low Level Calibration Verification

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Mercury	ug/L	1.00	0.245	0.200	122	70 - 130

Lab Control Sample

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Mercury	ug/L	2.50	10.7	10.0	107	85 - 115

Matrix Spike

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Mercury	ug/L	2.50	10.8	10.0(10.0)	108	75 - 125

Matrix Spike Duplicate

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Mercury	ug/L	2.50	10.7	10.0(10.0)	107	75 - 125

MRCCS - Secondary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Mercury	ug/L	1.00	2.04	2.00	102	90 - 110

MRCVS - Primary

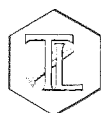
Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Mercury	ug/L	1.00	2.19	2.00	110	90 - 110

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Mercury	ug/L	1.00	2.18	2.00	109	90 - 110

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Mercury	ug/L	1.00	2.14	2.00	107	90 - 110



Client: E2 Consulting Engineers, Inc.

Project Name: PG&E Topock Project

Page 18 of 27

Project Number: 423575.MP.02.CM

Printed 12/2/2012

Metals by 200.7, Dissolved		Batch 110712A-Th2				
Parameter	Unit	Analyzed	DF	MDL	RL	Result
804408-001 Aluminum	ug/L	11/07/2012 12:28	1.00	10.0	50.0	ND
Boron	ug/L	11/07/2012 12:28	1.00	2.70	200	975
Iron	ug/L	11/07/2012 12:28	1.00	9.50	20.0	ND
Magnesium	ug/L	11/07/2012 12:28	1.00	55.4	500	4390
Zinc	ug/L	11/07/2012 12:28	1.00	7.00	20.0	ND
804408-002 Aluminum	ug/L	11/07/2012 13:12	1.00	10.0	50.0	ND
Boron	ug/L	11/07/2012 13:12	1.00	2.70	200	1080
Iron	ug/L	11/07/2012 13:12	1.00	9.50	20.0	ND
Magnesium	ug/L	11/07/2012 13:12	1.00	55.4	500	10600
Zinc	ug/L	11/07/2012 13:12	1.00	7.00	20.0	ND
804408-003 Aluminum	ug/L	11/07/2012 13:17	1.00	10.0	50.0	ND
Boron	ug/L	11/07/2012 13:17	1.00	2.70	200	1110
Iron	ug/L	11/07/2012 13:17	1.00	9.50	20.0	ND
Magnesium	ug/L	11/07/2012 13:17	1.00	55.4	500	5740
Zinc	ug/L	11/07/2012 13:17	1.00	7.00	20.0	32.2
804408-004 Aluminum	ug/L	11/07/2012 13:23	1.00	10.0	50.0	ND
Boron	ug/L	11/07/2012 13:23	1.00	2.70	200	1030
Iron	ug/L	11/07/2012 13:23	1.00	9.50	20.0	ND
Magnesium	ug/L	11/07/2012 13:23	1.00	55.4	500	16600
Zinc	ug/L	11/07/2012 13:23	1.00	7.00	20.0	ND
804408-005 Aluminum	ug/L	11/07/2012 13:29	1.00	10.0	50.0	ND
Boron	ug/L	11/07/2012 13:29	1.00	2.70	200	976
Iron	ug/L	11/07/2012 13:29	1.00	9.50	20.0	ND
Magnesium	ug/L	11/07/2012 13:29	1.00	55.4	500	4380
Zinc	ug/L	11/07/2012 13:29	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
Magnesium	ug/L	1.00	ND
Boron	ug/L	1.00	ND



Client: E2 Consulting Engineers, Inc.

Project Name: PG&E Topock Project

Page 19 of 27

Project Number: 423575.MP.02.CM

Printed 12/2/2012

Duplicate

Lab ID = 804408-001

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Aluminum	ug/L	1.00	ND	0	0	0 - 20
Iron	ug/L	1.00	ND	0	0	0 - 20
Zinc	ug/L	1.00	ND	0	0	0 - 20
Magnesium	ug/L	1.00	4490	4390	2.16	0 - 20
Boron	ug/L	1.00	998	975	2.35	0 - 20

Lab Control Sample

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Aluminum	ug/L	1.00	1970	2000	98.6	85 - 115
Iron	ug/L	1.00	2090	2000	104	85 - 115
Zinc	ug/L	1.00	1900	2000	94.8	85 - 115
Magnesium	ug/L	1.00	2120	2000	106	85 - 115
Boron	ug/L	1.00	1920	2000	96.0	85 - 115

Matrix Spike

Lab ID = 804408-001

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Aluminum	ug/L	1.00	1670	2000(2000)	83.6	75 - 125
Iron	ug/L	1.00	1900	2000(2000)	95.0	75 - 125
Zinc	ug/L	1.00	2120	2000(2000)	106	75 - 125
Magnesium	ug/L	1.00	6570	6390(2000)	109	75 - 125
Boron	ug/L	1.00	2870	2980(2000)	94.8	75 - 125

Matrix Spike Duplicate

Lab ID = 804408-001

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Aluminum	ug/L	1.00	1620	2000(2000)	81.2	75 - 125
Iron	ug/L	1.00	1840	2000(2000)	91.8	75 - 125
Zinc	ug/L	1.00	2050	2000(2000)	102	75 - 125
Magnesium	ug/L	1.00	6380	6390(2000)	99.4	75 - 125
Boron	ug/L	1.00	2810	2980(2000)	91.6	75 - 125

MRCCS - Secondary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Aluminum	ug/L	1.00	4810	5000	96.2	95 - 105
Iron	ug/L	1.00	5020	5000	100	95 - 105
Zinc	ug/L	1.00	4800	5000	96.0	95 - 105
Magnesium	ug/L	1.00	4900	5000	97.9	95 - 105
Boron	ug/L	1.00	4910	5000	98.1	95 - 105


Client: E2 Consulting Engineers, Inc.
Project Name: PG&E Topock Project
Page 23 of 27
Project Number: 423575.MP.02.CM
Printed 12/2/2012

Metals by 200.7, Dissolved		Batch 110612A-Th2				
Parameter	Unit	Analyzed	DF	MDL	RL	Result
804408-001 Calcium	ug/L	11/06/2012 15:07	50.0	600	5000	83100
Potassium	ug/L	11/06/2012 16:14	5.00	1350	5000	11100
Sodium	ug/L	11/06/2012 13:31	500	197000	500000	1660000
804408-002 Calcium	ug/L	11/06/2012 14:14	100	1200	10000	143000
Potassium	ug/L	11/06/2012 16:37	2.00	540	2000	13100
Sodium	ug/L	11/06/2012 14:14	100	39400	100000	1470000
804408-003 Calcium	ug/L	11/06/2012 14:20	100	1200	10000	78200
Potassium	ug/L	11/06/2012 16:43	2.00	540	2000	12500
Sodium	ug/L	11/06/2012 14:20	100	39400	100000	1570000
804408-004 Calcium	ug/L	11/06/2012 14:26	100	1200	10000	209000
Potassium	ug/L	11/06/2012 16:49	2.00	540	2000	16200
Sodium	ug/L	11/06/2012 14:26	100	39400	100000	1640000
804408-005 Calcium	ug/L	11/06/2012 14:32	100	1200	10000	83400
Potassium	ug/L	11/06/2012 16:55	2.00	540	2000	12100
Sodium	ug/L	11/06/2012 14:32	100	39400	100000	1580000

Method Blank

Parameter	Unit	DF	Result
Calcium	ug/L	1.00	ND
Potassium	ug/L	1.00	ND
Sodium	ug/L	1.00	ND

Duplicate
Lab ID = 804408-001

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Calcium	ug/L	50.0	84400	83100	1.55	0 - 20
Potassium	ug/L	5.00	10600	11100	4.23	0 - 20
Sodium	ug/L	500	1580000	1660000	4.62	0 - 20

Lab Control Sample

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Calcium	ug/L	1.00	2190	2000	110	85 - 115
Potassium	ug/L	1.00	2140	2000	107	85 - 115
Sodium	ug/L	1.00	1980	2000	99.0	85 - 115



Client: E2 Consulting Engineers, Inc.

Project Name: PG&E Topock Project

Page 24 of 27

Project Number: 423575.MP.02.CM

Printed 12/2/2012

Matrix Spike

Lab ID = 804408-001

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Calcium	ug/L	50.0	189000	183000(100000)	106	75 - 125
Potassium	ug/L	5.00	21700	21100(10000)	106	75 - 125
Sodium	ug/L	500	2690000	2660000(100000)	103	75 - 125

MRCSS - Secondary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Calcium	ug/L	1.00	5060	5000	101	95 - 105
Potassium	ug/L	1.00	4960	5000	99.2	95 - 105
Sodium	ug/L	1.00	4900	5000	97.9	95 - 105

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Calcium	ug/L	1.00	5190	5000	104	90 - 110

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Calcium	ug/L	1.00	4980	5000	99.5	90 - 110

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Calcium	ug/L	1.00	5020	5000	100	90 - 110

MRCVS - Primary

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

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Calcium	ug/L	1.00	5130	5000	102	90 - 110

MRCVS - Primary

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

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Potassium	ug/L	1.00	5080	5000	102	90 - 110

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Potassium	ug/L	1.00	4960	5000	99.2	90 - 110



TRUESDAIL LABORATORIES, INC.

Report Continued

Client: E2 Consulting Engineers, Inc.

Project Name: PG&E Topock Project

Page 27 of 27

Project Number: 423575.MP.02.CM

Printed 12/2/2012

Turbidity by SM 2130 B

Batch 10TUC12J

Parameter	Unit	Analyzed	DF	MDL	RL	Result
804408-001 Turbidity	NTU	10/17/2012	1.00	0.0140	0.100	ND
804408-002 Turbidity	NTU	10/17/2012	1.00	0.0140	0.100	0.136
804408-003 Turbidity	NTU	10/17/2012	1.00	0.0140	0.100	ND
804408-004 Turbidity	NTU	10/17/2012	1.00	0.0140	0.100	ND
804408-005 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



Total Dissolved Solids by SM 2540 C

Calculations

Batch: 10TDS12E
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	71.8091	71.8108	71.8105	0.0003	No	0.0014	14.0	25.0	ND	1
804302-1	50	71.3078	71.3677	71.3673	0.0004	No	0.0595	1190.0	50.0	1190.0	1
804302-2	50	69.5551	69.6245	69.6241	0.0004	No	0.0690	1380.0	50.0	1380.0	1
804302-3	50	65.4453	65.5167	65.5166	0.0001	No	0.0713	1426.0	50.0	1426.0	1
804302-4	50	78.3756	78.4832	78.4832	0.0000	No	0.1076	2152.0	50.0	2152.0	1
804302-5	50	68.8712	68.9165	68.9161	0.0004	No	0.0449	898.0	50.0	898.0	1
804302-6	50	67.7686	67.8279	67.8279	0.0000	No	0.0593	1186.0	50.0	1186.0	1
804332-1	100	68.0106	68.0364	68.0360	0.0004	No	0.0254	254.0	25.0	254.0	1
804332-2	100	69.4115	69.4389	69.4389	0.0000	No	0.0274	274.0	25.0	274.0	1
804332-3	100	67.2086	67.2429	67.2425	0.0004	No	0.0339	339.0	25.0	339.0	1
804332-4	100	72.0944	72.1279	72.1275	0.0004	No	0.0331	331.0	25.0	331.0	1
804332-4D	100	69.2080	69.2416	69.2415	0.0001	No	0.0335	335.0	25.0	335.0	1
LCS	100	72.3864	72.4363	72.4362	0.0001	No	0.0498	498.0	25.0	498.0	1
804332-5	100	74.6076	74.639	74.6386	0.0004	No	0.0310	310.0	25.0	310.0	1
804332-6	50	51.0602	51.1278	51.1278	0.0000	No	0.0676	1352.0	50.0	1352.0	1
804332-7	50	49.3551	49.4087	49.4087	0.0000	No	0.0536	1072.0	50.0	1072.0	1
804332-8	50	49.8836	49.9372	49.9372	0.0000	No	0.0536	1072.0	50.0	1072.0	1
804332-9	50	50.6353	50.6952	50.6949	0.0003	No	0.0596	1192.0	50.0	1192.0	1
804357-5	50	75.7609	75.7913	75.7913	0.0000	No	0.0304	608.0	50.0	608.0	1
804357-6	50	111.3691	111.4003	111.4003	0.0000	No	0.0312	624.0	50.0	624.0	1
804408-1	10	49.1835	49.2245	49.2245	0.0000	No	0.0410	4100.0	250.0	4100.0	1
804408-2	10	75.2925	75.3327	75.3325	0.0002	No	0.0400	4000.0	250.0	4000.0	1
804408-3	10	50.1285	50.1705	50.1704	0.0001	No	0.0419	4190.0	250.0	4190.0	1

Calculation as follows:

Filterable residue (TDS), mg/L =

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

Where:

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

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

Laboratory Control Sample (LCS) Summary

QC Std I.D.	Measured Value, ppm	Theoretical Value, ppm	Percent Rec	Acceptance Limit	QC Within Control?
LCS1	498	500	99.6%	90-110%	Yes
LCSD					

LCS Recovery

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

P = Percent recovery.

LC = Measured LCS value (ppm).

LT = Theoretical LCS value (ppm).

Duplicate Determinations Difference Summary

Lab Number	Sample Weight, g	Sample Dup Weight, g	% RPD	Acceptance Limit	QC Within Control?
804332-4	0.0331	0.0335	0.6%	≤5%	Yes

Duplicate Determination Difference

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

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

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

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

C = Average weight in (g).

Jenny T.

Analyst Printed Name

Analyst Signature

Hope T.

Reviewer Printed Name

Reviewer Signature

Total Dissolved Solids by SM 2540 C

TDS/EC CHECK

Batch: 10TDS12E
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
804302-1	1820	0.65	1183	1.01
804302-2	2050	0.67	1332.5	1.04
804302-3	2060	0.69	1339	1.06
804302-4	3150	0.68	2047.5	1.05
804302-5	1380	0.65	897	1.00
804302-6	1780	0.67	1157	1.03
804332-1	450	0.56	292.5	0.87
804332-2	435	0.63	282.75	0.97
804332-3	527	0.64	342.55	0.99
804332-4	523	0.63	339.95	0.97
804332-4D	523	0.64	339.95	0.99
LCS				
804332-5	480	0.65	312	0.99
804332-6	1913	0.71	1243.45	1.09
804332-7	1620	0.66	1053	1.02
804332-8	1654	0.65	1075.1	1.00
804332-9	1758	0.68	1142.7	1.04
804357-5	1021	0.60	663.65	0.92
804357-6	1015	0.61	659.75	0.95
804408-1	7480	0.55	4862	0.84
804408-2	7250	0.55	4712.5	0.85
804408-3	7440	0.56	4836	0.87





Truesdail Laboratories, Inc.

Total Dissolved Solids by SM 2540 C**Calculations**Batch: 10TDS12F
Date Analyzed: 10/16/12

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	69.5584	69.5585	69.5584	0.0001	No	0.0000	0.0	25.0	ND	1
804408-4	10	50.7026	50.7486	50.7486	0.0000	No	0.0460	4600.0	250.0	4600.0	1
804408-5	10	47.5155	47.5575	47.5573	0.0002	No	0.0418	4180.0	250.0	4180.0	1
804409-6	100	66.8046	66.8309	66.8305	0.0004	No	0.0259	259.0	25.0	259.0	1
804409-7	50	76.6743	76.7234	76.723	0.0004	No	0.0487	974.0	50.0	974.0	1
804409-8	100	76.1917	76.2420	76.2417	0.0003	No	0.0500	500.0	25.0	500.0	1
804409-10	100	68.8025	68.8361	68.8357	0.0004	No	0.0332	332.0	25.0	332.0	1
804409-11	100	67.0518	67.0850	67.0847	0.0003	No	0.0329	329.0	25.0	329.0	1
804434-1	50	76.2794	76.3722	76.372	0.0002	No	0.0926	1852.0	50.0	1852.0	1
804434-2	50	65.6670	65.7573	65.7570	0.0003	No	0.0900	1800.0	50.0	1800.0	1
804434-3	20	48.5862	48.6679	48.6677	0.0002	No	0.0815	4075.0	125.0	4075.0	1
804408-5D	10	50.1575	50.1989	50.1989	0.0000	No	0.0414	4140.0	250.0	4140.0	1
LCS	100	73.4436	73.4925	73.4925	0.0000	No	0.0489	489.0	25.0	489.0	1
804434-4	50	69.3397	69.4434	69.443	0.0004	No	0.1033	2066.0	50.0	2066.0	1
804434-5	20	51.4496	51.5385	51.5383	0.0002	No	0.0887	4435.0	125.0	4435.0	1
804434-6	50	78.3965	78.4765	78.4765	0.0000	No	0.0800	1600.0	50.0	1600.0	1
804434-7	20	49.1782	49.268	49.2679	0.0001	No	0.0897	4485.0	125.0	4485.0	1
804434-8	100	50.8651	50.8911	50.8911	0.0000	No	0.0260	260.0	25.0	260.0	1
804434-9	50	67.6984	67.8248	67.8248	0.0000	No	0.1264	2528.0	50.0	2528.0	1
804439	50	76.3414	76.384	76.3836	0.0004	No	0.0422	844.0	50.0	844.0	1
804452-1	50	66.7120	66.8212	66.8211	0.0001	No	0.1091	2182.0	50.0	2182.0	1
804452-2	20	51.4696	51.5205	51.5205	0.0000	No	0.0509	2545.0	125.0	2545.0	1
804438-1	100	111.7303	111.7672	111.7668	0.0004	No	0.0365	365.0	25.0	365.0	1

Calculation as follows:

Filterable residue (TDS), mg/L =

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

Where:

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

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

Laboratory Control Sample (LCS) Summary

QC Std ID	Measured Value, ppm	Theoretical Value, ppm	Percent Rec	Acceptance Limit	QC Within Control?
LCS1	489	500	97.8%	90-110%	Yes
LCS2					

LCS Recovery

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

P = Percent recovery.

LC = Measured LCS value (ppm).

LT = Theoretical LCS value (ppm).

Duplicate Determinations Difference Summary

Lab Number	Sample Weight, g	Sample Dup Weight, g	% RPD	Acceptance Limit	QC Within Control?
804408-5	0.0418	0.0414	0.5%	≤5%	Yes

Duplicate Determination Difference

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

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

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

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

C = Average weight in (g).

Jenny T.

Analyst Printed Name

Analyst Signature

Reviewer Printed Name

Reviewer Printed Name

Reviewer Signature

048

Total Dissolved Solids by SM 2540 C

TDS/EC CHECK

Batch: 10TDS12F
Date Analyzed: 10/16/12

Laboratory Number	EC	TDS/EC Ratio: 0.55-.9	Calculated TDS (EC*0.65)	Measured TDS / Calc TDS <1.3
804408-4	8440	0.55	5486	0.84
804408-5	7470	0.56	4855.5	0.86
804409-6	441	0.59	286.65	0.90
804409-7	1453	0.67	944.45	1.03
804409-8	771	0.65	501.15	1.00
804409-10	520	0.64	338	0.98
804409-11	519	0.63	337.35	0.98
804434-1	2580	0.72	1677	1.10
804434-2	2590	0.69	1683.5	1.07
804434-3	5380	0.76	3497	1.17
804408-5D	7470	0.55	4855.5	0.85
LCS				
804434-4	2830	0.73	1839.5	1.12
804434-5	5960	0.74	3874	1.14
804434-6	2370	0.68	1540.5	1.04
804434-7	5930	0.76	3854.5	1.16
804434-8	438	0.59	284.7	0.91
804434-9	3670	0.69	2385.5	1.06
804439	1410	0.60	916.5	0.92
804452-1	3660	0.60	2379	0.92
804452-2	4080	0.62	2652	0.96
804438-1	534	0.68	347.1	1.05

Alkalinity by SM 2320B
Calculations

Analytical Batch: 10ALK12C
Matrix: Water
Date of Analysis: 10/18/12

Lab ID	Sample pH	Sample Volume (ml)	N of HCL	Titrant Volume to reach pH 8.3	P Alkalinity as CaCO ₃	Titrant Volume to reach pH 4.5	Total mL titrant to reach pH 0.3 unit lower	Total Alkalinity as CaCO ₃	RL, ppm	Total Alkalinity Reported Value	HCO ₃ Conc. as CaCO ₃ (ppm)	CO ₃ Alkalinity as CaCO ₃ (ppm)	OH Alkalinity as CaCO ₃ (ppm)	Low Alkalinity as CaCO ₃ (<20ppm)
BLANK	6.25	50	0.02		0.0	0.00		0.0	5	ND	ND	ND	ND	
804233-2	7.14	50	0.02		0.0	22.80		456.0	5	456.0	456.0	ND	ND	
804246	8.53	50	0.02	0.2	3.0	3.15		63.0	5	63.0	57.0	6	ND	
804295-5	10.49	50	0.02	1.30	26.0	1.80		36.0	5	36.0	ND	20	16	
804295-5 DUP	10.54	50	0.02	1.30	26.0	1.75		35.0	5	35.0	ND	18	17	
804295-6	10.53	50	0.02	1.3	26.0	1.65		33.0	5	33.0	ND	14	19	
804332-3	7.79	50	0.02		0.0	6.25		125.0	5	125.0	125.0	ND	ND	
804332-4	7.96	50	0.02		0.0	6.50		130.0	5	130.0	130.0	ND	ND	
804408-1	8.00	50	0.02		0.0	3.05		61.0	5	61.0	61.0	ND	ND	
804408-2	7.83	50	0.02		0.0	2.45		49.0	5	49.0	49.0	ND	ND	
804408-3	8.00	50	0.02		0.0	2.95		59.0	5	59.0	59.0	ND	ND	
804408-4	7.73	50	0.02		0.0	2.30		46.0	5	46.0	46.0	ND	ND	
804408-5	8.01	50	0.02		0.0	3.10		62.0	5	62.0	62.0	ND	ND	
804408-5 MS	9.67	50	0.02	2.3	45.0	7.75		155.0	5	155.0	65.0	90	ND	
804409-7	7.18	50	0.02		0.0	14.65		293.0	5	293.0	293.0	ND	ND	
804409-8	7.43	50	0.02		0.0	8.40		168.0	5	168.0	168.0	ND	ND	
804409-10	7.79	50	0.02		0.0	7.05		141.0	5	141.0	141.0	ND	ND	
804409-11	7.75	50	0.02		0.0	7.30		146.0	5	146.0	146.0	ND	ND	
804411-6	9.04	50	0.02	0.6	11.0	7.50		150.0	5	150.0	128.0	22	ND	
LCS	10.52	50	0.02	2.4	47.0	5.05		101.0	5	101.0	7.0	94	ND	
LCSD	10.57	50	0.02	2.3	46.0	5.10		102.0	5	102.0	10.0	92	ND	

Calculations as follows:

T or P =

$$\left(\frac{A \times N \times 50000}{\text{mL sample}} \right)$$

Where:

T = Total Alkalinity, mg CaCO₃/LP = Phenolphthalein Alkalinity, mg CaCO₃/L

A = mL standard acid used

N = normality of standard acid

Low Alkalinity: = $\frac{(2 \times B - C) \times N \times 50000}{\text{mL sample}}$
as mg/L CaCO₃

Where: B = mL titrant to first recorded pH

C = Total mL titrant to reach pH 0.3 unit lower

N = Normality of standard acid

LCS = Laboratory Control Standard/Duplicate

MS/MSD = Matrix Spike/Duplicate

ND = Not Detected (below the reporting limit)

Blank Summary

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

Laboratory Control Sample (LCS/LCSD) Summary

QC Std I.D.	Measured Value, ppm	Theoretical Value, ppm	%Recovery	Acceptance Limit	QC Within Control?
LCS	101	100	101.0%	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	Acceptance Limit	QC Within Control?
804295-5	36	35	2.8%	≤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?
804408-5	62	1	100	100	155	162.00	93%	75-125	Yes			
		1	100	100								

Melissa S.

Analyst Printed Name

101712c

Analyst Signature

Maksim G.
Hope J.

Reviewer Printed Name

Reviewer Signature

053

SC 62


CH2MHILL

CHAIN OF CUSTODY RECORD

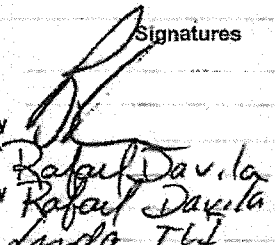
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Page 1 OF 1

804408

Project Name PG&E Topock Location Topock Project Manager Jay Piper Sample Manager Matt Ringier Project Number 423575.MP.02.CM Task Order Project 2012-CMP-028 Turnaround Time 10 Days Shipping Date: 10/16/2012 COC Number: 1				Container:		250 ml Poly	500 ml Poly	1x500 ml Poly	2x1 Liter	2x1 Liter	2x1 Liter	2x1 Liter	2x1 Liter	1 Liter Poly	* The Metals list should be: Al, Sb, As, Ba, Be, B, Ca, Cd, Co, Cr, Cu, Fe, Pb, Mg, Mn, Hg, Mo, Ni, Se, Ag, Tl, V, Zn, K, Na <div style="text-align: right;">  10/17/2012 </div> <div style="border: 2px solid black; padding: 10px; text-align: center; font-weight: bold; font-size: 1.5em;"> ALERT !! Level III QC </div>	Number of Containers	COMMENTS
				Preservatives:		(NH4)2S O4/NH4O H, 4°C	HNO3, 4°C	HNO3, 4°C	4°C	4°C	4°C	4°C	4°C	H2SO4, pH=2 4°C			
				Filtered:		Field	NA	Field	NA	NA	NA	NA	NA	NA			
				Holding Time:		28	180	180	2	2	2	2	2	28			
				Cr6 (E218.6) Field Filtered	Metals (E2108) Total Fe	* Metals (E200series) Field Filtered AlSbAsBeBaBcCaCdCoCrCuFeP		Specific Conductance (E120.1)	Anions (E300.0) Cl, F, SO4	Turbidity (SM2130)	TDS (SM2540C)	Alkalinity (SM2320B)	Ammonia (SM4500NH3)				
DATE	TIME	MATRIX															
1 CW-02D-028	10/15/2012	10:36	Water	X	X	X	X	X	X	X	X	X	X		6	} pH=2	
2 CW-02M-028	10/15/2012	12:04	Water	X	X	X	X	X	X	X	X	X	X		6		
3 CW-03D-028	10/15/2012	14:26	Water	X	X	X	X	X	X	X	X	X	X		6		
4 CW-03M-028	10/15/2012	15:34	Water	X	X	X	X	X	X	X	X	X	X		6		
5 OW-90-028	10/15/2012	7:10	Water	X	X	X	X	X	X	X	X	X	X		6		
OW-86-028	10/16/2012	7:10	Water	X											1	Hold	
OW-87-028	10/16/2012	7:15	Water	X											1	Hold	
TOTAL NUMBER OF CONTAINERS														32			

For Sample Condition
See Form Attached

Approved by Sampled by Relinquished by Received by Relinquished by Received by		Signatures  Date/Time 10-16-12 1540 10/16/12 15:40 10-16-12 21:38 10/16/12 21:30		Shipping Details Method of Shipment: courier On Ice: yes / no Airbill No: Lab Name: Truesdail Laboratories, Inc. Lab Phone: (714) 730-6239		ATTN: Sample Custody		Special Instructions: October 1-5, 2012 Report Copy to Shawn Duffy (530) 229-3303	
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CH2MHILL

CHAIN OF CUSTODY RECORD

10/16/2012 3:17:52 PM

Page 1 OF 1

804408

Project Name PG&E Topock Location Topock Project Manager Jay Piper Sample Manager Matt Ringler Project Number 423575.MP.02.CM Task Order Project 2012-CMP-028 Turnaround Time 10 Days Shipping Date: 10/16/2012 COC Number: 1				Container:		250 ml Poly	500 ml Poly	1x500 ml Poly	2x1 Liter	2x1 Liter	2x1 Liter	2x1 Liter	2x1 Liter	1 Liter Poly	ALERT !! Level III QC	Number of Containers	COMMENTS
				Preservatives:		(NH4)2S O4/NH4O H, 4°C	HNO3, 4°C	HNO3, 4°C	4°C	4°C	4°C	4°C	4°C	H2SO4, pH<2, 4°C			
				Filtered:		Field	NA	Field	NA	NA	NA	NA	NA	NA			
				Holding Time:		28	180	180	2	2	2	2	2	28			
						C6 (E218.6) Field Filtered	Metals (6010B) Total Fe	Metals (E200series) Field Filtered AsBAsBabBcAcCdCoCICuFePb	Specific Conductance (E120.1)	Anions (E300.0) Cl, F, SO4	Turbidity (SM12130)	TDS (SM12540C)	Alkalinity (SM2320B)	Ammonia (SM4500NH3)			
				DATE	TIME	Matrix											
1	CW-02D-028	10/15/2012	10:36	Water	X	X	X	X	X	X	X	X	X		6	} pH=2	
2	CW-02M-028	10/15/2012	12:04	Water	X	X	X	X	X	X	X	X		6			
3	CW-03D-028	10/15/2012	14:26	Water	X	X	X	X	X	X	X	X		6			
4	CW-03M-028	10/15/2012	15:34	Water	X	X	X	X	X	X	X	X		6			
5	OW-90-028	10/15/2012	7:10	Water	X	X	X	X	X	X	X	X		6			
	OW-86-028	10/16/2012	7:10	Water	X										1	Hold	
	OW-87-028	10/16/2012	7:15	Water	X										1	Hold	
TOTAL NUMBER OF CONTAINERS															32		

For Sample Conditions
See Form Attached

Approved by Sampled by Relinquished by Received by Relinquished by Received by	Signatures 	Date/Time 10-16-12 1540 10/16/12 15:40 10-16-12 21:38 10/16/12 21:30	Shipping Details Method of Shipment: courier On Ice: yes / no Airbill No: Lab Name: Truesdail Laboratories, Inc. Lab Phone: (714) 730-6239
---	-------------------------------	--	---

ATTN:

Special Instructions:

October 1-5, 2012

Sample Custody

Report Copy to
 Shawn Duffy
 (530) 229-3303

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					

10-29-12



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)	<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(1-2)	↓	↓	↓	↓	↓			
804294	↓	↓	↓	↓	↓			
804293(1-3)	<1	<2	10/15/12	M.M	3010A			
804295(1-8)	↓	↓	↓	↓	↓			
804303	>1	>2	10/15/12	M.M	3010A			
804343(1-24)	<1	>2	↓	↓	NO	10-15-12	10-16-12	pH < 2
804222(1-4)	↓	↓	↓	↓	↓	↓	↓	↓
804221(1-3)	↓	↓	↓	↓	↓	↓	↓	↓
804357(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	M.M	3010A			
804408(1-5)	↓	>2	↓	↓	↓			
804409(1-11)	↓	↓	↓	↓	↓			
804410(1-2)	↓	↓	↓	↓	↓			
804411(1-6)	↓	↓	↓	↓	↓			
804412(1-4)	↓	↓	↓	↓	↓			
804413(1-15)	↓	↓	↓	↓	↓			
804269(1-12)	<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)	↓	↓	↓	↓	↓	↓	↓	↓
804425(1-3)	↓	↓	↓	↓	↓	↓	↓	↓
804429(1-12)	↓	↓	↓	↓	↓	↓	↓	↓
804439	>1	>2	10/18/12	KR	YES			
804442	>1	>2	↓	↓	↓			
804418(1-5)	<1	<2	10/22/12	M.M	3010A			
804434(1-9)	↓	↓	↓	↓	↓			
804435(1-7,6-9)	↓	↓	↓	↓	↓			
804436(1-7,6-10)	↓	↓	↓	↓	↓			
804437	↓	↓	↓	↓	↓			
804438	↓	↓	↓	↓	↓			
804458(1-3)	↓	↓	↓	↓	↓			
804304	<1	<2	10/16/12	M.M	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: E 2

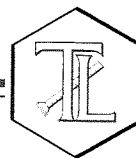
Lab # 804408

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)? 3.8°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: Alex

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 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 2012-CMP-028, GROUNDWATER MONITORING
PROJECT, TLI NO.: 804461

Truesdail Laboratories, Inc. is pleased to submit this report summarizing the Topock 2012-CMP-028 groundwater-monitoring project. 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 are under Section 5.

The samples were received and delivered with the chain of custody October 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.

Samples 804461-1 through 804461-6 for Turbidity by SM 2130B were received past the method specified holding time.


On October 23, 2012, Mr. Shawn Duffy updated the metals analyte list and provided a revised chain of custody.


Due to instrument problems, samples for Total Dissolved Metals analysis by EPA 200.8 (except Mercury) were sub-contracted to Advanced Technology Laboratories – Las Vegas with Mr. Duffy's approval. The results will be forwarded when they become available.

No other violations or non-conformance actions occurred for this data package.

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

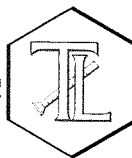
Respectfully Submitted,
TRUESDAIL LABORATORIES, INC.

for 
Mona Nassimi
Manager, Analytical Services


Michael Ngo
Quality Assurance/Quality Control Officer

TRUESDAIL LABORATORIES, INC.

EXCELLENCE IN INDEPENDENT TESTING



Established 1931

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

Attention: Shawn Duffy

Sample: Fourteen (14) Groundwater Samples

Project Name: PG&E Topock Project

Project No.: 423575.MP.02.CM

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

Laboratory No.: 804461

Date: December 2, 2012

Collected: October 16 - 18, 2012

Received: October 18, 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 2130B	Turbidity	Gautam Savani
EPA 300.0	Anions	Giawad Ghenniwa
SM 4500-NH3 D	Ammonia	Melissa Scharfe
SW 6010B	Metals by ICP	Ethel Suico
EPA 200.7	Metals by ICP	Ethel Suico
EPA 200.8	Metals by ICP/MS	Bitu Emami
EPA 218.6	Hexavalent Chromium	George Wahba

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

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

Attention: Shawn Duffy

Project Name: PG&E Topock Project
Project No.: 423575.MP.02.CM
P.O. No.: 423575.MP.02.CM

Laboratory No.: 804461
Date Received: October 18, 2012

Analytical Results Summary

Lab Sample ID	Field ID	Analysis Method	Extraction Method	Sample Date	Sample Time	Parameter	Result	Units	RL
804461-001	CW-01D-028	E120.1	NONE	10/16/2012	11:52	EC	7180	umhos/cm	2.00
804461-001	CW-01D-028	E200.7	FLDFLT	10/16/2012	11:52	Aluminum	ND	ug/L	50.0
804461-001	CW-01D-028	E200.7	FLDFLT	10/16/2012	11:52	BORON	918	ug/L	200
804461-001	CW-01D-028	E200.7	FLDFLT	10/16/2012	11:52	Calcium	190000	ug/L	10000
804461-001	CW-01D-028	E200.7	FLDFLT	10/16/2012	11:52	Iron	ND	ug/L	20.0
804461-001	CW-01D-028	E200.7	FLDFLT	10/16/2012	11:52	Magnesium	17000	ug/L	500
804461-001	CW-01D-028	E200.7	FLDFLT	10/16/2012	11:52	Potassium	14000	ug/L	2000
804461-001	CW-01D-028	E200.7	FLDFLT	10/16/2012	11:52	Sodium	1410000	ug/L	100000
804461-001	CW-01D-028	E200.7	FLDFLT	10/16/2012	11:52	Zinc	ND	ug/L	20.0
804461-001	CW-01D-028	E200.8	FLDFLT	10/16/2012	11:52	Mercury	ND	ug/L	0.50
804461-001	CW-01D-028	E218.6	FLDFLT	10/16/2012	11:52	Chromium, Hexavalent	0.46	ug/L	0.20
804461-001	CW-01D-028	E300	NONE	10/16/2012	11:52	Chloride	2120	mg/L	50.0
804461-001	CW-01D-028	E300	NONE	10/16/2012	11:52	Fluoride	2.46	mg/L	0.500
804461-001	CW-01D-028	E300	NONE	10/16/2012	11:52	Sulfate	496	mg/L	25.0
804461-001	CW-01D-028	SM2130B	NONE	10/16/2012	11:52	Turbidity	ND J	NTU	0.100
804461-001	CW-01D-028	SM2320B	NONE	10/16/2012	11:52	Alkalinity	53.0	mg/L	5.00
804461-001	CW-01D-028	SM2320B	NONE	10/16/2012	11:52	Alkalinity, Bicarbonate (As	53.0	mg/L	5.00
804461-001	CW-01D-028	SM2320B	NONE	10/16/2012	11:52	Alkalinity, Carbonate (As C	ND	mg/L	5.00
804461-001	CW-01D-028	SM2540C	NONE	10/16/2012	11:52	Total Dissolved Solids	4270	mg/L	250
804461-001	CW-01D-028	SM4500NH3D	NONE	10/16/2012	11:52	Ammonia-N	ND	mg/L	0.500
804461-001	CW-01D-028	SW6010B	NONE	10/16/2012	11:52	Iron	ND	ug/L	20.0

005

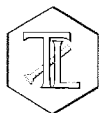
This report applies only to the sample, or samples, investigated and is not necessarily indicative of the quality or condition of apparently identical or similar products. As a mutual protection to clients, the public, and these laboratories, this report is submitted and accepted for the exclusive use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



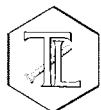
Lab Sample ID	Field ID	Analysis Method	Extraction Method	Sample Date	Sample Time	Parameter	Result	Units	RL
804461-002	CW-01M-028	E120.1	NONE	10/16/2012	12:34	EC	7190	umhos/cm	2.00
804461-002	CW-01M-028	E200.7	FLDFLT	10/16/2012	12:34	Aluminum	ND	ug/L	50.0
804461-002	CW-01M-028	E200.7	FLDFLT	10/16/2012	12:34	BORON	923	ug/L	200
804461-002	CW-01M-028	E200.7	FLDFLT	10/16/2012	12:34	Calcium	170000	ug/L	10000
804461-002	CW-01M-028	E200.7	FLDFLT	10/16/2012	12:34	Iron	ND	ug/L	20.0
804461-002	CW-01M-028	E200.7	FLDFLT	10/16/2012	12:34	Magnesium	13400	ug/L	500
804461-002	CW-01M-028	E200.7	FLDFLT	10/16/2012	12:34	Potassium	14000	ug/L	2000
804461-002	CW-01M-028	E200.7	FLDFLT	10/16/2012	12:34	Sodium	1440000	ug/L	100000
804461-002	CW-01M-028	E200.7	FLDFLT	10/16/2012	12:34	Zinc	ND	ug/L	20.0
804461-002	CW-01M-028	E200.8	FLDFLT	10/16/2012	12:34	Mercury	ND	ug/L	0.50
804461-002	CW-01M-028	E218.6	FLDFLT	10/16/2012	12:34	Chromium, Hexavalent	1.5	ug/L	0.20
804461-002	CW-01M-028	E300	NONE	10/16/2012	12:34	Chloride	2130	mg/L	50.0
804461-002	CW-01M-028	E300	NONE	10/16/2012	12:34	Fluoride	2.01	mg/L	0.500
804461-002	CW-01M-028	E300	NONE	10/16/2012	12:34	Sulfate	492	mg/L	25.0
804461-002	CW-01M-028	SM2130B	NONE	10/16/2012	12:34	Turbidity	0.142 J	NTU	0.100
804461-002	CW-01M-028	SM2320B	NONE	10/16/2012	12:34	Alkalinity	58.0	mg/L	5.00
804461-002	CW-01M-028	SM2320B	NONE	10/16/2012	12:34	Alkalinity, Bicarbonate (As	58.0	mg/L	5.00
804461-002	CW-01M-028	SM2320B	NONE	10/16/2012	12:34	Alkalinity, Carbonate (As C	ND	mg/L	5.00
804461-002	CW-01M-028	SM2540C	NONE	10/16/2012	12:34	Total Dissolved Solids	4440	mg/L	250
804461-002	CW-01M-028	SM4500NH3D	NONE	10/16/2012	12:34	Ammonia-N	ND	mg/L	0.500
804461-002	CW-01M-028	SW6010B	NONE	10/16/2012	12:34	Iron	ND	ug/L	20.0



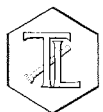
Lab Sample ID	Field ID	Analysis Method	Extraction Method	Sample Date	Sample Time	Parameter	Result	Units	RL
804461-003	CW-04D-028	E120.1	NONE	10/16/2012	8:48	EC	7620	umhos/cm	2.00
804461-003	CW-04D-028	E200.7	FLDFLT	10/16/2012	8:48	Aluminum	ND	ug/L	50.0
804461-003	CW-04D-028	E200.7	FLDFLT	10/16/2012	8:48	BORON	1110	ug/L	200
804461-003	CW-04D-028	E200.7	FLDFLT	10/16/2012	8:48	Calcium	117000	ug/L	10000
804461-003	CW-04D-028	E200.7	FLDFLT	10/16/2012	8:48	Iron	ND	ug/L	20.0
804461-003	CW-04D-028	E200.7	FLDFLT	10/16/2012	8:48	Magnesium	7230	ug/L	500
804461-003	CW-04D-028	E200.7	FLDFLT	10/16/2012	8:48	Potassium	12600	ug/L	2000
804461-003	CW-04D-028	E200.7	FLDFLT	10/16/2012	8:48	Sodium	1590000	ug/L	100000
804461-003	CW-04D-028	E200.7	FLDFLT	10/16/2012	8:48	Zinc	ND	ug/L	20.0
804461-003	CW-04D-028	E200.8	FLDFLT	10/16/2012	8:48	Mercury	ND	ug/L	0.50
804461-003	CW-04D-028	E218.6	FLDFLT	10/16/2012	8:48	Chromium, Hexavalent	1.1	ug/L	0.20
804461-003	CW-04D-028	E300	NONE	10/16/2012	8:48	Chloride	2200	mg/L	50.0
804461-003	CW-04D-028	E300	NONE	10/16/2012	8:48	Fluoride	3.46	mg/L	0.500
804461-003	CW-04D-028	E300	NONE	10/16/2012	8:48	Sulfate	505	mg/L	25.0
804461-003	CW-04D-028	SM2130B	NONE	10/16/2012	8:48	Turbidity	0.127 J	NTU	0.100
804461-003	CW-04D-028	SM2320B	NONE	10/16/2012	8:48	Alkalinity	52.0	mg/L	5.00
804461-003	CW-04D-028	SM2320B	NONE	10/16/2012	8:48	Alkalinity, Bicarbonate (As	52.0	mg/L	5.00
804461-003	CW-04D-028	SM2320B	NONE	10/16/2012	8:48	Alkalinity, Carbonate (As C	ND	mg/L	5.00
804461-003	CW-04D-028	SM2540C	NONE	10/16/2012	8:48	Total Dissolved Solids	4430	mg/L	250
804461-003	CW-04D-028	SM4500NH3D	NONE	10/16/2012	8:48	Ammonia-N	ND	mg/L	0.500
804461-003	CW-04D-028	SW6010B	NONE	10/16/2012	8:48	Iron	ND	ug/L	20.0



Lab Sample ID	Field ID	Analysis Method	Extraction Method	Sample Date	Sample Time	Parameter	Result	Units	RL
804461-004	CW-04M-028	E120.1	NONE	10/16/2012	9:57	EC	6720	umhos/cm	2.00
804461-004	CW-04M-028	E200.7	FLDFLT	10/16/2012	9:57	Aluminum	ND	ug/L	50.0
804461-004	CW-04M-028	E200.7	FLDFLT	10/16/2012	9:57	BORON	845	ug/L	200
804461-004	CW-04M-028	E200.7	FLDFLT	10/16/2012	9:57	Calcium	179000	ug/L	10000
804461-004	CW-04M-028	E200.7	FLDFLT	10/16/2012	9:57	Iron	ND	ug/L	20.0
804461-004	CW-04M-028	E200.7	FLDFLT	10/16/2012	9:57	Magnesium	14200	ug/L	500
804461-004	CW-04M-028	E200.7	FLDFLT	10/16/2012	9:57	Potassium	12800	ug/L	2000
804461-004	CW-04M-028	E200.7	FLDFLT	10/16/2012	9:57	Sodium	1300000	ug/L	100000
804461-004	CW-04M-028	E200.7	FLDFLT	10/16/2012	9:57	Zinc	ND	ug/L	20.0
804461-004	CW-04M-028	E200.8	FLDFLT	10/16/2012	9:57	Mercury	ND	ug/L	0.50
804461-004	CW-04M-028	E218.6	FLDFLT	10/16/2012	9:57	Chromium, Hexavalent	7.2	ug/L	0.20
804461-004	CW-04M-028	E300	NONE	10/16/2012	9:57	Chloride	1970	mg/L	50.0
804461-004	CW-04M-028	E300	NONE	10/16/2012	9:57	Fluoride	1.86	mg/L	0.500
804461-004	CW-04M-028	E300	NONE	10/16/2012	9:57	Sulfate	419	mg/L	25.0
804461-004	CW-04M-028	SM2130B	NONE	10/16/2012	9:57	Turbidity	0.120 J	NTU	0.100
804461-004	CW-04M-028	SM2320B	NONE	10/16/2012	9:57	Alkalinity	51.0	mg/L	5.00
804461-004	CW-04M-028	SM2320B	NONE	10/16/2012	9:57	Alkalinity, Bicarbonate (As	51.0	mg/L	5.00
804461-004	CW-04M-028	SM2320B	NONE	10/16/2012	9:57	Alkalinity, Carbonate (As C	ND	mg/L	5.00
804461-004	CW-04M-028	SM2540C	NONE	10/16/2012	9:57	Total Dissolved Solids	4170	mg/L	250
804461-004	CW-04M-028	SM4500NH3D	NONE	10/16/2012	9:57	Ammonia-N	ND	mg/L	0.500
804461-004	CW-04M-028	SW6010B	NONE	10/16/2012	9:57	Iron	ND	ug/L	20.0



Lab Sample ID	Field ID	Analysis Method	Extraction Method	Sample Date	Sample Time	Parameter	Result	Units	RL
804461-005	OW-01D-028	E120.1	NONE	10/16/2012	14:28	EC	7200	umhos/cm	2.00
804461-005	OW-01D-028	E200.7	FLDFLT	10/16/2012	14:28	Aluminum	ND	ug/L	50.0
804461-005	OW-01D-028	E200.7	FLDFLT	10/16/2012	14:28	BORON	954	ug/L	200
804461-005	OW-01D-028	E200.7	FLDFLT	10/16/2012	14:28	Calcium	184000	ug/L	10000
804461-005	OW-01D-028	E200.7	FLDFLT	10/16/2012	14:28	Iron	ND	ug/L	20.0
804461-005	OW-01D-028	E200.7	FLDFLT	10/16/2012	14:28	Magnesium	16500	ug/L	500
804461-005	OW-01D-028	E200.7	FLDFLT	10/16/2012	14:28	Potassium	13400	ug/L	2000
804461-005	OW-01D-028	E200.7	FLDFLT	10/16/2012	14:28	Sodium	1440000	ug/L	100000
804461-005	OW-01D-028	E200.7	FLDFLT	10/16/2012	14:28	Zinc	ND	ug/L	20.0
804461-005	OW-01D-028	E200.8	FLDFLT	10/16/2012	14:28	Mercury	ND	ug/L	0.50
804461-005	OW-01D-028	E218.6	FLDFLT	10/16/2012	14:28	Chromium, Hexavalent	0.85	ug/L	0.20
804461-005	OW-01D-028	E300	NONE	10/16/2012	14:28	Chloride	2090	mg/L	50.0
804461-005	OW-01D-028	E300	NONE	10/16/2012	14:28	Fluoride	2.34	mg/L	0.500
804461-005	OW-01D-028	E300	NONE	10/16/2012	14:28	Sulfate	489	mg/L	25.0
804461-005	OW-01D-028	SM2130B	NONE	10/16/2012	14:28	Turbidity	0.336 J	NTU	0.100
804461-005	OW-01D-028	SM2320B	NONE	10/16/2012	14:28	Alkalinity	56.0	mg/L	5.00
804461-005	OW-01D-028	SM2320B	NONE	10/16/2012	14:28	Alkalinity, Bicarbonate (As	56.0	mg/L	5.00
804461-005	OW-01D-028	SM2320B	NONE	10/16/2012	14:28	Alkalinity, Carbonate (As C	ND	mg/L	5.00
804461-005	OW-01D-028	SM2540C	NONE	10/16/2012	14:28	Total Dissolved Solids	4510	mg/L	250
804461-005	OW-01D-028	SM4500NH3D	NONE	10/16/2012	14:28	Ammonia-N	ND	mg/L	0.500
804461-005	OW-01D-028	SW6010B	NONE	10/16/2012	14:28	Iron	26.0	ug/L	20.0
804461-006	OW-01S-028	E120.1	NONE	10/16/2012	15:07	EC	4100	umhos/cm	2.00
804461-006	OW-01S-028	E200.7	FLDFLT	10/16/2012	15:07	Sodium	515000	ug/L	25000
804461-006	OW-01S-028	E218.6	FLDFLT	10/16/2012	15:07	Chromium, Hexavalent	14.0	ug/L	0.20
804461-006	OW-01S-028	E300	NONE	10/16/2012	15:07	Chloride	1160	mg/L	50.0
804461-006	OW-01S-028	E300	NONE	10/16/2012	15:07	Fluoride	2.34	mg/L	0.500
804461-006	OW-01S-028	E300	NONE	10/16/2012	15:07	Sulfate	258	mg/L	25.0
804461-006	OW-01S-028	SM2130B	NONE	10/16/2012	15:07	Turbidity	0.487 J	NTU	0.100
804461-006	OW-01S-028	SM2540C	NONE	10/16/2012	15:07	Total Dissolved Solids	2690	mg/L	125



Lab Sample ID	Field ID	Analysis Method	Extraction Method	Sample Date	Sample Time	Parameter	Result	Units	RL
804461-007	OW-01M-028	E120.1	NONE	10/18/2012	7:54	EC	7070	umhos/cm	2.00
804461-007	OW-01M-028	E200.7	FLDFLT	10/18/2012	7:54	Aluminum	ND	ug/L	50.0
804461-007	OW-01M-028	E200.7	FLDFLT	10/18/2012	7:54	BORON	823	ug/L	200
804461-007	OW-01M-028	E200.7	FLDFLT	10/18/2012	7:54	Calcium	152000	ug/L	25000
804461-007	OW-01M-028	E200.7	FLDFLT	10/18/2012	7:54	Iron	ND	ug/L	20.0
804461-007	OW-01M-028	E200.7	FLDFLT	10/18/2012	7:54	Magnesium	20700	ug/L	1000
804461-007	OW-01M-028	E200.7	FLDFLT	10/18/2012	7:54	Potassium	16200	ug/L	1000
804461-007	OW-01M-028	E200.7	FLDFLT	10/18/2012	7:54	Sodium	1360000	ug/L	100000
804461-007	OW-01M-028	E200.7	FLDFLT	10/18/2012	7:54	Zinc	ND	ug/L	20.0
804461-007	OW-01M-028	E200.8	FLDFLT	10/18/2012	7:54	Mercury	ND	ug/L	0.50
804461-007	OW-01M-028	E218.6	FLDFLT	10/18/2012	7:54	Chromium, Hexavalent	1.2	ug/L	0.20
804461-007	OW-01M-028	E300	NONE	10/18/2012	7:54	Chloride	2110	mg/L	50.0
804461-007	OW-01M-028	E300	NONE	10/18/2012	7:54	Fluoride	2.56	mg/L	0.500
804461-007	OW-01M-028	E300	NONE	10/18/2012	7:54	Sulfate	480	mg/L	25.0
804461-007	OW-01M-028	SM2130B	NONE	10/18/2012	7:54	Turbidity	0.101	NTU	0.100
804461-007	OW-01M-028	SM2320B	NONE	10/18/2012	7:54	Alkalinity	45.0	mg/L	5.00
804461-007	OW-01M-028	SM2320B	NONE	10/18/2012	7:54	Alkalinity, Bicarbonate (As	45.0	mg/L	5.00
804461-007	OW-01M-028	SM2320B	NONE	10/18/2012	7:54	Alkalinity, Carbonate (As C	ND	mg/L	5.00
804461-007	OW-01M-028	SM2540C	NONE	10/18/2012	7:54	Total Dissolved Solids	4340	mg/L	250
804461-007	OW-01M-028	SM4500NH3D	NONE	10/18/2012	7:54	Ammonia-N	ND	mg/L	0.500
804461-007	OW-01M-028	SW6010B	NONE	10/18/2012	7:54	Iron	ND	ug/L	20.0
804461-008	OW-02D-028	E120.1	NONE	10/18/2012	9:27	EC	7150	umhos/cm	2.00
804461-008	OW-02D-028	E200.7	FLDFLT	10/18/2012	9:27	Sodium	1290000	ug/L	50000
804461-008	OW-02D-028	E218.6	FLDFLT	10/18/2012	9:27	Chromium, Hexavalent	0.54	ug/L	0.20
804461-008	OW-02D-028	E300	NONE	10/18/2012	9:27	Chloride	2090	mg/L	50.0
804461-008	OW-02D-028	E300	NONE	10/18/2012	9:27	Fluoride	2.15	mg/L	0.500
804461-008	OW-02D-028	E300	NONE	10/18/2012	9:27	Sulfate	480	mg/L	25.0
804461-008	OW-02D-028	SM2130B	NONE	10/18/2012	9:27	Turbidity	ND	NTU	0.100
804461-008	OW-02D-028	SM2540C	NONE	10/18/2012	9:27	Total Dissolved Solids	4300	mg/L	250



Lab Sample ID	Field ID	Analysis Method	Extraction Method	Sample Date	Sample Time	Parameter	Result	Units	RL
804461-009	OW-02M-028	E120.1	NONE	10/18/2012	11:45	EC	7150	umhos/cm	2.00
804461-009	OW-02M-028	E200.7	FLDFLT	10/18/2012	11:45	Sodium	1250000	ug/L	50000
804461-009	OW-02M-028	E218.6	FLDFLT	10/18/2012	11:45	Chromium, Hexavalent	1.2	ug/L	0.20
804461-009	OW-02M-028	E300	NONE	10/18/2012	11:45	Chloride	2060	mg/L	50.0
804461-009	OW-02M-028	E300	NONE	10/18/2012	11:45	Fluoride	2.58	mg/L	0.500
804461-009	OW-02M-028	E300	NONE	10/18/2012	11:45	Sulfate	482	mg/L	25.0
804461-009	OW-02M-028	SM2130B	NONE	10/18/2012	11:45	Turbidity	ND	NTU	0.100
804461-009	OW-02M-028	SM2540C	NONE	10/18/2012	11:45	Total Dissolved Solids	4360	mg/L	250
804461-010	OW-02S-028	E120.1	NONE	10/18/2012	10:04	EC	1610	umhos/cm	2.00
804461-010	OW-02S-028	E200.7	FLDFLT	10/18/2012	10:04	Sodium	298000	ug/L	50000
804461-010	OW-02S-028	E218.6	FLDFLT	10/18/2012	10:04	Chromium, Hexavalent	26.8	ug/L	0.20
804461-010	OW-02S-028	E300	NONE	10/18/2012	10:04	Chloride	378	mg/L	50.0
804461-010	OW-02S-028	E300	NONE	10/18/2012	10:04	Fluoride	5.06	mg/L	0.500
804461-010	OW-02S-028	E300	NONE	10/18/2012	10:04	Sulfate	98.3	mg/L	25.0
804461-010	OW-02S-028	SM2130B	NONE	10/18/2012	10:04	Turbidity	0.419	NTU	0.100
804461-010	OW-02S-028	SM2540C	NONE	10/18/2012	10:04	Total Dissolved Solids	1030	mg/L	50.0
804461-011	OW-05D-028	E120.1	NONE	10/18/2012	12:56	EC	7120	umhos/cm	2.00
804461-011	OW-05D-028	E200.7	FLDFLT	10/18/2012	12:56	Sodium	1350000	ug/L	50000
804461-011	OW-05D-028	E218.6	FLDFLT	10/18/2012	12:56	Chromium, Hexavalent	0.38	ug/L	0.20
804461-011	OW-05D-028	E300	NONE	10/18/2012	12:56	Chloride	2050	mg/L	50.0
804461-011	OW-05D-028	E300	NONE	10/18/2012	12:56	Fluoride	2.29	mg/L	0.500
804461-011	OW-05D-028	E300	NONE	10/18/2012	12:56	Sulfate	479	mg/L	25.0
804461-011	OW-05D-028	SM2130B	NONE	10/18/2012	12:56	Turbidity	ND	NTU	0.100
804461-011	OW-05D-028	SM2540C	NONE	10/18/2012	12:56	Total Dissolved Solids	4200	mg/L	250
804461-012	OW-05M-028	E120.1	NONE	10/18/2012	14:03	EC	7170	umhos/cm	2.00
804461-012	OW-05M-028	E200.7	FLDFLT	10/18/2012	14:03	Sodium	1330000	ug/L	50000
804461-012	OW-05M-028	E218.6	FLDFLT	10/18/2012	14:03	Chromium, Hexavalent	0.44	ug/L	0.20
804461-012	OW-05M-028	E300	NONE	10/18/2012	14:03	Chloride	2040	mg/L	50.0
804461-012	OW-05M-028	E300	NONE	10/18/2012	14:03	Fluoride	2.42	mg/L	0.500
804461-012	OW-05M-028	E300	NONE	10/18/2012	14:03	Sulfate	488	mg/L	25.0
804461-012	OW-05M-028	SM2130B	NONE	10/18/2012	14:03	Turbidity	0.145	NTU	0.100
804461-012	OW-05M-028	SM2540C	NONE	10/18/2012	14:03	Total Dissolved Solids	4430	mg/L	250



Lab Sample ID	Field ID	Analysis Method	Extraction Method	Sample Date	Sample Time	Parameter	Result	Units	RL
804461-013	OW-05S-028	E120.1	NONE	10/18/2012	14:41	EC	2770	umhos/cm	2.00
804461-013	OW-05S-028	E200.7	FLDFLT	10/18/2012	14:41	Sodium	364000	ug/L	50000
804461-013	OW-05S-028	E218.6	FLDFLT	10/18/2012	14:41	Chromium, Hexavalent	17.0	ug/L	0.20
804461-013	OW-05S-028	E300	NONE	10/18/2012	14:41	Chloride	1140	mg/L	50.0
804461-013	OW-05S-028	E300	NONE	10/18/2012	14:41	Fluoride	1.85	mg/L	0.500
804461-013	OW-05S-028	E300	NONE	10/18/2012	14:41	Sulfate	141	mg/L	25.0
804461-013	OW-05S-028	SM2130B	NONE	10/18/2012	14:41	Turbidity	0.290	NTU	0.100
804461-013	OW-05S-028	SM2540C	NONE	10/18/2012	14:41	Total Dissolved Solids	1800	mg/L	50.0
804461-014	OW-91-028	E120.1	NONE	10/18/2012	7:05	EC	7170	umhos/cm	2.00
804461-014	OW-91-028	E200.7	FLDFLT	10/18/2012	7:05	Sodium	1260000	ug/L	50000
804461-014	OW-91-028	E218.6	FLDFLT	10/18/2012	7:05	Chromium, Hexavalent	0.44	ug/L	0.20
804461-014	OW-91-028	E300	NONE	10/18/2012	7:05	Chloride	2070	mg/L	50.0
804461-014	OW-91-028	E300	NONE	10/18/2012	7:05	Fluoride	2.27	mg/L	0.500
804461-014	OW-91-028	E300	NONE	10/18/2012	7:05	Sulfate	488	mg/L	25.0
804461-014	OW-91-028	SM2130B	NONE	10/18/2012	7:05	Turbidity	ND	NTU	0.100
804461-014	OW-91-028	SM2540C	NONE	10/18/2012	7:05	Total Dissolved Solids	4440	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: 423575.MP.02.CM

P.O. Number: 423575.MP.02.CM

Release Number:

Laboratory No. 804461

Page 1 of 36

Printed 12/2/2012

Samples Received on 10/18/2012 8:40:00 PM

Field ID	Lab ID	Collected	Matrix
CW-01D-028	804461-001	10/16/2012 11:52	Water
CW-01M-028	804461-002	10/16/2012 12:34	Water
CW-04D-028	804461-003	10/16/2012 08:48	Water
CW-04M-028	804461-004	10/16/2012 09:57	Water
OW-01D-028	804461-005	10/16/2012 14:28	Water
OW-01S-028	804461-006	10/16/2012 15:07	Water
OW-01M-028	804461-007	10/18/2012 07:54	Water
OW-02D-028	804461-008	10/18/2012 09:27	Water
OW-02M-028	804461-009	10/18/2012 11:45	Water
OW-02S-028	804461-010	10/18/2012 10:04	Water
OW-05D-028	804461-011	10/18/2012 12:56	Water
OW-05M-028	804461-012	10/18/2012 14:03	Water
OW-05S-028	804461-013	10/18/2012 14:41	Water
OW-91-028	804461-014	10/18/2012 07:05	Water

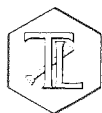
Anions By I.C. - EPA 300.0

Batch 10AN12AA

Parameter	Unit	Analyzed	DF	MDL	RL	Result
804461-001 Chloride	mg/L	10/25/2012 14:21	500	17.4	50.0	2120
Fluoride	mg/L	10/25/2012 10:44	5.00	0.104	0.500	2.46
Sulfate	mg/L	10/25/2012 18:22	50.0	1.54	25.0	496
804461-002 Chloride	mg/L	10/25/2012 15:31	500	17.4	50.0	2130
Fluoride	mg/L	10/25/2012 10:55	5.00	0.104	0.500	2.01
Sulfate	mg/L	10/25/2012 18:33	50.0	1.54	25.0	492
804461-003 Chloride	mg/L	10/25/2012 15:42	500	17.4	50.0	2200
Fluoride	mg/L	10/25/2012 11:07	5.00	0.104	0.500	3.46
Sulfate	mg/L	10/25/2012 18:45	50.0	1.54	25.0	505
804461-004 Chloride	mg/L	10/25/2012 15:54	500	17.4	50.0	1970
Fluoride	mg/L	10/25/2012 11:18	5.00	0.104	0.500	1.86

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

021



Client: E2 Consulting Engineers, Inc.

Project Name: PG&E Topock Project

Page 2 of 36

Project Number: 423575.MP.02.CM

Printed 12/2/2012

804461-004 Sulfate	mg/L	10/25/2012 18:56	50.0	1.54	25.0	419
804461-005 Chloride	mg/L	10/25/2012 16:05	500	17.4	50.0	2090
Fluoride	mg/L	10/25/2012 11:29	5.00	0.104	0.500	2.34
Sulfate	mg/L	10/25/2012 19:30	50.0	1.54	25.0	489
804461-006 Chloride	mg/L	10/25/2012 16:16	500	17.4	50.0	1160
Fluoride	mg/L	10/25/2012 11:41	5.00	0.104	0.500	2.34
Sulfate	mg/L	10/25/2012 19:42	50.0	1.54	25.0	258
804461-007 Chloride	mg/L	10/25/2012 16:28	500	17.4	50.0	2110
Fluoride	mg/L	10/25/2012 11:52	5.00	0.104	0.500	2.56
Sulfate	mg/L	10/25/2012 19:53	50.0	1.54	25.0	480
804461-008 Chloride	mg/L	10/25/2012 16:39	500	17.4	50.0	2090
Fluoride	mg/L	10/25/2012 12:04	5.00	0.104	0.500	2.15
Sulfate	mg/L	10/25/2012 20:05	50.0	1.54	25.0	480
804461-009 Chloride	mg/L	10/25/2012 17:13	500	17.4	50.0	2060
Fluoride	mg/L	10/25/2012 13:12	5.00	0.104	0.500	2.58
Sulfate	mg/L	10/25/2012 20:16	50.0	1.54	25.0	482
804461-010 Chloride	mg/L	10/25/2012 17:25	500	17.4	50.0	378
Fluoride	mg/L	10/25/2012 13:24	5.00	0.104	0.500	5.06
Sulfate	mg/L	10/25/2012 20:27	50.0	1.54	25.0	98.3
804461-011 Chloride	mg/L	10/25/2012 17:36	500	17.4	50.0	2050
Fluoride	mg/L	10/25/2012 13:35	5.00	0.104	0.500	2.29
Sulfate	mg/L	10/25/2012 20:39	50.0	1.54	25.0	479
804461-012 Chloride	mg/L	10/25/2012 17:48	500	17.4	50.0	2040
Fluoride	mg/L	10/25/2012 13:46	5.00	0.104	0.500	2.42
Sulfate	mg/L	10/25/2012 20:50	50.0	1.54	25.0	488
804461-013 Chloride	mg/L	10/25/2012 17:59	500	17.4	50.0	1140
Fluoride	mg/L	10/25/2012 13:58	5.00	0.104	0.500	1.85
Sulfate	mg/L	10/25/2012 21:02	50.0	1.54	25.0	141
804461-014 Chloride	mg/L	10/25/2012 18:10	500	17.4	50.0	2070
Fluoride	mg/L	10/25/2012 14:09	5.00	0.104	0.500	2.27
Sulfate	mg/L	10/25/2012 21:13	50.0	1.54	25.0	488

Method Blank

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

**Client: E2 Consulting Engineers, Inc.****Project Name: PG&E Topock Project****Page 3 of 36****Project Number: 423575.MP.02.CM****Printed 12/2/2012****Duplicate**

Lab ID = 804484-011

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Fluoride	mg/L	1.00	0.856	0.856	0	0 - 20

Duplicate

Lab ID = 804492-004

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Chloride	mg/L	25.0	72.5	73.6	1.51	0 - 20
Sulfate	mg/L	25.0	89.9	90.2	0.374	0 - 20

Lab Control Sample

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chloride	mg/L	1.00	4.00	4.00	100	90 - 110
Fluoride	mg/L	1.00	4.14	4.00	104	90 - 110
Sulfate	mg/L	1.00	20.0	20.0	100	90 - 110

Matrix Spike

Lab ID = 804484-011

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Fluoride	mg/L	1.00	2.90	2.86(2.00)	102	85 - 115

Matrix Spike

Lab ID = 804492-004

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chloride	mg/L	25.0	172	174(100)	98.2	85 - 115
Sulfate	mg/L	25.0	195	190(100)	105	85 - 115

MRCCS - Secondary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chloride	mg/L	1.00	4.00	4.00	99.9	90 - 110
Fluoride	mg/L	1.00	4.14	4.00	104	90 - 110
Sulfate	mg/L	1.00	20.1	20.0	100	90 - 110

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chloride	mg/L	1.00	2.98	3.00	99.5	90 - 110

MRCVS - Primary

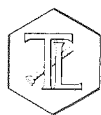
Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chloride	mg/L	1.00	2.96	3.00	98.6	90 - 110

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chloride	mg/L	1.00	2.99	3.00	99.6	90 - 110

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chloride	mg/L	1.00	2.96	3.00	98.7	90 - 110



Client: E2 Consulting Engineers, Inc.

Project Name: PG&E Topock Project

Page 5 of 36

Project Number: 423575.MP.02.CM

Printed 12/2/2012

Alkalinity by SM 2320B		Batch 10ALK12E				
Parameter	Unit	Analyzed	DF	MDL	RL	Result
804461-001 Alkalinity as CaCO ₃	mg/L	10/19/2012	1.00	0.555	5.00	53.0
Bicarbonate (Calculated)	mg/L	10/19/2012	1.00	0.555	5.00	53.0
Carbonate (Calculated)	mg/L	10/19/2012	1.00	0.555	5.00	ND
804461-002 Alkalinity as CaCO ₃	mg/L	10/19/2012	1.00	0.555	5.00	58.0
Bicarbonate (Calculated)	mg/L	10/19/2012	1.00	0.555	5.00	58.0
Carbonate (Calculated)	mg/L	10/19/2012	1.00	0.555	5.00	ND
804461-003 Alkalinity as CaCO ₃	mg/L	10/19/2012	1.00	0.555	5.00	52.0
Bicarbonate (Calculated)	mg/L	10/19/2012	1.00	0.555	5.00	52.0
Carbonate (Calculated)	mg/L	10/19/2012	1.00	0.555	5.00	ND
804461-004 Alkalinity as CaCO ₃	mg/L	10/19/2012	1.00	0.555	5.00	51.0
Bicarbonate (Calculated)	mg/L	10/19/2012	1.00	0.555	5.00	51.0
Carbonate (Calculated)	mg/L	10/19/2012	1.00	0.555	5.00	ND
804461-005 Alkalinity as CaCO ₃	mg/L	10/19/2012	1.00	0.555	5.00	56.0
Bicarbonate (Calculated)	mg/L	10/19/2012	1.00	0.555	5.00	56.0
Carbonate (Calculated)	mg/L	10/19/2012	1.00	0.555	5.00	ND
804461-007 Alkalinity as CaCO ₃	mg/L	10/19/2012	1.00	0.555	5.00	45.0
Bicarbonate (Calculated)	mg/L	10/19/2012	1.00	0.555	5.00	45.0
Carbonate (Calculated)	mg/L	10/19/2012	1.00	0.555	5.00	ND

Method Blank

Parameter	Unit	DF	Result
Alkalinity as CaCO ₃	mg/L	1.00	ND

Duplicate

Lab ID = 804461-005

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Alkalinity as CaCO ₃	mg/L	1.00	51.0	56.0	9.34	0 - 20

Lab Control Sample

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Alkalinity as CaCO ₃	mg/L	1.00	108	100	108	90 - 110

Lab Control Sample Duplicate

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Alkalinity as CaCO ₃	mg/L	1.00	104	100	104	75 - 125

Matrix Spike

Lab ID = 804461-007

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Alkalinity as CaCO ₃	mg/L	1.00	149	145(100)	104	75 - 125



Client: E2 Consulting Engineers, Inc.

Project Name: PG&E Topock Project

Page 6 of 36

Project Number: 423575.MP.02.CM

Printed 12/2/2012

Specific Conductivity - EPA 120.1		Batch 10EC12E				
Parameter	Unit	Analyzed	DF	MDL	RL	Result
804461-001 Specific Conductivity	umhos/cm	10/23/2012	1.00	0.116	2.00	7180
804461-002 Specific Conductivity	umhos/cm	10/23/2012	1.00	0.116	2.00	7190
804461-003 Specific Conductivity	umhos/cm	10/23/2012	1.00	0.116	2.00	7620
804461-004 Specific Conductivity	umhos/cm	10/23/2012	1.00	0.116	2.00	6720
804461-005 Specific Conductivity	umhos/cm	10/23/2012	1.00	0.116	2.00	7200
804461-006 Specific Conductivity	umhos/cm	10/23/2012	1.00	0.116	2.00	4100
804461-007 Specific Conductivity	umhos/cm	10/23/2012	1.00	0.116	2.00	7070
804461-008 Specific Conductivity	umhos/cm	10/23/2012	1.00	0.116	2.00	7150
804461-009 Specific Conductivity	umhos/cm	10/23/2012	1.00	0.116	2.00	7150
804461-010 Specific Conductivity	umhos/cm	10/23/2012	1.00	0.116	2.00	1610
804461-011 Specific Conductivity	umhos/cm	10/23/2012	1.00	0.116	2.00	7120
804461-012 Specific Conductivity	umhos/cm	10/23/2012	1.00	0.116	2.00	7170
804461-013 Specific Conductivity	umhos/cm	10/23/2012	1.00	0.116	2.00	2770
804461-014 Specific Conductivity	umhos/cm	10/23/2012	1.00	0.116	2.00	7170

Method Blank

Parameter	Unit	DF	Result
Specific Conductivity	umhos	1.00	ND

Duplicate

Lab ID = 804461-010

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Specific Conductivity	umhos	1.00	1620	1610	0.619	0 - 10

Duplicate

Lab ID = 804461-014

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Specific Conductivity	umhos	1.00	7160	7170	0.140	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	705	706	99.8	90 - 110

MRCCS - Secondary

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



Client: E2 Consulting Engineers, Inc.

Project Name: PG&E Topock Project

Page 8 of 36

Project Number: 423575.MP.02.CM

Printed 12/2/2012

Metals by EPA 6010B, Total

Batch 102912A-Th2

Parameter	Unit	Analyzed	DF	MDL	RL	Result
804461-001 Iron	ug/L	10/29/2012 16:18	1.00	0.900	20.0	ND
804461-002 Iron	ug/L	10/29/2012 16:46	1.00	0.900	20.0	ND
804461-003 Iron	ug/L	10/29/2012 16:52	1.00	0.900	20.0	ND
804461-004 Iron	ug/L	10/29/2012 16:58	1.00	0.900	20.0	ND
804461-005 Iron	ug/L	10/29/2012 17:04	1.00	0.900	20.0	26.0
804461-007 Iron	ug/L	10/29/2012 17:10	1.00	0.900	20.0	ND

Method Blank

Parameter	Unit	DF	Result
Iron	ug/L	1.00	ND

Duplicate

Lab ID = 804408-001

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	2220	2000	111	85 - 115

Matrix Spike

Lab ID = 804408-001

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Iron	ug/L	1.00	2060	2000(2000)	103	75 - 125

MRCCS - Secondary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Iron	ug/L	1.00	5220	5000	104	95 - 105

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Iron	ug/L	1.00	5460	5000	109	90 - 110

MRCVS - Primary

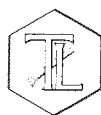
Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Iron	ug/L	1.00	5250	5000	105	90 - 110

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Iron	ug/L	1.00	5400	5000	108	90 - 110

Interference Check Standard A

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Iron	ug/L	1.00	2180	2000	109	80 - 120



Client: E2 Consulting Engineers, Inc.

Project Name: PG&E Topock Project

Page 10 of 36

Project Number: 423575.MP.02.CM

Printed 12/2/2012

Chrome VI by EPA 218.6

Batch 10CrH12X

Parameter	Unit	Analyzed	DF	MDL	RL	Result
804461-001 Chromium, Hexavalent	ug/L	10/29/2012 11:34	1.00	0.00920	0.20	0.46
804461-002 Chromium, Hexavalent	ug/L	10/29/2012 11:45	1.00	0.00920	0.20	1.5
804461-003 Chromium, Hexavalent	ug/L	10/29/2012 11:55	1.00	0.00920	0.20	1.1
804461-004 Chromium, Hexavalent	ug/L	10/29/2012 12:05	1.00	0.00920	0.20	7.2
804461-005 Chromium, Hexavalent	ug/L	10/29/2012 12:16	1.00	0.00920	0.20	0.85
804461-006 Chromium, Hexavalent	ug/L	10/29/2012 12:26	1.00	0.00920	0.20	14.0
804461-007 Chromium, Hexavalent	ug/L	10/29/2012 12:37	1.00	0.00920	0.20	1.2
804461-008 Chromium, Hexavalent	ug/L	10/29/2012 12:47	1.00	0.00920	0.20	0.54
804461-009 Chromium, Hexavalent	ug/L	10/29/2012 13:35	1.00	0.00920	0.20	1.2
804461-010 Chromium, Hexavalent	ug/L	10/29/2012 13:45	1.00	0.00920	0.20	26.8
804461-011 Chromium, Hexavalent	ug/L	10/29/2012 14:58	1.00	0.00920	0.20	0.38
804461-012 Chromium, Hexavalent	ug/L	10/29/2012 15:08	1.00	0.00920	0.20	0.44
804461-013 Chromium, Hexavalent	ug/L	10/29/2012 15:40	1.00	0.00920	0.20	17.0
804461-014 Chromium, Hexavalent	ug/L	10/29/2012 15:50	1.00	0.00920	0.20	0.44

Method Blank

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

Duplicate

Lab ID = 804461-006

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	14.0	14.0	0.242	0 - 20

Low Level Calibration Verification

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	0.209	0.200	105	70 - 130

Lab Control Sample

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	5.00	5.00	100.	90 - 110

Matrix Spike

Lab ID = 804461-001

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	1.41	1.46(1.00)	95.0	90 - 110

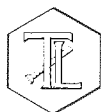
Matrix Spike

Lab ID = 804461-002

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	6.37	6.49(5.00)	97.6	90 - 110

**Client: E2 Consulting Engineers, Inc.****Project Name: PG&E Topock Project****Page 11 of 36****Project Number: 423575.MP.02.CM****Printed 12/2/2012**

Matrix Spike						Lab ID = 804461-003
Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	6.02	6.13(5.00)	97.8	90 - 110
Matrix Spike						Lab ID = 804461-004
Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	17.0	17.2(10.0)	97.5	90 - 110
Matrix Spike						Lab ID = 804461-005
Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	1.82	1.85(1.00)	97.4	90 - 110
Matrix Spike						Lab ID = 804461-007
Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	6.01	6.25(5.00)	95.3	90 - 110
Matrix Spike						Lab ID = 804461-008
Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	1.48	1.54(1.00)	94.3	90 - 110
Matrix Spike						Lab ID = 804461-009
Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	5.91	6.24(5.00)	93.4	90 - 110
Matrix Spike						Lab ID = 804461-011
Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	1.33	1.38(1.00)	95.6	90 - 110
Matrix Spike						Lab ID = 804461-012
Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	1.36	1.44(1.00)	92.2	90 - 110
Matrix Spike						Lab ID = 804461-014
Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	1.42	1.44(1.00)	98.7	90 - 110
Matrix Spike						Lab ID = 804493-001
Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	7.96	8.23(5.00)	94.7	90 - 110
Matrix Spike						Lab ID = 804493-002
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 = 804493-003
Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	7.29	7.52(5.00)	95.4	90 - 110



Client: E2 Consulting Engineers, Inc.

Project Name: PG&E Topock Project

Page 13 of 36

Project Number: 423575.MP.02.CM

Printed 12/2/2012

Total Dissolved Solids by SM 2540 C		Batch 10TDS12I				
Parameter	Unit	Analyzed	DF	MDL	RL	Result
804461-001 Total Dissolved Solids	mg/L	10/22/2012	1.00	0.757	250	4270
804461-002 Total Dissolved Solids	mg/L	10/22/2012	1.00	0.757	250	4440
804461-003 Total Dissolved Solids	mg/L	10/22/2012	1.00	0.757	250	4430
804461-004 Total Dissolved Solids	mg/L	10/22/2012	1.00	0.757	250	4170
804461-005 Total Dissolved Solids	mg/L	10/22/2012	1.00	0.757	250	4510
804461-006 Total Dissolved Solids	mg/L	10/22/2012	1.00	0.757	125	2690
804461-007 Total Dissolved Solids	mg/L	10/22/2012	1.00	0.757	250	4340
804461-008 Total Dissolved Solids	mg/L	10/22/2012	1.00	0.757	250	4300
804461-009 Total Dissolved Solids	mg/L	10/22/2012	1.00	0.757	250	4360
804461-010 Total Dissolved Solids	mg/L	10/22/2012	1.00	0.757	50.0	1030
804461-011 Total Dissolved Solids	mg/L	10/22/2012	1.00	0.757	250	4200
804461-012 Total Dissolved Solids	mg/L	10/22/2012	1.00	0.757	250	4430
804461-013 Total Dissolved Solids	mg/L	10/22/2012	1.00	0.757	50.0	1800
804461-014 Total Dissolved Solids	mg/L	10/22/2012	1.00	0.757	250	4440

Method Blank

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

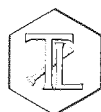
Duplicate

Lab ID = 804461-006

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Total Dissolved Solids	mg/L	1.00	2720	2690	1.11	0 - 10

Lab Control Sample

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Total Dissolved Solids	mg/L	1.00	485	500	97.0	90 - 110



Client: E2 Consulting Engineers, Inc.

Project Name: PG&E Topock Project

Page 14 of 36

Project Number: 423575.MP.02.CM

Printed 12/2/2012

Ammonia Nitrogen by SM4500-NH3D

Batch 10NH312C

Parameter	Unit	Analyzed	DF	MDL	RL	Result
804461-001 Ammonia as N	mg/L	10/22/2012	1.00	0.00980	0.500	ND
804461-002 Ammonia as N	mg/L	10/22/2012	1.00	0.00980	0.500	ND
804461-003 Ammonia as N	mg/L	10/22/2012	1.00	0.00980	0.500	ND
804461-004 Ammonia as N	mg/L	10/22/2012	1.00	0.00980	0.500	ND
804461-005 Ammonia as N	mg/L	10/22/2012	1.00	0.00980	0.500	ND
804461-007 Ammonia as N	mg/L	10/22/2012	1.00	0.00980	0.500	ND

Method Blank

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

Duplicate

Lab ID = 804303-001

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	7.96	8.00	99.5	90 - 110

Lab Control Sample Duplicate

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

Matrix Spike

Lab ID = 804408-001

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Ammonia as N	mg/L	1.00	7.22	8.00(8.00)	90.2	75 - 125

MRCCS - Secondary

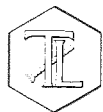
Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Ammonia as N	mg/L	1.00	6.14	6.00	102	90 - 110

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Ammonia as N	mg/L	1.00	5.99	6.00	99.8	90 - 110

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Ammonia as N	mg/L	1.00	5.46	6.00	90.9	90 - 110



Client: E2 Consulting Engineers, Inc.

Project Name: PG&E Topock Project

Page 15 of 36

Project Number: 423575.MP.02.CM

Printed 12/2/2012

Metals by EPA 200.8, Dissolved

Batch 111312B

Parameter	Unit	Analyzed	DF	MDL	RL	Result
804461-001 Mercury	ug/L	11/13/2012 20:33	2.50	0.100	0.50	ND
804461-002 Mercury	ug/L	11/13/2012 21:22	2.50	0.100	0.50	ND
804461-003 Mercury	ug/L	11/13/2012 21:30	2.50	0.100	0.50	ND
804461-004 Mercury	ug/L	11/13/2012 21:37	2.50	0.100	0.50	ND
804461-005 Mercury	ug/L	11/13/2012 21:44	2.50	0.100	0.50	ND
804461-007 Mercury	ug/L	11/13/2012 21:58	2.50	0.100	0.50	ND

Method Blank

Parameter	Unit	DF	Result
Mercury	ug/L	1.00	ND

Duplicate

Lab ID = 804461-001

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

Low Level Calibration Verification

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Mercury	ug/L	1.00	0.233	0.200	117	70 - 130

Lab Control Sample

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Mercury	ug/L	2.50	10.1	10.0	101	85 - 115

Matrix Spike

Lab ID = 804461-001

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Mercury	ug/L	2.50	9.06	10.0(10.0)	90.6	75 - 125

Matrix Spike Duplicate

Lab ID = 804461-001

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Mercury	ug/L	2.50	9.33	10.0(10.0)	93.3	75 - 125

MRCCS - Secondary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Mercury	ug/L	1.00	2.02	2.00	101	90 - 110

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Mercury	ug/L	1.00	1.99	2.00	99.7	90 - 110

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Mercury	ug/L	1.00	2.02	2.00	101	90 - 110



Client: E2 Consulting Engineers, Inc.

Project Name: PG&E Topock Project

Page 17 of 36

Project Number: 423575.MP.02.CM

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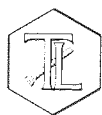
Metals by 200.7, Dissolved

Batch 110712A-Th2

Parameter	Unit	Analyzed	DF	MDL	RL	Result
804461-001 Aluminum	ug/L	11/07/2012 13:35	1.00	10.0	50.0	ND
Boron	ug/L	11/07/2012 13:35	1.00	2.70	200	918
Iron	ug/L	11/07/2012 13:35	1.00	9.50	20.0	ND
Magnesium	ug/L	11/07/2012 13:35	1.00	55.4	500	17000
Zinc	ug/L	11/07/2012 13:35	1.00	7.00	20.0	ND
804461-002 Aluminum	ug/L	11/07/2012 13:41	1.00	10.0	50.0	ND
Boron	ug/L	11/07/2012 13:41	1.00	2.70	200	923
Iron	ug/L	11/07/2012 13:41	1.00	9.50	20.0	ND
Magnesium	ug/L	11/07/2012 13:41	1.00	55.4	500	13400
Zinc	ug/L	11/07/2012 13:41	1.00	7.00	20.0	ND
804461-003 Aluminum	ug/L	11/07/2012 13:47	1.00	10.0	50.0	ND
Boron	ug/L	11/07/2012 13:47	1.00	2.70	200	1110
Iron	ug/L	11/07/2012 13:47	1.00	9.50	20.0	ND
Magnesium	ug/L	11/07/2012 13:47	1.00	55.4	500	7230
Zinc	ug/L	11/07/2012 13:47	1.00	7.00	20.0	ND
804461-004 Aluminum	ug/L	11/07/2012 13:53	1.00	10.0	50.0	ND
Boron	ug/L	11/07/2012 13:53	1.00	2.70	200	845
Iron	ug/L	11/07/2012 13:53	1.00	9.50	20.0	ND
Magnesium	ug/L	11/07/2012 13:53	1.00	55.4	500	14200
Zinc	ug/L	11/07/2012 13:53	1.00	7.00	20.0	ND
804461-005 Aluminum	ug/L	11/07/2012 13:59	1.00	10.0	50.0	ND
Boron	ug/L	11/07/2012 13:59	1.00	2.70	200	954
Iron	ug/L	11/07/2012 13:59	1.00	9.50	20.0	ND
Magnesium	ug/L	11/07/2012 13:59	1.00	55.4	500	16500
Zinc	ug/L	11/07/2012 13:59	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
Magnesium	ug/L	1.00	ND
Boron	ug/L	1.00	ND

**Client: E2 Consulting Engineers, Inc.****Project Name: PG&E Topock Project****Page 18 of 36****Project Number: 423575.MP.02.CM****Printed 12/2/2012****Duplicate**

Lab ID = 804408-001

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Aluminum	ug/L	1.00	ND	0	0	0 - 20
Iron	ug/L	1.00	ND	0	0	0 - 20
Zinc	ug/L	1.00	ND	0	0	0 - 20
Magnesium	ug/L	1.00	4490	4390	2.16	0 - 20
Boron	ug/L	1.00	998	975	2.35	0 - 20

Lab Control Sample

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Aluminum	ug/L	1.00	1970	2000	98.6	85 - 115
Iron	ug/L	1.00	2090	2000	104	85 - 115
Zinc	ug/L	1.00	1900	2000	94.8	85 - 115
Magnesium	ug/L	1.00	2120	2000	106	85 - 115
Boron	ug/L	1.00	1920	2000	96.0	85 - 115

Matrix Spike

Lab ID = 804408-001

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Aluminum	ug/L	1.00	1670	2000(2000)	83.6	75 - 125
Iron	ug/L	1.00	1900	2000(2000)	95.0	75 - 125
Zinc	ug/L	1.00	2120	2000(2000)	106	75 - 125
Magnesium	ug/L	1.00	6570	6390(2000)	109	75 - 125
Boron	ug/L	1.00	2870	2980(2000)	94.8	75 - 125

Matrix Spike Duplicate

Lab ID = 804408-001

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Aluminum	ug/L	1.00	1620	2000(2000)	81.2	75 - 125
Iron	ug/L	1.00	1840	2000(2000)	91.8	75 - 125
Zinc	ug/L	1.00	2050	2000(2000)	102	75 - 125
Magnesium	ug/L	1.00	6380	6390(2000)	99.4	75 - 125
Boron	ug/L	1.00	2810	2980(2000)	91.6	75 - 125

MRCCS - Secondary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Aluminum	ug/L	1.00	4810	5000	96.2	95 - 105
Iron	ug/L	1.00	5020	5000	100	95 - 105
Zinc	ug/L	1.00	4800	5000	96.0	95 - 105
Magnesium	ug/L	1.00	4900	5000	97.9	95 - 105
Boron	ug/L	1.00	4910	5000	98.1	95 - 105



Client: E2 Consulting Engineers, Inc.

Project Name: PG&E Topock Project

Page 22 of 36

Project Number: 423575.MP.02.CM

Printed 12/2/2012

Metals by 200.7, Dissolved		Batch 110612A-Th2				
Parameter	Unit	Analyzed	DF	MDL	RL	Result
804461-001 Calcium	ug/L	11/06/2012 14:38	100	1200	10000	190000
Potassium	ug/L	11/06/2012 17:01	2.00	540	2000	14000
Sodium	ug/L	11/06/2012 14:38	100	39400	100000	1410000
804461-002 Calcium	ug/L	11/06/2012 14:43	100	1200	10000	170000
Potassium	ug/L	11/06/2012 17:01	2.00	540	2000	14000
Sodium	ug/L	11/06/2012 14:43	100	39400	100000	1440000
804461-003 Calcium	ug/L	11/06/2012 14:49	100	1200	10000	117000
Potassium	ug/L	11/06/2012 17:34	2.00	540	2000	12600
Sodium	ug/L	11/06/2012 14:49	100	39400	100000	1590000
804461-004 Calcium	ug/L	11/06/2012 14:55	100	1200	10000	179000
Potassium	ug/L	11/06/2012 17:40	2.00	540	2000	12800
Sodium	ug/L	11/06/2012 14:55	100	39400	100000	1300000
804461-005 Calcium	ug/L	11/06/2012 15:01	100	1200	10000	184000
Potassium	ug/L	11/06/2012 17:46	2.00	540	2000	13400
Sodium	ug/L	11/06/2012 15:01	100	39400	100000	1440000

Method Blank

Parameter	Unit	DF	Result
Calcium	ug/L	1.00	ND
Potassium	ug/L	1.00	ND
Sodium	ug/L	1.00	ND

Duplicate

Lab ID = 804408-001

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Calcium	ug/L	50.0	84400	83100	1.55	0 - 20
Potassium	ug/L	5.00	10600	11100	4.23	0 - 20
Sodium	ug/L	500	1580000	1660000	4.62	0 - 20

Lab Control Sample

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Calcium	ug/L	1.00	2190	2000	110	85 - 115
Potassium	ug/L	1.00	2140	2000	107	85 - 115
Sodium	ug/L	1.00	1980	2000	99.0	85 - 115



Client: E2 Consulting Engineers, Inc.

Project Name: PG&E Topock Project

Page 26 of 36

Project Number: 423575.MP.02.CM

Printed 12/2/2012

Metals by 200.7, Dissolved

Batch 103012A

Parameter	Unit	Analyzed	DF	MDL	RL	Result
804461-007 Aluminum	ug/L	10/30/2012 13:37	1.00	9.50	50.0	ND
Boron	ug/L	10/30/2012 13:37	1.00	1.70	200	823
Iron	ug/L	10/30/2012 13:37	1.00	5.10	20.0	ND
Zinc	ug/L	10/30/2012 13:37	1.00	1.60	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 = 804409-007

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	491	498	1.40	0 - 20

Lab Control Sample

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Aluminum	ug/L	1.00	2190	2000	110	85 - 115
Iron	ug/L	1.00	2120	2000	106	85 - 115
Zinc	ug/L	1.00	2030	2000	101	85 - 115
Boron	ug/L	1.00	1950	2000	97.6	85 - 115

Matrix Spike

Lab ID = 804409-007

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Aluminum	ug/L	1.00	1670	2000(2000)	83.6	75 - 125
Iron	ug/L	1.00	1860	2000(2000)	93.2	75 - 125
Zinc	ug/L	1.00	2050	2000(2000)	102	75 - 125
Boron	ug/L	1.00	2400	2500(2000)	95.2	75 - 125

Matrix Spike Duplicate

Lab ID = 804409-007

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Aluminum	ug/L	1.00	1650	2000(2000)	82.4	75 - 125
Iron	ug/L	1.00	1870	2000(2000)	93.5	75 - 125
Zinc	ug/L	1.00	2030	2000(2000)	102	75 - 125
Boron	ug/L	1.00	2370	2500(2000)	93.6	75 - 125



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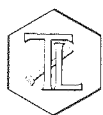
Project Name: PG&E Topock Project

Page 30 of 36

Project Number: 423575.MP.02.CM

Printed 12/2/2012

Metals by 200.7, Dissolved		Batch 102912A				
Parameter	Unit	Analyzed	DF	MDL	RL	Result
804461-007 Potassium	ug/L	10/29/2012 14:35	2.00	360	1000	16200
Method Blank						
Parameter	Unit	DF	Result			
Potassium	ug/L	1.00	ND			
Duplicate				Lab ID = 804409-007		
Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Potassium	ug/L	2.00	7460	7410	0.646	0 - 20
Lab Control Sample						
Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Potassium	ug/L	1.00	2130	2000	107	85 - 115
Matrix Spike				Lab ID = 804409-007		
Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Potassium	ug/L	2.00	11500	11400(4000)	103	75 - 125
MRCCS - Secondary						
Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Potassium	ug/L	1.00	5020	5000	100	90 - 110
MRCVS - Primary						
Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Potassium	ug/L	1.00	5030	5000	101	90 - 110
MRCVS - Primary						
Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Potassium	ug/L	1.00	4940	5000	98.8	90 - 110
MRCVS - Primary						
Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Potassium	ug/L	1.00	4690	5000	93.8	90 - 110
Interference Check Standard A						
Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Potassium	ug/L	1.00	2060	2000	103	80 - 120
Interference Check Standard A						
Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Potassium	ug/L	1.00	1940	2000	97.2	80 - 120



Client: E2 Consulting Engineers, Inc.

Project Name: PG&E Topock Project

Page 32 of 36

Project Number: 423575.MP.02.CM

Printed 12/2/2012

Metals by 200.7, Dissolved		Batch 102512A				
Parameter	Unit	Analyzed	DF	MDL	RL	Result
804461-006 Sodium	ug/L	10/25/2012 13:55	50.0	5650	25000	515000
804461-007 Calcium	ug/L	10/25/2012 14:01	50.0	836	25000	152000
Magnesium	ug/L	10/25/2012 18:24	2.00	103	1000	20700
Sodium	ug/L	10/25/2012 14:28	200	22600	100000	1360000
804461-008 Sodium	ug/L	10/25/2012 15:11	100	11300	50000	1290000
804461-009 Sodium	ug/L	10/25/2012 15:16	100	11300	50000	1250000
804461-010 Sodium	ug/L	10/25/2012 14:17	100	11300	50000	298000
804461-011 Sodium	ug/L	10/25/2012 14:23	100	11300	50000	1350000
804461-012 Sodium	ug/L	10/25/2012 14:54	100	11300	50000	1330000
804461-013 Sodium	ug/L	10/25/2012 15:00	100	11300	50000	364000
804461-014 Sodium	ug/L	10/25/2012 15:05	100	11300	50000	1260000

Method Blank

Parameter	Unit	DF	Result
Calcium	ug/L	1.00	ND
Sodium	ug/L	1.00	ND
Magnesium	ug/L	1.00	ND

Duplicate

Lab ID = 804409-007

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Calcium	ug/L	100	154000	155000	0.517	0 - 20
Sodium	ug/L	100	107000	106000	1.22	0 - 20
Magnesium	ug/L	10.0	26800	25800	3.91	0 - 20

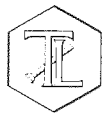
Lab Control Sample

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Calcium	ug/L	1.00	2020	2000	101	85 - 115
Sodium	ug/L	1.00	1920	2000	96.2	85 - 115
Magnesium	ug/L	1.00	2110	2000	106	85 - 115

Matrix Spike

Lab ID = 804409-007

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Calcium	ug/L	100	350000	355000(200000)	97.5	75 - 125
Sodium	ug/L	100	298000	306000(200000)	95.8	75 - 125
Magnesium	ug/L	10.0	45000	45800(20000)	96.1	75 - 125



Client: E2 Consulting Engineers, Inc.

Project Name: PG&E Topock Project

Page 35 of 36

Project Number: 423575.MP.02.CM

Printed 12/2/2012

Interference Check Standard AB

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Magnesium	ug/L	1.00	2190	2000	110	80 - 120

Turbidity by SM 2130 B

Batch 10TUC12L

Parameter	Unit	Analyzed	DF	MDL	RL	Result	
804461-001 Turbidity	NTU	10/19/2012	1.00	0.0140	0.100	ND	J
804461-002 Turbidity	NTU	10/19/2012	1.00	0.0140	0.100	0.142	J
804461-003 Turbidity	NTU	10/19/2012	1.00	0.0140	0.100	0.127	J
804461-004 Turbidity	NTU	10/19/2012	1.00	0.0140	0.100	0.120	J
804461-005 Turbidity	NTU	10/19/2012	1.00	0.0140	0.100	0.336	J
804461-006 Turbidity	NTU	10/19/2012	1.00	0.0140	0.100	0.487	J
804461-007 Turbidity	NTU	10/19/2012	1.00	0.0140	0.100	0.101	
804461-008 Turbidity	NTU	10/19/2012	1.00	0.0140	0.100	ND	
804461-009 Turbidity	NTU	10/19/2012	1.00	0.0140	0.100	ND	
804461-010 Turbidity	NTU	10/19/2012	1.00	0.0140	0.100	0.419	
804461-011 Turbidity	NTU	10/19/2012	1.00	0.0140	0.100	ND	
804461-012 Turbidity	NTU	10/19/2012	1.00	0.0140	0.100	0.145	
804461-013 Turbidity	NTU	10/19/2012	1.00	0.0140	0.100	0.290	
804461-014 Turbidity	NTU	10/19/2012	1.00	0.0140	0.100	ND	

Method Blank

Parameter	Unit	DF	Result
Turbidity	NTU	1.00	ND

Duplicate

Lab ID = 804461-010

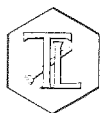
Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Turbidity	NTU	1.00	0.421	0.419	0.476	0 - 20

Lab Control Sample

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Turbidity	NTU	1.00	7.97	8.00	99.6	90 - 110

Lab Control Sample Duplicate

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Turbidity	NTU	1.00	7.85	8.00	98.1	90 - 110



TRUESDAIL LABORATORIES, INC.

Report Continued

Client: E2 Consulting Engineers, Inc.

Project Name: PG&E Topock Project

Page 36 of 36

Project Number: 423575.MP.02.CM

Printed 12/2/2012

Respectfully submitted,

TRUESDAIL LABORATORIES, INC.

for 

Mona Nassimi

Manager, Analytical Services



Truesdail Laboratories, Inc.

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

Batch: 10TDS12I

Date Analyzed: 10/22/12

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	67.0518	67.0518	67.0518	0.0000	No	0.0000	0.0	25.0	ND	1
804460-5	100	73.7964	73.8282	73.8282	0.0000	No	0.0318	318.0	25.0	318.0	1
804460-6	100	76.7928	76.8253	76.8249	0.0004	No	0.0321	321.0	25.0	321.0	1
804460-11	50	77.7819	77.8735	77.8735	0.0000	No	0.0916	1832.0	50.0	1832.0	1
804460-12	50	73.4426	73.5333	73.5333	0.0000	No	0.0907	1814.0	50.0	1814.0	1
804461-1	10	47.8657	47.9085	47.9084	0.0001	No	0.0427	4270.0	250.0	4270.0	1
804461-2	10	50.1252	50.1700	50.1696	0.0004	No	0.0444	4440.0	250.0	4440.0	1
804461-3	10	47.9485	47.9929	47.9928	0.0001	No	0.0443	4430.0	250.0	4430.0	1
804461-4	10	50.1529	50.195	50.1946	0.0004	No	0.0417	4170.0	250.0	4170.0	1
804461-5	10	47.5133	47.5586	47.5584	0.0002	No	0.0451	4510.0	250.0	4510.0	1
804461-6	20	48.9959	49.0497	49.0497	0.0000	No	0.0538	2690.0	125.0	2690.0	1
804461-6D	20	75.2899	75.3443	75.3443	0.0000	No	0.0544	2720.0	125.0	2720.0	1
LCS	100	76.7944	76.8432	76.8429	0.0003	No	0.0485	485.0	25.0	485.0	1
804461-7	10	49.6789	49.7224	49.7223	0.0001	No	0.0434	4340.0	250.0	4340.0	1
804461-8	10	51.0588	51.1021	51.1018	0.0003	No	0.0430	4300.0	250.0	4300.0	1
804461-9	10	47.2196	47.2632	47.2632	0.0000	No	0.0436	4360.0	250.0	4360.0	1
804461-10	50	75.1997	75.2518	75.2514	0.0004	No	0.0517	1034.0	50.0	1034.0	1
804461-11	10	51.4230	51.4653	51.465	0.0003	No	0.0420	4200.0	250.0	4200.0	1
804461-12	10	48.1372	48.1819	48.1815	0.0004	No	0.0443	4430.0	250.0	4430.0	1
804461-13	50	72.5253	72.6151	72.6151	0.0000	No	0.0898	1796.0	50.0	1796.0	1
804461-14	10	51.4302	51.4747	51.4746	0.0001	No	0.0444	4440.0	250.0	4440.0	1
804485-2	100	111.3678	111.3902	111.3898	0.0004	No	0.0220	220.0	25.0	220.0	1
804485-4	100	69.2029	69.2481	69.248	0.0001	No	0.0451	451.0	25.0	451.0	1

Calculation as follows:

Filterable residue (TDS), mg/L =

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

Where:

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

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

Laboratory Control Sample (LCS) Summary

QC Std I.D.	Measured Value, ppm	Theoretical Value, ppm	Percent Rec	Acceptance Limit	QC Within Control?
LCS1	485	500	97.0%	90-110%	Yes
LCSD					

LCS Recovery

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

P = Percent recovery.

LC = Measured LCS value (ppm).

LT = Theoretical LCS value (ppm).

Duplicate Determinations Difference Summary

Lab Number	Sample Weight, g	Sample Dup Weight, g	% RPD	Acceptance Limit	QC Within Control?
804461-6	0.0538	0.0544	0.6%	≤5%	Yes

Duplicate Determination Difference

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

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

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

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

C = Average weight in (g).

Jenny T.

Analyst Printed Name

Analyst Signature

Maksim Hope

Reviewer Printed Name

Reviewer Signature

Total Dissolved Solids by SM 2540 C

TDS/EC CHECK

Batch: 10TDS12I
Date Analyzed: 10/22/12

Laboratory Number	EC	TDS/EC Ratio: 0.55-.9	Calculated TDS (EC*0.65)	Measured TDS / Calc TDS <1.3
804460-5	445	0.71	289.25	1.10
804460-6	452	0.71	293.8	1.09
804460-11	2700	0.68	1755	1.04
804460-12	2680	0.68	1742	1.04
804461-1	7320	0.58	4758	0.90
804461-2	7380	0.60	4797	0.93
804461-3	7740	0.57	5031	0.88
804461-4	6880	0.61	4472	0.93
804461-5	7320	0.62	4758	0.95
804461-6	4230	0.64	2749.5	0.98
804461-6D	4230	0.64	2749.5	0.99
LCS				
804461-7	7260	0.60	4719	0.92
804461-8	7320	0.59	4758	0.90
804461-9	7200	0.61	4680	0.93
804461-10	1760	0.59	1144	0.90
804461-11	7270	0.58	4725.5	0.89
804461-12	7330	0.60	4764.5	0.93
804461-13	2950	0.61	1917.5	0.94
804461-14	7300	0.61	4745	0.94
804485-2	391	0.56	254.15	0.87
804485-4	754	0.60	490.1	0.92



Analytical Batch:	10ALK12E
Matrix:	Water
Date of Analysis:	10/19/12

Calculations as follows:

$$T \text{ or } P = \left(\frac{A \times N \times 50000}{mL \text{ sample}} \right)$$

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: =
$$\frac{(2 \times B - C) \times N \times 50000}{\text{mL sample}}$$

as mg/L CaCO₃

Where: B = mL titrant to first recorded pH

C = Total mL titrant to reach pH 0.3 unit lower

N = Normality of standard acid

LCS = Laboratory Control Standard/Duplicate

MS/MSD = Matrix Spike/Duplicate

ND = Not Detected (below the reporting limit)

Blank Summary

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

Laboratory Control Sample (LCS/LCSD) Summary

QC Std I.D.	Measured Value, ppm	Theoretical Value, ppm	%Recovery	Acceptance Limit	QC Within Control?
LCS	108	100	108.0%	90-110	Yes
LCSD	104	100	104.0%	90-110	Yes

Duplicate Determination Difference Summary

Lab Number I.D.	Measured Value, ppm	Dup Value, ppm	RPD	Acceptance Limit	QC Within Control?
804461-5	56	51	9.3%	≤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?
804461-7	45	1	100	100	149	145.00	104%	75-125	Yes			
		1	100	100								

Melissa S.

Analyst Printed Name

101912e

Analyst Signature

Maksim G.
~~Hope~~

Reviewer Printed Name

Reviewer Signature _____

065

250

804461

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CHAIN OF CUSTODY RECORD

10/18/2012 3:21:06 PM

Page 1 OF 2

Project Name PG&E Topock		Container:	250 ml Poly	500 ml Poly	500 ml Poly	1x500 ml Poly	2x1 Liter	2x1 Liter	2x1 Liter	2x1 Liter	2x1 Liter	1 Liter Poly	<p>* The Metals list should be: Al, Sb, As, Ba, Be, B, Ca, Cd, Co, Cr, Cu, Fe, Pb, Mg, Mn, Hg, Mo, Ni, Se, Ag, Tl, V, Zn, K, Na</p> <p><i>Shawn P. Duffy</i> 10/23/2012</p> <p>For Sample Conditions See Form Attached</p>	Number of Containers	COMMENTS
Location Topock		Preservatives:	(NH4)2S 0.4NH4O H, 4°C	HNO3, 4°C	HNO3, 4°C	HNO3, 4°C	4°C	4°C	4°C	4°C	4°C	H2SO4, pH<2, 4°C			
Project Manager Jay Piper		Filtered:	Field	Field	NA	Field	NA	NA	NA	NA	NA	NA			
Sample Manager Matt Ringler		Holding Time:	28	180	180	180	2	2	2	2	2	28			
Project Number 423575.MP.02.CM			C6 (E210.8) Field Filtered	Metals (E200.7-E200.8) Field Filtered Cr, Mo, Na	Metals (E201.08) Total Fe	* Metals (E200series) Field Filtered AsPbAsBaBbCaCdCoCrCuFe	Specific Conductance (E120.1)	Anions (E300.0) Cl, F, SO4	Turbidity (SM2130)	TDS (SM2540C)	Alkalinity (SM4230B)	Ammonia (SM4500NH3)			
Task Order															
Project 2012-CMP-028															
Turnaround Time 10 Days															
Shipping Date: 10/18/2012															
COC Number: 5															
DATE	TIME	MATRIX													
1 CW-01D-028	10/16/2012	11:52	Water	X		X	X	X	X	X	X	X		6	
2 CW-01M-028	10/16/2012	12:34	Water	X		X	X	X	X	X	X	X		6	
3 CW-04D-028	10/16/2012	8:48	Water	X		X	X	X	X	X	X	X		6	
4 CW-04M-028	10/16/2012	9:57	Water	X		X	X	X	X	X	X	X		6	PH=2
5 OW-01D-028	10/16/2012	14:28	Water	X		X	X	X	X	X	X	X		6	
6 OW-01S-028	10/16/2012	15:07	Water	X	X			X	X	X	X			4	
OW-06-028	10/17/2012	8:25	Water	X										1	Hold
OW-09-028	10/17/2012	8:35	Water	X										1	Hold
7 OW-01M-028	10/18/2012	7:54	Water	X		X	X	X	X	X	X	X		6	
8 OW-02D-028	10/18/2012	9:27	Water	X	X			X	X	X	X			4	
9 OW-02M-028	10/18/2012	11:45	Water	X	X			X	X	X	X			4	
10 OW-02S-028	10/18/2012	10:04	Water	X	X			X	X	X	X			4	PH=2
11 OW-05D-028	10/18/2012	12:56	Water	X	X			X	X	X	X			4	
12 OW-05M-028	10/18/2012	14:03	Water	X	X			X	X	X	X			4	

ALERT II
Level III QC

<p>Approved by</p> <p>Sampled by</p> <p>Relinquished by</p> <p>Received by</p> <p>Relinquished by</p> <p>Received by</p>		<p>Signatures</p> <p>Date/Time</p> <p>10-18-12</p> <p>1540</p> <p>10-18-12 1540</p> <p>10-18-12 2040</p> <p>10/18/12 2040</p>	<p>Shipping Details</p> <p>Method of Shipment: courier</p> <p>On Ice: yes / no</p> <p>Airbill No:</p> <p>Lab Name: Truesdell Laboratories, Inc.</p> <p>Lab Phone: (714) 730-6239</p>	<p>ATTN:</p> <p>Sample Custody</p>	<p>Special Instructions:</p> <p>October 1-5, 2012</p> <p>Report Copy to</p> <p>Shawn Duffy</p> <p>(530) 229-3303</p>
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10/18/2012 3:21:07 PM

Page 2 OF 2

804461

Project Name PG&E Topock				Container:	250 ml Poly	500 ml Poly	500 ml Poly	1x500 ml Poly	2x1 Liter	2x1 Liter	2x1 Liter	2x1 Liter	2x1 Liter	1 Liter Poly	<div style="border: 2px solid black; padding: 10px; transform: rotate(-2deg); font-weight: bold; font-size: 1.2em;"> ALERT !! Level III QC </div>	Number of Containers	COMMENTS
Location Topock				Preservatives:	(NH4)2S 04/NH4O H, 4°C	HNO3, 4°C	HNO3, 4°C	HNO3, 4°C	4°C	4°C	4°C	4°C	4°C	H2SO4, pH<2, 4°C			
Project Manager Jay Piper				Filtered:	Field	Field	NA	Field	NA	NA	NA	NA	NA				
Sample Manager Matt Ringier				Holding Time:	28	180	180	180	2	2	2	2	2	28			
Project Number 423575.MP.02.CM					C16 (E218.6) Field Filtered	Metals (E200.7-E200.8) Field Filtered Cr, Mo, Na	Metals (601.08) Total Fe	Metals (E200series) Field Filtered As, Ba, Be, B, Cd, Co, Cr, Cu, Fe, Pb	Specific Conductance (E120.1)	Anions (E300.0) Cl, F, SO4	Turbidity (SM2130)	TDS (SM2540C)	Alkalinity (SM2320B)	Ammonia (SM4500NH3)			
Task Order																	
Project 2012-CMP-028																	
Turnaround Time 10 Days																	
Shipping Date: 10/18/2012																	
COC Number: 5																	
DATE	TIME	Matrix															
10/18/2012	14:41	Water	X	X				X	X	X	X				4		
10/18/2012	7:05	Water	X	X				X	X	X	X				4		
10-18-12	1509		X														
10-18-12	1510		X														
10-18-12	1521		X														
TOTAL NUMBER OF CONTAINERS															20		

Held
Held
Held

Approved by Sampled by Relinquished by Received by Relinquished by Received by	Signatures 	Date/Time 10-18-12 1540 10-18-12 15:40 10-18-12 2040 10/18/12 20:40	Shipping Details Method of Shipment: courier On Ice: yes / no Airbill No: Lab Name: Truesdail Laboratories, Inc. Lab Phone: (714) 730-6239	ATTN: Sample Custody	Special Instructions: October 1-5, 2012 Report Copy to Shawn Duffy (530) 229-3303
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CHAIN OF CUSTODY RECORD

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Page 1 OF 2

Project Name PG&E Topock Location Topock Project Manager Jay Piper Sample Manager Matt Ringier				Container:	250 ml Poly (NH4)2S O4/NH4O H, 4°C	500 ml Poly HNO3, 4°C	500 ml Poly HNO3, 4°C	1x500 ml Poly HNO3, 4°C	2x1 Liter 4°C	2x1 Liter 4°C	2x1 Liter 4°C	2x1 Liter 4°C	2x1 Liter 4°C	1 Liter Poly H2SO4, pH<2, 4°C	For Sample Conditions See Form Attached	Number of Containers	COMMENTS
Preservatives:				Field	Field	NA	Field	NA	NA	NA	NA	NA	NA				
Filtered:				Field	Field	NA	Field	NA	NA	NA	NA	NA					
Holding Time:				28	180	180	180	2	2	2	2	2	28				
Project Number 423575.MP.02.CM Task Order Project 2012-CMP-028 Turnaround Time 10 Days Shipping Date: 10/18/2012 COC Number: 5				C16 (E218.6) Field Filtered	Metals (E200.7-E200.8) Field Filtered Cr, Mo, Na	Metals (6010B) Total Fe	Metals (E200series) Field Filtered AlSbBaBeBcCdCoCrCuFePb	Specific Conductance (E120.1)	Anions (E300.0) Cl, F, SO4	Turbidity (SM2130)	TDS (SM2540C)	Alkalinity (SM2320B)	Ammonia (SH4500NH3)				
DATE	TIME	MATRIX															
CW-01D-028	10/16/2012	11:52	Water	X		X	X	X	X	X	X	X	X		6	} m=2	
CW-01M-028	10/16/2012	12:34	Water	X		X	X	X	X	X	X	X	X		6		
CW-04D-028	10/16/2012	8:48	Water	X		X	X	X	X	X	X	X	X		6		
CW-04M-028	10/16/2012	9:57	Water	X		X	X	X	X	X	X	X	X		6		
OW-01D-028	10/16/2012	14:28	Water	X		X	X	X	X	X	X	X	X		6		
OW-01S-028	10/16/2012	15:07	Water	X	X			X	X	X	X				4	} Hold	
OW-88-028	10/17/2012	8:25	Water	X											1		
OW-89-028	10/17/2012	8:35	Water	X											1		
OW-01M-028	10/18/2012	7:54	Water	X		X	X	X	X	X	X	X	X		6	} m=2	
OW-02D-028	10/18/2012	9:27	Water	X	X			X	X	X	X				4		
OW-02M-028	10/18/2012	11:45	Water	X	X			X	X	X	X				4		
OW-02S-028	10/18/2012	10:04	Water	X	X			X	X	X	X				4		
OW-05D-028	10/18/2012	12:56	Water	X	X			X	X	X	X				4		
OW-05M-028	10/18/2012	14:03	Water	X	X			X	X	X	X				4		

ALERT !!
Level III QC

Signatures Approved by <i>[Signature]</i> Sampled by <i>[Signature]</i> Relinquished by <i>[Signature]</i> Relinquished by <i>[Signature]</i> Received by <i>[Signature]</i>		Date/Time 10-18-12 1540 10-18-12 15:46 10-18-12 20:46 10/18/12 2040		Shipping Details Method of Shipment: courier On Ice: yes / no Airbill No: Lab Name: Truesdail Laboratories, Inc. Lab Phone: (714) 730-6239		ATTN: Sample Custody		Special Instructions: October 1-5, 2012 Report Copy to Shawn Duffy (530) 229-3303	
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CHAIN OF CUSTODY RECORD

10/18/2012 3:21:07 PM

Page 2 OF 2

804461

Project Name PG&E Topock Location Topock Project Manager Jay Piper Sample Manager Matt Ringier Project Number 423575.MP.02.CM Task Order Project 2012-CMP-028 Turnaround Time 10 Days Shipping Date: 10/18/2012 COC Number: 5				Container: 250 ml Poly Preservatives: (NH4)2S O4/NH4O H, 4°C Filtered: Field Holding Time: 28	500 ml Poly HNO3, 4°C Field	500 ml Poly HNO3, 4°C NA	1x500 ml Poly HNO3, 4°C Field	2x1 Liter 4°C NA	2x1 Liter 4°C NA	2x1 Liter 4°C NA	2x1 Liter 4°C NA	2x1 Liter 4°C NA	1 Liter Poly H2SO4, pH<2, 4°C NA	<div style="border: 2px solid black; padding: 10px; text-align: center;"> ALERT !! Level III QC </div>	Number of Containers	COMMENTS
C16 (E218.6) Field Filtered	Metals (E200.7-E200.8) Field Filtered Cr,Mo,Na	Metals (6010B) Total Fe	Metals (E200series) Field Filtered AlSbAsBaBeBCaCdCoCfCuFePb	Specific Conductance (E120.1)	Anions (E300.0) Cl, F, SO4	Turbidity (SM2130)	TDS (SM2540C)	Alkalinity (SM2320B)	Ammonia (SM4500NH3)							
DATE	TIME	Matrix														
12 OW-05S-028	10/18/2012	14:41	Water	X	X			X	X	X	X					
14 OW-91-028	10/18/2012	7:05	Water	X	X			X	X	X	X			4		
OW-83-028	10-18-12	1509		X											TOTAL NUMBER OF CONTAINERS	
OW-84-028		1516		X												
OW-85-028		1521		X												

Approved by Sampled by Relinquished by Received by Relinquished by Received by	Signatures  	Date/Time 10-18-12 1540 10-18-12 1540 10-18-12 2040 10/18/12 20:40	Shipping Details Method of Shipment: courier On Ice: yes / no Airbill No: Lab Name: Truesdail Laboratories, Inc. Lab Phone: (714) 730-6239	ATTN: Sample Custody	Special Instructions: October 1-5, 2012 Report Copy to Shawn Duffy (530) 229-3303
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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
10/18/12	804438-1	9.5	N/A	N/A	N/A	HAV
↓	↓	↓	↓	↓	↓	↓
10/19/12	804459-1	9.5	N/A	N/A	N/A	HAV
↓	↓	↓	↓	↓	↓	↓
↓	↓	↓	↓	↓	↓	↓
↓	↓	↓	↓	↓	↓	↓
↓	↓	↓	↓	↓	↓	↓
↓	↓	↓	↓	↓	↓	↓
↓	↓	↓	↓	↓	↓	↓
↓	↓	↓	↓	↓	↓	↓
↓	↓	↓	↓	↓	↓	↓
↓	↓	↓	↓	↓	↓	↓
↓	↓	↓	↓	↓	↓	↓
↓	↓	↓	↓	↓	↓	↓
↓	↓	↓	↓	↓	↓	↓
10/19/12	804460-1	9.5	N/A	N/A	N/A	HAV
↓	↓	↓	↓	↓	↓	↓
↓	↓	↓	↓	↓	↓	↓
↓	↓	↓	↓	↓	↓	↓
↓	↓	↓	↓	↓	↓	↓
↓	↓	↓	↓	↓	↓	↓
↓	↓	↓	↓	↓	↓	↓
↓	↓	↓	↓	↓	↓	↓
↓	↓	↓	↓	↓	↓	↓
↓	↓	↓	↓	↓	↓	↓
↓	↓	↓	↓	↓	↓	↓
↓	↓	↓	↓	↓	↓	↓
↓	↓	↓	↓	↓	↓	↓
↓	↓	↓	↓	↓	↓	↓
10/19/12	804461-1	9.5	N/A	N/A	N/A	HAV
↓	↓	↓	↓	↓	↓	↓
↓	↓	↓	↓	↓	↓	↓
↓	↓	↓	↓	↓	↓	↓
↓	↓	↓	↓	↓	↓	↓

10-31-12

HAV
10/31/12

Hexavalent Chromium

Method EPA 218.6 and SW 7199 Sample pH Log

[illegible]

15-31-12

HAV
10/31/12



Turbidity/pH Check

Sample Number	Turbidity	pH	Date	Analyst	Need Digest	pH2-Adjusted Time	Date/Time of 2nd pH check	Comments
804459 (1-5, 11)	<1	<2	10/22/12	M.M.	30/10A			
804460 (1, 3-11)	↓	↓	↓	↓	↓			
804461 (1-14)	↓	↓	↓	↓	↓			
804478	<1	>2	10-22-12	BZ	NO	15:00	10-23-12	PH < 2
804444	>1	<2	10/23/12	M.M.	30/10A			
804447	↓	↓	↓	↓	↓			
804471	↓	↓	↓	↓	↓			
804472	↓	↓	↓	↓	↓			
804482	↓	↓	↓	↓	↓			
804494	↓	↓	↓	↓	↓			
804499	↓	↓	↓	↓	↓			
804502	↓	↓	↓	↓	↓			
804493	<1	<2	10/24/12	M.M.	30/10A			
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.	30/10A			
804532	↓	↓	↓	↓	↓			
804537	↓	↓	↓	↓	↓			
804543	↓	↓	↓	↓	↓			
804544	↓	↓	↓	↓	↓			
804545	↓	↓	↓	↓	↓			
804546	↓	↓	↓	↓	↓			
804547	↓	↓	↓	↓	↓			
804562	↓	↓	↓	↓	↓			
804570 (19294)	<1	>2	10-30-12	BZ	NO	8:00 AM	11-4	PH < 2
804573 (1-3)	>1	>2	10/31/12	KK	yes	TTLCE 10am		
804574	>1	>2	↓	↓	↓	↓		
804602	<1	>2	10/31/12	M.M.	30/10A			
804575	>1	<2	↓	↓	↓			
804576	rubber	-	↓	↓	TTLCE			
804593	>1	<2	↓	↓	↓			
804607	↓	↓	↓	↓	30/10A			
8046012	↓	>2	10/31/12	M.M.	30/10A	11:30am	10/31/12	ph < 2
804620	>1	<2	11-2-12	BE	30/10A			
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.

Sample Integrity & Analysis Discrepancy Form

Client: E2

Lab # 804461

Date Delivered: 10/18/12 Time: 20:40 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.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 Shabecoff

Advanced Technology Laboratories, Inc.

Client: Truesdail Laboratories
Project: PGE Topock, 423575.MP.02.CM
Lab Order: N008954
Sample: Five (5) Groundwater Samples

Date Reported: December 4, 2012
Collected: October 15, 2012
Received: November 21, 2012

ANALYST LIST

METHOD	PARAMETER	ANALYST
EPA 200.7	Metals by ICP	Claire Ignacio
EPA 200.8	Metals by ICP/MS	Claire Ignacio



**Advanced Technology
Laboratories, Inc.**

3151 W. Post Rd Las Vegas, NV 89118 Tel: 702-307-2659 Fax: 702-307-2691

Advanced Technology Laboratories, Inc.

Client: Truesdail Laboratories
Project: PGE Topock, 423575.MP.02.CM
Lab Order: N008957
Sample: Fourteen (14) Groundwater Samples

Date Reported: December 5, 2012
Collected: October 16-18, 2012
Received: November 21, 2012

ANALYST LIST

METHOD	PARAMETER	ANALYST
EPA 200.7	Metals by ICP	Claire Ignacio
EPA 200.8	Metals by ICP/MS	Claire Ignacio



**Advanced Technology
Laboratories, Inc.**

3151 W. Post Rd Las Vegas, NV 89118 Tel: 702-307-2659 Fax: 702-307-2691



CH2MHILL

Applied Sciences Laboratory

ANALYTICAL REPORT

For:

PGE Topock

ASL Report #: L2665

Project ID: 423575.MP.02.CM

Attn: Jay Piper/LAS

cc:

Data Center/RDD

Authorized and Released By:

Kathy McKinley

Laboratory Project Manager

Kathy McKinley

(541) 758-0235 ext.23144

November 02, 2012

All analyses performed by CH2M HILL are clearly indicated. Any subcontracted analyses are included as appended reports as received from the subcontracted laboratory. The results included in this report only relate to the samples listed on the following Sample Cross-Reference page. This report shall not be reproduced except in full, without the written approval of the laboratory.

Any unusual difficulties encountered during the analysis of your samples are discussed in the attached case narratives.



Oregon (100022)

Arizona (0771)

Louisiana (05031)

ASL Report #: L2665

Sample Receipt Comments

We certify that the test results meet all NELAP requirements except those listed below:

- Samples were received at a temperature of 10.1°C.

Sample Cross-Reference

ASL Sample ID	Client Sample ID	Date/Time Collected	Date Received
L266501	CW-02D-028	10/15/12 10:36	10/18/12
L266502	CW-02M-028	10/15/12 12:04	10/18/12
L266503	CW-03D-028	10/15/12 14:26	10/18/12
L266504	CW-03M-028	10/15/12 15:34	10/18/12
L266505	OW-90-028	10/15/12 07:10	10/18/12

**CASE NARRATIVE
AUTOMATED CHEMISTRY ANALYSIS**

Lab Name: CH2M HILL/LAB/CVO

ASL SDG#: L2665

Project: PGE Topock

Project #: 423575.MP.02.CM

I. Method(s):

Analysis: E353.2

II. Receipt/Holding Times:

All acceptance criteria were met.

III. Analysis:

A. Initial Calibration(s):

All acceptance criteria were met.

B. Calibration Verification(s):

All acceptance criteria were met.

C. Blanks:

All acceptance criteria were met.

D. Laboratory Control Sample(s):

All acceptance criteria were met.

E. Matrix Spike/Matrix Spike Duplicate Sample(s):

Analyzed in accordance with standard operating procedure.

F. Analytical Exception(s):

None.

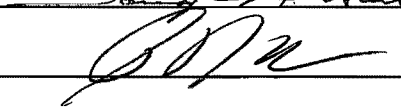
IV. Documentation Exception(s):

None.

V. I certify that this data package is in compliance with the terms and conditions agreed to by the client and CH2M HILL, both technically and for completeness, except for the conditions detailed above. Release of the data contained in this hardcopy data package has been authorized by the Laboratory Manager or designee, as verified by the following signatures.

Prepared by: 

Date: 10/31/12

Reviewed by: 

Date: 2 Nov 2012

CW-02D-028

Lab Name: CH2M HILL/LAB/CVO

Lab Sample ID: L266501

Date Received: 10/18/12

[illegible]

CW-02M-028

Date Received: 10/18/12

[illegible]

CW-03D-028

Date Received: 10/18/12

[illegible]

CW-03M-028

Date Received: 10/18/12

[illegible]

OW-90-028

Date Received: 10/18/12


[illegible]

WB1-101912

Date Received: / /

[illegible]

Concentration Units: MG/L

Signatures		Date/Time	Shipping Details		Special Instructions:
Approved by		10-16-12	Method of Shipment: courier		ATTN:
Sampled by		1540	On Ice: yes / no		October 1-5, 2012
Relinquished by		Airbill No:	Sample Custody		
Received by		Lab Name: CH2M HILL Applied Sciences Lab	and		Report Copy to
Relinquished by	Rafael Davila 10/16/12 15:40	Lab Phone: (541) 752-4271	Kathy McKinley		Shawn Duffy
Received by	Linda, REC 10/16/12 21:30	Brent Longenecker 10/18/12		(530) 229-3303	

Rel-shed: TLT, Linda, 10/17/12



Batch Number: L2665
Client/Project: PG&E Taprock

Date received: 10/18/12
Checked by: BSW
Checked by: _____

VERIFICATION OF SAMPLE CONDITIONS (verify all items), HD = Client Hand delivered Samples	NA	YES	NO
Radiological Screening for DoD	/		
Were custody seals intact and on the outside of the cooler?		/	
Type of packing material: Ice <u>Blue Ice</u> Bubble wrap		/	
Was a Chain of Custody (CoC) Provided?		/	
Was the CoC correctly filled out (If No, document in the SRER)		/	
Did the CoC list a correct bottle count and the preservative types (Y=OK, N=Corrected on CoC)		/	
Were the sample containers in good condition (broken or leaking)?		/	
Containers supplied by ASL?			/
Any sample with < 1/2 holding time remaining? If so contact LPM			/
Samples have multi-phase? If yes, document on SRER			/
Was there ice in the cooler? Enter temp. If >6°C contact client/SRER 10.1 °C		/	

All VOCs free of air bubbles? No, document on SRER	/		
pH of all samples checked and met requirements? No, then document in SRER		/	
Enough sample volume provided for analysis? No, document in SRER		/	
Did sample labels agree with COC? No, document in SRER		/	
Dissolved/Soluble metals filtered in the field?	/		
Dissolved/Soluble metals have sediment in bottom of container? Document in SRER	/		

[illegible]



CH2MHILL
Applied Sciences Laboratory (ASL)

Sample Receipt Exception Report

Sample Batch Number:

L26605

Client/Project

PGE Topack

The following exceptions were noted:

Comments (write number of exception description and the impacted sample numbers)

1. No custody seal as required by project

2. No chain-of-custody provided

3. Analysis, description, date of collection not provided

4. Samples broken or leaking on receipt.

5. Temperature of samples inappropriate for analysis requested

6. Container inappropriate for analysis requested

7. Inadequate sample volume.

8. Preservation inappropriate for analysis requested

9. Samples received out of holding time for analysis requested

10. Discrepancies between COC form and container labels.

11. Other.

5- Temperatures Received
at ~~10.1~~ → 10.4 °C
10.1 ROG BAM 10/18/12

Limited blue ice, peanuts and cardboard box.

ACTION TAKEN:

Proceed with analysis per Shawn Duffy / RDD

Originator:

Brent Mangum

Date:

10/18/12

Client was notified on:

(Date/Time)

10/18/12 1115

Client Contact:

Shawn Duffy / RDD

Client Services:



CH2MHILL

Applied Sciences Laboratory

ANALYTICAL REPORT

For:

PGE Topock

ASL Report #: L2696

Project ID: 423575.MP.02.CM

Attn: Jay Piper/LAS

cc:

Data Center/RDD

Authorized and Released By:

Kathy McKinley

Laboratory Project Manager

Kathy McKinley

(541) 758-0235 ext.23144

November 02, 2012

All analyses performed by CH2M HILL are clearly indicated. Any subcontracted analyses are included as appended reports as received from the subcontracted laboratory. The results included in this report only relate to the samples listed on the following Sample Cross-Reference page. This report shall not be reproduced except in full, without the written approval of the laboratory.

Any unusual difficulties encountered during the analysis of your samples are discussed in the attached case narratives.



Oregon (100022)

Arizona (0771)

Louisiana (05031)

ASL Report #: L2696

Sample Receipt Comments

We certify that the test results meet all NELAP requirements.

Sample Cross-Reference

ASL Sample ID	Client Sample ID	Date/Time Collected	Date Received
L269601	CW-01D-028	10/16/12 11:52	10/23/12
L269602	CW-01M-028	10/16/12 12:34	10/23/12
L269603	CW-04D-028	10/16/12 08:48	10/23/12
L269604	CW-04M-028	10/16/12 09:57	10/23/12
L269605	OW-01D-028	10/16/12 14:28	10/23/12
L269606	OW-01S-028	10/16/12 15:07	10/23/12
L269607	OW-01M-028	10/18/12 07:54	10/23/12
L269608	OW-02D-028	10/18/12 09:27	10/23/12
L269609	OW-02M-028	10/18/12 11:45	10/23/12
L269610	OW-02S-028	10/18/12 10:04	10/23/12
L269611	OW-05D-028	10/18/12 12:56	10/23/12
L269612	OW-05M-028	10/18/12 14:03	10/23/12
L269613	OW-05S-028	10/18/12 14:41	10/23/12
L269614	OW-91-028	10/18/12 07:05	10/23/12

**CASE NARRATIVE
AUTOMATED CHEMISTRY ANALYSIS**

Lab Name: CH2M HILL/LAB/CVO

ASL SDG#: L2696

Project: PGE Topock

Project #: 423575.MP.02.CM

I. Method(s):

Analysis: E353.2

II. Receipt/Holding Times:

All acceptance criteria were met.

III. Analysis:

A. Initial Calibration(s):

All acceptance criteria were met.

B. Calibration Verification(s):

All acceptance criteria were met.

C. Blanks:

All acceptance criteria were met.

D. Laboratory Control Sample(s):

All acceptance criteria were met.

E. Matrix Spike/Matrix Spike Duplicate Sample(s):

Analyzed in accordance with standard operating procedure.

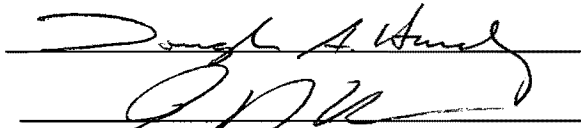
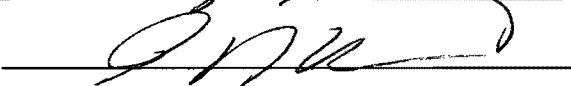
F. Analytical Exception(s):

None.

IV. Documentation Exception(s):

None.

- V. I certify that this data package is in compliance with the terms and conditions agreed to by the client and CH2M HILL, both technically and for completeness, except for the conditions detailed above. Release of the data contained in this hardcopy data package has been authorized by the Laboratory Manager or designee, as verified by the following signatures.

Prepared by:		Date:	<u>10/31/12</u>
Reviewed by:		Date:	<u>12 Nov 2012</u>

CW-01D-028

Date Received: 10/23/12

[illegible]

CW-01M-028

Lab Name: CH2M HILL/LAB/CVO

Lab Sample ID: L269602

[illegible]

CW-04D-028

Date Received: 10/23/12

[illegible]

CW-04M-028

Lab Name: CH2M HILL/LAB/CVO

Lab Sample ID: L269604

Date Received: 10/23/12

[illegible]

OW-01D-028

Date Received: 10/23/12

[illegible]

OW-01S-028

Date Received: 10/23/12

[illegible]

OW-01M-028

Lab Name: CH2M HILL/LAB/CVO

Lab Sample ID: L269607

[illegible]

OW-02D-028

Lab Name: CH2M HILL/LAB/CVO

Lab Sample ID: L269608

Date Received: 10/23/12

[illegible]

OW-02M-028

Date Received: 10/23/12

[illegible]

OW-02S-028

Date Received: 10/23/12

[illegible]

OW-05D-028

Lab Name: CH2M HILL/LAB/CVO

Lab Sample ID: L269611

[illegible]

OW-05M-028

Lab Name: CH2M HILL/LAB/CVO

Lab Sample ID: L269612

Date Received: 10/23/12

[illegible]

OW-05S-028

Lab Name: CH2M HILL/LAB/CVO

Lab Sample ID: L269613

Date Received: 10/23/12

[illegible]

OW-91-028

Date Received: 10/23/12

[illegible]

WB1-102612

Date Received: / /

[illegible]

Concentration Units: MG/L

CH2MHILL

CHAIN OF CUSTODY RECORD

10/18/2012 3:20:36 PM

Page 1 OF 2

Project Name PG&E Topock				Container:	1 Liter Poly	2.2		Number of Containers	COMMENTS
Location Topock				Preservatives:	H2SO4, pH<2, 4°C				
Project Manager Jay Piper				Filtered:	NA				
Sample Manager Matt Ringier				Holding Time:	28				
Project Number 423575.MP.02.CM Task Order Project 2012-CMP-028 Turnaround Time 12 Days Shipping Date: 10/18/2012 COC Number: 6				Nitrate/Nitrite (SM4500NO3-E)					
DATE	TIME	Matrix							
CW-01D-028	10/16/2012	11:52	Water	X	-1			1	
CW-01M-028	10/16/2012	12:34	Water	X	-2			1	
CW-04D-028	10/16/2012	8:48	Water	X	-3			1	
CW-04M-028	10/16/2012	9:57	Water	X	-4			1	
OW-01D-028	10/16/2012	14:28	Water	X	-5			1	
OW-01S-028	10/16/2012	15:07	Water	X	-6			1	
OW-01M-028	10/18/2012	7:54	Water	X	-7			1	
OW-02D-028	10/18/2012	9:27	Water	X	-8			1	
OW-02M-028	10/18/2012	11:45	Water	X	-9			1	
OW-02S-028	10/18/2012	10:04	Water	X	-10			1	
OW-05D-028	10/18/2012	12:56	Water	X	-4			1	
OW-05M-028	10/18/2012	14:03	Water	X	-12			1	
OW-05S-028	10/18/2012	14:41	Water	X	-13			1	
OW-91-028	10/18/2012	7:05	Water	X	-14			1	

Approved by Sampled by Relinquished by Received by Relinquished by Received by Rel-Stat:	Signatures 	Date/Time 	Shipping Details Method of Shipment: courier On Ice: yes / no Airbill No: Lab Name: CH2M HILL Applied Sciences Lab Lab Phone: (541) 752-4271	ATTN: Sample Custody and Kathy McKinley	Special Instructions: October 1-5, 2012 Report Copy to Shawn Duffy (530) 229-3303
---	---	--	---	--	---



Batch Number: 12696
Client/Project: PG+E

Date received: 10-28-12
Checked by: CR
Checked by: _____

VERIFICATION OF SAMPLE CONDITIONS (verify all items), HD = Client Hand delivered Samples	NA	YES	NO
Radiological Screening for DoD	✓		
Were custody seals intact and on the outside of the cooler?		✓	
Type of packing material: <u>Ice</u> <u>Blue Ice</u> <u>Bubble wrap</u>		✓	
Was a Chain of Custody (CoC) Provided?		✓	
Was the CoC correctly filled out (If No, document in the SRER)		✓	
Did the CoC list a correct bottle count and the preservative types (Y=OK, N=Corrected on CoC)		✓	
Were the sample containers in good condition (broken or leaking)?		✓	
Containers supplied by ASL?			✓
Any sample with < 1/2 holding time remaining? If so contact LPM			✓
Samples have multi-phase? If yes, document on SRER			✓
Was there ice in the cooler? Enter temp. If >6°C contact client/SRER 2.2°C		✓	

All VOCs free of air bubbles? No, document on SRER	✓		
pH of all samples checked and met requirements? No, then document in SRER		✓	
Enough sample volume provided for analysis? No, document in SRER		✓	
Did sample labels agree with COC? No, document in SRER		✓	
Dissolved/Soluble metals filtered in the field?	✓		
Dissolved/Soluble metals have sediment in bottom of container? Document in SRER	✓		

[illegible]

December 04, 2012

Sean Condon
Truesdail Laboratories
14201 Franklin Ave.
Tustin, CA 92780

TEL: (714) 730 6229
FAX: (714) 730-6462

CA-ELAP No.:2676
NV Cert. No.:NV-009222007A

Workorder No.: N008954

RE: PGE Topock, 423575.MP.02.CM

Attention: Sean Condon

Enclosed are the results for sample(s) received on November 21, 2012 by Advanced Technology Laboratories, Inc. . The sample(s) are tested for the parameters as indicated in the enclosed chain of custody in accordance with the applicable laboratory certifications.

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

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

Sincerely,



Jose Tenorio Jr.
Laboratory Director

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



**Advanced Technology
Laboratories, Inc.**

3151 W. Post Rd Las Vegas, NV 89118 Tel: 702-307-2659 Fax: 702-307-2691

CLIENT: Truesdail Laboratories
Project: PGE Topock, 423575.MP.02.CM
Lab Order: N008954

CASE NARRATIVE

SAMPLE RECEIVING/GENERAL COMMENTS:

Samples were received intact with proper chain of custody documentation.

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

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

Samples were analyzed within method holding time.



CLIENT: Truesdail Laboratories
Project: PGE Topock, 423575.MP.02.CM
Lab Order: N008954
Contract No: 2012-CMP-028

Work Order Sample Summary

Lab Sample ID	Client Sample ID	Matrix	Collection Date	Date Received	Date Reported
N008954-001A	CW-02D-028	Water	10/15/2012 10:36:00 AM	11/21/2012	12/4/2012
N008954-002A	CW-02M-028	Water	10/15/2012 12:04:00 PM	11/21/2012	12/4/2012
N008954-003A	CW-03D-028	Water	10/15/2012 2:26:00 PM	11/21/2012	12/4/2012
N008954-004A	CW-03M-028	Water	10/15/2012 3:34:00 PM	11/21/2012	12/4/2012
N008954-005A	OW-90-028	Water	10/15/2012 7:10:00 AM	11/21/2012	12/4/2012



Advanced Technology Laboratories, Inc.**ANALYTICAL RESULTS**

Print Date: 04-Dec-12

CLIENT: Truesdail Laboratories
Lab Order: N008954
Project: PGE Topock, 423575.MP.02.CM
Lab ID: N008954-001

Client Sample ID: CW-02D-028
Collection Date: 10/15/2012 10:36:00 AM
Matrix: WATER

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

DISSOLVED METALS BY ICP**EPA 200.7**

RunID: ICP2_121127D	QC Batch: 41291	PrepDate: 11/21/2012	Analyst: CEI			
Barium	13	0.36	3.0	µg/L	1	11/27/2012 04:51 PM
Beryllium	ND	0.12	3.0	µg/L	1	11/27/2012 04:51 PM
Cadmium	ND	0.37	3.0	µg/L	1	11/27/2012 04:51 PM
Cobalt	ND	0.37	3.0	µg/L	1	11/27/2012 04:51 PM
Copper	ND	2.2	5.0	µg/L	1	11/27/2012 04:51 PM
Lead	ND	1.6	10	µg/L	1	11/27/2012 04:51 PM
Nickel	ND	0.70	5.0	µg/L	1	11/27/2012 04:51 PM
Silver	ND	0.39	3.0	µg/L	1	11/27/2012 04:51 PM
Vanadium	5.3	0.31	3.0	µg/L	1	11/27/2012 04:51 PM

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



**Advanced Technology
Laboratories, Inc.**

3151 W. Post Rd Las Vegas, NV 89118 Tel: 702-307-2659 Fax: 702-307-2691

Advanced Technology Laboratories, Inc.**ANALYTICAL RESULTS**

Print Date: 04-Dec-12

CLIENT: Truesdail Laboratories
Lab Order: N008954
Project: PGE Topock, 423575.MP.02.CM
Lab ID: N008954-002

Client Sample ID: CW-02M-028
Collection Date: 10/15/2012 12:04:00 PM
Matrix: WATER

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

DISSOLVED METALS BY ICP**EPA 200.7**

RunID: ICP2_121127D	QC Batch: 41291	PrepDate: 11/21/2012	Analyst: CEI			
Barium	71	0.36	3.0	µg/L	1	11/27/2012 04:56 PM
Beryllium	ND	0.12	3.0	µg/L	1	11/27/2012 04:56 PM
Cadmium	ND	0.37	3.0	µg/L	1	11/27/2012 04:56 PM
Cobalt	ND	0.37	3.0	µg/L	1	11/27/2012 04:56 PM
Copper	ND	2.2	5.0	µg/L	1	11/27/2012 04:56 PM
Lead	ND	1.6	10	µg/L	1	11/27/2012 04:56 PM
Nickel	ND	0.70	5.0	µg/L	1	11/27/2012 04:56 PM
Silver	ND	0.39	3.0	µg/L	1	11/27/2012 04:56 PM
Vanadium	4.2	0.31	3.0	µg/L	1	11/27/2012 04:56 PM

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



**Advanced Technology
Laboratories, Inc.**

3151 W. Post Rd Las Vegas, NV 89118 Tel: 702-307-2659 Fax: 702-307-2691

Advanced Technology Laboratories, Inc.**ANALYTICAL RESULTS**

Print Date: 04-Dec-12

CLIENT: Truesdail Laboratories
Lab Order: N008954
Project: PGE Topock, 423575.MP.02.CM
Lab ID: N008954-003

Client Sample ID: CW-03D-028
Collection Date: 10/15/2012 2:26:00 PM
Matrix: WATER

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

DISSOLVED METALS BY ICP**EPA 200.7**

RunID: ICP2_121127D	QC Batch: 41291	PrepDate: 11/21/2012	Analyst: CEI			
Barium	14	0.36	3.0	µg/L	1	11/27/2012 05:05 PM
Beryllium	ND	0.12	3.0	µg/L	1	11/27/2012 05:05 PM
Cadmium	ND	0.37	3.0	µg/L	1	11/27/2012 05:05 PM
Cobalt	ND	0.37	3.0	µg/L	1	11/27/2012 05:05 PM
Copper	ND	2.2	5.0	µg/L	1	11/27/2012 05:05 PM
Lead	ND	1.6	10	µg/L	1	11/27/2012 05:05 PM
Nickel	ND	0.70	5.0	µg/L	1	11/27/2012 05:05 PM
Silver	ND	0.39	3.0	µg/L	1	11/27/2012 05:05 PM
Vanadium	ND	0.31	3.0	µg/L	1	11/27/2012 05:05 PM

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



**Advanced Technology
Laboratories, Inc.**

3151 W. Post Rd Las Vegas, NV 89118 Tel: 702-307-2659 Fax: 702-307-2691

Advanced Technology Laboratories, Inc.**ANALYTICAL RESULTS**

Print Date: 04-Dec-12

CLIENT: Truesdail Laboratories
Lab Order: N008954
Project: PGE Topock, 423575.MP.02.CM
Lab ID: N008954-004

Client Sample ID: CW-03M-028
Collection Date: 10/15/2012 3:34:00 PM
Matrix: WATER

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

DISSOLVED METALS BY ICP**EPA 200.7**

RunID: ICP2_121127D	QC Batch: 41291	PrepDate: 11/21/2012	Analyst: CEI			
Barium	49	0.36	3.0	µg/L	1	11/27/2012 05:14 PM
Beryllium	ND	0.12	3.0	µg/L	1	11/27/2012 05:14 PM
Cadmium	ND	0.37	3.0	µg/L	1	11/27/2012 05:14 PM
Cobalt	ND	0.37	3.0	µg/L	1	11/27/2012 05:14 PM
Copper	ND	2.2	5.0	µg/L	1	11/27/2012 05:14 PM
Lead	ND	1.6	10	µg/L	1	11/27/2012 05:14 PM
Nickel	ND	0.70	5.0	µg/L	1	11/27/2012 05:14 PM
Silver	3.8	0.39	3.0	µg/L	1	11/27/2012 05:14 PM
Vanadium	ND	0.31	3.0	µg/L	1	11/27/2012 05:14 PM

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



**Advanced Technology
Laboratories, Inc.**

3151 W. Post Rd Las Vegas, NV 89118 Tel: 702-307-2659 Fax: 702-307-2691

Advanced Technology Laboratories, Inc.**ANALYTICAL RESULTS**

Print Date: 04-Dec-12

CLIENT: Truesdail Laboratories
Lab Order: N008954
Project: PGE Topock, 423575.MP.02.CM
Lab ID: N008954-005

Client Sample ID: OW-90-028
Collection Date: 10/15/2012 7:10:00 AM
Matrix: WATER

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

RunID: ICP2_121127D	QC Batch: 41291	PrepDate: 11/21/2012	Analyst: CEI			
Barium	13	0.36	3.0	µg/L	1	11/27/2012 05:30 PM
Beryllium	ND	0.12	3.0	µg/L	1	11/27/2012 05:30 PM
Cadmium	ND	0.37	3.0	µg/L	1	11/27/2012 05:30 PM
Cobalt	ND	0.37	3.0	µg/L	1	11/27/2012 05:30 PM
Copper	ND	2.2	5.0	µg/L	1	11/27/2012 05:30 PM
Lead	ND	1.6	10	µg/L	1	11/27/2012 05:30 PM
Nickel	ND	0.70	5.0	µg/L	1	11/27/2012 05:30 PM
Silver	ND	0.39	3.0	µg/L	1	11/27/2012 05:30 PM
Vanadium	5.2	0.31	3.0	µg/L	1	11/27/2012 05:30 PM

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



**Advanced Technology
Laboratories, Inc.**

3151 W. Post Rd Las Vegas, NV 89118 Tel: 702-307-2659 Fax: 702-307-2691

CLIENT: Truesdail Laboratories
 Work Order: N008954
 Project: PGE Topock, 423575.MP.02.CM

ANALYTICAL QC SUMMARY REPORT

TestCode: 200.7_WDPGEPPB

Sample ID: MB-41291	SampType: MBLK	TestCode: 200.7_WDPG	Units: µg/L	Prep Date: 11/21/2012	RunNo: 86465						
Client ID: PBW	Batch ID: 41291	TestNo: EPA 200.7		Analysis Date: 11/27/2012	SeqNo: 1479863						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Barium	ND	3.0									
Beryllium	ND	3.0									
Cadmium	ND	3.0									
Cobalt	ND	3.0									
Copper	ND	5.0									
Lead	ND	10									
Nickel	ND	5.0									
Silver	ND	3.0									
Vanadium	ND	3.0									

Sample ID: LCS-41291	SampType: LCS	TestCode: 200.7_WDPG	Units: µg/L	Prep Date: 11/21/2012	RunNo: 86465						
Client ID: LCSW	Batch ID: 41291	TestNo: EPA 200.7		Analysis Date: 11/27/2012	SeqNo: 1479864						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Barium	48.351	3.0	50.00	0	96.7	85	115				
Beryllium	9.304	3.0	10.00	0	93.0	85	115				
Cadmium	9.246	3.0	10.00	0	92.5	85	115				
Cobalt	9.993	3.0	10.00	0	99.9	85	115				
Copper	9.267	5.0	10.00	0	92.7	85	115				
Lead	46.416	10	50.00	0	92.8	85	115				
Nickel	50.401	5.0	50.00	0	101	85	115				
Silver	9.681	3.0	10.00	0	96.8	85	115				
Vanadium	9.926	3.0	10.00	0	99.3	85	115				

Sample ID: N008954-002A-MS	SampType: MS	TestCode: 200.7_WDPG	Units: µg/L	Prep Date: 11/21/2012	RunNo: 86465						
Client ID: ZZZZZZ	Batch ID: 41291	TestNo: EPA 200.7		Analysis Date: 11/27/2012	SeqNo: 1479880						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Qualifiers:

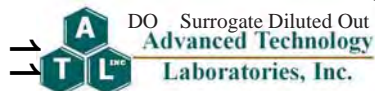
B Analyte detected in the associated Method Blank
 ND Not Detected at the Reporting Limit

E Value above quantitation range
 R RPD outside accepted recovery limits

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

DO Surrogate Diluted Out

Calculations are based on raw values



CLIENT: Truesdail Laboratories
Work Order: N008954
Project: PGE Topock, 423575.MP.02.CM

ANALYTICAL QC SUMMARY REPORT

TestCode: 200.7_WDPGEPPB

Sample ID: N008954-002A-MS	SampType: MS	TestCode: 200.7_WDPG	Units: µg/L	Prep Date: 11/21/2012	RunNo: 86465						
Client ID: ZZZZZZ	Batch ID: 41291	TestNo: EPA 200.7		Analysis Date: 11/27/2012	SeqNo: 1479880						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Barium	122.467	3.0	50.00	71.45	102	75	125				
Beryllium	9.830	3.0	10.00	0	98.3	75	125				
Cadmium	8.422	3.0	10.00	0	84.2	75	125				
Cobalt	9.430	3.0	10.00	0	94.3	75	125				
Copper	11.097	5.0	10.00	0	111	75	125				
Lead	43.466	10	50.00	0	86.9	75	125				
Nickel	48.990	5.0	50.00	0	98.0	75	125				
Silver	12.738	3.0	10.00	2.670	101	75	125				
Vanadium	14.875	3.0	10.00	4.218	107	75	125				

Sample ID: N008954-002A-MSD	SampType: MSD	TestCode: 200.7_WDPG	Units: µg/L	Prep Date: 11/21/2012	RunNo: 86465						
Client ID: ZZZZZZ	Batch ID: 41291	TestNo: EPA 200.7		Analysis Date: 11/27/2012	SeqNo: 1479886						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Barium	123.413	3.0	50.00	71.45	104	75	125	122.5	0.769	20	
Beryllium	10.081	3.0	10.00	0	101	75	125	9.830	2.52	20	
Cadmium	8.812	3.0	10.00	0	88.1	75	125	8.422	4.53	20	
Cobalt	9.581	3.0	10.00	0	95.8	75	125	9.430	1.59	20	
Copper	11.017	5.0	10.00	0	110	75	125	11.10	0.721	20	
Lead	44.822	10	50.00	0	89.6	75	125	43.47	3.07	20	
Nickel	50.282	5.0	50.00	0	101	75	125	48.99	2.60	20	
Silver	12.835	3.0	10.00	2.670	102	75	125	12.74	0.757	20	
Vanadium	14.945	3.0	10.00	4.218	107	75	125	14.88	0.465	20	

Sample ID: N008957-007A-MS	SampType: MS	TestCode: 200.7_WDPG	Units: µg/L	Prep Date: 11/21/2012	RunNo: 86465						
Client ID: ZZZZZZ	Batch ID: 41291	TestNo: EPA 200.7		Analysis Date: 11/27/2012	SeqNo: 1479887						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Barium	125.884	3.0	50.00	78.07	95.6	75	125				
Beryllium	9.709	3.0	10.00	0	97.1	75	125				

Qualifiers:

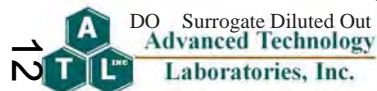
B Analyte detected in the associated Method Blank
ND Not Detected at the Reporting Limit

E Value above quantitation range
R RPD outside accepted recovery limits

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

DO Surrogate Diluted Out

Calculations are based on raw values



3151 W. Post Rd Las Vegas, NV 89118 Tel: 702-307-2659 Fax: 702-307-2691

CLIENT: Truesdail Laboratories
Work Order: N008954
Project: PGE Topock, 423575.MP.02.CM

ANALYTICAL QC SUMMARY REPORT

TestCode: 200.7_WDPGEPPB

Sample ID: N008957-007A-MS	SampType: MS	TestCode: 200.7_WDPG	Units: µg/L	Prep Date: 11/21/2012	RunNo: 86465						
Client ID: ZZZZZZ	Batch ID: 41291	TestNo: EPA 200.7		Analysis Date: 11/27/2012	SeqNo: 1479887						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Cadmium	8.228	3.0	10.00	0	82.3	75	125				
Cobalt	9.328	3.0	10.00	0	93.3	75	125				
Copper	11.662	5.0	10.00	2.211	94.5	75	125				
Lead	42.618	10	50.00	0	85.2	75	125				
Nickel	48.380	5.0	50.00	0	96.8	75	125				
Silver	13.132	3.0	10.00	2.931	102	75	125				
Vanadium	13.820	3.0	10.00	3.626	102	75	125				

Qualifiers:

B Analyte detected in the associated Method Blank
ND Not Detected at the Reporting Limit

E Value above quantitation range
R RPD outside accepted recovery limits

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

DO Surrogate Diluted Out

Calculations are based on raw values



**Advanced Technology
Laboratories, Inc.**

3151 W. Post Rd Las Vegas, NV 89118 Tel: 702-307-2659 Fax: 702-307-2691

Advanced Technology Laboratories, Inc.**ANALYTICAL RESULTS**

Print Date: 04-Dec-12

CLIENT: Truesdail Laboratories
Lab Order: N008954
Project: PGE Topock, 423575.MP.02.CM
Lab ID: N008954-001

Client Sample ID: CW-02D-028
Collection Date: 10/15/2012 10:36:00 AM
Matrix: WATER

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

RunID: ICP7_121203A	QC Batch: 41290	PrepDate: 11/21/2012	Analyst: CEI		
Antimony	ND 0.084	0.50	µg/L	1	12/3/2012 01:47 PM
Arsenic	3.7 0.035	0.10	µg/L	1	12/3/2012 01:47 PM
Chromium	ND 0.17	1.0	µg/L	1	12/3/2012 01:47 PM
Manganese	ND 0.16	0.50	µg/L	1	12/3/2012 01:47 PM
Molybdenum	12 0.074	0.50	µg/L	1	12/3/2012 01:47 PM
Selenium	3.0 0.084	0.50	µg/L	1	12/3/2012 01:47 PM
Thallium	ND 0.075	0.50	µg/L	1	12/3/2012 01:47 PM

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



**Advanced Technology
Laboratories, Inc.**

3151 W. Post Rd Las Vegas, NV 89118 Tel: 702-307-2659 Fax: 702-307-2691

Advanced Technology Laboratories, Inc.**ANALYTICAL RESULTS**

Print Date: 04-Dec-12

CLIENT: Truesdail Laboratories
Lab Order: N008954
Project: PGE Topock, 423575.MP.02.CM
Lab ID: N008954-002

Client Sample ID: CW-02M-028
Collection Date: 10/15/2012 12:04:00 PM
Matrix: WATER

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

RunID: ICP7_121203A	QC Batch: 41290	PrepDate: 11/21/2012	Analyst: CEI		
Antimony	ND 0.084	0.50	µg/L	1	12/3/2012 04:52 PM
Arsenic	2.1 0.035	0.10	µg/L	1	12/3/2012 04:52 PM
Chromium	2.1 0.17	1.0	µg/L	1	12/3/2012 04:52 PM
Manganese	ND 0.16	0.50	µg/L	1	12/3/2012 04:52 PM
Molybdenum	19 0.074	0.50	µg/L	1	12/3/2012 04:52 PM
Selenium	2.4 0.084	0.50	µg/L	1	12/3/2012 04:52 PM
Thallium	ND 0.075	0.50	µg/L	1	12/3/2012 04:52 PM

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



**Advanced Technology
Laboratories, Inc.**

3151 W. Post Rd Las Vegas, NV 89118 Tel: 702-307-2659 Fax: 702-307-2691

Advanced Technology Laboratories, Inc.**ANALYTICAL RESULTS**

Print Date: 04-Dec-12

CLIENT: Truesdail Laboratories
Lab Order: N008954
Project: PGE Topock, 423575.MP.02.CM
Lab ID: N008954-003

Client Sample ID: CW-03D-028
Collection Date: 10/15/2012 2:26:00 PM
Matrix: WATER

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

RunID: ICP7_121203A	QC Batch: 41290	PrepDate: 11/21/2012	Analyst: CEI		
Antimony	ND 0.084	0.50	µg/L	1	12/3/2012 02:20 PM
Arsenic	1.7 0.035	0.10	µg/L	1	12/3/2012 02:20 PM
Chromium	ND 0.17	1.0	µg/L	1	12/3/2012 02:20 PM
Manganese	ND 0.16	0.50	µg/L	1	12/3/2012 02:20 PM
Molybdenum	17 0.074	0.50	µg/L	1	12/3/2012 02:20 PM
Selenium	3.3 0.084	0.50	µg/L	1	12/3/2012 02:20 PM
Thallium	ND 0.075	0.50	µg/L	1	12/3/2012 02:20 PM

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



**Advanced Technology
Laboratories, Inc.**

3151 W. Post Rd Las Vegas, NV 89118 Tel: 702-307-2659 Fax: 702-307-2691

Advanced Technology Laboratories, Inc.**ANALYTICAL RESULTS**

Print Date: 04-Dec-12

CLIENT: Truesdail Laboratories
Lab Order: N008954
Project: PGE Topock, 423575.MP.02.CM
Lab ID: N008954-004

Client Sample ID: CW-03M-028
Collection Date: 10/15/2012 3:34:00 PM
Matrix: WATER

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

RunID: ICP7_121203A	QC Batch: 41290	PrepDate: 11/21/2012	Analyst: CEI		
Antimony	ND 0.084	0.50	µg/L	1	12/3/2012 04:57 PM
Arsenic	1.4 0.035	0.10	µg/L	1	12/3/2012 04:57 PM
Chromium	6.5 0.17	1.0	µg/L	1	12/3/2012 04:57 PM
Manganese	ND 0.16	0.50	µg/L	1	12/3/2012 04:57 PM
Molybdenum	24 0.074	0.50	µg/L	1	12/3/2012 04:57 PM
Selenium	1.6 0.084	0.50	µg/L	1	12/3/2012 04:57 PM
Thallium	ND 0.075	0.50	µg/L	1	12/3/2012 04:57 PM

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



**Advanced Technology
Laboratories, Inc.**

3151 W. Post Rd Las Vegas, NV 89118 Tel: 702-307-2659 Fax: 702-307-2691

Advanced Technology Laboratories, Inc.**ANALYTICAL RESULTS**

Print Date: 04-Dec-12

CLIENT: Truesdail Laboratories
Lab Order: N008954
Project: PGE Topock, 423575.MP.02.CM
Lab ID: N008954-005

Client Sample ID: OW-90-028
Collection Date: 10/15/2012 7:10:00 AM
Matrix: WATER

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

RunID: ICP7_121203A	QC Batch: 41290	PrepDate: 11/21/2012	Analyst: CEI	
Antimony	ND 0.084	0.50	µg/L 1	12/3/2012 02:30 PM
Arsenic	3.4 0.035	0.10	µg/L 1	12/3/2012 02:30 PM
Chromium	ND 0.17	1.0	µg/L 1	12/3/2012 02:30 PM
Manganese	ND 0.16	0.50	µg/L 1	12/3/2012 02:30 PM
Molybdenum	11 0.074	0.50	µg/L 1	12/3/2012 02:30 PM
Selenium	3.2 0.084	0.50	µg/L 1	12/3/2012 02:30 PM
Thallium	ND 0.075	0.50	µg/L 1	12/3/2012 02:30 PM

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



**Advanced Technology
Laboratories, Inc.**

3151 W. Post Rd Las Vegas, NV 89118 Tel: 702-307-2659 Fax: 702-307-2691

CLIENT: Truesdail Laboratories
Work Order: N008954
Project: PGE Topock, 423575.MP.02.CM

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

Sample ID: N008954-001A-MS	SampType: MS	TestCode: 200.8_WDISS	Units: µg/L	Prep Date: 11/21/2012	RunNo: 86523						
Client ID: ZZZZZZ	Batch ID: 41290	TestNo: EPA 200.8		Analysis Date: 12/3/2012	SeqNo: 1482299						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Antimony	9.027	0.50	10.00	0	90.3	75	125				
Arsenic	13.290	0.10	10.00	3.730	95.6	75	125				
Chromium	9.600	1.0	10.00	0.9373	86.6	75	125				
Manganese	85.410	0.50	100.0	0	85.4	75	125				
Molybdenum	21.980	0.50	10.00	11.55	104	75	125				
Selenium	11.724	0.50	10.00	3.009	87.1	75	125				
Thallium	10.098	0.50	10.00	0	101	75	125				

Sample ID: N008954-001A-MSD	SampType: MSD	TestCode: 200.8_WDISS	Units: µg/L	Prep Date: 11/21/2012	RunNo: 86523						
Client ID: ZZZZZZ	Batch ID: 41290	TestNo: EPA 200.8		Analysis Date: 12/3/2012	SeqNo: 1482300						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Antimony	9.102	0.50	10.00	0	91.0	75	125	9.027	0.823	20	
Arsenic	13.185	0.10	10.00	3.730	94.5	75	125	13.29	0.793	20	
Chromium	9.630	1.0	10.00	0.9373	86.9	75	125	9.600	0.314	20	
Manganese	85.048	0.50	100.0	0	85.0	75	125	85.41	0.424	20	
Molybdenum	21.762	0.50	10.00	11.55	102	75	125	21.98	0.999	20	
Selenium	11.482	0.50	10.00	3.009	84.7	75	125	11.72	2.09	20	
Thallium	10.204	0.50	10.00	0	102	75	125	10.10	1.04	20	

Sample ID: N008957-006A-MS	SampType: MS	TestCode: 200.8_WDISS	Units: µg/L	Prep Date: 11/21/2012	RunNo: 86523						
Client ID: ZZZZZZ	Batch ID: 41290	TestNo: EPA 200.8		Analysis Date: 12/3/2012	SeqNo: 1482314						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Antimony	9.003	0.50	10.00	0	90.0	75	125				
Arsenic	11.684	0.10	10.00	1.683	100	75	125				
Chromium	23.121	1.0	10.00	13.58	95.4	75	125				
Manganese	84.776	0.50	100.0	0	84.8	75	125				

Qualifiers:

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



Advanced Technology
Laboratories, Inc.

3151 W. Post Rd Las Vegas, NV 89118 Tel: 702-307-2659 Fax: 702-307-2691

CLIENT: Truesdail Laboratories
Work Order: N008954
Project: PGE Topock, 423575.MP.02.CM

ANALYTICAL QC SUMMARY REPORT

TestCode: 200.8_WDISS

Sample ID: N008957-006A-MS	SampType: MS	TestCode: 200.8_WDISS	Units: µg/L	Prep Date: 11/21/2012	RunNo: 86523						
Client ID: ZZZZZZ	Batch ID: 41290	TestNo: EPA 200.8		Analysis Date: 12/3/2012	SeqNo: 1482314						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Molybdenum	25.000	0.50	10.00	14.14	109	75	125				
Selenium	11.521	0.50	10.00	2.417	91.0	75	125				
Thallium	10.139	0.50	10.00	0	101	75	125				

Sample ID: MB-41290	SampType: MBLK	TestCode: 200.8_WDISS	Units: µg/L	Prep Date: 11/21/2012	RunNo: 86523						
Client ID: PBW	Batch ID: 41290	TestNo: EPA 200.8		Analysis Date: 12/3/2012	SeqNo: 1482330						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Antimony	ND	0.50									
Arsenic	0.095	0.10									
Chromium	ND	1.0									
Manganese	ND	0.50									
Molybdenum	ND	0.50									
Selenium	ND	0.50									
Thallium	ND	0.50									

Sample ID: LCS-41290	SampType: LCS	TestCode: 200.8_WDISS	Units: µg/L	Prep Date: 11/21/2012	RunNo: 86523						
Client ID: LCSW	Batch ID: 41290	TestNo: EPA 200.8		Analysis Date: 12/3/2012	SeqNo: 1482333						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Antimony	9.084	0.50	10.00	0	90.8	85	115				
Arsenic	9.672	0.10	10.00	0	96.7	85	115				
Chromium	9.776	1.0	10.00	0	97.8	85	115				
Manganese	95.039	0.50	100.0	0	95.0	85	115				
Molybdenum	9.449	0.50	10.00	0	94.5	85	115				
Selenium	9.957	0.50	10.00	0	99.6	85	115				
Thallium	9.720	0.50	10.00	0	97.2	85	115				

Qualifiers:

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



Advanced Technology
Laboratories, Inc.

3151 W. Post Rd Las Vegas, NV 89118 Tel: 702-307-2659 Fax: 702-307-2691

Advanced Technology Laboratories, Inc.

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

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

Cooler Received/Opened On: 11/21/2012

Workorder: N008954

Rep sample Temp (Deg C): NA

IR Gun ID: NA

Temp Blank: ☐ Yes ☒ No

Carrier name: Golden State Overnight

Last 4 digits of Tracking No.: 3580

Packing Material Used: None

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

Sample Receipt Checklist

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

Comments:

Checklist Completed B

MBC

11/21/12

Reviewed By:



Sample Calculation

METHOD: EPA 200.7

TEST NAME: Heavy Metals by ICP

MATRIX: Water

FORMULA:

Calculate the Barium concentration, in ug/L, in the original sample as follows:

$$\text{Barium, ug/L} = A * DF * PF * CF$$

where:

A = mg/L, calculated concentration

DF = dilution factor

PF = Final Vol. of Digestate in mL / Vol. of Sample used in mL

CF = Conversion Factor

For Sample **N008954-001A**, the concentration in ug/L is calculated as follows:

$$\begin{aligned}\text{Barium, ug/L} &= 0.01264340864 * 1 * (25/25) * 1000 \\ &= 12.64340864\end{aligned}$$

Reporting results in two significant figures,

$$\text{Barium, ug/L} = 13$$

NS for
12/31

Advanced Technology Laboratories, Inc.**ICP-Metals in Water**

Work Order No.: N008954
Test Method: EPA 200.7
Analysis Date: 11/27/12

Dilution Test Summary

Matrix: Water
Batch No.: 41291

Instrument ID: ICP-02
Instrument Description: Perkin Elmer Optima DV Series

Comments:

Analyzed By: Mary Claire Ignacio

Dilution Test is not applicable for all the analytes. The calculated values were < 25X the RL. However the PS @2X passes the criteria.

Sample ID	Analyte	&Units	Calc.Val	OQual	SAMPrefval	%DIFF	%DIFFlimit
N008954-001A 5X	Barium	ug/L	13.98	NA	12.64	10.56%	10
N008954-001A 5X	Beryllium	ug/L	0.00	NA	0.00	0.00%	10
N008954-001A 5X	Cadmium	ug/L	0.00	NA	0.00	0.00%	10
N008954-001A 5X	Cobalt	ug/L	0.00	NA	0.00	0.00%	10
N008954-001A 5X	Copper	ug/L	0.00	NA	0.00	0.00%	10
N008954-001A 5X	Lead	ug/L	0.00	NA	0.00	0.00%	10
N008954-001A 5X	Nickel	ug/L	0.00	NA	0.00	0.00%	10
N008954-001A 5X	Silver	ug/L	0.00	NA	1.50	100.00%	10
N008954-001A 5X	Vanadium	ug/L	5.04	NA	5.29	4.70%	10

Note: NA - Not Applicable

CLIENT: Truesdail Laboratories

Work Order: N008954

Project: PGE Topock, 423575.MP.02.CM

ANALYTICAL QC SUMMARY REPORT

TestCode: 200.7_WDPGEPPB

Sample ID: N008954-002A-PS	SampType: PS	TestCode: 200.7_WDPG	Units: µg/L	Prep Date: 11/21/2012	RunNo: 86465						
Client ID: ZZZZZZ	Batch ID: 41291	TestNo: EPA 200.7		Analysis Date: 11/27/2012	SeqNo: 1479879						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Barium	273.475	6.0	250.0	71.45	80.8	75	125				
Beryllium	262.326	6.0	250.0	0	105	75	125				
Cadmium	262.665	6.0	250.0	0	105	75	125				
Cobalt	263.958	6.0	250.0	0	106	75	125				
Copper	255.232	10	250.0	0	102	75	125				
Lead	246.578	20	250.0	0	98.6	75	125				
Nickel	266.116	10	250.0	0	106	75	125				
Silver	261.174	6.0	250.0	2.670	103	75	125				
Vanadium	259.426	6.0	250.0	4.218	102	75	125				

Qualifiers:

B Analyte detected in the associated Method Blank
 ND Not Detected at the Reporting Limit
 DO Surrogate Diluted Out

E Value above quantitation range
 R RPD outside accepted recovery limits
 Calculations are based on raw values

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

Sample Calculation

METHOD: EPA 200.8

TEST NAME: Heavy Metals by ICP-MS

MATRIX: Aqueous

FORMULA:

Calculate the Arsenic concentration, in ug/L, in the original sample as follows:

$$\text{Arsenic, ug/L} = A * DF * PF$$

where:

A = ug/L, calculated concentration

DF = dilution factor

PF = Final Vol. of Digestate in mL / Vol. of Sample used in mL

For Sample **N008954-001A**, the concentration in ug/L is calculated as follows:

$$\begin{aligned}\text{Arsenic, ug/L} &= 3.73021966997133 * 1 * (25/25) \\ &= 3.73021966997133\end{aligned}$$

Reporting result in two significant figures,

$$\text{Arsenic, ug/L} = 3.7$$

is for
12/4h

Advanced Technology Laboratories, Inc.

ICP-Metals in Water

Work Order No.: N008954
Test Method: EPA 200.8
Analysis Date: 12/03/12

Dilution Test Summary

Matrix: Water
Batch No.: 41290

Instrument ID: ICP-MS #2
Instrument Description: Agilent 7700x

Comments:

Analyzed By: Mary Claire Ignacio

Dilution is not applicable to Sb, Cr, Mn, Mo, Ti and Se. The calculated values were <25X RL. PS passed criteria.

Sample ID	Analyte	&Units	Calc Val	OQual	Calc Val	%DIFF	%DIFFlimit
N008954-001A-DT 5X	Antimony	µg/L	0	NA	0	0.00%	10
N008954-001A-DT 5X	Arsenic	µg/L	3.558883416	PASSED	3.73021967	4.59%	10
N008954-001A-DT 5X	Chromium	µg/L	0	NA	0.937268156	100.00%	10
N008954-001A-DT 5X	Manganese	µg/L	0	NA	0	0.00%	10
N008954-001A-DT 5X	Molybdenum	µg/L	10.78715319	NA	11.55112795	6.61%	10
N008954-001A-DT 5X	Thallium	µg/L	0	NA	0	0.00%	10
N008954-001A-DT 5X	Selenium	µg/L	2.856378064	NA	3.0093582	5.08%	10

Note: NA - Not applicable

CLIENT: Truesdail Laboratories
Work Order: N008954
Project: PGE Topock, 423575.MP.02.CM

ANALYTICAL QC SUMMARY REPORT

TestCode: 200.8_WDISS

Sample ID: N008954-001A-PS	SampType: PS	TestCode: 200.8_WDISS	Units: µg/L	Prep Date:	RunNo: 86523						
Client ID: ZZZZZZ	Batch ID: 41290	TestNo: EPA 200.8		Analysis Date: 12/3/2012	SeqNo: 1482325						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Antimony	19.572	1.0	20.00	0	97.9	75	125				
Arsenic	24.825	0.20	20.00	3.730	105	75	125				
Chromium	19.984	2.0	20.00	0.9373	95.2	75	125				
Manganese	185.740	1.0	200.0	0	92.9	75	125				
Molybdenum	33.801	1.0	20.00	11.55	111	75	125				
Selenium	23.236	1.0	20.00	3.009	101	75	125				
Thallium	21.377	1.0	20.00	0	107	75	125				

Qualifiers:

B Analyte detected in the associated Method Blank
ND Not Detected at the Reporting Limit
DO Surrogate Diluted Out

E Value above quantitation range
R RPD outside accepted recovery limits
Calculations are based on raw values

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

December 04, 2012

Sean Condon
Truesdail Laboratories
14201 Franklin Ave.
Tustin, CA 92780

TEL: (714) 730 6229
FAX: (714) 730-6462

CA-ELAP No.:2676
NV Cert. No.:NV-009222007A

Workorder No.: N008957

RE: PGE Topock, 423575.MP.02.CM

Attention: Sean Condon

Enclosed are the results for sample(s) received on November 21, 2012 by Advanced Technology Laboratories, Inc. . The sample(s) are tested for the parameters as indicated in the enclosed chain of custody in accordance with the applicable laboratory certifications.

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

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

Sincerely,



Jose Tenorio Jr.
Laboratory Director

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



Advanced Technology
Laboratories, Inc.

3151 W. Post Rd Las Vegas, NV 89118 Tel: 702-307-2659 Fax: 702-307-2691

CLIENT: Truesdail Laboratories
Project: PGE Topock, 423575.MP.02.CM
Lab Order: N008957

CASE NARRATIVE

SAMPLE RECEIVING/GENERAL COMMENTS:

Samples were received intact with proper chain of custody documentation.

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

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

Samples were analyzed within method holding time.

Analytical Comments for EPA 200.8_Dissolved:

Because the results for total dissolved chromium (6.633 ug/L) and hexavalent chromium (8.2 ug/L as client result) for sample N008957-004 (CW-04M-028) are discrepant, undigested sample was analyzed for total dissolved chromium. The result from the undigested sample was 6.689 ug/L. Since this data confirmed the original result for total dissolved chromium, the original result is reported.

CLIENT: Truesdail Laboratories
Project: PGE Topock, 423575.MP.02.CM
Lab Order: N008957
Contract No: 2012-CMP-028

Work Order Sample Summary

Lab Sample ID	Client Sample ID	Matrix	Collection Date	Date Received	Date Reported
N008957-001A	CW-01D-028	Water	10/16/2012 11:52:00 AM	11/21/2012	12/4/2012
N008957-002A	CW-01M-028	Water	10/16/2012 12:34:00 PM	11/21/2012	12/4/2012
N008957-003A	CW-04D-028	Water	10/16/2012 8:48:00 AM	11/21/2012	12/4/2012
N008957-004A	CW-04M-028	Water	10/16/2012 9:57:00 AM	11/21/2012	12/4/2012
N008957-005A	OW-01D-028	Water	10/16/2012 2:28:00 PM	11/21/2012	12/4/2012
N008957-006A	OW-01S-028	Water	10/16/2012 3:07:00 PM	11/21/2012	12/4/2012
N008957-007A	OW-01M-028	Water	10/18/2012 7:54:00 AM	11/21/2012	12/4/2012
N008957-008A	OW-02D-028	Water	10/18/2012 9:27:00 AM	11/21/2012	12/4/2012
N008957-009A	OW-02M-028	Water	10/18/2012 11:45:00 AM	11/21/2012	12/4/2012
N008957-010A	OW-02S-028	Water	10/18/2012 10:04:00 AM	11/21/2012	12/4/2012
N008957-011A	OW-05D-028	Water	10/18/2012 12:56:00 PM	11/21/2012	12/4/2012
N008957-012A	OW-05M-028	Water	10/18/2012 2:03:00 PM	11/21/2012	12/4/2012
N008957-014A	OW-91-028	Water	10/18/2012 7:05:00 AM	11/21/2012	12/4/2012



Advanced Technology Laboratories, Inc.

ANALYTICAL RESULTS

Print Date: 04-Dec-12

CLIENT: Truesdail Laboratories
Lab Order: N008957
Project: PGE Topock, 423575.MP.02.CM
Lab ID: N008957-001

Client Sample ID: CW-01D-028
Collection Date: 10/16/2012 11:52:00 AM
Matrix: WATER

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

EPA 200.7

RunID: ICP2_121127D	QC Batch: 41291	PrepDate: 11/21/2012	Analyst: CEI
Barium	27 0.36	3.0	µg/L 1 11/27/2012 05:35 PM
Beryllium	ND 0.12	3.0	µg/L 1 11/27/2012 05:35 PM
Cadmium	ND 0.37	3.0	µg/L 1 11/27/2012 05:35 PM
Cobalt	ND 0.37	3.0	µg/L 1 11/27/2012 05:35 PM
Copper	ND 2.2	5.0	µg/L 1 11/27/2012 05:35 PM
Lead	ND 1.6	10	µg/L 1 11/27/2012 05:35 PM
Nickel	ND 0.70	5.0	µg/L 1 11/27/2012 05:35 PM
Silver	3.6 0.39	3.0	µg/L 1 11/27/2012 05:35 PM
Vanadium	ND 0.31	3.0	µg/L 1 11/27/2012 05:35 PM

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



Advanced Technology
Laboratories, Inc.

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Advanced Technology Laboratories, Inc.

ANALYTICAL RESULTS

Print Date: 04-Dec-12

CLIENT: Truesdail Laboratories
Lab Order: N008957
Project: PGE Topock, 423575.MP.02.CM
Lab ID: N008957-002

Client Sample ID: CW-01M-028
Collection Date: 10/16/2012 12:34:00 PM
Matrix: WATER

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

EPA 200.7

RunID: ICP2_121127D

QC Batch: 41291

PrepDate: 11/21/2012

Analyst: CEI

Barium	94	0.36	3.0	µg/L	1	11/27/2012 05:40 PM
Beryllium	ND	0.12	3.0	µg/L	1	11/27/2012 05:40 PM
Cadmium	ND	0.37	3.0	µg/L	1	11/27/2012 05:40 PM
Cobalt	ND	0.37	3.0	µg/L	1	11/27/2012 05:40 PM
Copper	ND	2.2	5.0	µg/L	1	11/27/2012 05:40 PM
Lead	ND	1.6	10	µg/L	1	11/27/2012 05:40 PM
Nickel	ND	0.70	5.0	µg/L	1	11/27/2012 05:40 PM
Silver	3.2	0.39	3.0	µg/L	1	11/27/2012 05:40 PM
Vanadium	3.4	0.31	3.0	µg/L	1	11/27/2012 05:40 PM

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



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Advanced Technology Laboratories, Inc.

ANALYTICAL RESULTS

Print Date: 04-Dec-12

CLIENT: Truesdail Laboratories
Lab Order: N008957
Project: PGE Topock, 423575.MP.02.CM
Lab ID: N008957-003

Client Sample ID: CW-04D-028
Collection Date: 10/16/2012 8:48:00 AM
Matrix: WATER

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

EPA 200.7

RunID: ICP2_121127D	QC Batch: 41291	PrepDate: 11/21/2012	Analyst: CEI
Barium	20 0.36	3.0	µg/L 1 11/27/2012 05:46 PM
Beryllium	ND 0.12	3.0	µg/L 1 11/27/2012 05:46 PM
Cadmium	ND 0.37	3.0	µg/L 1 11/27/2012 05:46 PM
Cobalt	ND 0.37	3.0	µg/L 1 11/27/2012 05:46 PM
Copper	ND 2.2	5.0	µg/L 1 11/27/2012 05:46 PM
Lead	ND 1.6	10	µg/L 1 11/27/2012 05:46 PM
Nickel	ND 0.70	5.0	µg/L 1 11/27/2012 05:46 PM
Silver	ND 0.39	3.0	µg/L 1 11/27/2012 05:46 PM
Vanadium	4.5 0.31	3.0	µg/L 1 11/27/2012 05:46 PM

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



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Advanced Technology Laboratories, Inc.

ANALYTICAL RESULTS

Print Date: 04-Dec-12

CLIENT: Truesdail Laboratories
Lab Order: N008957
Project: PGE Topock, 423575.MP.02.CM
Lab ID: N008957-004

Client Sample ID: CW-04M-028
Collection Date: 10/16/2012 9:57:00 AM
Matrix: WATER

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

EPA 200.7

RunID: ICP2_121127D	QC Batch: 41291	PrepDate: 11/21/2012	Analyst: CEI
Barium	97 0.36	3.0	µg/L 1 11/27/2012 05:51 PM
Beryllium	ND 0.12	3.0	µg/L 1 11/27/2012 05:51 PM
Cadmium	ND 0.37	3.0	µg/L 1 11/27/2012 05:51 PM
Cobalt	ND 0.37	3.0	µg/L 1 11/27/2012 05:51 PM
Copper	ND 2.2	5.0	µg/L 1 11/27/2012 05:51 PM
Lead	ND 1.6	10	µg/L 1 11/27/2012 05:51 PM
Nickel	ND 0.70	5.0	µg/L 1 11/27/2012 05:51 PM
Silver	3.4 0.39	3.0	µg/L 1 11/27/2012 05:51 PM
Vanadium	4.0 0.31	3.0	µg/L 1 11/27/2012 05:51 PM

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



Advanced Technology
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3151 W. Post Rd Las Vegas, NV 89118 Tel: 702-307-2659 Fax: 702-307-2691

Advanced Technology Laboratories, Inc.

ANALYTICAL RESULTS

Print Date: 04-Dec-12

CLIENT: Truesdail Laboratories
Lab Order: N008957
Project: PGE Topock, 423575.MP.02.CM
Lab ID: N008957-005

Client Sample ID: OW-01D-028
Collection Date: 10/16/2012 2:28:00 PM
Matrix: WATER

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

EPA 200.7

RunID: ICP2_121127D

QC Batch: 41291

PrepDate: 11/21/2012

Analyst: CEI

Barium	34	0.36	3.0	µg/L	1	11/27/2012 05:57 PM
Beryllium	ND	0.12	3.0	µg/L	1	11/27/2012 05:57 PM
Cadmium	ND	0.37	3.0	µg/L	1	11/27/2012 05:57 PM
Cobalt	ND	0.37	3.0	µg/L	1	11/27/2012 05:57 PM
Copper	ND	2.2	5.0	µg/L	1	11/27/2012 05:57 PM
Lead	ND	1.6	10	µg/L	1	11/27/2012 05:57 PM
Nickel	ND	0.70	5.0	µg/L	1	11/27/2012 05:57 PM
Silver	3.3	0.39	3.0	µg/L	1	11/27/2012 05:57 PM
Vanadium	3.2	0.31	3.0	µg/L	1	11/27/2012 05:57 PM

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



**Advanced Technology
Laboratories, Inc.**

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Advanced Technology Laboratories, Inc.

ANALYTICAL RESULTS

Print Date: 04-Dec-12

CLIENT: Truesdail Laboratories
Lab Order: N008957
Project: PGE Topock, 423575.MP.02.CM
Lab ID: N008957-007

Client Sample ID: OW-01M-028
Collection Date: 10/18/2012 7:54:00 AM
Matrix: WATER

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

EPA 200.7

RunID: ICP2_121127D	QC Batch: 41291	PrepDate: 11/21/2012	Analyst: CEI
Barium	78 0.36	3.0	µg/L 1 11/27/2012 06:02 PM
Beryllium	ND 0.12	3.0	µg/L 1 11/27/2012 06:02 PM
Cadmium	ND 0.37	3.0	µg/L 1 11/27/2012 06:02 PM
Cobalt	ND 0.37	3.0	µg/L 1 11/27/2012 06:02 PM
Copper	ND 2.2	5.0	µg/L 1 11/27/2012 06:02 PM
Lead	ND 1.6	10	µg/L 1 11/27/2012 06:02 PM
Nickel	ND 0.70	5.0	µg/L 1 11/27/2012 06:02 PM
Silver	ND 0.39	3.0	µg/L 1 11/27/2012 06:02 PM
Vanadium	3.6 0.31	3.0	µg/L 1 11/27/2012 06:02 PM

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



Advanced Technology
Laboratories, Inc.

3151 W. Post Rd Las Vegas, NV 89118 Tel: 702-307-2659 Fax: 702-307-2691

CLIENT: Truesdail Laboratories
Work Order: N008957
Project: PGE Topock, 423575.MP.02.CM

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

Sample ID: MB-41291	SampType: MBLK	TestCode: 200.7_WDPG	Units: µg/L	Prep Date: 11/21/2012	RunNo: 86465						
Client ID: PBW	Batch ID: 41291	TestNo: EPA 200.7		Analysis Date: 11/27/2012	SeqNo: 1479863						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Barium	ND	3.0									
Beryllium	ND	3.0									
Cadmium	ND	3.0									
Cobalt	ND	3.0									
Copper	ND	5.0									
Lead	ND	10									
Nickel	ND	5.0									
Silver	ND	3.0									
Vanadium	ND	3.0									

Sample ID: LCS-41291	SampType: LCS	TestCode: 200.7_WDPG	Units: µg/L	Prep Date: 11/21/2012	RunNo: 86465						
Client ID: LCSW	Batch ID: 41291	TestNo: EPA 200.7		Analysis Date: 11/27/2012	SeqNo: 1479864						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Barium	48.351	3.0	50.00	0	96.7	85	115				
Beryllium	9.304	3.0	10.00	0	93.0	85	115				
Cadmium	9.246	3.0	10.00	0	92.5	85	115				
Cobalt	9.993	3.0	10.00	0	99.9	85	115				
Copper	9.267	5.0	10.00	0	92.7	85	115				
Lead	46.416	10	50.00	0	92.8	85	115				
Nickel	50.401	5.0	50.00	0	101	85	115				
Silver	9.681	3.0	10.00	0	96.8	85	115				
Vanadium	9.926	3.0	10.00	0	99.3	85	115				

Sample ID: N008954-002A-MS	SampType: MS	TestCode: 200.7_WDPG	Units: µg/L	Prep Date: 11/21/2012	RunNo: 86465						
Client ID: ZZZZZZ	Batch ID: 41291	TestNo: EPA 200.7		Analysis Date: 11/27/2012	SeqNo: 1479880						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Qualifiers:

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



Advanced Technology
Laboratories, Inc.

3151 W. Post Rd Las Vegas, NV 89118 Tel: 702-307-2659 Fax: 702-307-2691

CLIENT: Truesdail Laboratories
Work Order: N008957
Project: PGE Topock, 423575.MP.02.CM

ANALYTICAL QC SUMMARY REPORT

TestCode: 200.7_WDPGEPPB

Sample ID: N008954-002A-MS	SampType: MS	TestCode: 200.7_WDPG	Units: µg/L	Prep Date: 11/21/2012	RunNo: 86465						
Client ID: ZZZZZZ	Batch ID: 41291	TestNo: EPA 200.7		Analysis Date: 11/27/2012	SeqNo: 1479880						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Barium	122.467	3.0	50.00	71.45	102	75	125				
Beryllium	9.830	3.0	10.00	0	98.3	75	125				
Cadmium	8.422	3.0	10.00	0	84.2	75	125				
Cobalt	9.430	3.0	10.00	0	94.3	75	125				
Copper	11.097	5.0	10.00	0	111	75	125				
Lead	43.466	10	50.00	0	86.9	75	125				
Nickel	48.990	5.0	50.00	0	98.0	75	125				
Silver	12.738	3.0	10.00	2.670	101	75	125				
Vanadium	14.875	3.0	10.00	4.218	107	75	125				

Sample ID: N008954-002A-MSD	SampType: MSD	TestCode: 200.7_WDPG	Units: µg/L	Prep Date: 11/21/2012	RunNo: 86465						
Client ID: ZZZZZZ	Batch ID: 41291	TestNo: EPA 200.7		Analysis Date: 11/27/2012	SeqNo: 1479886						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Barium	123.413	3.0	50.00	71.45	104	75	125	122.5	0.769	20	
Beryllium	10.081	3.0	10.00	0	101	75	125	9.830	2.52	20	
Cadmium	8.812	3.0	10.00	0	88.1	75	125	8.422	4.53	20	
Cobalt	9.581	3.0	10.00	0	95.8	75	125	9.430	1.59	20	
Copper	11.017	5.0	10.00	0	110	75	125	11.10	0.721	20	
Lead	44.822	10	50.00	0	89.6	75	125	43.47	3.07	20	
Nickel	50.282	5.0	50.00	0	101	75	125	48.99	2.60	20	
Silver	12.835	3.0	10.00	2.670	102	75	125	12.74	0.757	20	
Vanadium	14.945	3.0	10.00	4.218	107	75	125	14.88	0.465	20	

Sample ID: N008957-007A-MS	SampType: MS	TestCode: 200.7_WDPG	Units: µg/L	Prep Date: 11/21/2012	RunNo: 86465						
Client ID: ZZZZZZ	Batch ID: 41291	TestNo: EPA 200.7		Analysis Date: 11/27/2012	SeqNo: 1479887						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Barium	125.884	3.0	50.00	78.07	95.6	75	125				
Beryllium	9.709	3.0	10.00	0	97.1	75	125				

Qualifiers:

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



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3151 W. Post Rd Las Vegas, NV 89118 Tel: 702-307-2659 Fax: 702-307-2691

CLIENT: Truesdail Laboratories
Work Order: N008957
Project: PGE Topock, 423575.MP.02.CM

ANALYTICAL QC SUMMARY REPORT

TestCode: 200.7_WDPGEPPB

Sample ID: N008957-007A-MS	SampType: MS	TestCode: 200.7_WDPG	Units: µg/L	Prep Date: 11/21/2012	RunNo: 86465						
Client ID: ZZZZZZ	Batch ID: 41291	TestNo: EPA 200.7		Analysis Date: 11/27/2012	SeqNo: 1479887						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Cadmium	8.228	3.0	10.00	0	82.3	75	125				
Cobalt	9.328	3.0	10.00	0	93.3	75	125				
Copper	11.662	5.0	10.00	2.211	94.5	75	125				
Lead	42.618	10	50.00	0	85.2	75	125				
Nickel	48.380	5.0	50.00	0	96.8	75	125				
Silver	13.132	3.0	10.00	2.931	102	75	125				
Vanadium	13.820	3.0	10.00	3.626	102	75	125				

Qualifiers:

B Analyte detected in the associated Method Blank
ND Not Detected at the Reporting Limit
DO Surrogate Diluted Out

E Value above quantitation range
R RPD outside accepted recovery limits
Calculations are based on raw values

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



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Advanced Technology Laboratories, Inc.

ANALYTICAL RESULTS

Print Date: 04-Dec-12

CLIENT: Truesdail Laboratories
Lab Order: N008957
Project: PGE Topock, 423575.MP.02.CM
Lab ID: N008957-001

Client Sample ID: CW-01D-028
Collection Date: 10/16/2012 11:52:00 AM
Matrix: WATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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DISSOLVED METALS BY ICPMS

EPA 200.8

RunID: ICP7_121203A	QC Batch: 41290	PrepDate: 11/21/2012	Analyst: CEI
Antimony	ND 0.084	0.50	µg/L 1 12/3/2012 02:48 PM
Arsenic	1.5 0.035	0.10	µg/L 1 12/3/2012 02:48 PM
Chromium	ND 0.17	1.0	µg/L 1 12/3/2012 02:48 PM
Manganese	ND 0.16	0.50	µg/L 1 12/3/2012 02:48 PM
Molybdenum	20 0.074	0.50	µg/L 1 12/3/2012 02:48 PM
Selenium	3.5 0.084	0.50	µg/L 1 12/3/2012 02:48 PM
Thallium	ND 0.075	0.50	µg/L 1 12/3/2012 02:48 PM

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



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3151 W. Post Rd Las Vegas, NV 89118 Tel: 702-307-2659 Fax: 702-307-2691

Advanced Technology Laboratories, Inc.

ANALYTICAL RESULTS

Print Date: 04-Dec-12

CLIENT: Truesdail Laboratories
Lab Order: N008957
Project: PGE Topock, 423575.MP.02.CM
Lab ID: N008957-002

Client Sample ID: CW-01M-028
Collection Date: 10/16/2012 12:34:00 PM
Matrix: WATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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DISSOLVED METALS BY ICPMS

EPA 200.8

RunID: ICP7_121203A	QC Batch: 41290	PrepDate: 11/21/2012	Analyst: CEI
Antimony	ND 0.084	0.50	µg/L 1 12/3/2012 02:53 PM
Arsenic	1.7 0.035	0.10	µg/L 1 12/3/2012 02:53 PM
Chromium	1.3 0.17	1.0	µg/L 1 12/3/2012 02:53 PM
Manganese	ND 0.16	0.50	µg/L 1 12/3/2012 02:53 PM
Molybdenum	19 0.074	0.50	µg/L 1 12/3/2012 02:53 PM
Selenium	3.5 0.084	0.50	µg/L 1 12/3/2012 02:53 PM
Thallium	ND 0.075	0.50	µg/L 1 12/3/2012 02:53 PM

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



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Advanced Technology Laboratories, Inc.

ANALYTICAL RESULTS

Print Date: 04-Dec-12

CLIENT: Truesdail Laboratories
Lab Order: N008957
Project: PGE Topock, 423575.MP.02.CM
Lab ID: N008957-003

Client Sample ID: CW-04D-028
Collection Date: 10/16/2012 8:48:00 AM
Matrix: WATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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DISSOLVED METALS BY ICPMS

EPA 200.8

RunID: ICP7_121203A

QC Batch: 41290

PrepDate: 11/21/2012

Analyst: CEI

Antimony	ND	0.084	0.50		µg/L	1	12/3/2012 03:20 PM
Arsenic	4.0	0.035	0.10		µg/L	1	12/3/2012 03:20 PM
Chromium	ND	0.17	1.0		µg/L	1	12/3/2012 03:20 PM
Manganese	ND	0.16	0.50		µg/L	1	12/3/2012 03:20 PM
Molybdenum	24	0.074	0.50		µg/L	1	12/3/2012 03:20 PM
Selenium	2.7	0.084	0.50		µg/L	1	12/3/2012 03:20 PM
Thallium	ND	0.075	0.50		µg/L	1	12/3/2012 03:20 PM

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



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Advanced Technology Laboratories, Inc.

ANALYTICAL RESULTS

Print Date: 04-Dec-12

CLIENT: Truesdail Laboratories
Lab Order: N008957
Project: PGE Topock, 423575.MP.02.CM
Lab ID: N008957-004

Client Sample ID: CW-04M-028
Collection Date: 10/16/2012 9:57:00 AM
Matrix: WATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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DISSOLVED METALS BY ICPMS

EPA 200.8

RunID: ICP7_121203A	QC Batch: 41290	PrepDate: 11/21/2012	Analyst: CEI
Antimony	ND 0.084	0.50	µg/L 1 12/3/2012 03:25 PM
Arsenic	2.3 0.035	0.10	µg/L 1 12/3/2012 03:25 PM
Chromium	6.6 0.17	1.0	µg/L 1 12/3/2012 03:25 PM
Manganese	ND 0.16	0.50	µg/L 1 12/3/2012 03:25 PM
Molybdenum	10 0.074	0.50	µg/L 1 12/3/2012 03:25 PM
Selenium	1.9 0.084	0.50	µg/L 1 12/3/2012 03:25 PM
Thallium	ND 0.075	0.50	µg/L 1 12/3/2012 03:25 PM

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



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Advanced Technology Laboratories, Inc.

ANALYTICAL RESULTS

Print Date: 04-Dec-12

CLIENT: Truesdail Laboratories
Lab Order: N008957
Project: PGE Topock, 423575.MP.02.CM
Lab ID: N008957-005

Client Sample ID: OW-01D-028
Collection Date: 10/16/2012 2:28:00 PM
Matrix: WATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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DISSOLVED METALS BY ICPMS

EPA 200.8

RunID: ICP7_121203A	QC Batch: 41290	PrepDate: 11/21/2012	Analyst: CEI
Antimony	ND 0.084	0.50	µg/L 1 12/3/2012 05:02 PM
Arsenic	1.3 0.035	0.10	µg/L 1 12/3/2012 05:02 PM
Chromium	ND 0.17	1.0	µg/L 1 12/3/2012 05:02 PM
Manganese	ND 0.16	0.50	µg/L 1 12/3/2012 05:02 PM
Molybdenum	20 0.074	0.50	µg/L 1 12/3/2012 05:02 PM
Selenium	3.5 0.084	0.50	µg/L 1 12/3/2012 05:02 PM
Thallium	ND 0.075	0.50	µg/L 1 12/3/2012 05:02 PM

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



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3151 W. Post Rd Las Vegas, NV 89118 Tel: 702-307-2659 Fax: 702-307-2691

Advanced Technology Laboratories, Inc.**ANALYTICAL RESULTS**

Print Date: 04-Dec-12

CLIENT: Truesdail Laboratories
Lab Order: N008957
Project: PGE Topock, 423575.MP.02.CM
Lab ID: N008957-006

Client Sample ID: OW-01S-028
Collection Date: 10/16/2012 3:07:00 PM
Matrix: WATER

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

RunID: ICP7_121203A	QC Batch: 41290	PrepDate: 11/21/2012	Analyst: CEI
Chromium	14 0.17	1.0	µg/L 1 12/3/2012 05:08 PM
Molybdenum	14 0.074	0.50	µg/L 1 12/3/2012 05:08 PM

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



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Advanced Technology Laboratories, Inc.

ANALYTICAL RESULTS

Print Date: 04-Dec-12

CLIENT: Truesdail Laboratories
Lab Order: N008957
Project: PGE Topock, 423575.MP.02.CM
Lab ID: N008957-007

Client Sample ID: OW-01M-028
Collection Date: 10/18/2012 7:54:00 AM
Matrix: WATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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DISSOLVED METALS BY ICPMS

EPA 200.8

RunID: ICP7_121203A	QC Batch: 41290	PrepDate: 11/21/2012	Analyst: CEI
Antimony	ND 0.084	0.50	µg/L 1 12/3/2012 03:51 PM
Arsenic	2.3 0.035	0.10	µg/L 1 12/3/2012 03:51 PM
Chromium	ND 0.17	1.0	µg/L 1 12/3/2012 03:51 PM
Manganese	ND 0.16	0.50	µg/L 1 12/3/2012 03:51 PM
Molybdenum	23 0.074	0.50	µg/L 1 12/3/2012 03:51 PM
Selenium	3.3 0.084	0.50	µg/L 1 12/3/2012 03:51 PM
Thallium	ND 0.075	0.50	µg/L 1 12/3/2012 03:51 PM

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



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Advanced Technology Laboratories, Inc.**ANALYTICAL RESULTS**

Print Date: 04-Dec-12

CLIENT: Truesdail Laboratories
Lab Order: N008957
Project: PGE Topock, 423575.MP.02.CM
Lab ID: N008957-008

Client Sample ID: OW-02D-028
Collection Date: 10/18/2012 9:27:00 AM
Matrix: WATER

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

RunID: ICP7_121203A	QC Batch: 41290	PrepDate: 11/21/2012	Analyst: CEI	
Chromium	ND 0.17	1.0	µg/L 1	12/3/2012 03:56 PM
Molybdenum	21 0.074	0.50	µg/L 1	12/3/2012 03:56 PM

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



**Advanced Technology
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Advanced Technology Laboratories, Inc.**ANALYTICAL RESULTS**

Print Date: 04-Dec-12

CLIENT: Truesdail Laboratories
Lab Order: N008957
Project: PGE Topock, 423575.MP.02.CM
Lab ID: N008957-009

Client Sample ID: OW-02M-028
Collection Date: 10/18/2012 11:45:00 AM
Matrix: WATER

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

RunID: ICP7_121203A	QC Batch: 41290	PrepDate: 11/21/2012	Analyst: CEI	
Chromium	ND 0.17	1.0	µg/L 1	12/3/2012 04:01 PM
Molybdenum	23 0.074	0.50	µg/L 1	12/3/2012 04:01 PM

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



**Advanced Technology
Laboratories, Inc.**

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Advanced Technology Laboratories, Inc.**ANALYTICAL RESULTS**

Print Date: 04-Dec-12

CLIENT: Truesdail Laboratories
Lab Order: N008957
Project: PGE Topock, 423575.MP.02.CM
Lab ID: N008957-010

Client Sample ID: OW-02S-028
Collection Date: 10/18/2012 10:04:00 AM
Matrix: WATER

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

RunID: ICP7_121203A	QC Batch: 41290	PrepDate: 11/21/2012	Analyst: CEI
Chromium	28 0.17	1.0	µg/L 1 12/3/2012 04:06 PM
Molybdenum	46 0.074	0.50	µg/L 1 12/3/2012 04:06 PM

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



**Advanced Technology
Laboratories, Inc.**

3151 W. Post Rd Las Vegas, NV 89118 Tel: 702-307-2659 Fax: 702-307-2691

Advanced Technology Laboratories, Inc.**ANALYTICAL RESULTS**

Print Date: 04-Dec-12

CLIENT: Truesdail Laboratories
Lab Order: N008957
Project: PGE Topock, 423575.MP.02.CM
Lab ID: N008957-011

Client Sample ID: OW-05D-028
Collection Date: 10/18/2012 12:56:00 PM
Matrix: WATER

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

RunID: ICP7_121203A

QC Batch: 41290

PrepDate: 11/21/2012

Analyst: CEI

Chromium	ND	0.17	1.0	µg/L	1	12/3/2012 04:27 PM
Molybdenum	22	0.074	0.50	µg/L	1	12/3/2012 04:27 PM

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



**Advanced Technology
Laboratories, Inc.**

3151 W. Post Rd Las Vegas, NV 89118 Tel: 702-307-2659 Fax: 702-307-2691

Advanced Technology Laboratories, Inc.**ANALYTICAL RESULTS**

Print Date: 04-Dec-12

CLIENT: Truesdail Laboratories
Lab Order: N008957
Project: PGE Topock, 423575.MP.02.CM
Lab ID: N008957-012

Client Sample ID: OW-05M-028
Collection Date: 10/18/2012 2:03:00 PM
Matrix: WATER

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

RunID: ICP7_121203A	QC Batch: 41290	PrepDate: 11/21/2012	Analyst: CEI	
Chromium	ND 0.17	1.0	µg/L 1	12/3/2012 04:32 PM
Molybdenum	21 0.074	0.50	µg/L 1	12/3/2012 04:32 PM

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



**Advanced Technology
Laboratories, Inc.**

3151 W. Post Rd Las Vegas, NV 89118 Tel: 702-307-2659 Fax: 702-307-2691

Advanced Technology Laboratories, Inc.**ANALYTICAL RESULTS**

Print Date: 04-Dec-12

CLIENT: Truesdail Laboratories
Lab Order: N008957
Project: PGE Topock, 423575.MP.02.CM
Lab ID: N008957-013

Client Sample ID: OW-05S-028
Collection Date: 10/18/2012 2:41:00 PM
Matrix: WATER

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

DISSOLVED METALS BY ICPMS**EPA 200.8**

RunID: ICP7_121203A	QC Batch: 41290	PrepDate: 11/21/2012	Analyst: CEI
Chromium	18 0.17	1.0	µg/L 1 12/3/2012 04:37 PM
Molybdenum	17 0.074	0.50	µg/L 1 12/3/2012 04:37 PM

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



**Advanced Technology
Laboratories, Inc.**

3151 W. Post Rd Las Vegas, NV 89118 Tel: 702-307-2659 Fax: 702-307-2691

Advanced Technology Laboratories, Inc.

ANALYTICAL RESULTS

Print Date: 04-Dec-12

CLIENT:	Truesdail Laboratories	Client Sample ID:	OW-91-028
Lab Order:	N008957	Collection Date:	10/18/2012 7:05:00 AM
Project:	PGE Topock, 423575.MP.02.CM	Matrix:	WATER
Lab ID:	N008957-014		

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

DISSOLVED METALS BY ICPMS

EPA 200.8

RunID: ICP7_121203A	QC Batch: 41290	PrepDate: 11/21/2012	Analyst: CEI			
Chromium	ND	0.17	1.0	µg/L	1	12/3/2012 04:42 PM
Molybdenum	21	0.074	0.50	µg/L	1	12/3/2012 04:42 PM

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



**Advanced Technology
Laboratories, Inc.**

3151 W. Post Rd Las Vegas, NV 89118 Tel: 702-307-2659 Fax: 702-307-2691

CLIENT: Truesdail Laboratories
Work Order: N008957
Project: PGE Topock, 423575.MP.02.CM

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

Sample ID: N008954-001A-MS	SampType: MS	TestCode: 200.8_WDISS	Units: µg/L	Prep Date: 11/21/2012	RunNo: 86523						
Client ID: ZZZZZZ	Batch ID: 41290	TestNo: EPA 200.8		Analysis Date: 12/3/2012	SeqNo: 1482299						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Antimony	9.027	0.50	10.00	0	90.3	75	125				
Arsenic	13.290	0.10	10.00	3.730	95.6	75	125				
Chromium	9.600	1.0	10.00	0.9373	86.6	75	125				
Manganese	85.410	0.50	100.0	0	85.4	75	125				
Molybdenum	21.980	0.50	10.00	11.55	104	75	125				
Selenium	11.724	0.50	10.00	3.009	87.1	75	125				
Thallium	10.098	0.50	10.00	0	101	75	125				

Sample ID: N008954-001A-MSD	SampType: MSD	TestCode: 200.8_WDISS	Units: µg/L	Prep Date: 11/21/2012	RunNo: 86523						
Client ID: ZZZZZZ	Batch ID: 41290	TestNo: EPA 200.8		Analysis Date: 12/3/2012	SeqNo: 1482300						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Antimony	9.102	0.50	10.00	0	91.0	75	125	9.027	0.823	20	
Arsenic	13.185	0.10	10.00	3.730	94.5	75	125	13.29	0.793	20	
Chromium	9.630	1.0	10.00	0.9373	86.9	75	125	9.600	0.314	20	
Manganese	85.048	0.50	100.0	0	85.0	75	125	85.41	0.424	20	
Molybdenum	21.762	0.50	10.00	11.55	102	75	125	21.98	0.999	20	
Selenium	11.482	0.50	10.00	3.009	84.7	75	125	11.72	2.09	20	
Thallium	10.204	0.50	10.00	0	102	75	125	10.10	1.04	20	

Sample ID: N008957-006A-MS	SampType: MS	TestCode: 200.8_WDISS	Units: µg/L	Prep Date: 11/21/2012	RunNo: 86523						
Client ID: ZZZZZZ	Batch ID: 41290	TestNo: EPA 200.8		Analysis Date: 12/3/2012	SeqNo: 1482314						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Antimony	9.003	0.50	10.00	0	90.0	75	125				
Arsenic	11.684	0.10	10.00	1.683	100	75	125				
Chromium	23.121	1.0	10.00	13.58	95.4	75	125				
Manganese	84.776	0.50	100.0	0	84.8	75	125				

Qualifiers:

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



Advanced Technology
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CLIENT: Truesdail Laboratories
Work Order: N008957
Project: PGE Topock, 423575.MP.02.CM

ANALYTICAL QC SUMMARY REPORT

TestCode: 200.8_WDISS

Sample ID: N008957-006A-MS	SampType: MS	TestCode: 200.8_WDISS	Units: µg/L	Prep Date: 11/21/2012	RunNo: 86523						
Client ID: ZZZZZZ	Batch ID: 41290	TestNo: EPA 200.8		Analysis Date: 12/3/2012	SeqNo: 1482314						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Molybdenum	25.000	0.50	10.00	14.14	109	75	125				
Selenium	11.521	0.50	10.00	2.417	91.0	75	125				
Thallium	10.139	0.50	10.00	0	101	75	125				

Sample ID: MB-41290	SampType: MBLK	TestCode: 200.8_WDISS	Units: µg/L	Prep Date: 11/21/2012	RunNo: 86523						
Client ID: PBW	Batch ID: 41290	TestNo: EPA 200.8		Analysis Date: 12/3/2012	SeqNo: 1482330						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Antimony	ND	0.50									
Arsenic	0.095	0.10									
Chromium	ND	1.0									
Manganese	ND	0.50									
Molybdenum	ND	0.50									
Selenium	ND	0.50									
Thallium	ND	0.50									

Sample ID: LCS-41290	SampType: LCS	TestCode: 200.8_WDISS	Units: µg/L	Prep Date: 11/21/2012	RunNo: 86523						
Client ID: LCSW	Batch ID: 41290	TestNo: EPA 200.8		Analysis Date: 12/3/2012	SeqNo: 1482333						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Antimony	9.084	0.50	10.00	0	90.8	85	115				
Arsenic	9.672	0.10	10.00	0	96.7	85	115				
Chromium	9.776	1.0	10.00	0	97.8	85	115				
Manganese	95.039	0.50	100.0	0	95.0	85	115				
Molybdenum	9.449	0.50	10.00	0	94.5	85	115				
Selenium	9.957	0.50	10.00	0	99.6	85	115				
Thallium	9.720	0.50	10.00	0	97.2	85	115				

Qualifiers:

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



Advanced Technology
Laboratories, Inc.

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TRUESDAIL LABORATORIES, INC.

14201 FRANKLIN AVENUE - TUSTIN, CA 92780-7008

(714) 730-6239 - FAX (714) 730-6462

CHAIN OF CUSTODY

☒ X TURNAROUND TIME Normal TAT
DATE: 11/19/2012 PAGE: 1 OF 1

METHODS

COMPANY Truesdail Laboratories, Inc.				Sb, As, Ba, Be, Cd, Co, Cr, Cu, Pb, Mn, Mo, Ni, Se, Ag, Ti, V	Diss. Metals (200.8/200.7) FF Cr, Mo	Diss. Metals (200.8/200.7) FF							NUMBER OF CONTAINERS	COMMENTS Level IV data package w/ EDD
CONTACT Sean Condon	PHONE 714-730-6239 x202	FAX	ADDRESS 14201 Franklin Ave. Tustin, CA 92780											
SAMPLE I.D.	DATE	TIME	DESCRIPTION										TLI Sample ID	
CW-01D-028	10/16/12	11:52	Water	X									1 804461-1	
CW-01M-028	10/16/12	12:34	Water	X									1 804461-2	
CW-04D-028	10/16/12	08:48	Water	X									1 804461-3	
CW-04M-028	10/16/12	09:57	Water	X									1 804461-4	
OW-01D-028	10/16/12	14:28	Water	X									1 804461-5	
OW-01S-028	10/16/12	15:07	Water		X								1 804461-6	
OW-01M-028	10/18/12	07:54	Water	X									1 804461-7	
OW-02D-028	10/18/12	09:27	Water		X								1 804461-8	
OW-02M-028	10/18/12	11:45	Water		X								1 804461-9	
OW-02S-028	10/18/12	10:04	Water		X								1 804461-10	
OW-05D-028	10/18/12	12:56	Water		X								1 804461-11	
OW-05M-028	10/18/12	14:03	Water		X								1 804461-12	
OW-05S-028	10/18/12	14:41	Water		X								1 804461-13	
OW-91-028	10/18/12	07:05	Water		X								1 804461-14	

Chain of Custody Signature Record			TOTAL NUMBER OF CONTAINERS 14	SAMPLE CONDITIONS: RECEIVED Cool <input type="checkbox"/> Warm <input type="checkbox"/> <u>NA</u> Yes <input type="checkbox"/> No <input type="checkbox"/>	SPECIAL REQUIREMENTS:
Signature	Company/ Agency	Date/ Time			
1. <u>[Signature]</u>	<u>TLI</u>	<u>11-20-12 2:00</u>			
2. <u>REC: [Signature]</u>	<u>ATL INC</u>	<u>11/21/12 @ 0955</u>			
3. _____	_____	_____			
4. _____	_____	_____			
5. _____	_____	_____			
6. _____	_____	_____			
7. _____	_____	_____			

Advanced Technology Laboratories, Inc.

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

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

Cooler Received/Opened On: 11/21/2012

Workorder: N008957

Rep sample Temp (Deg C): na

IR Gun ID: na

Temp Blank: ☐ Yes ☒ No

Carrier name: Golden State Overnight

Last 4 digits of Tracking No.: 3583

Packing Material Used: None

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

Sample Receipt Checklist

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

Comments:

Checklist Completed B

MBC

11/21/12

Reviewed By:

[Signature]

Sample Calculation

METHOD: EPA 200.7

TEST NAME: Heavy Metals by ICP

MATRIX: Water

FORMULA:

Calculate the Barium concentration, in ug/L, in the original sample as follows:

$$\text{Barium, ug/L} = A * DF * PF * CF$$

where:

A = mg/L, calculated concentration

DF = dilution factor

PF = Final Vol. of Digestate in mL / Vol. of Sample used in mL

CF = Conversion Factor

For Sample **N008957-001A**, the concentration in ug/L is calculated as follows:

$$\begin{aligned}\text{Barium, ug/L} &= 0.02687859431 * 1 * (25/25) * 1000 \\ &= 26.87859431\end{aligned}$$

Reporting results in two significant figures,

$$\text{Barium, ug/L} = 27$$

NS for
12/4/12

Advanced Technology Laboratories, Inc.

ICP-Metals in Water

Work Order No.: N008957
Test Method: EPA 200.7
Analysis Date: 11/27/12

Dilution Test Summary

Matrix: Water
Batch No.: 41291

Instrument ID: ICP-02
Instrument Description: Perkin Elmer Optima DV Series

Comments:

Analyzed By: Mary Claire Ignacio

Dilution Test is not applicable for all the analytes. The calculated values were < 25X the RL. However the PS @2X passes the criteria.

Sample ID	Analyte	&Units	Calc Val	OQual	SAMPrefval	%DIFF	%DIFFlimit
N008954-001A 5X	Barium	ug/L	13.98	NA	12.64	10.56%	10
N008954-001A 5X	Beryllium	ug/L	0.00	NA	0.00	0.00%	10
N008954-001A 5X	Cadmium	ug/L	0.00	NA	0.00	0.00%	10
N008954-001A 5X	Cobalt	ug/L	0.00	NA	0.00	0.00%	10
N008954-001A 5X	Copper	ug/L	0.00	NA	0.00	0.00%	10
N008954-001A 5X	Lead	ug/L	0.00	NA	0.00	0.00%	10
N008954-001A 5X	Nickel	ug/L	0.00	NA	0.00	0.00%	10
N008954-001A 5X	Silver	ug/L	0.00	NA	1.50	100.00%	10
N008954-001A 5X	Vanadium	ug/L	5.04	NA	5.29	4.70%	10

Note: NA - Not Applicable

CLIENT: Truesdail Laboratories

Work Order: N008957

Project: PGE Topock, 423575.MP.02.CM

ANALYTICAL QC SUMMARY REPORT

TestCode: 200.7_WDPGEPPB

Sample ID: N008954-002A-PS	SampType: PS	TestCode: 200.7_WDPG	Units: µg/L	Prep Date: 11/21/2012	RunNo: 86465						
Client ID: ZZZZZZ	Batch ID: 41291	TestNo: EPA 200.7		Analysis Date: 11/27/2012	SeqNo: 1479879						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Barium	273.475	6.0	250.0	71.45	80.8	75	125				
Beryllium	262.326	6.0	250.0	0	105	75	125				
Cadmium	262.665	6.0	250.0	0	105	75	125				
Cobalt	263.958	6.0	250.0	0	106	75	125				
Copper	255.232	10	250.0	0	102	75	125				
Lead	246.578	20	250.0	0	98.6	75	125				
Nickel	266.116	10	250.0	0	106	75	125				
Silver	261.174	6.0	250.0	2.670	103	75	125				
Vanadium	259.426	6.0	250.0	4.218	102	75	125				

Qualifiers:

B Analyte detected in the associated Method Blank
 ND Not Detected at the Reporting Limit
 DO Surrogate Diluted Out

E Value above quantitation range
 R RPD outside accepted recovery limits
 Calculations are based on raw values

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

Sample Calculation

METHOD: EPA 200.8

TEST NAME: Heavy Metals by ICP-MS

MATRIX: Aqueous

FORMULA:

Calculate the Arsenic concentration, in ug/L, in the original sample as follows:

$$\text{Arsenic, ug/L} = A * DF * PF$$

where:

A = ug/L, calculated concentration

DF = dilution factor

PF = Final Vol. of Digestate in mL / Vol. of Sample used in mL

For Sample **N008957-001A**, the concentration in ug/L is calculated as follows:

$$\begin{aligned}\text{Arsenic, ug/L} &= 1.45698788281173 * 1 * (25/25) \\ &= 1.45698788281173\end{aligned}$$

Reporting result in two significant figures,

$$\text{Arsenic, ug/L} = 1.5$$

NS for
12/4/12

Advanced Technology Laboratories, Inc.

ICP-Metals in Water

Work Order No.: N008957
Test Method: EPA 200.8
Analysis Date: 12/03/12

Dilution Test Summary

Matrix: Water
Batch No.: 41290

Instrument ID: ICP-MS #2
Instrument Description: Agilent 7700x

Comments:

Analyzed By: Mary Claire Ignacio

Dilution is not applicable to Sb, Cr, Mn, Mo, Tl and Se. The calculated values were <25X RL. PS passed criteria.

Sample ID	Analyte	&Units	Calc Val	OQual	Calc Val	%DIFF	%DIFFlimit
N008954-001A-DT 5X	Antimony	µg/L	0	NA	0	0.00%	10
N008954-001A-DT 5X	Arsenic	µg/L	3.558883416	PASSED	3.73021967	4.59%	10
N008954-001A-DT 5X	Chromium	µg/L	0	NA	0.937268156	100.00%	10
N008954-001A-DT 5X	Manganese	µg/L	0	NA	0	0.00%	10
N008954-001A-DT 5X	Molybdenum	µg/L	10.78715319	NA	11.55112795	6.61%	10
N008954-001A-DT 5X	Thallium	µg/L	0	NA	0	0.00%	10
N008954-001A-DT 5X	Selenium	µg/L	2.856378064	NA	3.0093582	5.08%	10

Note: NA - Not applicable

CLIENT: Truesdail Laboratories

Work Order: N008957

Project: PGE Topock, 423575.MP.02.CM

ANALYTICAL QC SUMMARY REPORT

TestCode: 200.8_WDISS

Sample ID: N008954-001A-PS	SampType: PS	TestCode: 200.8_WDISS	Units: µg/L	Prep Date:	RunNo: 86523						
Client ID: ZZZZZZ	Batch ID: 41290	TestNo: EPA 200.8		Analysis Date: 12/3/2012	SeqNo: 1482325						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Antimony	19.572	1.0	20.00	0	97.9	75	125				
Arsenic	24.825	0.20	20.00	3.730	105	75	125				
Chromium	19.984	2.0	20.00	0.9373	95.2	75	125				
Manganese	185.740	1.0	200.0	0	92.9	75	125				
Molybdenum	33.801	1.0	20.00	11.55	111	75	125				
Selenium	23.236	1.0	20.00	3.009	101	75	125				
Thallium	21.377	1.0	20.00	0	107	75	125				

Qualifiers:

B Analyte detected in the associated Method Blank
 ND Not Detected at the Reporting Limit
 DO Surrogate Diluted Out

E Value above quantitation range
 R RPD outside accepted recovery limits
 Calculations are based on raw values

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

Appendix B
Field Data Sheets, Second Half 2012
(provided on CD-ROM only)

Topock CMP Manual Water Level SnapshotPersonnel: B. Collow/CHamWLI serial number: PGE 2011-01

Loc ID	Depth to Water (ft BTOC)	Date	Time	Comments
CW-1M	108.21'	7-17-12	0757	
CW-1D	108.37		0759	
CW-2M	91.85		0803	
CW-2D	91.47		0804	
CW-3M	76.79		0808	
CW-3D	76.20		0810	
CW-4M	60.63		0816	
CW-4D	60.53		0818	
OW-1S	92.72		0823	
OW-1M	92.52		0825	
OW-1D	92.30		0826	
OW-2S	91.35		0829	
OW-2M	90.66		0830	
OW-2D	90.74		0832	
OW-5S	94.20		0836	
OW-5M	93.27		0838	
OW-5D	93.95		0840	

IM-3 Staff confirm that 7-15-12, 7-16-12, and 7-17-12 were normal operation days with no backwashing or plant down time prior to snapshot collection.

PM Signature: _____

QC Signature: _____

TOPOCK PLANNED SAMPLE TABLE

Date: October 1-5, 2012

Event: 2012-CMP-028

CMP-028
10-16-12

mp-028

0-16-12

									Aqueous Sample Container										
									Aqueous Preservatives										
									Filtered										
									Lab										
									Analysis Holding Time										
Sample Location	Sample ID	Team	Approx DTW (feet TOC)	Target Purge Rate (gpm)	Est. Total Purge (gal)	Est. Total Purge Duration (min)	Previous CR (VI) µg/L	Sample Type	250 ml Poly	500 ml Poly	500 ml Poly	1x500 ml Poly	2x1 Liter Poly	2x1 Liter Poly	2x1 Liter Poly	2x1 Liter Poly	2x1 Liter Poly	1 Liter Poly	1 Liter Poly
									(NH4)2SO4/NH4OH, 4°C	HNO3, 4°C	HNO3, 4°C	HNO3, 4°C	4°C	4°C	4°C	4°C	4°C	H2SO4, pH<2, 4°C	H2SO4, pH<2, 4°C
									Field	Field	NA	Field	NA	NA	NA	NA	NA	NA	NA
									TLI	TLI	TLI	TLI	TLI	TLI	TLI	TLI	TLI	CHMC	TLI
									28	180	180	180	2	2	2	2	2	28	28
									Cr6 (E218.6) FF	Metals (E200.7-E200.8) FF Cr,Mo,Na	Metals (6010B) Total Fe	Metals (E200series) FF AlSbAsBaBeBcBaCdCoCrCuFePbMg MnHgMoNiSeAgTiVZnKNa	Specific Conductance (E120.1)	Anions (E300.0) Cl, F, I, SO4	Turbidity (SM2130)	TDS (SM2540C)	Alkalinity (SM2320B)	Nitrate/Nitrite (SM4500NO3-E)	Ammonia (SM4500NH3)
CW-01D	CW-01D-028	1	108.93	3	98	32.7	0.41	N	10		10	10	10	10	10	10	10	12	10
CW-01M	CW-01M-028	1	108.91	2	42	21.0	2.00	N	10		10	10	10	10	10	10	10	12	10
CW-02D	CW-02D-028	1	91.74	3	135	45.0	0.82	N	10		10	10	10	10	10	10	10	12	10
CW-02D	OW-90-028	1	91.74	3	135	45.0	0.82	FD	10		10	10	10	10	10	10	10	12	10
CW-02M	CW-02M-028	1	92.32	2	56	28.0	2.40	N	10		10	10	10	10	10	10	10	12	10
CW-03D	CW-03D-028	1	76.45	3	135	45.0	0.69	N	10		10	10	10	10	10	10	10	12	10
CW-03M	CW-03M-028	1	77.16	2	74	37.0	7.90	N	10		10	10	10	10	10	10	10	12	10
CW-04D	CW-04D-028	1	61	3	124	41.3	1.00	N	10		10	10	10	10	10	10	10	12	10
CW-04M	CW-04M-028	1	61.1	2	56	28.0	8.70	N	10		10	10	10	10	10	10	10	12	10
OW-01D	OW-01D-028	1	92.86	3	102	34.0	1.00	N	10		10	10	10	10	10	10	10	12	10
OW-01M	OW-01M-028	1	93.12	3	50	16.7	1.50	N	10		10	10	10	10	10	10	10	12	10
OW-01S	OW-01S-028	1	93.29	1	11	11.0	9.50	N	10	10			10	10	10	10		12	
OW-02D	OW-02D-028	1	91.15	3	120	40.0	ND (1.0)	N	10	10			10	10	10	10		12	
OW-02M	OW-02M-028	1	91.27	2	60	30.0	1.60	N	10	10			10	10	10	10		12	
OW-02S	OW-02S-028	1	91.85	1	6	6.00	26.8	N	10	10			10	10	10	10		12	
OW-05D	OW-05D-028	1	94.75	3	130	43.3	ND (1.0)	N	10	10			10	10	10	10		12	
OW-05M	OW-05M-028	1	94.13	3	80	26.7	ND (1.0)	N	10	10			10	10	10	10		12	
OW-05M	OW-91-028	1	94.13	3	80	26.7	ND (1.0)	FD	10	10			10	10	10	10		12	

PM Signature: _____

QC Signature: _____

TOPOCK PLANNED SAMPLE TABLE

Date: October 1-5, 2012

Event: 2012-CMP-028

Sample Location	Sample ID	Team	Approx DTW (feet TOC)	Target Purge Rate (gpm)	Est. Total Purge (gal)	Est. Total Purge Duration (min)	Previous CR (VI) µg/L	Sample Type	Analysis Holding Time										
									Aqueous Sample Container										
									Aqueous Preservatives										
									Filtered										
									Lab										
									250 ml Poly	500 ml Poly	500 ml Poly	1x500 ml Poly	2x1 Liter Poly	2x1 Liter Poly	2x1 Liter Poly	2x1 Liter Poly	2x1 Liter Poly	1 Liter Poly	1 Liter Poly
									(NH ₄) ₂ SO ₄ /NH ₄ OH, 4°C	HNO ₃ , 4°C	HNO ₃ , 4°C	HNO ₃ , 4°C	4°C	4°C	4°C	4°C	4°C	H ₂ SO ₄ , pH<2, 4°C	H ₂ SO ₄ , pH<2, 4°C
									Field	Field	NA	Field	NA	NA	NA	NA	NA	NA	NA
									TLI	TLI	TLI	TLI	TLI	TLI	TLI	TLI	TLI	CHMC	TLI
									28	180	180	180	2	2	2	2	2	28	28
									Cr6 (E218.6) FF	Metals (E200.7-E200.8) FF Cr,Mo,Na	Metals (6010B) Total Fe	Metals (E200series) FF AlSbAsBaBeBCaCdCoCrCuFePbMg MnHgMoNiSeAgTlVZnKNa	Specific Conductance (E120.1)	Anions (E300.0) Cl, F, I, SO ₄	Turbidity (SM2130)	TDS (SM2540C)	Alkalinity (SM2320B)	Nitrate/Nitrite (SM4500NO ₃ -E)	Ammonia (SM4500NH ₃)
OW-05S	OW-05S-028	1	94.77	1	9	9.00	20.2	N	10	10			10	10	10	10		12	
EB-CMP	OW-86-028	1				—		EB	10										
EB-CMP	OW-87-028	1				—		EB	10										
EB-CMP	OW-88-028	1				—		EB	10										
EB-CMP	OW-89-028	1				—		EB	10										

NOTES:

1. Purge and sample in accordance with SOP A-1 "Purging and Sampling Monitoring Wells" and SOP A-6 "Sample Field Filtration and Preservation for Metals Analyses".
2. Record the water level and field parameters during purging. Compare parameters with previous. Note where anomalous data is suspected and investigate equipment problems. If unresolved, report to Barry Collom 541-740-3250.
3. Complete the entire field data form and note "NA" where data is not applicable
4. Sample when purge volume is greater than or equal to three casing volumes and stabilization criteria have been met
5. Scan COCs, purge records, field notes and calibration forms at the end of the event following QC and email to Shawn Duffy, Aurora Abbott (aurora.abbott@ch2m.com), Jay Piper (jay.piper@ch2m.com), Tuesdai Powers (tuesdai.powers@critigen.com), and Priya Kumar (priya.kumar@ch2m.com).
6. Alkalinity will be collected in same bottle set as SC, Anions, Turbidity and TDS when collected.
7. Samples collected for SC, Anions, Turbidity and TDS should be shipped to ensure they do not exceed the minimum hold time, which is 2 days.
8. pH triggers contingency actions if pH <6.2 or pH >9.2. If pH out of that range immediately contact B. Collom ((541) 740-3250). If B. Collom unavailable contact S. Duffy ((530) 941-9227). If S. Duffy unavailable contact J. Piper ((702) 953-1202 x36602 or (702) 525-1137). If J. Piper unavailable contact Christina Hong ((213) 228-8248 x35448 or (213) 228-8242).
9. TDS triggers contingency actions if TDS >10,800 mg/L (10.8g/L). If TDS is out of that range immediately contact B. Collom ((541) 740-3250). If B. Collom unavailable contact S. Duffy ((530) 941-9227). If S. Duffy unavailable contact J. Piper ((702) 953-1202 x36602 or (702) 525-1137). If J. Piper unavailable contact Christina Hong ((213) 228-8248 x35448 or (213) 228-8242).

* Added EB's OW-83-028, OW-84-028, + OW-85-028

Project Name PG&E Topock Location Topock Project Manager Jay Piper Sample Manager Matt Ringier Project Number 423575.MP.02.CM Task Order Project 2012-CMP-028 Turnaround Time 10 Days Shipping Date: 10/16/2012 COC Number: 1				Container:	250 ml Poly	500 ml Poly	1x500 ml Poly	2x1 Liter	2x1 Liter	2x1 Liter	2x1 Liter	2x1 Liter	1 Liter Poly	Number of Containers	COMMENTS
Preservatives:				(NH4)2S O4/NH4O H, 4°C	HNO3, 4°C	HNO3, 4°C	4°C	4°C	4°C	4°C	4°C	H2SO4, pH<2, 4°C			
Filtered:				Field	NA	Field	NA	NA	NA	NA	NA	NA			
Holding Time:				28	180	180	2	2	2	2	2	28			
DATE				TIME	Matrix	Cr6 (E218.6) Field Filtered	Metals (E200series) Field Filtered AlSbAsBaBeBCaCdCoCrCuFePb Metals (6010B) Total Fe	Specific Conductance (E120.1)	Anions (E300.0) Cl, F, SO4	Turbidity (SM2130)	TDS (SM2540C)	Alkalinity (SM2320B)	Ammonia (SM4500NH3)		
CW-02D-028	10/15/2012	10:36	Water	X	X	X	X	X	X	X	X	X	X	6	
CW-02M-028	10/15/2012	12:04	Water	X	X	X	X	X	X	X	X	X	X	6	
CW-03D-028	10/15/2012	14:26	Water	X	X	X	X	X	X	X	X	X	X	6	
CW-03M-028	10/15/2012	15:34	Water	X	X	X	X	X	X	X	X	X	X	6	
OW-90-028	10/15/2012	7:10	Water	X	X	X	X	X	X	X	X	X	X	6	
OW-86-028	10/16/2012	7:10	Water	X										1	Hold
OW-87-028	10/16/2012	7:15	Water	X										1	Hold
TOTAL NUMBER OF CONTAINERS														32	

Approved by	Signatures	Date/Time	Shipping Details	ATTN:	Special Instructions:
Sampled by		10-16-12	Method of Shipment: courier		October 1-5, 2012
Relinquished by		1540	On Ice: yes / no	Sample Custody	
Received by	Rafael Davila	10/16/12 15:40	Airbill No:		Report Copy to
Relinquished by			Lab Name: Truesdail Laboratories, Inc.		Shawn Duffy
Received by			Lab Phone: (714) 730-6239		(530) 229-3303



Project Name PG&E Topock Location Topock Project Manager Jay Piper Sample Manager Matt Ringier Project Number 423575.MP.02.CM Task Order Project 2012-CMP-028 Turnaround Time 10 Days Shipping Date: 10/18/2012 COC Number: 5				Container:	250 ml Poly	500 ml Poly	500 ml Poly	1x500 ml Poly	2x1 Liter	2x1 Liter	2x1 Liter	2x1 Liter	2x1 Liter	1 Liter Poly		Number of Containers	COMMENTS
				Preservatives:	(NH4)2SO4/NH4OH, 4°C	HNO3, 4°C	HNO3, 4°C	HNO3, 4°C	4°C	4°C	4°C	4°C	4°C	H2SO4, pH<2, 4°C			
				Filtered:	Field	Field	NA	Field	NA	NA	NA	NA	NA	NA			
				Holding Time:	28	180	180	180	2	2	2	2	2	28			
					Cr6 (E218.6) Field Filtered	Metals (E200.7-E200.8) Field Filtered Cr,Mo,Na	Metals (6010B) Total Fe	Metals (E200series) Field Filtered AlSbAsBaBeBCaCdCoCrCuFePb	Specific Conductance (E120.1)	Anions (E300.0) Cl, F, SO4	Turbidity (SM2130)	TDS (SM2540C)	Alkalinity (SM2320B)	Ammonia (SM4500NH3)			
DATE	TIME	Matrix															
CW-01D-028	10/16/2012	11:52	Water	X		X	X	X	X	X	X	X	X		6		
CW-01M-028	10/16/2012	12:34	Water	X		X	X	X	X	X	X	X	X		6		
CW-04D-028	10/16/2012	8:48	Water	X		X	X	X	X	X	X	X	X		6		
CW-04M-028	10/16/2012	9:57	Water	X		X	X	X	X	X	X	X	X		6		
OW-01D-028	10/16/2012	14:28	Water	X		X	X	X	X	X	X	X	X		6		
OW-01S-028	10/16/2012	15:07	Water	X	X			X	X	X	X				4		
OW-88-028	10/17/2012	8:25	Water	X											1	Hold	
OW-89-028	10/17/2012	8:35	Water	X											1	Hold	
OW-01M-028	10/18/2012	7:54	Water	X		X	X	X	X	X	X	X	X		6		
OW-02D-028	10/18/2012	9:27	Water	X	X			X	X	X	X				4		
OW-02M-028	10/18/2012	11:45	Water	X	X			X	X	X	X				4		
OW-02S-028	10/18/2012	10:04	Water	X	X			X	X	X	X				4		
OW-05D-028	10/18/2012	12:56	Water	X	X			X	X	X	X				4		
OW-05M-028	10/18/2012	14:03	Water	X	X			X	X	X	X				4		

Signatures		Date/Time	Shipping Details		ATTN: Sample Custody	Special Instructions: October 1-5, 2012 Report Copy to Shawn Duffy (530) 229-3303
Approved by		10-18-12 1540	Method of Shipment: courier			
Sampled by			On Ice: yes / no			
Relinquished by		10-18-12 1540	Airbill No:			
Received by			Lab Name: Truesdail Laboratories, Inc.			
Relinquished by			Lab Phone: (714) 730-6239			
Received by						

Signatures Approved by _____ Sampled by _____ Relinquished by _____ Received by _____ Relinquished by _____ Received by _____	Date/Time 10-18-12 1540 10-18-12 15:40	Shipping Details Method of Shipment: courier On Ice: yes / no Airbill No: _____ Lab Name: Truesdail Laboratories, Inc. Lab Phone: (714) 730-6239	ATTN: Sample Custody	Special Instructions: October 1-5, 2012 Report Copy to Shawn Duffy (530) 229-3303
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Signatures Approved by _____ Sampled by _____ Relinquished by _____ Received by _____ Relinquished by _____ Received by _____		Date/Time 10-16-12 1540		Shipping Details Method of Shipment: courier On Ice: yes / no Airbill No: _____ Lab Name: CH2M HILL Applied Sciences Lab Lab Phone: (541) 752-4271		Special Instructions: ATTN: _____ October 1-5, 2012 Sample Custody _____ and _____ Kathy McKinley Report Copy to _____ Shawn Duffy (530) 229-3303	
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Project Name PG&E Topock				Container:	1 Liter Poly			
Location Topock				Preservatives:	H2SO4, pH<2, 4°C			
Project Manager Jay Piper				Filtered:	NA			
Sample Manager Matt Ringier				Holding Time:	28			
Project Number 423575.MP.02.CM					Nitrate/Nitrite (SM4500NO3-E)			
Task Order								
Project 2012-CMP-028								
Turnaround Time 12 Days								
Shipping Date: 10/18/2012								
COC Number: 6								
DATE		TIME	Matrix				Number of Containers	COMMENTS
CW-01D-028	10/16/2012	11:52	Water	X			1	
CW-01M-028	10/16/2012	12:34	Water	X			1	
CW-04D-028	10/16/2012	8:48	Water	X			1	
CW-04M-028	10/16/2012	9:57	Water	X			1	
OW-01D-028	10/16/2012	14:28	Water	X			1	
OW-01S-028	10/16/2012	15:07	Water	X			1	
OW-01M-028	10/18/2012	7:54	Water	X			1	
OW-02D-028	10/18/2012	9:27	Water	X			1	
OW-02M-028	10/18/2012	11:45	Water	X			1	
OW-02S-028	10/18/2012	10:04	Water	X			1	
OW-05D-028	10/18/2012	12:56	Water	X			1	
OW-05M-028	10/18/2012	14:03	Water	X			1	
OW-05S-028	10/18/2012	14:41	Water	X			1	
OW-91-028	10/18/2012	7:05	Water	X			1	

Approved by		Signatures	Date/Time	Shipping Details	ATTN: Sample Custody and Kathy McKinley	Special Instructions:
Sampled by			10-18-12	Method of Shipment: courier		October 1-5, 2012
Relinquished by			1540	On Ice: yes / no		
Received by			10-18-12 1540	Airbill No:		Report Copy to
Relinquished by				Lab Name: CH2M HILL Applied Sciences Lab		Shawn Duffy
Received by				Lab Phone: (541) 752-4271		(530) 229-3303

Project Name PG&E Topock CMP

Sampling Event 2012-CMP-028

Job Number 423575.MP.02.CM

Date 10/16/12

Sampler CG Field Team 1 Field Conditions Sunny, Breezy 90°F

Page 1 of 1

Well/Sample Number CW-01D-028

QC Sample ID NA

QC Sample Time NA

Purge Start Time 1115 Flow Cell (Y) N Purge Method: 2 in # Ded. Pump NO Min. Purge Volume (gal)/(L) 98 Purge Rate (gpm)/(mLpm) 3

Water Level	Time	Vol. Purged gallons / liters	pH**	Conductivity mS/cm	Turbidity NTU	Diss. Oxygen mg/L	Temp. °C	Salinity %	TDS** g/L	Eh/ORP mv	Comments (See description below)
109.39	1122	21	7.65	7.250	0.4	6.59	29.20	3.97	4.723	62.6	H2 349
109.42	1129	42	7.78	7.283	0.2	7.86	28.81	3.98	4.734	63.9	
109.42	1136	63	7.78	7.283	0.2	7.87	28.77	3.98	4.734	64.2	
109.42	1143	84	7.78	7.283	0.3	7.88	28.76	3.98	4.735	64.1	
109.42	1150	105	7.77	7.283	0.2	7.92	28.74	3.98	4.734	66.6	

Parameter Compliance Criteria

6.2 < pH < 9.2

10.8

**If pH or TDS is out of range check calibration, take to IM3 and check pH, SC-get second probe. If still out of range immediately contact B. Collom ((541) 740-3250). If B. Collom unavailable contact S. Duffy ((530) 941-9227). If S. Duffy unavailable contact J. Piper ((702) 953-1202 x36602 or (702) 525-1137). If J. Piper unavailable contact Christina Hong ((213) 228-8248 x35448 or (213) 228-8242).

Parameter Stabilization Criteria	+/- 0.1 pH units	+/- 3%	+/- 10% NTU units when >10 NTUs	+/- 0.3 mg/L	NA	NA	NA	+/- 10 mV
Did Parameters Stabilize prior to sampling?	Y	Y	Y	Y	NA	Y	Y	Y
Previous Field measurement (4/3/2012)	7.81	7314	1	4.52	28.47	0.47	-	29.2
Are measurements consistent with previous?	Y	Y	Y	higher	NA	-	-	Y

Sample Time 1152 ✓ Sample Location: pump tubing X well port spigot bailer other

Comments:

Initial Depth to Water (ft BTOC): 109.22

Field measured confirmation of Well Depth (ft btoc):

WD (Well Depth - from database) ft btoc (300.2)

SWH (Standing Water Height) = WD-Initial Depth 190.98

D (Volume as per diameter) 2"= 0.17, 4"= 0.66, 1"= 0.041 (2 in)

One Casing Volume = D*SWH 32.46

Three Casing Volumes = 97.39

Color: Clear, grey, yellow, brown, black, cloudy, green

Odor: none, sulphur, organic, other

Solids: Trace, Small Qu, Med Qu, Large Qu, Particulate, Silt, Sand

WQ METER MAKE and SERIAL NUMBER: 424 55L Dico 474

WATER LEVEL METER SERIAL NUMBER: PGE-2005-43

Initial DTW / Before Removal		If Transducer	
Time	Initial DTW	Approx. 5 min After Reinstallation	Time of Removal
1100	109.22	NA	NA
Comments:		Time of Reinstallation	

Project Name PG&E Topock CMP

Sampling Event 2012-CMP-028

Job Number 423575.MP.02.CM

Date 10/16/12

Sampler OG Field Team 1 Field Conditions Sunny, Breezy 90°F

Page 1 of 1

Well/Sample Number CW-01M-028

QC Sample ID

NA

QC Sample Time

Purge Start Time 1211

Flow Cell Y N

Purge Method 2 in 42

Ded. Pump 00

Min. Purge Volume (gal)(L) 42

Purge Rate (gpm)/(mLpm) 2

Water Level	Time	Vol. Purged gallons/ liters	pH**	Conductivity mS/cm	Turbidity NTU	Diss. Oxygen mg/L	Temp. °C	Salinity %	TDS** g/L	Eh/ORP mv	Comments (See description below)
109.11	1215	8	7.81	7.314	0.4	9.10	29.65	4.0	4.754	65.4	333
109.13	1219	16	7.80	7.313	0.5	9.18	29.68	4.0	4.753	66.3	
109.13	1223	24	7.80	7.315	0.5	9.20	29.67	4.0	4.754	66.7	
109.13	1227	32	7.80	7.314	0.7	9.21	29.70	4.0	4.754	66.9	
109.13	1231	40	7.80	7.314	0.2	9.30	29.70	4.0	4.755	66.7	

Parameter Compliance Criteria

6.2<pH<9.2

10.8

**If pH or TDS is out of range check calibration, take to IM3 and check pH, SC-get second probe. If still out of range immediately contact B. Collom ((541) 740-3250). If B. Collom unavailable contact S. Duffy ((530) 941-9227). If S. Duffy unavailable contact J. Piper ((702) 953-1202 x36602 or (702) 525-1137). If J. Piper unavailable contact Christina Hong ((213) 228-8248 x35448 or (213) 228-8242).

Parameter Stabilization Criteria

+/- 0.1
pH units

+/- 3%

+/- 10% NTU
units
when >10 NTUs+/- 0.3
mg/L

NA

NA

NA

+/- 10 mV

Did Parameters Stabilize prior to sampling?

4

4

4

4

NA

-

-

4

Previous Field measurement (4/3/2012)

7.86

7294

1

5.04

29.38

0.47

-

19.3

Are measurements consistent with previous?

4

4

4

higher

NA

-

-

4

Sample Time 1234 Sample Location:

pump tubing 4

well port 4

spigot 4

bailer 4

other 4

Comments:

Initial Depth to Water (ft BTOC): 109.07

Field measured confirmation of Well Depth (ft btoc):

WD (Well Depth - from database) ft btoc (190)

SWH (Standing Water Height) = WD-Initial Depth 80.93

D (Volume as per diameter) 2"= 0.17, 4"= 0.66, 1"=0.041 (2 in)

One Casing Volume = D*SWH 13.76

Three Casing Volumes = 41.27

Color: (0) grey, yellow, brown, black, cloudy, green

Odor: (0) none, sulphur, organic, other

Solids: (0) Trace, Small Qu, Med Qu, Large Qu, Particulate, Silt, Sand

WQ METER MAKE and SERIAL NUMBER:

WATER LEVEL METER SERIAL NUMBER:

If Transducer

Initial DTW / Before Removal

Approx. 5 min After Reinstallation

Time of Removal

Time

Initial DTW

Time

Final DTW

Time of Reinstallation

Comments:

\\Zinfandel\Pro\PacificGasElectricCo\TopockProgram\Database\Field\FrontEnd2K\v344_PaperWork\MIST.mdb\rptPurger-ormCMP

Project Name PG&E Topock CMP

Sampling Event 2012-CMP-028

Job Number 423575.MP.02.CM

Date 10/15/12

Sampler CG Field Team 1 Field Conditions Sunny, Calm, Clear 9:50Page 1 of 1

Well/Sample Number CW-03D-028

QC Sample ID NA

QC Sample Time NA

Purge Start Time 1339

Flow Cell Y NPurge Method: Zin Grundfos Ded. Pump NOMin. Purge Volume 134 (gal)/(L)Purge Rate 3 (gpm)/(mLpm)

Water Level	Time	Vol. Purged gallons / liters	pH**	Conductivity mS/cm	Turbidity NTU	Diss. Oxygen mg/L	Temp. °C	Salinity %	TDS** g/L	Eh/ORP mv	Comments (See description below)
77.10	1348	27	8.12	7.484	0.7	7.73	30.33	4.10	4.875	6.2	H2 295
76.90	1357	54	8.08	7.509	0.9	7.47	30.60	4.11	4.881	10.4	
77.05	1406	81	8.09	7.510	0.2	7.51	30.65	4.11	4.881	11.0	
77.15	1415	108	8.09	7.510	0.5	7.50	30.67	4.11	4.881	11.5	
77.00	1424	135	8.08	7.509	0.2	7.43	30.67	4.10	4.881	12.2	

Parameter Compliance Criteria

6.2 < pH < 9.2

10.8

**If pH or TDS is out of range check calibration, take to IM3 and check pH, SC-get second probe. If still out of range immediately contact B. Collom ((541) 740-3250). If B. Collom unavailable contact S. Duffy ((530) 941-9227). If S. Duffy unavailable contact J. Piper ((702) 953-1202 x36602 or (702) 525-1137). If J. Piper unavailable contact Christina Hong ((213) 228-8248 x35448 or (213) 228-8242).

Parameter Stabilization Criteria	+/- 0.1 pH units	+/- 3%	+/- 10% NTU units when >10 NTUs	+/- 0.3 mg/L	NA	NA	NA	+/- 10 mV
Did Parameters Stabilize prior to sampling?	Y	Y		Y	NA	-	-	Y
Previous Field measurement (4/4/2012)	7.91	7502	1	8.43	30.85	0.48		122
Are measurements consistent with previous?	Y	Y		Y	NA	-	-	historical

Sample Time 1426 ✓ Sample Location: pump tubing Y well port Y spigot Y bailer Y other Y

Comments: Collect EB CW-86-028 10/16/12 @ 09:10 on pump #2

Initial Depth to Water (ft BTOC): 77.95

Field measured confirmation of Well Depth (ft btoc):

WD (Well Depth - from database) ft btoc (340)

SWH (Standing Water Height) = WD-Initial Depth 262.05

D (Volume as per diameter) 2"= 0.17, 4"= 0.66, 1"=0.041 (2 in)

One Casing Volume = D*SWH 44.54

Three Casing Volumes = 133.6

Color: 0, grey, yellow, brown, black, cloudy, greenOdor: 0, sulphur, organic, otherSolids: 0, Trace, Small Qu, Med Qu, Large Qu, Particulate, Silt, SandWQ METER MAKE and SERIAL NUMBER: YSF 556 D100174WATER LEVEL METER SERIAL NUMBER: RAE-2005-03

Initial DTW / Before Removal		If Transducer			
		Approx. 5 min After Reinstallation		Time of Removal	
Time	Initial DTW	Time	Final DTW	Time of Reinstallation	
1325	77.95	NA			
Comments:					

Project Name PG&E Topock CMP

Sampling Event 2012-CMP-028

Job Number 423575.MP.02.CM

Date 10/15/12

Sampler OG Field Team 1 Field Conditions Sunny, Clear, BreezyPage 1 of 1

Well/Sample Number CW-03M-028

QC Sample ID NA

QC Sample Time NAPurge Start Time 1452 Flow Cell Y / N Purge Method: 2 in Ground Ded. Pump NO Min. Purge Volume (gal)/(L) 74 Purge Rate (gpm)/(mLpm) 2

Water Level	8 min Time	Vol. Purged gallons / liters	pH**	Conductivity mS/cm	Turbidity NTU	Diss. Oxygen mg/L	Temp. °C	Salinity %	TDS** g/L	Eh/ORP mv	Comments (See description below)
77.77	1500	16	7.78	9.030	0.7	2.51	30.18	4.82	5.664	-1.9	Hc 301
77.77	1508	32	7.79	8.567	0.7	3.29	30.20	4.73	5.561	-1.3	
77.77	1516	48	7.79	8.517	0.4	3.39	30.17	4.70	5.535	-0.9	
77.77	1524	64	7.78	8.501	0.4	3.40	30.19	4.69	5.526	-1.3	
77.77	1532	80	7.78	8.495	0.2	3.43	30.19	4.69	5.523	-1.7	

Parameter Compliance Criteria

6.2 < pH < 9.2

10.8

**If pH or TDS is out of range check calibration, take to IM3 and check pH, SC-get second probe. If still out of range immediately contact B. Collom ((541) 740-3250). If B. Collom unavailable contact S. Duffy ((530) 941-9227). If S. Duffy unavailable contact J. Piper ((702) 953-1202 x36602 or (702) 525-1137). If J. Piper unavailable contact Christina Hong ((213) 228-8248 x35448 or (213) 228-8242).

Parameter Stabilization Criteria

+/- 0.1 pH units

+/- 3%

+/- 10% NTU units when >10 NTUs

+/- 0.3 mg/L

NA

NA

NA

+/- 10 mV

Did Parameters Stabilize prior to sampling?

Y

Y

Y

Y

NA

-

-

Y

Previous Field measurement (4/4/2012)

7.66

8913

Y

2.54

29.89

0.58

-

Y

Are measurements consistent with previous?

Y

Y

Y

higher

NA

-

-

lower

Sample Time 1534 Sample Location: pump tubing X well port spigot bailer otherComments: Collocat EB ~~WATER~~ CW-87-028 10/16/12 @ 0715 pump #3Initial Depth to Water (ft BTOC): 78.60 77.60

Field measured confirmation of Well Depth (ft btoc):

WD (Well Depth - from database) ft btoc (222)

SWH (Standing Water Height) = WD-Initial Depth 143.9 144.4

D (Volume as per diameter) 2"= 0.17, 4"= 0.66, 1"=0.041 (2 in)

One Casing Volume = D*SWH 8 24.38 24.55Three Casing Volumes = 8 73.13 73.64Color: grey, yellow, brown, black, cloudy, green.Odor: none, sulphur, organic, otherSolids: Trace, Small Qu, Med Qu, Large Qu, Particulate, Silt, SandWQ METER MAKE and SERIAL NUMBER: YS556 D100474WATER LEVEL METER SERIAL NUMBER: PGIE-0005-03Measure Point: Well TOC Steel Casing

If Transducer

Initial DTW / Before Removal		Approx. 5 min After Reinstallation		Time of Removal	Time of Reinstallation
Time	Initial DTW	Time	Final DTW		
1440	78.60	NA			
Comments:					

Project Name PG&E Topock CMP

Sampling Event 2012-CMP-028

Job Number 423575.MP.02.CM

Date 8/16/12

Sampler CB Field Team 1 Field Conditions Sunny, Cool, Calm

Page 1 of 1

Well/Sample Number CW-04D-028

QC Sample ID NA

QC Sample Time

Purge Start Time 0806 Flow Cell: 0 N Purge Method: 2 in ground Ded. Pump NO Min. Purge Volume (gal)/(L) 124 Purge Rate (gpm)/(mLpm) 3

Water Level	Time 8 min	Vol. Purged gallons / liters	pH**	Conductivity mS/cm	Turbidity NTU	Diss. Oxygen mg/L	Temp. °C	Salinity %	TDS** g/L	Eh/ORP mv	Comments (See description below)
61.75	0814	24	7.79	7.300	1	8.51	29.80	3.99	4.748	114.0	H2 291
61.80	0822	48	7.94	7.391	2	9.24	30.34	4.06	4.831	96.0	
61.80	0830	72	7.96	7.655	0.5	8.71	30.41	4.19	4.978	88.5	
61.80	0838	96	7.97	7.695	0.8	8.74	30.42	4.22	5.004	83.6	
	0846	120	7.97	7.717	0.7	8.61	30.48	4.23	5.019	80.7	

Parameter Compliance Criteria

6.2 < pH < 9.2

10.8

**If pH or TDS is out of range check calibration, take to IM3 and check pH, SC-get second probe. If still out of range immediately contact B. Collom ((541) 740-3250). If B. Collom unavailable contact S. Duffy ((530) 941-9227). If S. Duffy unavailable contact J. Piper ((702) 953-1202 x36602 or (702) 525-1137). If J. Piper unavailable contact Christina Hong ((213) 228-8248 x35448 or (213) 228-8242).

Parameter Stabilization Criteria

+/- 0.1
pH units

+/- 3%

+/- 10% NTU
units
when >10 NTUs+/- 0.3
mg/L

NA

NA

NA

+/- 10 mV

Did Parameters Stabilize prior to sampling?

4

4

4

4

NA

-

-

4

Previous Field measurement (4/4/2012)

7.97

7641

1

8.48

30.44

0.49

22.4

Are measurements consistent with previous?

4

4

4

4

NA

-

-

4

Sample Time 0848 Sample Location:

pump tubing

well port

spigot

bailer

other

Comments:

Initial Depth to Water (ft BTOW):

61.32

Field measured confirmation of Well Depth (ft btoc):

WD (Well Depth - from database) ft btoc (303)

SWH (Standing Water Height) = WD-Initial Depth 241.68

D (Volume as per diameter) 2"= 0.17, 4"= 0.66, 1"=0.041 (2 in)

One Casing Volume = D*SWH 41.08

Three Casing Volumes = 123.26

Color: clear, grey, yellow, brown, black, cloudy, green

Color: none, sulphur, organic, other

Solids: Trace, Small Qu, Med Qu, Large Qu, Particulate, Silt, Sand

WQ METER MAKE and SERIAL NUMBER: 451556 D100444

WATER LEVEL METER SERIAL NUMBER: PG&E-2005-03

Measure Point: Well TOC

Steel Casing

If Transducer

Initial DTW / Before Removal

Approx. 5 min After Reinstallation

Time of Removal

Time

Initial DTW

Time

Final DTW

Time of Reinstallation

0750

61.32

NA

Comments:

Initial Depth to Water (ft BTOC): 61.50

Field measured confirmation of Well Depth (ft btoc): _____

WD (Well Depth - from database) ft btoc (169.8)

SWH (Standing Water Height) = WD-Initial Depth 108.3

D (Volume as per diameter) 2"= 0.17, 4"= 0.66, 1"=0.041 (2 in)

One Casing Volume = D*SWH 18.4

Three Casing Volumes = 55.23

Color: 0 clear, grey, yellow, brown, black, cloudy, green

WQ METER MAKE and SERIAL NUMBER: YSI 556 D100474
WATER LEVEL METER SERIAL NUMBER: PCF-2005-03

Odor: none, sulphur, organic, other

Solids: Trace, Small Qu, Med Qu, Large Qu, Particulate, Silt, Sand

Project Name PG&E Topock CMP				Sampling Event 2012-CMP-028							
Job Number 423575.MP.02.CM				Date 10/18/12				BCL			
Sampler CH		Field Team 1		Field Conditions Windy, Clear, Cool		Page 1 of 1					
Well/Sample Number OW-01M-028				QC Sample ID NA		QC Sample Time NA					
Purge Start Time 0735		Flow Cell N		Purge Method 2 in		Ded. Pump NO		Min. Purge Volume (gal)/(L) 48		Purge Rate (gpm)/(mLpm) 3	

Water Level	Time	Vol. Purged gallons / liters	pH**	Conductivity mS/cm	Turbidity NTU	Diss. Oxygen mg/L	Temp. °C	Salinity %	TDS** g/L	Eh/ORP mv	Comments (See description below)
93.86	0738	9	7.15	7.103	3	8.26	28.14	3.89	4.621	112.5	172 335
93.88	0741	18	7.50	7.114	2	7.60	28.08	3.89	4.624	90.2	
93.88	0744	27	7.61	7.117	1	7.64	28.04	3.89	4.627	84.6	
93.88	0747	36	7.68	7.120	1	7.59	28.08	3.89	4.628	80.0	
93.88	0750	45	7.63	7.123	0.5	8.00	28.06	3.89	4.630	77.2	
Parameter Compliance Criteria			6.2 < pH < 9.2						10.8		

**If pH or TDS is out of range check calibration, take to IM3 and check pH, SC-get second probe. If still out of range immediately contact B. Collom ((541) 740-3250). If B. Collom unavailable contact S. Duffy ((530) 941-9227). If S. Duffy unavailable contact J. Piper ((702) 953-1202 x36602 or (702) 525-1137). If J. Piper unavailable contact Christina Hong ((213) 228-8248 x35448 or (213) 228-8242).

Parameter Stabilization Criteria	+/- 0.1 pH units	+/- 3%	+/- 10% NTU units when >10 NTUs	+/- 0.3 mg/L	NA	NA	NA	+/- 10 mV
Did Parameters Stabilize prior to sampling?	4	4	4	4	NA	-	-	4
Previous Field measurement (10/5/2011)	7.81	7553	1	7.05	28.42	0.49		83.1
Are measurements consistent with previous?	4	4	4	4	NA	-	-	4

Sample Time 0754 Sample Location: pump tubing ☒ well port ☐ spigot ☐ bailer ☐ other ☐

Comments:

Initial Depth to Water (ft BTOC): 93.55

Field measured confirmation of Well Depth (ft btoc):

WD (Well Depth - from database) ft btoc (185.8)

SWH (Standing Water Height) = WD-Initial Depth 92.25

D (Volume as per diameter) 2"= 0.17, 4"= 0.66, 1"=0.041 (2 in)

One Casing Volume = D*SWH 15.68

Three Casing Volumes = 47.05

Color: clear, grey, yellow, brown, black, cloudy, green

Odor: none, sulphur, organic, other

Solids: Trace, Small Qu, Med Qu, Large Qu, Particulate, Silt, Sand

Measure Point: Well TOC Steel Casing

WQ METER MAKE and SERIAL NUMBER: 1/2 556 D100474

WATER LEVEL METER SERIAL NUMBER: PGE-2005 43

Initial DTW / Before Removal		Approx. 5 min After Reinstallation		Time of Removal	Time of Reinstallation
Time	Initial DTW	Time	Final DTW		
0725	93.55	NA			

Comments:

Project Name PG&E Topock CMP

Sampling Event 2012-CMP-028

Job Number 423575.MP.02.CM

Date 10/16/12

Sampler CS Field Team 1 Field Conditions Sunny, Calm 95°FPage 1 of 1

Well/Sample Number OW-01S-028

QC Sample ID NA

QC Sample Time NPPurge Start Time 1452 Flow Cell Y / N Purge Method: 2 in * 2 Ded. Pump NO Min. Purge Volume (gal)/(L) 10.2 Purge Rate (gpm)/(mLpm) 1

Water Level	Time	Vol. Purged gallons / liters	pH**	Conductivity mS/cm	Turbidity NTU	Diss. Oxygen mg/L	Temp. °C	Salinity %	TDS** g/L	Eh/ORP mv	Comments (See description below)
93.50	1454	2	7.57	5.273	3	8.27	29.49	2.70	3291	62.0	H2 255
93.50	1456	4	7.59	4.666	1	8.35	29.68	2.45	3.007	62.5	
93.50	1458	6	7.60	4.550	1	8.37	29.64	2.36	2.895	62.3	
93.50	1500	8	7.61	4.422	2	8.41	29.66	2.33	2.860	62.3	
93.50	1502	10	7.62	4.331	1	8.30	29.64	2.28	2.802	62.2	
93.50	1504	12	7.64	4.295	1	8.26	29.66	2.23	2.744	61.9	

Parameter Compliance Criteria

6.2 < pH < 9.2

10.8

**If pH or TDS is out of range check calibration, take to IM3 and check pH, SC-get second probe. If still out of range immediately contact B. Collom ((541) 740-3250). If B. Collom unavailable contact S. Duffy ((530) 941-9227). If S. Duffy unavailable contact J. Piper ((702) 953-1202 x36602 or (702) 525-1137). If J. Piper unavailable contact Christina Hong ((213) 228-8248 x35448 or (213) 228-8242).

Parameter Stabilization Criteria	+/- 0.1 pH units	+/- 3%	+/- 10% NTU units when >10 NTUs	+/- 0.3 mg/L	NA	NA	NA	+/- 10 mV
Did Parameters Stabilize prior to sampling?	4	4	4	4	NA	-	-	4
Previous Field measurement (4/5/2012)	7.47	5499	1	6.77	28.74	0.35	-	75.6
Are measurements consistent with previous?	4	4	4	4	NA	-	-	4

Sample Time 1507 Sample Location: OW-88-028 pump tubing X well port X spigot X bailer other Comments: Collect EB OW-88-028 @ 8/17/12 0825Initial Depth to Water (ft BTOC): 93.46Field measured confirmation of Well Depth (ft btoc):

WD (Well Depth - from database) ft btoc (113.5)

SWH (Standing Water Height) = WD-Initial Depth 20.04

D (Volume as per diameter) 2" = 0.17, 4" = 0.66, 1" = 0.041 (2 in)

One Casing Volume = D*SWH 20.04 * 3.4 = 68.12Three Casing Volumes = 10.2Color: 0 clear, grey, yellow, brwn, black, cloudy, greenOdor: 0 none, sulphur, organic, otherSolids: 0 Trace, Small Qu, Med Qu, Large Qu, Particulate, Silt, SandWQ METER MAKE and SERIAL NUMBER: 435 556 D100174WATER LEVEL METER SERIAL NUMBER: PG&E-2005-03

If Transducer			
Initial DTW / Before Removal		Approx. 5 min After Reinstallation	
Time	Initial DTW	Time	Final DTW
<u>1435</u>	<u>93.46</u>	<u>1505</u>	<u>93.44</u>
Comments:		Time of Removal <u>1438</u> Time of Reinstallation <u>1518</u>	

Project Name PG&E Topock CMP

Sampling Event 2012-CMP-028

Job Number 423575.MP.02.CM

Date 10/18/12

Sampler OB Field Team 1 Field Conditions Sunny, Cool, windy

Page 1 of 1

Well/Sample Number OW-02D-028

QC Sample ID NA

QC Sample Time NA

Purge Start Time 0818 Flow Cell Y / N Purge Method: 2 in x 3 Ded. Pump NO Min. Purge Volume (gal/L) 127 Purge Rate (gpm)/(mLpm) 72

Water Level	Time H:MM	Vol. Purged gallons / liters	pH**	Conductivity mS/cm	Turbidity NTU	Diss. Oxygen mg/L	Temp. °C	Salinity %	TDS** g/L	Eh/ORP mv	Comments (See description below)
91.82	0829	22	7.91	7.175	0.2	6.09	29.58	3.92	4.664	58.1	H2, 3FT 323
91.82	0840	44	7.96	7.179	0.2	6.29	29.58	3.92	4.666	56.8	
91.82	0851	66	7.99	7.180	0.2	6.25	29.56	3.92	4.667	55.3	
91.82	0902	88	8.00	7.181	0.2	6.33	29.56	3.92	4.667	53.1	
91.82	0913	110	8.01	7.181	0.2	6.43	29.56	3.92	4.668	49.8	
91.82	0924	132	8.01	7.181	0.2	6.40	29.56	3.92	4.667	48.4	

Parameter Compliance Criteria

6.2<pH<9.2

10.8

**If pH or TDS is out of range check calibration, take to IM3 and check pH, SC-get second probe. If still out of range immediately contact B. Collom ((541) 740-3250). If B. Collom unavailable contact S. Duffy ((530) 941-9227). If S. Duffy unavailable contact J. Piper ((702) 953-1202 x36602 or (702) 525-1137). If J. Piper unavailable contact Christina Hong ((213) 228-8248 x35448 or (213) 228-8242).

Parameter Stabilization Criteria

+/- 0.1
pH units

+/- 3%

+/- 10% NTU
units
when >10 NTUs+/- 0.3
mg/L

NA

NA

NA

+/- 10 mV

Did Parameters Stabilize prior to sampling?

4

4

4

4

NA

-

-

4

Previous Field measurement (10/5/2011)

7.86

7616

1

6.63

29.46

0.49

73.3

Are measurements consistent with previous?

4

4

4

4

NA

-

-

4

Sample Time 0927 ✓ Sample Location:

pump tubing Y

well port

spigot

bailer

other

Comments: Pump at 3gpm with 1/2 in tubing. Using 3/8 in 2gpm.

Initial Depth to Water (ft BTOC):

91.69

Field measured confirmation of Well Depth (ft btoc):

WD (Well Depth - from database) ft btoc (340)

SWH (Standing Water Height) = WD-Initial Depth 248.31

D (Volume as per diameter) 2"= 0.17, 4"= 0.66, 1"=0.041 (2 in)

One Casing Volume = D*SWH

42.21

Three Casing Volumes =

126.64

Color: 0, clear, grey, yellow, brown, black, cloudy, greenOdor: 0, sulphur, organic, otherSolids: 0, Trace, Small Qu, Med Qu, Large Qu, Particulate, Silt, Sand

WQ METER MAKE and SERIAL NUMBER:

4ST 556 D100474

Measure Point: Well TOC

Steel Casing

WATER LEVEL METER SERIAL NUMBER:

PGE-100-03

If Transducer

Initial DTW / Before Removal		Approx. 5 min After Reinstallation		Time of Removal
Time	Initial DTW	Time	Final DTW	Time of Reinstallation
0810	91.69	NA	NA	NA
Comments:				

Project Name PG&E Topock CMP				Sampling Event 2012-CMP-028							
Job Number 423575.MP.02.CM				Date 10/18/12							
Sampler CM Field Team 1 Field Conditions Clear, breezy, 85°F				Page 1 of 1							
Well/Sample Number OW-02M-028				QC Sample ID NA				QC Sample Time NA			
Purge Start Time 1113		Flow Cell Y N		Purge Method 2 in 82		Ded. Pump NO		Min. Purge Volume (gal)/(L) 61		Purge Rate (gpm)/(mLpm) 2	

Water Level	Time	Vol. Purged gallons / liters	pH**	Conductivity mS/cm	Turbidity NTU	Diss. Oxygen mg/L	Temp. °C	Salinity %	TDS** g/L	Eh/ORP mv	Comments (See description below)
91.85	1119	81812	7.82	7.144	1	6.71	29.51	3.90	4.648	44.5	112 325
91.88	1125	82624	7.88	7.152	1	7.62	29.60	3.90	4.649	45.7	
91.85	1131	83436	7.89	7.154	1	7.43	29.59	3.90	4.649	46.4	
91.88	1137	82248	7.89	7.154	1	7.49	29.61	3.90	4.650	46.7	
91.88	1143	60	7.89	7.154	1	7.67	29.63	3.90	4.650	47.0	
Parameter Compliance Criteria			6.2 < pH < 9.2						10.8		

**If pH or TDS is out of range check calibration, take to IM3 and check pH, SC-get second probe. If still out of range immediately contact B. Collom ((541) 740-3250). If B. Collom unavailable contact S. Duffy ((530) 941-9227). If S. Duffy unavailable contact J. Piper ((702) 953-1202 x36602 or (702) 525-1137). If J. Piper unavailable contact Christina Hong ((213) 228-8248 x35448 or (213) 228-8242).

Parameter Stabilization Criteria	+/- 0.1 pH units	+/- 3%	+/- 10% NTU units when >10 NTUs	+/- 0.3 mg/L	NA	NA	NA	+/- 10 mV
Did Parameters Stabilize prior to sampling?	Y	Y	Y	Y	NA	-	-	Y
Previous Field measurement (10/5/2011)	7.81	7538	1	6.91	29.11	0.49		80.3
Are measurements consistent with previous?	Y	Y	Y	Y	NA	-	-	Y

Sample Time 1145 ✓ Sample Location: pump tubing ☒ well port ☐ spigot ☐ bailer ☐ other ☐

Comments: Purge @ 2gpm if using 3/8 in tubing. Otherwise, 3gpm.

Initial Depth to Water (ft BTOC): 91.66

Field measured confirmation of Well Depth (ft btoc):

WD (Well Depth - from database) ft btoc (210.3)

SWH (Standing Water Height) = WD - Initial Depth 118.64

D (Volume as per diameter) 2" = 0.17, 4" = 0.66, 1" = 0.041 (2 in)

One Casing Volume = D * SWH 20.16

Three Casing Volumes = 60.5

Color: 0, grey, yellow, brown, black, cloudy, green

Odor: 0, sulphur, organic, other

Solids: 0, Trace, Small Qu, Med Qu, Large Qu, Particulate, Silt, Sand

WQ METER MAKE and SERIAL NUMBER: YSE 556 D100474

WATER LEVEL METER SERIAL NUMBER: PGE 2005-03

Measure Point: Well TOC		Steel Casing	
Initial DTW / Before Removal		If Transducer	
Time	Initial DTW	Approx. 5 min After Reinstallation	Time of Removal
1105	91.66	NA	NA
Final DTW		Time of Reinstallation	
Comments:			

Project Name PG&E Topock CMP					Sampling Event 2012-CMP-028						
Job Number 423575.MP.02.CM					Date 10/18/12						
Sampler <u>CM</u> Field Team 1 Field Conditions <u>Clear, windy 80°</u>					Page 1 of 1						
Well/Sample Number OW-02S-028					QC Sample ID NA		QC Sample Time NA				
Purge Start Time 0946		Flow Cell <u>Y</u> / N		Purge Method: <u>2 1/2"</u>		Ded. Pump <u>NO</u>		Min. Purge Volume (gal)/(L) 15		Purge Rate (gpm)/(mLpm) 1	

Water Level	Time 3min	Vol. Purged gallons / liters	pH**	Conductivity mS/cm	Turbidity NTU	Diss. Oxygen mg/L	Temp. °C	Salinity %	TDS** g/L	Eh/ORP mv	Comments (See description below)
92.73	0949	3	8.18	1.716	5	7.91	29.38	0.86	1.117	35.8	HZ 257
92.72	0952	6	8.13	1.714	3	7.90	29.62	0.86	1.114	38.7	pump @ 95%
92.72	0955	9	8.10	1.714	2	7.91	29.50	0.86	1.114	40.9	HZ → 251 (a little fast before)
92.72	0958	12	8.09	1.717	1	7.91	29.57	0.86	1.116	42.4	
92.72	091001	15	8.08	1.716	1	7.92	29.55	0.86	1.115	43.2	
Parameter Compliance Criteria			6.2<pH<9.2						10.8		

**If pH or TDS is out of range check calibration, take to IM3 and check pH, SC-get second probe. If still out of range immediately contact B. Collom ((541) 740-3250). If B. Collom unavailable contact S. Duffy ((530) 941-9227). If S. Duffy unavailable contact J. Piper ((702) 953-1202 x36602 or (702) 525-1137). If J. Piper unavailable contact Christina Hong ((213) 228-8248 x35448 or (213) 228-8242).

Parameter Stabilization Criteria	+/- 0.1 pH units	+/- 3%	+/- 10% NTU units when >10 NTUs	+/- 0.3 mg/L	NA	NA	NA	+/- 10 mV
Did Parameters Stabilize prior to sampling?	Y	Y	Y	Y	NA	Y	-	Y
Previous Field measurement (4/5/2012)	8.04	1739	1	7.49	29.01	0.11		38.2
Are measurements consistent with previous?	Y	Y	Y	Y	NA	Y	-	Y

Sample Time 1004 ✓ Sample Location: pump tubing Y well port _____ spigot _____ bailer _____ other _____

Comments: _____

Initial Depth to Water (ft BTOC): 92.4

Field measured confirmation of Well Depth (ft btoc): _____

WD (Well Depth - from database) ft btoc (121)

SWH (Standing Water Height) = WD-Initial Depth 28.6

D (Volume as per diameter) 2"= 0.17, 4"= 0.66, 1"=0.041 (2 in)

One Casing Volume = D*SWH 4.862

Three Casing Volumes = 14.59

Color: 0, grey, yellow, brown, black, cloudy, green

Odor: 0, sulphur, organic, other

Solids: 0, Small Qu, Med Qu, Large Qu, Particulate, Silt, Sand

WQ METER MAKE and SERIAL NUMBER: YSE 556 D16W474

WATER LEVEL METER SERIAL NUMBER: PGE-2005-03

If Transducer			
Initial DTW / Before Removal		Approx. 5 min After Reinstallation	
Time	Initial DTW	Time	Final DTW
0935	92.4	1019	92.40
Comments:		Time of Removal 0939 Time of Reinstallation 1014	

Project Name PG&E Topock CMP				Sampling Event 2012-CMP-028				✓ BAC			
Job Number 423575.MP.02.CM				Date 10/18/12							
Sampler CB		Field Team 1		Field Conditions Sunny, Windy 90°F		Page 1 of 1					
Well/Sample Number OW-05D-028				QC Sample ID NA		QC Sample Time NA					
Purge Start Time 1209		Flow Cell N		Purge Method 2-W 3		Ded. Pump NO		Min. Purge Volume (gal)(L) 131		Purge Rate (gpm)(mLpm) 3	

Water Level	Time amin	Vol. Purged gallons / liters	pH**	Conductivity mS/cm	Turbidity NTU	Diss. Oxygen mg/L	Temp. °C	Salinity %	TDS** g/L	Eh/ORP mv	Comments (See description below)
95.25	1218	27	7.93	7.149	0.6	7.45	28.95	3.90	4.646	39.7	H2 335
95.29	1227	54	7.98	7.135	2	7.92	29.51	3.89	4.638	41.9	
95.22	1236	81	7.98	7.137	1	8.15	29.52	3.89	4.639	42.5	
95.24	1245	108	7.98	7.138	1	8.08	29.54	3.89	4.640	42.9	
95.22	1254	135	7.98	7.138	2	8.05	29.54	3.89	4.640	42.9	
Parameter Compliance Criteria			6.2<pH<9.2						10.8		

**If pH or TDS is out of range check calibration, take to IM3 and check pH, SC-get second probe. If still out of range immediately contact B. Collom ((541) 740-3250). If B. Collom unavailable contact S. Duffy ((530) 941-9227). If S. Duffy unavailable contact J. Piper ((702) 953-1202 x36602 or (702) 525-1137). If J. Piper unavailable contact Christina Hong ((213) 228-8248 x35448 or (213) 228-8242).

Parameter Stabilization Criteria	+/- 0.1 pH units	+/- 3%	+/- 10% NTU units when >10 NTUs	+/- 0.3 mg/L	NA	NA	NA	+/- 10 mV
Did Parameters Stabilize prior to sampling?	4	4	4	4	NA	—	—	4
Previous Field measurement (10/5/2011)	7.88	7674	1	8.4	29.49	0.5		82.4
Are measurements consistent with previous?	4	4	4	4	NA	—	—	4

Sample Time 1256 **Sample Location:** pump tubing ☒ well port ☐ spigot ☐ bailer ☐ other ☐

Comments: _____

Initial Depth to Water (ft BTOC): 94.76

Field measured confirmation of Well Depth (ft btoc): _____

WD (Well Depth - from database) ft btoc (350)

SWH (Standing Water Height) = WD-Initial Depth 255.24

D (Volume as per diameter) 2"= 0.17, 4"= 0.66, 1"=0.041 (2 in)

One Casing Volume = D*SWH 43.39

Three Casing Volumes = 130.17

Color: (0) grey, yellow, brown, black, cloudy, green.

4SE

Measure Point: Well TOC **Steel Casing**

WQ METER MAKE and SERIAL NUMBER: SSC D100474

WATER LEVEL METER SERIAL NUMBER: PG12-2005-03

If Transducer			
Initial DTW / Before Removal		Approx. 5 min After Reinstallation	
Time	Initial DTW	Time	Final DTW
1158	94.76	1308	94.85
Comments:		Time of Removal 1159 Time of Reinstallation 1303	

Odor: (0) none, sulphur, organic, other

Solids: (0) Trace, Small Qu, Med Qu, Large Qu, Particulate, Silt, Sand

Project Name PG&E Topock CMP				Sampling Event 2012-CMP-028			
Job Number 423575.MP.02.CM				Date 10/18/12 BCL			
Sampler <u>CG</u>		Field Team 1		Field Conditions Sunny, Windy 90°F		Page 1 of 1	
Well/Sample Number OW-05M-028				QC Sample ID OW-91-028		QC Sample Time 0705 (Put in MIST)	
Purge Start Time 1321		Flow Cell <u>Y</u> / N		Purge Method 2 in * 2		Ded. Pump NO	
Min. Purge Volume (gal)/(L) 80				Purge Rate (gpm)/(mLpm) 2			

Water Level	Time S.m.m	Vol. Purged gallons / liters	pH**	Conductivity mS/cm	Turbidity NTU	Diss. Oxygen mg/L	Temp. °C	Salinity %	TDS** g/L	Eh/ORP mv	Comments (See description below)
94.69	1329	16	7.63	7.161	1	7.84	29.05	3.91	4.652	42.8	H2 329
94.68	1337	32	7.82	7.180	1	8.97	28.98	3.92	4.667	48.6	
94.70	1345	48	7.84	7.182	1	9.09	28.90	3.92	4.669	50.2	
94.69	1353	64	7.84	7.182	1	9.08	28.94	3.92	4.668	50.8	
94.65	1401	80	7.84	7.183	1	9.06	28.93	3.92	4.669	51.2	
Parameter Compliance Criteria			6.2<pH<9.2							10.8	

**If pH or TDS is out of range check calibration, take to IM3 and check pH, SC-get second probe. If still out of range immediately contact B. Collom ((541) 740-3250). If B. Collom unavailable contact S. Duffy ((530) 941-9227). If S. Duffy unavailable contact J. Piper ((702) 953-1202 x36602 or (702) 525-1137). If J. Piper unavailable contact Christina Hong ((213) 228-8248 x35448 or (213) 228-8242).

Parameter Stabilization Criteria	+/- 0.1 pH units	+/- 3%	+/- 10% NTU units when >10 NTUs	+/- 0.3 mg/L	NA	NA	NA	+/- 10 mV
Did Parameters Stabilize prior to sampling?	Y	Y	Y	Y	NA	-	-	Y
Previous Field measurement (10/5/2011)	7.83	7426	1	10.43	27.8	0.48		81.2
Are measurements consistent with previous?	Y	Y	Y	Y	NA	-	-	Y

Sample Time 1403 Sample Location: pump tubing X well port _____ spigot _____ bailer _____ other _____

Comments: Can go 30 min if using 2 in tubing.
10/18/12 BCL 329-028 @ 1509 Collect EB OW-84-028 @ 1515

Initial Depth to Water (ft BTOC): 94.14

Field measured confirmation of Well Depth (ft btoc):

WD (Well Depth - from database) ft btoc (250.25)

SWH (Standing Water Height) = WD-Initial Depth 156.11

D (Volume as per diameter) 2"= 0.17, 4"= 0.66, 1"=0.041 (2 in)

One Casing Volume = D*SWH 26.53

Three Casing Volumes = 79.61

Color: PS clear, grey, yellow, brown, black, cloudy, green

Odor: 0 none, sulphur, organic, other

Solids: 0 Small Qu, Med Qu, Large Qu, Particulate, Silt, Sand

WQ METER MAKE and SERIAL NUMBER: 556 D100474
 WATER LEVEL METER SERIAL NUMBER: DGE 2005-03

If Transducer			
Initial DTW / Before Removal		Approx. 5 min After Reinstallation	
Time	Initial DTW	Time	Final DTW
1306	94.14	1404	94.15
Comments:		Time of Removal 1308 Time of Reinstallation 1410	

94.15

Topock Sampling Log

Project Name PG&E Topock CMP Sampling Event 2012-CMP-028
 Job Number 423575.MP.02.CM Date 10/18/12
 Sampler [Signature] Field Team 1 Field Conditions pty cloudy, windy 950 Page 1 of 1

Well/Sample Number OW-05S-028 QC Sample ID NA QC Sample Time N/A
 Purge Start Time 1429 Flow Cell ① N Purge Method 2 in * 1 Ded. Pump NO Min. Purge Volume (gal)/(L) 8 Purge Rate (gpm)/(mLpm) 1

Water Level	Time	Vol. Purged gallons / liters	pH**	Conductivity mS/cm	Turbidity NTU	Diss. Oxygen mg/L	Temp. °C	Salinity %	TDS** g/L	Eh/ORP mv	Comments (See description below)
95.17	1431	2	7.73	3.117	2	6.29	29.79	1.61	2.025	46.7	Hz 261
95.17	1433	4	7.72	3.095	3	6.23	30.03	1.60	2.007	46.8	Hz → 253
95.17	1435	6	7.71	3.033	1	6.22	29.97	1.56	1.968	46.8	
95.17	1437	8	7.71	2.989	1	6.29	30.00	1.54	1.938	46.8	
95.17	1439	10	7.71	2.954	2	6.28	30.01	1.51	1.906	46.6	

Parameter Compliance Criteria	6.2 < pH < 9.2								10.8	
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**If pH or TDS is out of range check calibration, take to IM3 and check pH, SC-get second probe. If still out of range immediately contact B. Collom ((541) 740-3250). If B. Collom unavailable contact S. Duffy ((530) 941-9227). If S. Duffy unavailable contact J. Piper ((702) 953-1202 x36602 or (702) 525-1137). If J. Piper unavailable contact Christina Hong ((213) 228-8248 x35448 or (213) 228-8242).

Parameter Stabilization Criteria	+/- 0.1 pH units	+/- 3%	+/- 10% NTU units when >10 NTUs	+/- 0.3 mg/L	NA	NA	NA	+/- 10 mV
Did Parameters Stabilize prior to sampling?	4	4	4	4	NA	-	-	4
Previous Field measurement (4/5/2012)	7.76	2742	4	6.39	28.78	0.18		21.8
Are measurements consistent with previous?	4	4	4	4	NA	-	-	4

Sample Time 1441 Sample Location: pump tubing [X] well port [] spigot [] bailer [] other []

Comments: Collect ER CW-83-028 @ 1500

Initial Depth to Water (ft BTOC): 95.10

Field measured confirmation of Well Depth (ft btoc):

WD (Well Depth - from database) ft btoc (110.3)

SWH (Standing Water Height) = WD-Initial Depth 15.2

D (Volume as per diameter) 2"= 0.17, 4"= 0.66, 1"=0.041 (2 in)

One Casing Volume = D*SWH 2.58

Three Casing Volumes = 7.75

Color: clear, grey, yellow, brown, black, cloudy, green

Measure Point: Well TOC Steel Casing

WQ METER MAKE and SERIAL NUMBER: YSE 556 D100474

WATER LEVEL METER SERIAL NUMBER: PFE-2005-03

If Transducer			
Initial DTW / Before Removal		Approx. 5 min After Reinstallation	
Time	Initial DTW	Time	Final DTW
1415	95.10	1455	95.10
Comments:		Time of Removal 1418	
		Time of Reinstallation 1450	

Odor: none, sulphur, organic, other

Solids: Trace, Small Qu, Med Qu, Large Qu, Particulate, Silt, Sand

Topock CMP Manual Water Level SnapshotPersonnel: B. Collom/CHAMWLI serial number: PGIE 2011-0210-23-12

Loc ID	Depth to Water (ft BTOC)	Date	Time	Comments
CW-1M	109.35	10-23-12	0943	
CW-1D	109.50		0946	
CW-2M	93.07		0935	
CW-2D	92.60		0938	
CW-3M	77.97		0932	
CW-3D	77.29		0929	
CW-4M	61.77		0955	
CW-4D	61.63		0953	
OW-1S	93.93		1001	
OW-1M	93.67		1004	
OW-1D	93.40		1006	
OW-2S	92.60		1009	
OW-2M	91.81		1011	
OW-2D	91.78		1014	
OW-5S	95.37		1017	
OW-5M	94.36		1019	
OW-5D	94.98		1022	

IM-3 Staff confirm that 10-21-12, 10-22-12 and 10-23-12 were normal operation days with no backwashing or plant down time prior to snapshot collection.

Appendix C
ARAR Monitoring Information for
Groundwater Samples, Second Half 2012

TABLE C-1

ARAR Monitoring Information for Groundwater Samples, Second Half 2012
 Combined CMP Semiannual Groundwater Monitoring Report, Second Half 2012, and
 PAR, Interim Measures No. 3, Injection Well Field
 PG&E Topock Compressor Station, Needles, California

Location	Sample ID	Sampler Name	Sample Date	Sample Time	Lab	Analysis Method	Parameter	Analysis Date	Lab Technician	Units	Result	RL	MDL
CW-01D	CW-01D-028	Barry Collom	10/16/2012	11:52:50 AM	TLI	EPA 120.1	SC	10/23/2012	Gautam Savani	μmhos/cm	7180	2.0	0.116
					AVTS	EPA 200.7	AGD	11/27/2012	Claire Ignacio	μg/L	3.60	3.0	0.39
					TLI	EPA 200.7	ALD	11/7/2012	Ethel Suico	μg/L	ND (50)	50.0	10.0
					AVTS	EPA 200.7	BAD	11/27/2012	Claire Ignacio	μg/L	27.0	3.0	0.36
					TLI	EPA 200.7	BD	11/7/2012	Ethel Suico	mg/L	0.918	0.20	0.0027
					AVTS	EPA 200.7	BED	11/27/2012	Claire Ignacio	μg/L	ND (3.0)	3.0	0.12
					TLI	EPA 200.7	CAD	11/6/2012	Ethel Suico	mg/L	190	10.0	1.20
					AVTS	EPA 200.7	CDD	11/27/2012	Claire Ignacio	μg/L	ND (3.0)	3.0	0.37
					AVTS	EPA 200.7	COBD	11/27/2012	Claire Ignacio	μg/L	ND (3.0)	3.0	0.37
					AVTS	EPA 200.7	CUD	11/27/2012	Claire Ignacio	μg/L	ND (5.0)	5.0	2.20
					TLI	EPA 200.7	FETD	11/7/2012	Ethel Suico	mg/L	ND (0.02)	0.02	0.0095
					TLI	EPA 200.7	KD	11/6/2012	Ethel Suico	mg/L	14.0	2.00	0.54
					TLI	EPA 200.7	MGD	11/7/2012	Ethel Suico	mg/L	17.0	0.50	0.0554
					TLI	EPA 200.7	NAD	11/6/2012	Ethel Suico	mg/L	1410	100	39.4
					AVTS	EPA 200.7	NID	11/27/2012	Claire Ignacio	μg/L	ND (5.0)	5.0	0.70
					AVTS	EPA 200.7	PBD	11/27/2012	Claire Ignacio	μg/L	ND (10)	10.0	1.60
					AVTS	EPA 200.7	VD	11/27/2012	Claire Ignacio	μg/L	ND (3.0)	3.0	0.31
					TLI	EPA 200.7	ZND	11/7/2012	Ethel Suico	μg/L	ND (20)	20.0	7.00

TABLE C-1

ARAR Monitoring Information for Groundwater Samples, Second Half 2012
 Combined CMP Semiannual Groundwater Monitoring Report, Second Half 2012, and
 PAR, Interim Measures No. 3, Injection Well Field
 PG&E Topock Compressor Station, Needles, California

Location	Sample ID	Sampler Name	Sample Date	Sample Time	Lab	Analysis Method	Parameter	Analysis Date	Lab Technician	Units	Result	RL	MDL
CW-01D	CW-01D-028	Barry Collom	10/16/2012	11:52:50 AM	AVTS	EPA 200.8	ASD	12/3/2012	Claire Ignacio	µg/L	1.50	0.1	0.035
					AVTS	EPA 200.8	CRTD	12/3/2012	Claire Ignacio	µg/L	ND (1.0)	1.0	0.17
					TLI	EPA 200.8	HGD	11/13/2012	Bitra Emami	µg/L	ND (0.5)	0.5	0.10
					AVTS	EPA 200.8	MND	12/3/2012	Claire Ignacio	µg/L	ND (0.5)	0.5	0.16
					AVTS	EPA 200.8	MOD	12/3/2012	Claire Ignacio	µg/L	20.0	0.5	0.074
					AVTS	EPA 200.8	SBD	12/3/2012	Claire Ignacio	µg/L	ND (0.5)	0.5	0.084
					AVTS	EPA 200.8	SED	12/3/2012	Claire Ignacio	µg/L	3.50	0.5	0.084
					AVTS	EPA 200.8	TLD	12/3/2012	Claire Ignacio	µg/L	ND (0.5)	0.5	0.075
					TLI	EPA 218.6	CR6	10/29/2012	George Wahba	µg/L	0.46	0.2	0.0092
					TLI	EPA 300.0	CL	10/25/2012	Giawad Ghenniwa	mg/L	2120	50.0	17.4
					TLI	EPA 300.0	FL	10/25/2012	Giawad Ghenniwa	mg/L	2.46	0.5	0.104
					TLI	EPA 300.0	SO4	10/25/2012	Giawad Ghenniwa	mg/L	496	25.0	1.54
					CHMC	EPA 353.2	NO3NO2N	10/26/2012	Emily Clark	mg/L	2.69	0.1	0.028
					TLI	EPA 6010B	FE	10/29/2012	Ethel Suico	mg/L	ND (0.02)	0.02	0.0009
					TLI	SM 2320B	ALKB	10/19/2012	Melissa Scharfe	mg/L	53.0	5.0	0.555
					TLI	SM 2320B	ALKC	10/19/2012	Melissa Scharfe	mg/L	ND (5.0)	5.0	0.555
					TLI	SM 2320B	ALKT	10/19/2012	Melissa Scharfe	mg/L	53.0	5.0	0.555
					TLI	SM2130B	TRB	10/19/2012	Gautam Savani	NTU	ND (0.1)J	0.1	0.014

TABLE C-1

ARAR Monitoring Information for Groundwater Samples, Second Half 2012
 Combined CMP Semiannual Groundwater Monitoring Report, Second Half 2012, and
 PAR, Interim Measures No. 3, Injection Well Field
 PG&E Topock Compressor Station, Needles, California

Location	Sample ID	Sampler Name	Sample Date	Sample Time	Lab	Analysis Method	Parameter	Analysis Date	Lab Technician	Units	Result	RL	MDL
CW-01D	CW-01D-028	Barry Collom	10/16/2012	11:52:50 AM	TLI	SM2540C	TDS	10/22/2012	Jenny Tankunakorn	mg/L	4270	250	0.757
					TLI	SM4500NH3D	NH3N	10/22/2012	Melissa Scharfe	mg/L	ND (0.5)	0.5	0.0098
CW-01M	CW-01M-028	Barry Collom	10/16/2012	12:34:42 PM	TLI	EPA 120.1	SC	10/23/2012	Gautam Savani	µmhos/cm	7190	2.0	0.116
					AVTS	EPA 200.7	AGD	11/27/2012	Claire Ignacio	µg/L	3.20	3.0	0.39
					TLI	EPA 200.7	ALD	11/7/2012	Ethel Suico	µg/L	ND (50)	50.0	10.0
					AVTS	EPA 200.7	BAD	11/27/2012	Claire Ignacio	µg/L	94.0	3.0	0.36
					TLI	EPA 200.7	BD	11/7/2012	Ethel Suico	mg/L	0.923	0.20	0.0027
					AVTS	EPA 200.7	BED	11/27/2012	Claire Ignacio	µg/L	ND (3.0)	3.0	0.12
					TLI	EPA 200.7	CAD	11/6/2012	Ethel Suico	mg/L	170	10.0	1.20
					AVTS	EPA 200.7	CDD	11/27/2012	Claire Ignacio	µg/L	ND (3.0)	3.0	0.37
					AVTS	EPA 200.7	COBD	11/27/2012	Claire Ignacio	µg/L	ND (3.0)	3.0	0.37
					AVTS	EPA 200.7	CUD	11/27/2012	Claire Ignacio	µg/L	ND (5.0)	5.0	2.20
					TLI	EPA 200.7	FETD	11/7/2012	Ethel Suico	mg/L	ND (0.02)	0.02	0.0095
					TLI	EPA 200.7	KD	11/6/2012	Ethel Suico	mg/L	14.0	2.00	0.54
					TLI	EPA 200.7	MGD	11/7/2012	Ethel Suico	mg/L	13.4	0.50	0.0554
					TLI	EPA 200.7	NAD	11/6/2012	Ethel Suico	mg/L	1440	100	39.4
					AVTS	EPA 200.7	NID	11/27/2012	Claire Ignacio	µg/L	ND (5.0)	5.0	0.70
					AVTS	EPA 200.7	PBD	11/27/2012	Claire Ignacio	µg/L	ND (10)	10.0	1.60

TABLE C-1

ARAR Monitoring Information for Groundwater Samples, Second Half 2012
 Combined CMP Semiannual Groundwater Monitoring Report, Second Half 2012, and
 PAR, Interim Measures No. 3, Injection Well Field
 PG&E Topock Compressor Station, Needles, California

Location	Sample ID	Sampler Name	Sample Date	Sample Time	Lab	Analysis Method	Parameter	Analysis Date	Lab Technician	Units	Result	RL	MDL
CW-01M	CW-01M-028	Barry Collom	10/16/2012	12:34:42 PM	AVTS	EPA 200.7	VD	11/27/2012	Claire Ignacio	µg/L	3.40	3.0	0.31
					TLI	EPA 200.7	ZND	11/7/2012	Ethel Suico	µg/L	ND (20)	20.0	7.00
					AVTS	EPA 200.8	ASD	12/3/2012	Claire Ignacio	µg/L	1.70	0.1	0.035
					AVTS	EPA 200.8	CRTD	12/3/2012	Claire Ignacio	µg/L	1.30	1.0	0.17
					TLI	EPA 200.8	HGD	11/13/2012	Bitu Emami	µg/L	ND (0.5)	0.5	0.10
					AVTS	EPA 200.8	MND	12/3/2012	Claire Ignacio	µg/L	ND (0.5)	0.5	0.16
					AVTS	EPA 200.8	MOD	12/3/2012	Claire Ignacio	µg/L	19.0	0.5	0.074
					AVTS	EPA 200.8	SBD	12/3/2012	Claire Ignacio	µg/L	ND (0.5)	0.5	0.084
					AVTS	EPA 200.8	SED	12/3/2012	Claire Ignacio	µg/L	3.50	0.5	0.084
					AVTS	EPA 200.8	TLD	12/3/2012	Claire Ignacio	µg/L	ND (0.5)	0.5	0.075
					TLI	EPA 218.6	CR6	10/29/2012	George Wahba	µg/L	1.50	0.2	0.0092
					TLI	EPA 300.0	CL	10/25/2012	Giawad Ghenniwa	mg/L	2130	50.0	17.4
					TLI	EPA 300.0	FL	10/25/2012	Giawad Ghenniwa	mg/L	2.01	0.5	0.104
					TLI	EPA 300.0	SO4	10/25/2012	Giawad Ghenniwa	mg/L	492	25.0	1.54
					CHMC	EPA 353.2	NO3NO2N	10/26/2012	Emily Clark	mg/L	2.86	0.1	0.028
					TLI	EPA 6010B	FE	10/29/2012	Ethel Suico	mg/L	ND (0.02)	0.02	0.0009
					TLI	SM 2320B	ALKB	10/19/2012	Melissa Scharfe	mg/L	58.0	5.0	0.555
					TLI	SM 2320B	ALKC	10/19/2012	Melissa Scharfe	mg/L	ND (5.0)	5.0	0.555

TABLE C-1

ARAR Monitoring Information for Groundwater Samples, Second Half 2012
 Combined CMP Semiannual Groundwater Monitoring Report, Second Half 2012, and
 PAR, Interim Measures No. 3, Injection Well Field
 PG&E Topock Compressor Station, Needles, California

Location	Sample ID	Sampler Name	Sample Date	Sample Time	Lab	Analysis Method	Parameter	Analysis Date	Lab Technician	Units	Result	RL	MDL
CW-01M	CW-01M-028	Barry Collom	10/16/2012	12:34:42 PM	TLI	SM 2320B	ALKT	10/19/2012	Melissa Scharfe	mg/L	58.0	5.0	0.555
					TLI	SM2130B	TRB	10/19/2012	Gautam Savani	NTU	0.142 J	0.1	0.014
					TLI	SM2540C	TDS	10/22/2012	Jenny Tankunakorn	mg/L	4440	250	0.757
					TLI	SM4500NH3D	NH3N	10/22/2012	Melissa Scharfe	mg/L	ND (0.5)	0.5	0.0098
CW-02D	OW-90-028	Barry Collom	10/15/2012	7:10:00 AM	TLI	EPA 120.1	SC	10/18/2012	Gautam Savani	µmhos/cm	7470	2.0	0.116
					AVTS	EPA 200.7	AGD	11/27/2012	Claire Ignacio	µg/L	ND (3.0)	3.0	0.39
					TLI	EPA 200.7	ALD	11/7/2012	Ethel Suico	µg/L	ND (50)	50.0	10.0
					AVTS	EPA 200.7	BAD	11/27/2012	Claire Ignacio	µg/L	13.0	3.0	0.36
					TLI	EPA 200.7	BD	11/7/2012	Ethel Suico	mg/L	0.976	0.20	0.0027
					AVTS	EPA 200.7	BED	11/27/2012	Claire Ignacio	µg/L	ND (3.0)	3.0	0.12
					TLI	EPA 200.7	CAD	11/6/2012	Ethel Suico	mg/L	83.4	10.0	1.20
					AVTS	EPA 200.7	CDD	11/27/2012	Claire Ignacio	µg/L	ND (3.0)	3.0	0.37
					AVTS	EPA 200.7	COBD	11/27/2012	Claire Ignacio	µg/L	ND (3.0)	3.0	0.37
					AVTS	EPA 200.7	CUD	11/27/2012	Claire Ignacio	µg/L	ND (5.0)	5.0	2.20
					TLI	EPA 200.7	FETD	11/7/2012	Ethel Suico	mg/L	ND (0.02)	0.02	0.0095
					TLI	EPA 200.7	KD	11/6/2012	Ethel Suico	mg/L	12.1	2.00	0.54
					TLI	EPA 200.7	MGD	11/7/2012	Ethel Suico	mg/L	4.38	0.50	0.0554
					TLI	EPA 200.7	NAD	11/6/2012	Ethel Suico	mg/L	1580	100	39.4

TABLE C-1

ARAR Monitoring Information for Groundwater Samples, Second Half 2012
 Combined CMP Semiannual Groundwater Monitoring Report, Second Half 2012, and
 PAR, Interim Measures No. 3, Injection Well Field
 PG&E Topock Compressor Station, Needles, California

Location	Sample ID	Sampler Name	Sample Date	Sample Time	Lab	Analysis Method	Parameter	Analysis Date	Lab Technician	Units	Result	RL	MDL
CW-02D	OW-90-028	Barry Collom	10/15/2012	7:10:00 AM	AVTS	EPA 200.7	NID	11/27/2012	Claire Ignacio	µg/L	ND (5.0)	5.0	0.70
					AVTS	EPA 200.7	PBD	11/27/2012	Claire Ignacio	µg/L	ND (10)	10.0	1.60
					AVTS	EPA 200.7	VD	11/27/2012	Claire Ignacio	µg/L	5.20	3.0	0.31
					TLI	EPA 200.7	ZND	11/7/2012	Ethel Suico	µg/L	ND (20)	20.0	7.00
					AVTS	EPA 200.8	ASD	12/3/2012	Claire Ignacio	µg/L	3.40	0.1	0.035
					AVTS	EPA 200.8	CRTD	12/3/2012	Claire Ignacio	µg/L	ND (1.0)	1.0	0.17
					TLI	EPA 200.8	HGD	11/13/2012	Bitu Emami	µg/L	ND (0.5)J	0.5	0.06
					AVTS	EPA 200.8	MND	12/3/2012	Claire Ignacio	µg/L	ND (0.5)	0.5	0.16
					AVTS	EPA 200.8	MOD	12/3/2012	Claire Ignacio	µg/L	11.0	0.5	0.074
					AVTS	EPA 200.8	SBD	12/3/2012	Claire Ignacio	µg/L	ND (0.5)	0.5	0.084
					AVTS	EPA 200.8	SED	12/3/2012	Claire Ignacio	µg/L	3.20	0.5	0.084
					AVTS	EPA 200.8	TLD	12/3/2012	Claire Ignacio	µg/L	ND (0.5)	0.5	0.075
					TLI	EPA 218.6	CR6	10/24/2012	George Wahba	µg/L	0.79	0.2	0.0092
					TLI	EPA 300.0	CL	10/24/2012	Giawad Ghenniwa	mg/L	2120	100	17.4
					TLI	EPA 300.0	FL	10/20/2012	Giawad Ghenniwa	mg/L	2.90	0.5	0.104
					TLI	EPA 300.0	SO4	10/24/2012	Giawad Ghenniwa	mg/L	502	25.0	1.54
					CHMC	EPA 353.2	NO3NO2N	10/19/2012	Emily Clark	mg/L	2.79 J	0.1	0.028
					TLI	EPA 6010B	FE	10/29/2012	Ethel Suico	mg/L	ND (0.02)	0.02	0.0009

TABLE C-1

ARAR Monitoring Information for Groundwater Samples, Second Half 2012
 Combined CMP Semiannual Groundwater Monitoring Report, Second Half 2012, and
 PAR, Interim Measures No. 3, Injection Well Field
 PG&E Topock Compressor Station, Needles, California

Location	Sample ID	Sampler Name	Sample Date	Sample Time	Lab	Analysis Method	Parameter	Analysis Date	Lab Technician	Units	Result	RL	MDL
CW-02D	OW-90-028	Barry Collom	10/15/2012	7:10:00 AM	TLI	SM 2320B	ALKB	10/18/2012	Melissa Scharfe	mg/L	62.0	5.0	0.555
					TLI	SM 2320B	ALKC	10/18/2012	Melissa Scharfe	mg/L	ND (5.0)	5.0	0.555
					TLI	SM 2320B	ALKT	10/18/2012	Melissa Scharfe	mg/L	62.0	5.0	0.555
					TLI	SM2130B	TRB	10/17/2012	Gautam Savani	NTU	ND (0.1)	0.1	0.014
					TLI	SM2540C	TDS	10/19/2012	Jenny Tankunakorn	mg/L	4180	250	0.757
					TLI	SM4500NH3D	NH3N	10/22/2012	Melissa Scharfe	mg/L	ND (0.5)	0.5	0.0098
CW-02D	CW-02D-028	Barry Collom	10/15/2012	10:36:17 AM	TLI	EPA 120.1	SC	10/18/2012	Gautam Savani	μmhos/cm	7420	2.0	0.116
					AVTS	EPA 200.7	AGD	11/27/2012	Claire Ignacio	μg/L	ND (3.0)	3.0	0.39
					TLI	EPA 200.7	ALD	11/7/2012	Ethel Suico	μg/L	ND (50)	50.0	10.0
					AVTS	EPA 200.7	BAD	11/27/2012	Claire Ignacio	μg/L	13.0	3.0	0.36
					TLI	EPA 200.7	BD	11/7/2012	Ethel Suico	mg/L	0.975	0.20	0.0027
					AVTS	EPA 200.7	BED	11/27/2012	Claire Ignacio	μg/L	ND (3.0)	3.0	0.12
					TLI	EPA 200.7	CAD	11/6/2012	Ethel Suico	mg/L	83.1	5.00	0.60
					AVTS	EPA 200.7	CDD	11/27/2012	Claire Ignacio	μg/L	ND (3.0)	3.0	0.37
					AVTS	EPA 200.7	COBD	11/27/2012	Claire Ignacio	μg/L	ND (3.0)	3.0	0.37
					AVTS	EPA 200.7	CUD	11/27/2012	Claire Ignacio	μg/L	ND (5.0)	5.0	2.20
					TLI	EPA 200.7	FETD	11/7/2012	Ethel Suico	mg/L	ND (0.02)	0.02	0.0095
					TLI	EPA 200.7	KD	11/6/2012	Ethel Suico	mg/L	11.1	5.00	1.35

TABLE C-1

ARAR Monitoring Information for Groundwater Samples, Second Half 2012
 Combined CMP Semiannual Groundwater Monitoring Report, Second Half 2012, and
 PAR, Interim Measures No. 3, Injection Well Field
 PG&E Topock Compressor Station, Needles, California

Location	Sample ID	Sampler Name	Sample Date	Sample Time	Lab	Analysis Method	Parameter	Analysis Date	Lab Technician	Units	Result	RL	MDL
CW-02D	CW-02D-028	Barry Collom	10/15/2012	10:36:17 AM	TLI	EPA 200.7	MGD	11/7/2012	Ethel Suico	mg/L	4.39	0.50	0.0554
					TLI	EPA 200.7	NAD	11/6/2012	Ethel Suico	mg/L	1660	500	197
					AVTS	EPA 200.7	NID	11/27/2012	Claire Ignacio	µg/L	ND (5.0)	5.0	0.70
					AVTS	EPA 200.7	PBD	11/27/2012	Claire Ignacio	µg/L	ND (10)	10.0	1.60
					AVTS	EPA 200.7	VD	11/27/2012	Claire Ignacio	µg/L	5.30	3.0	0.31
					TLI	EPA 200.7	ZND	11/7/2012	Ethel Suico	µg/L	ND (20)	20.0	7.00
					AVTS	EPA 200.8	ASD	12/3/2012	Claire Ignacio	µg/L	3.70	0.1	0.035
					AVTS	EPA 200.8	CRTD	12/3/2012	Claire Ignacio	µg/L	ND (1.0)	1.0	0.17
					TLI	EPA 200.8	HGD	11/13/2012	Bitu Emami	µg/L	ND (0.5)J	0.5	0.06
					AVTS	EPA 200.8	MND	12/3/2012	Claire Ignacio	µg/L	ND (0.5)	0.5	0.16
					AVTS	EPA 200.8	MOD	12/3/2012	Claire Ignacio	µg/L	12.0	0.5	0.074
					AVTS	EPA 200.8	SBD	12/3/2012	Claire Ignacio	µg/L	ND (0.5)	0.5	0.084
					AVTS	EPA 200.8	SED	12/3/2012	Claire Ignacio	µg/L	3.00	0.5	0.084
					AVTS	EPA 200.8	TLD	12/3/2012	Claire Ignacio	µg/L	ND (0.5)	0.5	0.075
					TLI	EPA 218.6	CR6	10/24/2012	George Wahba	µg/L	0.76	0.2	0.0092
					TLI	EPA 300.0	CL	10/24/2012	Giawad Ghenniwa	mg/L	2240	100	17.4
					TLI	EPA 300.0	FL	10/20/2012	Giawad Ghenniwa	mg/L	2.92	0.5	0.104
					TLI	EPA 300.0	SO4	10/24/2012	Giawad Ghenniwa	mg/L	503	25.0	1.54

TABLE C-1

ARAR Monitoring Information for Groundwater Samples, Second Half 2012
 Combined CMP Semiannual Groundwater Monitoring Report, Second Half 2012, and
 PAR, Interim Measures No. 3, Injection Well Field
 PG&E Topock Compressor Station, Needles, California

Location	Sample ID	Sampler Name	Sample Date	Sample Time	Lab	Analysis Method	Parameter	Analysis Date	Lab Technician	Units	Result	RL	MDL
CW-02D	CW-02D-028	Barry Collom	10/15/2012	10:36:17 AM	CHMC	EPA 353.2	NO3NO2N	10/19/2012	Emily Clark	mg/L	2.80 J	0.1	0.028
					TLI	EPA 6010B	FE	10/29/2012	Ethel Suico	mg/L	ND (0.02)	0.02	0.0009
					TLI	SM 2320B	ALKB	10/18/2012	Melissa Scharfe	mg/L	61.0	5.0	0.555
					TLI	SM 2320B	ALKC	10/18/2012	Melissa Scharfe	mg/L	ND (5.0)	5.0	0.555
					TLI	SM 2320B	ALKT	10/18/2012	Melissa Scharfe	mg/L	61.0	5.0	0.555
					TLI	SM2130B	TRB	10/17/2012	Gautam Savani	NTU	ND (0.1)	0.1	0.014
					TLI	SM2540C	TDS	10/18/2012	Jenny Tankunakorn	mg/L	4100	250	0.757
					TLI	SM4500NH3D	NH3N	10/22/2012	Melissa Scharfe	mg/L	ND (0.5)	0.5	0.0098
CW-02M	CW-02M-028	Barry Collom	10/15/2012	12:04:16 PM	TLI	EPA 120.1	SC	10/18/2012	Gautam Savani	µmhos/cm	7250	2.0	0.116
					AVTS	EPA 200.7	AGD	11/27/2012	Claire Ignacio	µg/L	ND (3.0)	3.0	0.39
					TLI	EPA 200.7	ALD	11/7/2012	Ethel Suico	µg/L	ND (50)	50.0	10.0
					AVTS	EPA 200.7	BAD	11/27/2012	Claire Ignacio	µg/L	71.0	3.0	0.36
					TLI	EPA 200.7	BD	11/7/2012	Ethel Suico	mg/L	1.08	0.20	0.0027
					AVTS	EPA 200.7	BED	11/27/2012	Claire Ignacio	µg/L	ND (3.0)	3.0	0.12
					TLI	EPA 200.7	CAD	11/6/2012	Ethel Suico	mg/L	143	10.0	1.20
					AVTS	EPA 200.7	CDD	11/27/2012	Claire Ignacio	µg/L	ND (3.0)	3.0	0.37
					AVTS	EPA 200.7	COBD	11/27/2012	Claire Ignacio	µg/L	ND (3.0)	3.0	0.37
					AVTS	EPA 200.7	CUD	11/27/2012	Claire Ignacio	µg/L	ND (5.0)	5.0	2.20

TABLE C-1

ARAR Monitoring Information for Groundwater Samples, Second Half 2012
 Combined CMP Semiannual Groundwater Monitoring Report, Second Half 2012, and
 PAR, Interim Measures No. 3, Injection Well Field
 PG&E Topock Compressor Station, Needles, California

Location	Sample ID	Sampler Name	Sample Date	Sample Time	Lab	Analysis Method	Parameter	Analysis Date	Lab Technician	Units	Result	RL	MDL
CW-02M	CW-02M-028	Barry Collom	10/15/2012	12:04:16 PM	TLI	EPA 200.7	FETD	11/7/2012	Ethel Suico	mg/L	ND (0.02)	0.02	0.0095
					TLI	EPA 200.7	KD	11/6/2012	Ethel Suico	mg/L	13.1	2.00	0.54
					TLI	EPA 200.7	MGD	11/7/2012	Ethel Suico	mg/L	10.6	0.50	0.0554
					TLI	EPA 200.7	NAD	11/6/2012	Ethel Suico	mg/L	1470	100	39.4
					AVTS	EPA 200.7	NID	11/27/2012	Claire Ignacio	µg/L	ND (5.0)	5.0	0.70
					AVTS	EPA 200.7	PBD	11/27/2012	Claire Ignacio	µg/L	ND (10)	10.0	1.60
					AVTS	EPA 200.7	VD	11/27/2012	Claire Ignacio	µg/L	4.20	3.0	0.31
					TLI	EPA 200.7	ZND	11/7/2012	Ethel Suico	µg/L	ND (20)	20.0	7.00
					AVTS	EPA 200.8	ASD	12/3/2012	Claire Ignacio	µg/L	2.10	0.1	0.035
					AVTS	EPA 200.8	CRTD	12/3/2012	Claire Ignacio	µg/L	2.10	1.0	0.17
					TLI	EPA 200.8	HGD	11/13/2012	Bitu Emami	µg/L	ND (0.5)J	0.5	0.06
					AVTS	EPA 200.8	MND	12/3/2012	Claire Ignacio	µg/L	ND (0.5)	0.5	0.16
					AVTS	EPA 200.8	MOD	12/3/2012	Claire Ignacio	µg/L	19.0	0.5	0.074
					AVTS	EPA 200.8	SBD	12/3/2012	Claire Ignacio	µg/L	ND (0.5)	0.5	0.084
					AVTS	EPA 200.8	SED	12/3/2012	Claire Ignacio	µg/L	2.40	0.5	0.084
					AVTS	EPA 200.8	TLD	12/3/2012	Claire Ignacio	µg/L	ND (0.5)	0.5	0.075
					TLI	EPA 218.6	CR6	10/24/2012	George Wahba	µg/L	2.40	0.2	0.0092
					TLI	EPA 300.0	CL	10/24/2012	Giawad Ghenniwa	mg/L	2080	100	17.4

TABLE C-1

ARAR Monitoring Information for Groundwater Samples, Second Half 2012
 Combined CMP Semiannual Groundwater Monitoring Report, Second Half 2012, and
 PAR, Interim Measures No. 3, Injection Well Field
 PG&E Topock Compressor Station, Needles, California

Location	Sample ID	Sampler Name	Sample Date	Sample Time	Lab	Analysis Method	Parameter	Analysis Date	Lab Technician	Units	Result	RL	MDL
CW-02M	CW-02M-028	Barry Collom	10/15/2012	12:04:16 PM	TLI	EPA 300.0	FL	10/20/2012	Giawad Ghenniwa	mg/L	2.80	0.5	0.104
					TLI	EPA 300.0	SO4	10/24/2012	Giawad Ghenniwa	mg/L	479	25.0	1.54
					CHMC	EPA 353.2	NO3NO2N	10/19/2012	Emily Clark	mg/L	2.78 J	0.1	0.028
					TLI	EPA 6010B	FE	10/29/2012	Ethel Suico	mg/L	ND (0.02)	0.02	0.0009
					TLI	SM 2320B	ALKB	10/18/2012	Melissa Scharfe	mg/L	49.0	5.0	0.555
					TLI	SM 2320B	ALKC	10/18/2012	Melissa Scharfe	mg/L	ND (5.0)	5.0	0.555
					TLI	SM 2320B	ALKT	10/18/2012	Melissa Scharfe	mg/L	49.0	5.0	0.555
					TLI	SM2130B	TRB	10/17/2012	Gautam Savani	NTU	0.136	0.1	0.014
					TLI	SM2540C	TDS	10/18/2012	Jenny Tankunakorn	mg/L	4000	250	0.757
					TLI	SM4500NH3D	NH3N	10/22/2012	Melissa Scharfe	mg/L	ND (0.5)	0.5	0.0098
CW-03D	CW-03D-028	Barry Collom	10/15/2012	2:26:01 PM	TLI	EPA 120.1	SC	10/18/2012	Gautam Savani	µmhos/cm	7440	2.0	0.116
					AVTS	EPA 200.7	AGD	11/27/2012	Claire Ignacio	µg/L	ND (3.0)	3.0	0.39
					TLI	EPA 200.7	ALD	11/7/2012	Ethel Suico	µg/L	ND (50)	50.0	10.0
					AVTS	EPA 200.7	BAD	11/27/2012	Claire Ignacio	µg/L	14.0	3.0	0.36
					TLI	EPA 200.7	BD	11/7/2012	Ethel Suico	mg/L	1.11	0.20	0.0027
					AVTS	EPA 200.7	BED	11/27/2012	Claire Ignacio	µg/L	ND (3.0)	3.0	0.12
					TLI	EPA 200.7	CAD	11/6/2012	Ethel Suico	mg/L	78.2	10.0	1.20
					AVTS	EPA 200.7	CDD	11/27/2012	Claire Ignacio	µg/L	ND (3.0)	3.0	0.37

TABLE C-1

ARAR Monitoring Information for Groundwater Samples, Second Half 2012
 Combined CMP Semiannual Groundwater Monitoring Report, Second Half 2012, and
 PAR, Interim Measures No. 3, Injection Well Field
 PG&E Topock Compressor Station, Needles, California

Location	Sample ID	Sampler Name	Sample Date	Sample Time	Lab	Analysis Method	Parameter	Analysis Date	Lab Technician	Units	Result	RL	MDL
CW-03D	CW-03D-028	Barry Collom	10/15/2012	2:26:01 PM	AVTS	EPA 200.7	COBD	11/27/2012	Claire Ignacio	µg/L	ND (3.0)	3.0	0.37
					AVTS	EPA 200.7	CUD	11/27/2012	Claire Ignacio	µg/L	ND (5.0)	5.0	2.20
					TLI	EPA 200.7	FETD	11/7/2012	Ethel Suico	mg/L	ND (0.02)	0.02	0.0095
					TLI	EPA 200.7	KD	11/6/2012	Ethel Suico	mg/L	12.5	2.00	0.54
					TLI	EPA 200.7	MGD	11/7/2012	Ethel Suico	mg/L	5.74	0.50	0.0554
					TLI	EPA 200.7	NAD	11/6/2012	Ethel Suico	mg/L	1570	100	39.4
					AVTS	EPA 200.7	NID	11/27/2012	Claire Ignacio	µg/L	ND (5.0)	5.0	0.70
					AVTS	EPA 200.7	PBD	11/27/2012	Claire Ignacio	µg/L	ND (10)	10.0	1.60
					AVTS	EPA 200.7	VD	11/27/2012	Claire Ignacio	µg/L	ND (3.0)	3.0	0.31
					TLI	EPA 200.7	ZND	11/7/2012	Ethel Suico	µg/L	32.2	20.0	7.00
					AVTS	EPA 200.8	ASD	12/3/2012	Claire Ignacio	µg/L	1.70	0.1	0.035
					AVTS	EPA 200.8	CRTD	12/3/2012	Claire Ignacio	µg/L	ND (1.0)	1.0	0.17
					TLI	EPA 200.8	HGD	11/13/2012	Bitu Emami	µg/L	ND (0.5)J	0.5	0.06
					AVTS	EPA 200.8	MND	12/3/2012	Claire Ignacio	µg/L	ND (0.5)	0.5	0.16
					AVTS	EPA 200.8	MOD	12/3/2012	Claire Ignacio	µg/L	17.0	0.5	0.074
					AVTS	EPA 200.8	SBD	12/3/2012	Claire Ignacio	µg/L	ND (0.5)	0.5	0.084
					AVTS	EPA 200.8	SED	12/3/2012	Claire Ignacio	µg/L	3.30	0.5	0.084
					AVTS	EPA 200.8	TLD	12/3/2012	Claire Ignacio	µg/L	ND (0.5)	0.5	0.075

TABLE C-1

ARAR Monitoring Information for Groundwater Samples, Second Half 2012
 Combined CMP Semiannual Groundwater Monitoring Report, Second Half 2012, and
 PAR, Interim Measures No. 3, Injection Well Field
 PG&E Topock Compressor Station, Needles, California

Location	Sample ID	Sampler Name	Sample Date	Sample Time	Lab	Analysis Method	Parameter	Analysis Date	Lab Technician	Units	Result	RL	MDL
CW-03D	CW-03D-028	Barry Collom	10/15/2012	2:26:01 PM	TLI	EPA 218.6	CR6	10/24/2012	George Wahba	µg/L	0.90	0.2	0.0092
					TLI	EPA 300.0	CL	10/24/2012	Giawad Ghenniwa	mg/L	2120	100	17.4
					TLI	EPA 300.0	FL	10/20/2012	Giawad Ghenniwa	mg/L	4.37	0.5	0.104
					TLI	EPA 300.0	SO4	10/24/2012	Giawad Ghenniwa	mg/L	499	25.0	1.54
					CHMC	EPA 353.2	NO3NO2N	10/19/2012	Emily Clark	mg/L	2.95 J	0.1	0.028
					TLI	EPA 6010B	FE	10/29/2012	Ethel Suico	mg/L	ND (0.02)	0.02	0.0009
					TLI	SM 2320B	ALKB	10/18/2012	Melissa Scharfe	mg/L	59.0	5.0	0.555
					TLI	SM 2320B	ALKC	10/18/2012	Melissa Scharfe	mg/L	ND (5.0)	5.0	0.555
					TLI	SM 2320B	ALKT	10/18/2012	Melissa Scharfe	mg/L	59.0	5.0	0.555
					TLI	SM2130B	TRB	10/17/2012	Gautam Savani	NTU	ND (0.1)	0.1	0.014
					TLI	SM2540C	TDS	10/18/2012	Jenny Tankunakorn	mg/L	4190	250	0.757
					TLI	SM4500NH3D	NH3N	10/22/2012	Melissa Scharfe	mg/L	ND (0.5)	0.5	0.0098
CW-03M	CW-03M-028	Barry Collom	10/15/2012	3:34:34 PM	TLI	EPA 120.1	SC	10/18/2012	Gautam Savani	µmhos/cm	8440	2.0	0.116
					AVTS	EPA 200.7	AGD	11/27/2012	Claire Ignacio	µg/L	3.80	3.0	0.39
					TLI	EPA 200.7	ALD	11/7/2012	Ethel Suico	µg/L	ND (50)	50.0	10.0
					AVTS	EPA 200.7	BAD	11/27/2012	Claire Ignacio	µg/L	49.0	3.0	0.36
					TLI	EPA 200.7	BD	11/7/2012	Ethel Suico	mg/L	1.03	0.20	0.0027
					AVTS	EPA 200.7	BED	11/27/2012	Claire Ignacio	µg/L	ND (3.0)	3.0	0.12

TABLE C-1

ARAR Monitoring Information for Groundwater Samples, Second Half 2012
 Combined CMP Semiannual Groundwater Monitoring Report, Second Half 2012, and
 PAR, Interim Measures No. 3, Injection Well Field
 PG&E Topock Compressor Station, Needles, California

Location	Sample ID	Sampler Name	Sample Date	Sample Time	Lab	Analysis Method	Parameter	Analysis Date	Lab Technician	Units	Result	RL	MDL
CW-03M	CW-03M-028	Barry Collom	10/15/2012	3:34:34 PM	TLI	EPA 200.7	CAD	11/6/2012	Ethel Suico	mg/L	209	10.0	1.20
					AVTS	EPA 200.7	CDD	11/27/2012	Claire Ignacio	µg/L	ND (3.0)	3.0	0.37
					AVTS	EPA 200.7	COBD	11/27/2012	Claire Ignacio	µg/L	ND (3.0)	3.0	0.37
					AVTS	EPA 200.7	CUD	11/27/2012	Claire Ignacio	µg/L	ND (5.0)	5.0	2.20
					TLI	EPA 200.7	FETD	11/7/2012	Ethel Suico	mg/L	ND (0.02)	0.02	0.0095
					TLI	EPA 200.7	KD	11/6/2012	Ethel Suico	mg/L	16.2	2.00	0.54
					TLI	EPA 200.7	MGD	11/7/2012	Ethel Suico	mg/L	16.6	0.50	0.0554
					TLI	EPA 200.7	NAD	11/6/2012	Ethel Suico	mg/L	1640	100	39.4
					AVTS	EPA 200.7	NID	11/27/2012	Claire Ignacio	µg/L	ND (5.0)	5.0	0.70
					AVTS	EPA 200.7	PBD	11/27/2012	Claire Ignacio	µg/L	ND (10)	10.0	1.60
					AVTS	EPA 200.7	VD	11/27/2012	Claire Ignacio	µg/L	ND (3.0)	3.0	0.31
					TLI	EPA 200.7	ZND	11/7/2012	Ethel Suico	µg/L	ND (20)	20.0	7.00
					AVTS	EPA 200.8	ASD	12/3/2012	Claire Ignacio	µg/L	1.40	0.1	0.035
					AVTS	EPA 200.8	CRTD	12/3/2012	Claire Ignacio	µg/L	6.50	1.0	0.17
					TLI	EPA 200.8	HGD	11/13/2012	Bitu Emami	µg/L	ND (0.5)J	0.5	0.06
					AVTS	EPA 200.8	MND	12/3/2012	Claire Ignacio	µg/L	ND (0.5)	0.5	0.16
					AVTS	EPA 200.8	MOD	12/3/2012	Claire Ignacio	µg/L	24.0	0.5	0.074
					AVTS	EPA 200.8	SBD	12/3/2012	Claire Ignacio	µg/L	ND (0.5)	0.5	0.084

TABLE C-1

ARAR Monitoring Information for Groundwater Samples, Second Half 2012
 Combined CMP Semiannual Groundwater Monitoring Report, Second Half 2012, and
 PAR, Interim Measures No. 3, Injection Well Field
 PG&E Topock Compressor Station, Needles, California

Location	Sample ID	Sampler Name	Sample Date	Sample Time	Lab	Analysis Method	Parameter	Analysis Date	Lab Technician	Units	Result	RL	MDL
CW-03M	CW-03M-028	Barry Collom	10/15/2012	3:34:34 PM	AVTS	EPA 200.8	SED	12/3/2012	Claire Ignacio	µg/L	1.60	0.5	0.084
					AVTS	EPA 200.8	TLD	12/3/2012	Claire Ignacio	µg/L	ND (0.5)	0.5	0.075
					TLI	EPA 218.6	CR6	10/24/2012	George Wahba	µg/L	6.40	1.0	0.046
					TLI	EPA 300.0	CL	10/24/2012	Giawad Ghenniwa	mg/L	2530	100	17.4
					TLI	EPA 300.0	FL	10/20/2012	Giawad Ghenniwa	mg/L	2.88	0.5	0.104
					TLI	EPA 300.0	SO4	10/24/2012	Giawad Ghenniwa	mg/L	458	25.0	1.54
					CHMC	EPA 353.2	NO3NO2N	10/19/2012	Emily Clark	mg/L	1.76 J	0.1	0.028
					TLI	EPA 6010B	FE	10/29/2012	Ethel Suico	mg/L	ND (0.02)	0.02	0.0009
					TLI	SM 2320B	ALKB	10/18/2012	Melissa Scharfe	mg/L	46.0	5.0	0.555
					TLI	SM 2320B	ALKC	10/18/2012	Melissa Scharfe	mg/L	ND (5.0)	5.0	0.555
					TLI	SM 2320B	ALKT	10/18/2012	Melissa Scharfe	mg/L	46.0	5.0	0.555
					TLI	SM2130B	TRB	10/17/2012	Gautam Savani	NTU	ND (0.1)	0.1	0.014
					TLI	SM2540C	TDS	10/19/2012	Jenny Tankunakorn	mg/L	4600	250	0.757
					TLI	SM4500NH3D	NH3N	10/22/2012	Melissa Scharfe	mg/L	ND (0.5)	0.5	0.0098
CW-04D	CW-04D-028	Barry Collom	10/16/2012	8:48:36 AM	TLI	EPA 120.1	SC	10/23/2012	Gautam Savani	µmhos/cm	7620	2.0	0.116
					AVTS	EPA 200.7	AGD	11/27/2012	Claire Ignacio	µg/L	ND (3.0)	3.0	0.39
					TLI	EPA 200.7	ALD	11/7/2012	Ethel Suico	µg/L	ND (50)	50.0	10.0
					AVTS	EPA 200.7	BAD	11/27/2012	Claire Ignacio	µg/L	20.0	3.0	0.36

TABLE C-1

ARAR Monitoring Information for Groundwater Samples, Second Half 2012
 Combined CMP Semiannual Groundwater Monitoring Report, Second Half 2012, and
 PAR, Interim Measures No. 3, Injection Well Field
 PG&E Topock Compressor Station, Needles, California

Location	Sample ID	Sampler Name	Sample Date	Sample Time	Lab	Analysis Method	Parameter	Analysis Date	Lab Technician	Units	Result	RL	MDL
CW-04D	CW-04D-028	Barry Collom	10/16/2012	8:48:36 AM	TLI	EPA 200.7	BD	11/7/2012	Ethel Suico	mg/L	1.11	0.20	0.0027
					AVTS	EPA 200.7	BED	11/27/2012	Claire Ignacio	µg/L	ND (3.0)	3.0	0.12
					TLI	EPA 200.7	CAD	11/6/2012	Ethel Suico	mg/L	117	10.0	1.20
					AVTS	EPA 200.7	CDD	11/27/2012	Claire Ignacio	µg/L	ND (3.0)	3.0	0.37
					AVTS	EPA 200.7	COBD	11/27/2012	Claire Ignacio	µg/L	ND (3.0)	3.0	0.37
					AVTS	EPA 200.7	CUD	11/27/2012	Claire Ignacio	µg/L	ND (5.0)	5.0	2.20
					TLI	EPA 200.7	FETD	11/7/2012	Ethel Suico	mg/L	ND (0.02)	0.02	0.0095
					TLI	EPA 200.7	KD	11/6/2012	Ethel Suico	mg/L	12.6	2.00	0.54
					TLI	EPA 200.7	MGD	11/7/2012	Ethel Suico	mg/L	7.23	0.50	0.0554
					TLI	EPA 200.7	NAD	11/6/2012	Ethel Suico	mg/L	1590	100	39.4
					AVTS	EPA 200.7	NID	11/27/2012	Claire Ignacio	µg/L	ND (5.0)	5.0	0.70
					AVTS	EPA 200.7	PBD	11/27/2012	Claire Ignacio	µg/L	ND (10)	10.0	1.60
					AVTS	EPA 200.7	VD	11/27/2012	Claire Ignacio	µg/L	4.50	3.0	0.31
					TLI	EPA 200.7	ZND	11/7/2012	Ethel Suico	µg/L	ND (20)	20.0	7.00
					AVTS	EPA 200.8	ASD	12/3/2012	Claire Ignacio	µg/L	4.00	0.1	0.035
					AVTS	EPA 200.8	CRTD	12/3/2012	Claire Ignacio	µg/L	ND (1.0)	1.0	0.17
					TLI	EPA 200.8	HGD	11/13/2012	Bitu Emami	µg/L	ND (0.5)	0.5	0.10
					AVTS	EPA 200.8	MND	12/3/2012	Claire Ignacio	µg/L	ND (0.5)	0.5	0.16

TABLE C-1

ARAR Monitoring Information for Groundwater Samples, Second Half 2012
 Combined CMP Semiannual Groundwater Monitoring Report, Second Half 2012, and
 PAR, Interim Measures No. 3, Injection Well Field
 PG&E Topock Compressor Station, Needles, California

Location	Sample ID	Sampler Name	Sample Date	Sample Time	Lab	Analysis Method	Parameter	Analysis Date	Lab Technician	Units	Result	RL	MDL
CW-04D	CW-04D-028	Barry Collom	10/16/2012	8:48:36 AM	AVTS	EPA 200.8	MOD	12/3/2012	Claire Ignacio	µg/L	24.0	0.5	0.074
					AVTS	EPA 200.8	SBD	12/3/2012	Claire Ignacio	µg/L	ND (0.5)	0.5	0.084
					AVTS	EPA 200.8	SED	12/3/2012	Claire Ignacio	µg/L	2.70	0.5	0.084
					AVTS	EPA 200.8	TLD	12/3/2012	Claire Ignacio	µg/L	ND (0.5)	0.5	0.075
					TLI	EPA 218.6	CR6	10/29/2012	George Wahba	µg/L	1.10	0.2	0.0092
					TLI	EPA 300.0	CL	10/25/2012	Giawad Ghenniwa	mg/L	2200	50.0	17.4
					TLI	EPA 300.0	FL	10/25/2012	Giawad Ghenniwa	mg/L	3.46	0.5	0.104
					TLI	EPA 300.0	SO4	10/25/2012	Giawad Ghenniwa	mg/L	505	25.0	1.54
					CHMC	EPA 353.2	NO3NO2N	10/26/2012	Emily Clark	mg/L	2.63	0.1	0.028
					TLI	EPA 6010B	FE	10/29/2012	Ethel Suico	mg/L	ND (0.02)	0.02	0.0009
					TLI	SM 2320B	ALKB	10/19/2012	Melissa Scharfe	mg/L	52.0	5.0	0.555
					TLI	SM 2320B	ALKC	10/19/2012	Melissa Scharfe	mg/L	ND (5.0)	5.0	0.555
					TLI	SM 2320B	ALKT	10/19/2012	Melissa Scharfe	mg/L	52.0	5.0	0.555
					TLI	SM2130B	TRB	10/19/2012	Gautam Savani	NTU	0.127 J	0.1	0.014
					TLI	SM2540C	TDS	10/22/2012	Jenny Tankunakorn	mg/L	4430	250	0.757
					TLI	SM4500NH3D	NH3N	10/22/2012	Melissa Scharfe	mg/L	ND (0.5)	0.5	0.0098
CW-04M	CW-04M-028	Barry Collom	10/16/2012	9:57:04 AM	TLI	EPA 120.1	SC	10/23/2012	Gautam Savani	µmhos/cm	6720	2.0	0.116
					AVTS	EPA 200.7	AGD	11/27/2012	Claire Ignacio	µg/L	3.40	3.0	0.39

TABLE C-1

ARAR Monitoring Information for Groundwater Samples, Second Half 2012
 Combined CMP Semiannual Groundwater Monitoring Report, Second Half 2012, and
 PAR, Interim Measures No. 3, Injection Well Field
 PG&E Topock Compressor Station, Needles, California

Location	Sample ID	Sampler Name	Sample Date	Sample Time	Lab	Analysis Method	Parameter	Analysis Date	Lab Technician	Units	Result	RL	MDL
CW-04M	CW-04M-028	Barry Collom	10/16/2012	9:57:04 AM	TLI	EPA 200.7	ALD	11/7/2012	Ethel Suico	µg/L	ND (50)	50.0	10.0
					AVTS	EPA 200.7	BAD	11/27/2012	Claire Ignacio	µg/L	97.0	3.0	0.36
					TLI	EPA 200.7	BD	11/7/2012	Ethel Suico	mg/L	0.845	0.20	0.0027
					AVTS	EPA 200.7	BED	11/27/2012	Claire Ignacio	µg/L	ND (3.0)	3.0	0.12
					TLI	EPA 200.7	CAD	11/6/2012	Ethel Suico	mg/L	179	10.0	1.20
					AVTS	EPA 200.7	CDD	11/27/2012	Claire Ignacio	µg/L	ND (3.0)	3.0	0.37
					AVTS	EPA 200.7	COBD	11/27/2012	Claire Ignacio	µg/L	ND (3.0)	3.0	0.37
					AVTS	EPA 200.7	CUD	11/27/2012	Claire Ignacio	µg/L	ND (5.0)	5.0	2.20
					TLI	EPA 200.7	FETD	11/7/2012	Ethel Suico	mg/L	ND (0.02)	0.02	0.0095
					TLI	EPA 200.7	KD	11/6/2012	Ethel Suico	mg/L	12.8	2.00	0.54
					TLI	EPA 200.7	MGD	11/7/2012	Ethel Suico	mg/L	14.2	0.50	0.0554
					TLI	EPA 200.7	NAD	11/6/2012	Ethel Suico	mg/L	1300	100	39.4
					AVTS	EPA 200.7	NID	11/27/2012	Claire Ignacio	µg/L	ND (5.0)	5.0	0.70
					AVTS	EPA 200.7	PBD	11/27/2012	Claire Ignacio	µg/L	ND (10)	10.0	1.60
					AVTS	EPA 200.7	VD	11/27/2012	Claire Ignacio	µg/L	4.00	3.0	0.31
					TLI	EPA 200.7	ZND	11/7/2012	Ethel Suico	µg/L	ND (20)	20.0	7.00
					AVTS	EPA 200.8	ASD	12/3/2012	Claire Ignacio	µg/L	2.30	0.1	0.035
					AVTS	EPA 200.8	CRTD	12/3/2012	Claire Ignacio	µg/L	6.60	1.0	0.17

TABLE C-1

ARAR Monitoring Information for Groundwater Samples, Second Half 2012
 Combined CMP Semiannual Groundwater Monitoring Report, Second Half 2012, and
 PAR, Interim Measures No. 3, Injection Well Field
 PG&E Topock Compressor Station, Needles, California

Location	Sample ID	Sampler Name	Sample Date	Sample Time	Lab	Analysis Method	Parameter	Analysis Date	Lab Technician	Units	Result	RL	MDL
CW-04M	CW-04M-028	Barry Collom	10/16/2012	9:57:04 AM	TLI	EPA 200.8	HGD	11/13/2012	Bitu Emami	µg/L	ND (0.5)	0.5	0.10
					AVTS	EPA 200.8	MND	12/3/2012	Claire Ignacio	µg/L	ND (0.5)	0.5	0.16
					AVTS	EPA 200.8	MOD	12/3/2012	Claire Ignacio	µg/L	10.0	0.5	0.074
					AVTS	EPA 200.8	SBD	12/3/2012	Claire Ignacio	µg/L	ND (0.5)	0.5	0.084
					AVTS	EPA 200.8	SED	12/3/2012	Claire Ignacio	µg/L	1.90	0.5	0.084
					AVTS	EPA 200.8	TLD	12/3/2012	Claire Ignacio	µg/L	ND (0.5)	0.5	0.075
					TLI	EPA 218.6	CR6	10/29/2012	George Wahba	µg/L	7.20	0.2	0.0092
					TLI	EPA 300.0	CL	10/25/2012	Giawad Ghenniwa	mg/L	1970	50.0	17.4
					TLI	EPA 300.0	FL	10/25/2012	Giawad Ghenniwa	mg/L	1.86	0.5	0.104
					TLI	EPA 300.0	SO4	10/25/2012	Giawad Ghenniwa	mg/L	419	25.0	1.54
					CHMC	EPA 353.2	NO3NO2N	10/26/2012	Emily Clark	mg/L	2.33	0.1	0.028
					TLI	EPA 6010B	FE	10/29/2012	Ethel Suico	mg/L	ND (0.02)	0.02	0.0009
					TLI	SM 2320B	ALKB	10/19/2012	Melissa Scharfe	mg/L	51.0	5.0	0.555
					TLI	SM 2320B	ALKC	10/19/2012	Melissa Scharfe	mg/L	ND (5.0)	5.0	0.555
					TLI	SM 2320B	ALKT	10/19/2012	Melissa Scharfe	mg/L	51.0	5.0	0.555
					TLI	SM2130B	TRB	10/19/2012	Gautam Savani	NTU	0.12 J	0.1	0.014
					TLI	SM2540C	TDS	10/22/2012	Jenny Tankunakorn	mg/L	4170	250	0.757
					TLI	SM4500NH3D	NH3N	10/22/2012	Melissa Scharfe	mg/L	ND (0.5)	0.5	0.0098

TABLE C-1

ARAR Monitoring Information for Groundwater Samples, Second Half 2012
 Combined CMP Semiannual Groundwater Monitoring Report, Second Half 2012, and
 PAR, Interim Measures No. 3, Injection Well Field
 PG&E Topock Compressor Station, Needles, California

Location	Sample ID	Sampler Name	Sample Date	Sample Time	Lab	Analysis Method	Parameter	Analysis Date	Lab Technician	Units	Result	RL	MDL
OW-01D	OW-01D-028	Barry Collom	10/16/2012	2:28:08 PM	TLI	EPA 120.1	SC	10/23/2012	Gautam Savani	μmhos/cm	7200	2.0	0.116
					AVTS	EPA 200.7	AGD	11/27/2012	Claire Ignacio	μg/L	3.30	3.0	0.39
					TLI	EPA 200.7	ALD	11/7/2012	Ethel Suico	μg/L	ND (50)	50.0	10.0
					AVTS	EPA 200.7	BAD	11/27/2012	Claire Ignacio	μg/L	34.0	3.0	0.36
					TLI	EPA 200.7	BD	11/7/2012	Ethel Suico	mg/L	0.954	0.20	0.0027
					AVTS	EPA 200.7	BED	11/27/2012	Claire Ignacio	μg/L	ND (3.0)	3.0	0.12
					TLI	EPA 200.7	CAD	11/6/2012	Ethel Suico	mg/L	184	10.0	1.20
					AVTS	EPA 200.7	CDD	11/27/2012	Claire Ignacio	μg/L	ND (3.0)	3.0	0.37
					AVTS	EPA 200.7	COBD	11/27/2012	Claire Ignacio	μg/L	ND (3.0)	3.0	0.37
					AVTS	EPA 200.7	CUD	11/27/2012	Claire Ignacio	μg/L	ND (5.0)	5.0	2.20
					TLI	EPA 200.7	FETD	11/7/2012	Ethel Suico	mg/L	ND (0.02)	0.02	0.0095
					TLI	EPA 200.7	KD	11/6/2012	Ethel Suico	mg/L	13.4	2.00	0.54
					TLI	EPA 200.7	MGD	11/7/2012	Ethel Suico	mg/L	16.5	0.50	0.0554
					TLI	EPA 200.7	NAD	11/6/2012	Ethel Suico	mg/L	1440	100	39.4
					AVTS	EPA 200.7	NID	11/27/2012	Claire Ignacio	μg/L	ND (5.0)	5.0	0.70
					AVTS	EPA 200.7	PBD	11/27/2012	Claire Ignacio	μg/L	ND (10)	10.0	1.60
					AVTS	EPA 200.7	VD	11/27/2012	Claire Ignacio	μg/L	3.20	3.0	0.31
					TLI	EPA 200.7	ZND	11/7/2012	Ethel Suico	μg/L	ND (20)	20.0	7.00

TABLE C-1

ARAR Monitoring Information for Groundwater Samples, Second Half 2012
 Combined CMP Semiannual Groundwater Monitoring Report, Second Half 2012, and
 PAR, Interim Measures No. 3, Injection Well Field
 PG&E Topock Compressor Station, Needles, California

Location	Sample ID	Sampler Name	Sample Date	Sample Time	Lab	Analysis Method	Parameter	Analysis Date	Lab Technician	Units	Result	RL	MDL
OW-01D	OW-01D-028	Barry Collom	10/16/2012	2:28:08 PM	AVTS	EPA 200.8	ASD	12/3/2012	Claire Ignacio	µg/L	1.30	0.1	0.035
					AVTS	EPA 200.8	CRTD	12/3/2012	Claire Ignacio	µg/L	ND (1.0)	1.0	0.17
					TLI	EPA 200.8	HGD	11/13/2012	Bitra Emami	µg/L	ND (0.5)	0.5	0.10
					AVTS	EPA 200.8	MND	12/3/2012	Claire Ignacio	µg/L	ND (0.5)	0.5	0.16
					AVTS	EPA 200.8	MOD	12/3/2012	Claire Ignacio	µg/L	20.0	0.5	0.074
					AVTS	EPA 200.8	SBD	12/3/2012	Claire Ignacio	µg/L	ND (0.5)	0.5	0.084
					AVTS	EPA 200.8	SED	12/3/2012	Claire Ignacio	µg/L	3.50	0.5	0.084
					AVTS	EPA 200.8	TLD	12/3/2012	Claire Ignacio	µg/L	ND (0.5)	0.5	0.075
					TLI	EPA 218.6	CR6	10/29/2012	George Wahba	µg/L	0.85	0.2	0.0092
					TLI	EPA 300.0	CL	10/25/2012	Giawad Ghenniwa	mg/L	2090	50.0	17.4
					TLI	EPA 300.0	FL	10/25/2012	Giawad Ghenniwa	mg/L	2.34	0.5	0.104
					TLI	EPA 300.0	SO4	10/25/2012	Giawad Ghenniwa	mg/L	489	25.0	1.54
					CHMC	EPA 353.2	NO3NO2N	10/26/2012	Emily Clark	mg/L	2.71	0.1	0.028
					TLI	EPA 6010B	FE	10/29/2012	Ethel Suico	mg/L	0.026	0.02	0.0009
					TLI	SM 2320B	ALKB	10/19/2012	Melissa Scharfe	mg/L	56.0	5.0	0.555
					TLI	SM 2320B	ALKC	10/19/2012	Melissa Scharfe	mg/L	ND (5.0)	5.0	0.555
					TLI	SM 2320B	ALKT	10/19/2012	Melissa Scharfe	mg/L	56.0	5.0	0.555
					TLI	SM2130B	TRB	10/19/2012	Gautam Savani	NTU	0.336 J	0.1	0.014

TABLE C-1

ARAR Monitoring Information for Groundwater Samples, Second Half 2012
 Combined CMP Semiannual Groundwater Monitoring Report, Second Half 2012, and
 PAR, Interim Measures No. 3, Injection Well Field
 PG&E Topock Compressor Station, Needles, California

Location	Sample ID	Sampler Name	Sample Date	Sample Time	Lab	Analysis Method	Parameter	Analysis Date	Lab Technician	Units	Result	RL	MDL
OW-01D	OW-01D-028	Barry Collom	10/16/2012	2:28:08 PM	TLI	SM2540C	TDS	10/22/2012	Jenny Tankunakorn	mg/L	4510	250	0.757
					TLI	SM4500NH3D	NH3N	10/22/2012	Melissa Scharfe	mg/L	ND (0.5)	0.5	0.0098
OW-01M	OW-01M-028	Barry Collom	10/18/2012	7:54:16 AM	TLI	EPA 120.1	SC	10/23/2012	Gautam Savani	μmhos/cm	7070	2.0	0.116
					AVTS	EPA 200.7	AGD	11/27/2012	Claire Ignacio	μg/L	ND (3.0)	3.0	0.39
					TLI	EPA 200.7	ALD	10/30/2012	Ethel Suico	μg/L	ND (50)	50.0	9.50
					AVTS	EPA 200.7	BAD	11/27/2012	Claire Ignacio	μg/L	78.0	3.0	0.36
					TLI	EPA 200.7	BD	10/30/2012	Ethel Suico	mg/L	0.823	0.20	0.0017
					AVTS	EPA 200.7	BED	11/27/2012	Claire Ignacio	μg/L	ND (3.0)	3.0	0.12
					TLI	EPA 200.7	CAD	10/25/2012	Ethel Suico	mg/L	152	25.0	0.836
					AVTS	EPA 200.7	CDD	11/27/2012	Claire Ignacio	μg/L	ND (3.0)	3.0	0.37
					AVTS	EPA 200.7	COBD	11/27/2012	Claire Ignacio	μg/L	ND (3.0)	3.0	0.37
					AVTS	EPA 200.7	CUD	11/27/2012	Claire Ignacio	μg/L	ND (5.0)	5.0	2.20
					TLI	EPA 200.7	FETD	10/30/2012	Ethel Suico	mg/L	ND (0.02)	0.02	0.0051
					TLI	EPA 200.7	KD	10/29/2012	Ethel Suico	mg/L	16.2	1.00	0.36
					TLI	EPA 200.7	MGD	10/25/2012	Ethel Suico	mg/L	20.7	1.00	0.103
					TLI	EPA 200.7	NAD	10/25/2012	Ethel Suico	mg/L	1360	100	22.6
					AVTS	EPA 200.7	NID	11/27/2012	Claire Ignacio	μg/L	ND (5.0)	5.0	0.70
					AVTS	EPA 200.7	PBD	11/27/2012	Claire Ignacio	μg/L	ND (10)	10.0	1.60

TABLE C-1

ARAR Monitoring Information for Groundwater Samples, Second Half 2012
 Combined CMP Semiannual Groundwater Monitoring Report, Second Half 2012, and
 PAR, Interim Measures No. 3, Injection Well Field
 PG&E Topock Compressor Station, Needles, California

Location	Sample ID	Sampler Name	Sample Date	Sample Time	Lab	Analysis Method	Parameter	Analysis Date	Lab Technician	Units	Result	RL	MDL
OW-01M	OW-01M-028	Barry Collom	10/18/2012	7:54:16 AM	AVTS	EPA 200.7	VD	11/27/2012	Claire Ignacio	µg/L	3.60	3.0	0.31
					TLI	EPA 200.7	ZND	10/30/2012	Ethel Suico	µg/L	ND (20)	20.0	1.60
					AVTS	EPA 200.8	ASD	12/3/2012	Claire Ignacio	µg/L	2.30	0.1	0.035
					AVTS	EPA 200.8	CRTD	12/3/2012	Claire Ignacio	µg/L	ND (1.0)	1.0	0.17
					TLI	EPA 200.8	HGD	11/13/2012	Bitu Emami	µg/L	ND (0.5)	0.5	0.10
					AVTS	EPA 200.8	MND	12/3/2012	Claire Ignacio	µg/L	ND (0.5)	0.5	0.16
					AVTS	EPA 200.8	MOD	12/3/2012	Claire Ignacio	µg/L	23.0	0.5	0.074
					AVTS	EPA 200.8	SBD	12/3/2012	Claire Ignacio	µg/L	ND (0.5)	0.5	0.084
					AVTS	EPA 200.8	SED	12/3/2012	Claire Ignacio	µg/L	3.30	0.5	0.084
					AVTS	EPA 200.8	TLD	12/3/2012	Claire Ignacio	µg/L	ND (0.5)	0.5	0.075
					TLI	EPA 218.6	CR6	10/29/2012	George Wahba	µg/L	1.20	0.2	0.0092
					TLI	EPA 300.0	CL	10/25/2012	Giawad Ghenniwa	mg/L	2110	50.0	17.4
					TLI	EPA 300.0	FL	10/25/2012	Giawad Ghenniwa	mg/L	2.56	0.5	0.104
					TLI	EPA 300.0	SO4	10/25/2012	Giawad Ghenniwa	mg/L	480	25.0	1.54
					CHMC	EPA 353.2	NO3NO2N	10/26/2012	Emily Clark	mg/L	2.78	0.1	0.028
					TLI	EPA 6010B	FE	10/29/2012	Ethel Suico	mg/L	ND (0.02)	0.02	0.0009
					TLI	SM 2320B	ALKB	10/19/2012	Melissa Scharfe	mg/L	45.0	5.0	0.555
					TLI	SM 2320B	ALKC	10/19/2012	Melissa Scharfe	mg/L	ND (5.0)	5.0	0.555

TABLE C-1

ARAR Monitoring Information for Groundwater Samples, Second Half 2012
 Combined CMP Semiannual Groundwater Monitoring Report, Second Half 2012, and
 PAR, Interim Measures No. 3, Injection Well Field
 PG&E Topock Compressor Station, Needles, California

Location	Sample ID	Sampler Name	Sample Date	Sample Time	Lab	Analysis Method	Parameter	Analysis Date	Lab Technician	Units	Result	RL	MDL
OW-01M	OW-01M-028	Barry Collom	10/18/2012	7:54:16 AM	TLI	SM 2320B	ALKT	10/19/2012	Melissa Scharfe	mg/L	45.0	5.0	0.555
					TLI	SM2130B	TRB	10/19/2012	Gautam Savani	NTU	0.101	0.1	0.014
					TLI	SM2540C	TDS	10/22/2012	Jenny Tankunakorn	mg/L	4340	250	0.757
					TLI	SM4500NH3D	NH3N	10/22/2012	Melissa Scharfe	mg/L	ND (0.5)	0.5	0.0098
OW-01S	OW-01S-028	Barry Collom	10/16/2012	3:07:22 PM	TLI	EPA 120.1	SC	10/23/2012	Gautam Savani	µmhos/cm	4100	2.0	0.116
					TLI	EPA 200.7	NAD	10/25/2012	Ethel Suico	mg/L	515	25.0	5.65
					AVTS	EPA 200.8	CRTD	12/3/2012	Claire Ignacio	µg/L	14.0	1.0	0.17
					AVTS	EPA 200.8	MOD	12/3/2012	Claire Ignacio	µg/L	14.0	0.5	0.074
					TLI	EPA 218.6	CR6	10/29/2012	George Wahba	µg/L	14.0	0.2	0.0092
					TLI	EPA 300.0	CL	10/25/2012	Giawad Ghenniwa	mg/L	1160	50.0	17.4
					TLI	EPA 300.0	FL	10/25/2012	Giawad Ghenniwa	mg/L	2.34	0.5	0.104
					TLI	EPA 300.0	SO4	10/25/2012	Giawad Ghenniwa	mg/L	258	25.0	1.54
					CHMC	EPA 353.2	NO3NO2N	10/26/2012	Emily Clark	mg/L	3.20	0.1	0.028
					TLI	SM2130B	TRB	10/19/2012	Gautam Savani	NTU	0.487 J	0.1	0.014
					TLI	SM2540C	TDS	10/22/2012	Jenny Tankunakorn	mg/L	2690	125	0.757
OW-02D	OW-02D-028	Barry Collom	10/18/2012	9:27:57 AM	TLI	EPA 120.1	SC	10/23/2012	Gautam Savani	µmhos/cm	7150	2.0	0.116
					TLI	EPA 200.7	NAD	10/25/2012	Ethel Suico	mg/L	1290	50.0	11.3
					AVTS	EPA 200.8	CRTD	12/3/2012	Claire Ignacio	µg/L	ND (1.0)	1.0	0.17

TABLE C-1

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 PAR, Interim Measures No. 3, Injection Well Field
 PG&E Topock Compressor Station, Needles, California

Location	Sample ID	Sampler Name	Sample Date	Sample Time	Lab	Analysis Method	Parameter	Analysis Date	Lab Technician	Units	Result	RL	MDL
OW-02D	OW-02D-028	Barry Collom	10/18/2012	9:27:57 AM	AVTS	EPA 200.8	MOD	12/3/2012	Claire Ignacio	µg/L	21.0	0.5	0.074
					TLI	EPA 218.6	CR6	10/29/2012	George Wahba	µg/L	0.54	0.2	0.0092
					TLI	EPA 300.0	CL	10/25/2012	Giawad Ghenniwa	mg/L	2090	50.0	17.4
					TLI	EPA 300.0	FL	10/25/2012	Giawad Ghenniwa	mg/L	2.15	0.5	0.104
					TLI	EPA 300.0	SO4	10/25/2012	Giawad Ghenniwa	mg/L	480	25.0	1.54
					CHMC	EPA 353.2	NO3NO2N	10/26/2012	Emily Clark	mg/L	2.84	0.1	0.028
					TLI	SM2130B	TRB	10/19/2012	Gautam Savani	NTU	ND (0.1)	0.1	0.014
					TLI	SM2540C	TDS	10/22/2012	Jenny Tankunakorn	mg/L	4300	250	0.757
OW-02M	OW-02M-028	Barry Collom	10/18/2012	11:45:02 AM	TLI	EPA 120.1	SC	10/23/2012	Gautam Savani	µmhos/cm	7150	2.0	0.116
					TLI	EPA 200.7	NAD	10/25/2012	Ethel Suico	mg/L	1250	50.0	11.3
					AVTS	EPA 200.8	CRTD	12/3/2012	Claire Ignacio	µg/L	ND (1.0)	1.0	0.17
					AVTS	EPA 200.8	MOD	12/3/2012	Claire Ignacio	µg/L	23.0	0.5	0.074
					TLI	EPA 218.6	CR6	10/29/2012	George Wahba	µg/L	1.20	0.2	0.0092
					TLI	EPA 300.0	CL	10/25/2012	Giawad Ghenniwa	mg/L	2060	50.0	17.4
					TLI	EPA 300.0	FL	10/25/2012	Giawad Ghenniwa	mg/L	2.58	0.5	0.104
					TLI	EPA 300.0	SO4	10/25/2012	Giawad Ghenniwa	mg/L	482	25.0	1.54
					CHMC	EPA 353.2	NO3NO2N	10/26/2012	Emily Clark	mg/L	2.73	0.1	0.028
					TLI	SM2130B	TRB	10/19/2012	Gautam Savani	NTU	ND (0.1)	0.1	0.014

TABLE C-1

ARAR Monitoring Information for Groundwater Samples, Second Half 2012
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 PAR, Interim Measures No. 3, Injection Well Field
 PG&E Topock Compressor Station, Needles, California

Location	Sample ID	Sampler Name	Sample Date	Sample Time	Lab	Analysis Method	Parameter	Analysis Date	Lab Technician	Units	Result	RL	MDL
OW-02M	OW-02M-028	Barry Collom	10/18/2012	11:45:02 AM	TLI	SM2540C	TDS	10/22/2012	Jenny Tankunakorn	mg/L	4360	250	0.757
OW-02S	OW-02S-028	Barry Collom	10/18/2012	10:04:42 AM	TLI	EPA 120.1	SC	10/23/2012	Gautam Savani	µmhos/cm	1610	2.0	0.116
					TLI	EPA 200.7	NAD	10/25/2012	Ethel Suico	mg/L	298	50.0	11.3
					AVTS	EPA 200.8	CRTD	12/3/2012	Claire Ignacio	µg/L	28.0	1.0	0.17
					AVTS	EPA 200.8	MOD	12/3/2012	Claire Ignacio	µg/L	46.0	0.5	0.074
					TLI	EPA 218.6	CR6	10/29/2012	George Wahba	µg/L	26.8	0.2	0.0092
					TLI	EPA 300.0	CL	10/25/2012	Giawad Ghenniwa	mg/L	378	50.0	17.4
					TLI	EPA 300.0	FL	10/25/2012	Giawad Ghenniwa	mg/L	5.06	0.5	0.104
					TLI	EPA 300.0	SO4	10/25/2012	Giawad Ghenniwa	mg/L	98.3	25.0	1.54
					CHMC	EPA 353.2	NO3NO2N	10/26/2012	Emily Clark	mg/L	3.95	0.1	0.028
					TLI	SM2130B	TRB	10/19/2012	Gautam Savani	NTU	0.419	0.1	0.014
					TLI	SM2540C	TDS	10/22/2012	Jenny Tankunakorn	mg/L	1030	50.0	0.757
OW-05D	OW-05D-028	Barry Collom	10/18/2012	12:56:01 PM	TLI	EPA 120.1	SC	10/23/2012	Gautam Savani	µmhos/cm	7120	2.0	0.116
					TLI	EPA 200.7	NAD	10/25/2012	Ethel Suico	mg/L	1350	50.0	11.3
					AVTS	EPA 200.8	CRTD	12/3/2012	Claire Ignacio	µg/L	ND (1.0)	1.0	0.17
					AVTS	EPA 200.8	MOD	12/3/2012	Claire Ignacio	µg/L	22.0	0.5	0.074
					TLI	EPA 218.6	CR6	10/29/2012	George Wahba	µg/L	0.38	0.2	0.0092
					TLI	EPA 300.0	CL	10/25/2012	Giawad Ghenniwa	mg/L	2050	50.0	17.4

TABLE C-1

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 PAR, Interim Measures No. 3, Injection Well Field
 PG&E Topock Compressor Station, Needles, California

Location	Sample ID	Sampler Name	Sample Date	Sample Time	Lab	Analysis Method	Parameter	Analysis Date	Lab Technician	Units	Result	RL	MDL
OW-05D	OW-05D-028	Barry Collom	10/18/2012	12:56:01 PM	TLI	EPA 300.0	FL	10/25/2012	Giawad Ghenniwa	mg/L	2.29	0.5	0.104
					TLI	EPA 300.0	SO4	10/25/2012	Giawad Ghenniwa	mg/L	479	25.0	1.54
					CHMC	EPA 353.2	NO3NO2N	10/26/2012	Emily Clark	mg/L	2.79	0.1	0.028
					TLI	SM2130B	TRB	10/19/2012	Gautam Savani	NTU	ND (0.1)	0.1	0.014
					TLI	SM2540C	TDS	10/22/2012	Jenny Tankunakorn	mg/L	4200	250	0.757
OW-05M	OW-91-028	Barry Collom	10/18/2012	7:05:00 AM	TLI	EPA 120.1	SC	10/23/2012	Gautam Savani	µmhos/cm	7170	2.0	0.116
					TLI	EPA 200.7	NAD	10/25/2012	Ethel Suico	mg/L	1260	50.0	11.3
					AVTS	EPA 200.8	CRTD	12/3/2012	Claire Ignacio	µg/L	ND (1.0)	1.0	0.17
					AVTS	EPA 200.8	MOD	12/3/2012	Claire Ignacio	µg/L	21.0	0.5	0.074
					TLI	EPA 218.6	CR6	10/29/2012	George Wahba	µg/L	0.44	0.2	0.0092
					TLI	EPA 300.0	CL	10/25/2012	Giawad Ghenniwa	mg/L	2070	50.0	17.4
					TLI	EPA 300.0	FL	10/25/2012	Giawad Ghenniwa	mg/L	2.27	0.5	0.104
					TLI	EPA 300.0	SO4	10/25/2012	Giawad Ghenniwa	mg/L	488	25.0	1.54
					CHMC	EPA 353.2	NO3NO2N	10/26/2012	Emily Clark	mg/L	2.78	0.1	0.028
					TLI	SM2130B	TRB	10/19/2012	Gautam Savani	NTU	ND (0.1)	0.1	0.014
					TLI	SM2540C	TDS	10/22/2012	Jenny Tankunakorn	mg/L	4440	250	0.757
OW-05M	OW-05M-028	Barry Collom	10/18/2012	2:03:00 PM	TLI	EPA 120.1	SC	10/23/2012	Gautam Savani	µmhos/cm	7170	2.0	0.116
					TLI	EPA 200.7	NAD	10/25/2012	Ethel Suico	mg/L	1330	50.0	11.3

TABLE C-1

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 PAR, Interim Measures No. 3, Injection Well Field
 PG&E Topock Compressor Station, Needles, California

Location	Sample ID	Sampler Name	Sample Date	Sample Time	Lab	Analysis Method	Parameter	Analysis Date	Lab Technician	Units	Result	RL	MDL
OW-05M	OW-05M-028	Barry Collom	10/18/2012	2:03:00 PM	AVTS	EPA 200.8	CRTD	12/3/2012	Claire Ignacio	µg/L	ND (1.0)	1.0	0.17
					AVTS	EPA 200.8	MOD	12/3/2012	Claire Ignacio	µg/L	21.0	0.5	0.074
					TLI	EPA 218.6	CR6	10/29/2012	George Wahba	µg/L	0.44	0.2	0.0092
					TLI	EPA 300.0	CL	10/25/2012	Giawad Ghenniwa	mg/L	2040	50.0	17.4
					TLI	EPA 300.0	FL	10/25/2012	Giawad Ghenniwa	mg/L	2.42	0.5	0.104
					TLI	EPA 300.0	SO4	10/25/2012	Giawad Ghenniwa	mg/L	488	25.0	1.54
					CHMC	EPA 353.2	NO3NO2N	10/26/2012	Emily Clark	mg/L	2.74	0.1	0.028
					TLI	SM2130B	TRB	10/19/2012	Gautam Savani	NTU	0.145	0.1	0.014
					TLI	SM2540C	TDS	10/22/2012	Jenny Tankunakorn	mg/L	4430	250	0.757
OW-05S	OW-05S-028	Barry Collom	10/18/2012	2:41:00 PM	TLI	EPA 120.1	SC	10/23/2012	Gautam Savani	µmhos/cm	2770	2.0	0.116
					TLI	EPA 200.7	NAD	10/25/2012	Ethel Suico	mg/L	364	50.0	11.3
					AVTS	EPA 200.8	CRTD	12/3/2012	Claire Ignacio	µg/L	18.0	1.0	0.17
					AVTS	EPA 200.8	MOD	12/3/2012	Claire Ignacio	µg/L	17.0	0.5	0.074
					TLI	EPA 218.6	CR6	10/29/2012	George Wahba	µg/L	17.0	0.2	0.0092
					TLI	EPA 300.0	CL	10/25/2012	Giawad Ghenniwa	mg/L	1140	50.0	17.4
					TLI	EPA 300.0	FL	10/25/2012	Giawad Ghenniwa	mg/L	1.85	0.5	0.104
					TLI	EPA 300.0	SO4	10/25/2012	Giawad Ghenniwa	mg/L	141	25.0	1.54
					CHMC	EPA 353.2	NO3NO2N	10/26/2012	Emily Clark	mg/L	2.62	0.1	0.028

TABLE C-1

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PAR, Interim Measures No. 3, Injection Well Field
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Location	Sample ID	Sampler Name	Sample Date	Sample Time	Lab	Analysis Method	Parameter	Analysis Date	Lab Technician	Units	Result	RL	MDL
OW-05S	OW-05S-028	Barry Collom	10/18/2012	2:41:00 PM	TLI	SM2130B	TRB	10/19/2012	Gautam Savani	NTU	0.29	0.1	0.014
					TLI	SM2540C	TDS	10/22/2012	Jenny Tankunakorn	mg/L	1800	50.0	0.757

TABLE C-1

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NOTES:

MDL method detection limit corrected for sample dilution
 RL reporting limit corrected for sample dilution
 ND parameter not detected at the listed reporting limit
 µmhos/cm micro-mhos per centimeter
 NTU Nephelometric Turbidity Unit
 mg/L milligrams per liter
 µg/L micrograms per liter
 J Concentration estimated by laboratory or data validation

ARAR applicable or relevant and appropriate requirements
 TLI Truesdail Laboratories, Inc.
 AVTS Advanced Technology Laboratories
 CHMC Advanced Sciences, Corvallis, OR

ALKC	alkalinity, as carbonate	HGD	mercury, dissolved
ALKT	alkalinity, total as CaCO ₃	KD	potassium, dissolved
ALKB	alkalinity, bicarbonate as CaCO ₃	MGD	magnesium, dissolved
ALD	aluminum, dissolved	MND	manganese, dissolved
AGD	silver, dissolved	MOD	molybdenum, dissolved
ASD	arsenic, dissolved	NAD	sodium, dissolved
BD	boron, dissolved	NID	nickel, dissolved
BAD	barium, dissolved	NH ₃ N	ammonia (as Nitrogen)
BED	beryllium, dissolved	NO ₃ NO ₂ N	nitrate/nitrite (as Nitrogen)
CAD	calcium, dissolved	PBD	lead, dissolved
CDD	cadmium, dissolved	SBD	antimony, dissolved
CL	chloride	SC	specific conductance
COBD	cobalt, dissolved	SED	selenium, dissolved
CRTD	chromium, dissolved	SO ₄	sulfate
CR6	hexavalent chromium	TLD	thallium, dissolved
CUD	copper, dissolved	TDS	total dissolved solids
FE	iron	TRB	turbidity
FETD	iron, dissolved	VD	vanadium, dissolved
FL	fluoride	ZND	zinc, dissolved