

Topock Project Executive Abstract

<p>Document Title:</p> <p>Compliance Monitoring Program, Semiannual Groundwater Monitoring Report, First Half 2011, PG&E Topock Compressor Station, Needles, California</p> <p>Submitting Agency: DTSC, Water Board</p> <p>Final Document? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No</p>	<p>Date of Document: July 15, 2011</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 of DTSC directives, WDR No. R7-2006-0060, and subsequent MRP revisions.</p>	<p>Is this a Regulatory Requirement?</p> <p><input checked="" type="checkbox"/> Yes <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>The purpose of the Topock Compliance Monitoring Program (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 First Half 2011, wells that exhibit water quality similar to the injected water include the middle and deep zone observation wells, certain middle and all deep zone compliance wells, and one shallow zone observation well.</p> <p>This report presents analytical laboratory groundwater results and groundwater level data collected from the First Half 2011 CMP monitoring event conducted in April 2011. During this event, the groundwater samples from the shallow observation well OW-2S had chromium concentrations of 31.2 µg/L and 29.8 µg/L. These results exceeded the chromium water quality objective of 28 µg/L. The concentrations of chromium are not related to injected water (which consistently has significantly lower Cr(VI) and chromium concentrations) but instead is related to the natural variability of background water quality within the shallower portions of the groundwater aquifer. Accordingly, DTSC and the Water Board have stated in letters to PG&E that it is not necessary to follow contingency plan requirements for Cr(VI) and chromium with respect to OW-2S and OW-5S. No other samples exceeded the water quality objectives for Cr(VI), chromium, pH, or total dissolved solids from the First Half 2011 CMP sampling event.</p> <p>Written by: PG&E</p>	
<p>Recommendations:</p> <p>This report is for your information only.</p>	

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

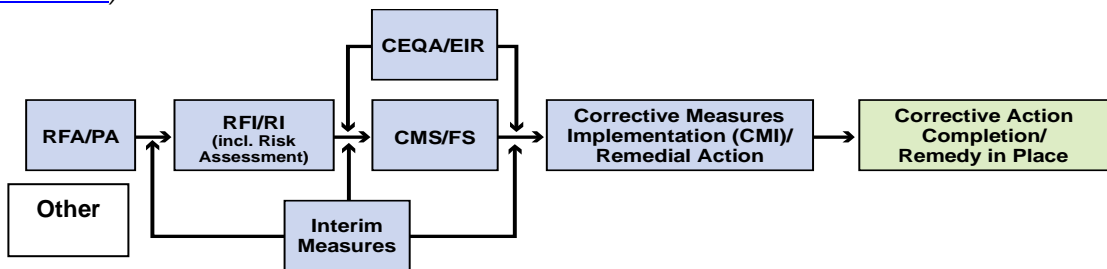
The CMP is a requirement related to the Interim Measure No. 3 and is designed to: (1) monitor changes in groundwater hydraulics and/or water quality of the aquifer in the injection well area and (2) to ensure that the quality of the aquifer is not adversely affected by the injected water.

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

Version 9



**Pacific Gas and
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July 15, 2011

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Subject: Board Order R7-2006-0060, WDID No. 7B 36 2033 001 - *Interim Measures No. 3, Compliance Monitoring Program, Semiannual Groundwater Monitoring Report, First Half 2011, PG&E Topock Compressor Station, Needles, California* (Document ID: PGE20110715A)

Dear Mr. Yue and Mr. Perdue:

Enclosed is the *Compliance Monitoring Program Semiannual Groundwater Monitoring Report, First Half 2011, Interim Measure No. 3, Pacific Gas and Electric Company Topock Compressor Station, Needles, California*. This monitoring report presents the results of the First Half 2011 Compliance Monitoring Program (CMP) groundwater monitoring event and has been prepared in conformance with the California Regional Water Quality Board, Colorado River Region (Water Board) Order No. R7-2006-0060, Monitoring and Reporting Program No. R7-2006-0060 Revision 1; the California Environmental Protection Agency, Department of Toxic Substances Control (DTSC)'s July 15, 2005 letter approving the Compliance Monitoring Plan; and subsequent letters modifying the reporting 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 were necessary based on sample results. The water quality objectives concentrations used to trigger the contingency plan are as follows: 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.

Mr. Aaron Yue
Mr. Robert Purdue
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July 15, 2011

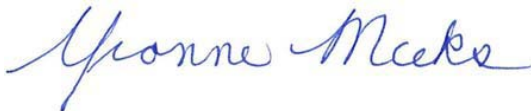
During the First Half 2011 monitoring event, samples from the well OW-2S (31.2 µg/L and 29.8 µg/L) exceeded the chromium water quality objective of 28.0 µg/L. A review of the water quality parameters indicative of treated groundwater injection (Cr[VI], TDS, sulfate, molybdenum, nitrate/nitrite, and fluoride) confirm that injected water has not yet reached OW-2S and that the concentrations of Cr(VI) and chromium are not related to injected water (which consistently has significantly lower Cr(VI) and chromium concentrations than those measured at well OW-2S), but instead is related to the natural variability within the shallower portions of the aquifer.

In a letter dated January 5, 2007, DTSC stated that it was not necessary to follow contingency plan requirements for Cr(VI) and chromium with respect to OW-2S and OW-5S. The Water Board concurred with this decision in a letter dated March 2, 2007. As such, the contingency plan was not triggered due to the chromium concentrations detected in OW-2S during First Half 2011.

No other samples exceeded the water quality objectives for Cr(VI), chromium, pH, or TDS during the First Half 2011 sampling event. The next CMP event is scheduled to occur in October 2011.

Please contact me at (805) 546-5243 if you have any questions on the CMP.

Sincerely,



Yvonne Meeks
Topock Remediation Project Manager

cc: Jose Cortez, Water Board
Christopher Guerre, DTSC

Enclosure

Final Report

**Compliance Monitoring Program
Semiannual Groundwater
Monitoring Report, First Half 2011**

**Interim Measure No. 3
PG&E Topock Compressor Station
Needles, California**

Board Order R7-2006-0060

WDID No. 7B 36 2033 001

Document ID: PGE20110715A

Prepared for
**California Department of Toxic Substances Control
and the California Regional Water Quality Control
Board, Colorado River Basin Region**

On behalf of
Pacific Gas and Electric Company

July 15, 2011

CH2MHILL

155 Grand Avenue, Suite 800
Oakland, CA 94612

**Compliance Monitoring Program
Semiannual Groundwater Monitoring Report,
First Half 2011**

**PG&E Topock Compressor Station
Needles, California
Board Order R7-2006-0060, WDID No. 7B 36 2033 001**

Prepared for

**California Department of Toxic Substance Control and the California Regional
Water Quality Control Board, Colorado River Basin Region**

On behalf of

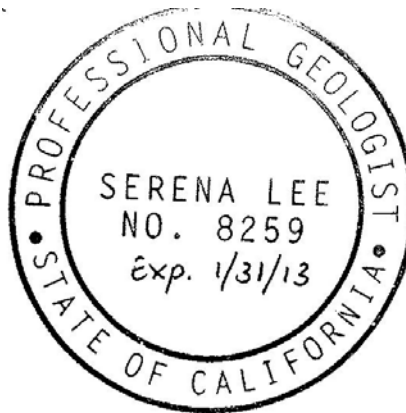
Pacific Gas and Electric Company

July 15, 2011

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



Serena Lee
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- A Laboratory Reports, First Half 2011
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Acronyms and Abbreviations

µg/L	micrograms per liter
CMP	Compliance Monitoring Program
Cr(VI)	hexavalent chromium
CW	compliance well
DTSC	California Environmental Protection Agency, Department of Toxic Substances Control
IM	Interim Measure
IM No. 3	Interim Measure No. 3
IW	injection well
mg/L	milligrams per liter
MRP	Monitoring and Reporting Program
PG&E	Pacific Gas and Electric Company
OW	observation well
QAPP	Quality Assurance Project Plan
TDS	total dissolved solids
Water Board	California Regional Water Quality Control Board, Colorado River Basin Region
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 consists of groundwater extraction in the Colorado River floodplain and management of extracted groundwater. The groundwater extraction, treatment, and injection systems are collectively referred to as Interim Measure No. 3 (IM No. 3). Currently, the IM No. 3 facilities include a groundwater extraction system, conveyance piping, a groundwater treatment plant, and an injection well field for the discharge of the treated groundwater. Figure 1 shows the location of the IM No. 3 extraction, conveyance, treatment, and injection facilities. (All figures are provided at the end of this report.)

The *Groundwater Compliance Monitoring Plan for Interim Measures No. 3 Injection Area, Topock Compressor Station, Needles, California* (CH2M HILL, 2005a) was submitted to the California Regional Water Quality Control Board, Colorado River Basin Region (Water Board) and the California Environmental Protection Agency, Department of Toxic Substances Control (DTSC) on June 17, 2005 (herein referred to as the Compliance Monitoring Plan). The Compliance Monitoring Plan and its addendum provide the objectives, proposed monitoring program, data evaluation methods, and reporting requirements for the Compliance Monitoring Program (CMP). In a letter dated June 9, 2006, DTSC modified the reporting requirements of the Compliance Monitoring Plan (DTSC, 2006).

On October 13, 2004, the Water Board adopted Waste Discharge Requirements (WDR) Order No. R7-2004-0103. This WDR authorized PG&E to inject treated groundwater into wells located in the East Mesa area of the Topock site. This WDR was superseded on September 20, 2006 by WDR No. R7-2006-0060, which has similar terms. Work described in this report was performed in accordance with the WDR No. R7-2006-0060.

The WDR specifies effluent limitations, prohibitions, specifications, and provisions for subsurface injection. Monitoring and Reporting Program (MRP) No. R7-2004-0103 specified 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. As with the WDR, MRP No. R7-2004-0103 was superseded on September 20, 2006 by MRP No. R7-2006-0060 with similar requirements.

The injection system consists of two injection wells (IWs): IW-2 and IW-3. Operation of the treatment system was conditionally approved on July 15, 2005 (DTSC, 2005), and injection into IW-2 began on July 31, 2005. Table 1 is a summary of the history of injection for IM No. 3. (All tables are provided at the end of this report.)

Figure 2 shows the locations of the injection wells and the groundwater monitoring wells (observation wells [OWs] and compliance wells [CWs]) in the CMP. Table 2 is a summary of information on well construction and sampling methods for all wells in the CMP.

On January 22, 2007 (DTSC, 2007), DTSC approved a reduction of constituents analyzed during quarterly sampling of the CMP observation wells (details are provided in

CH2M HILL, 2006). The Water Board concurred in a letter dated January 23, 2007 (Water Board, 2007a).

On October 16, 2007, the Water Board approved collecting pH measurements in the field rather than through laboratory analysis due to the change to 15-minute holding time for laboratory measurements specified by United States Environmental Protection Agency Method 150.1 (Water Board, 2007b). DTSC provided concurrence for the field pH change in an e-mail dated January 22, 2008 (DTSC, 2008a). This change became effective with the first quarter 2008 sampling event.

On November 13, 2007, the Water Board approved a modification to hexavalent chromium (Cr[VI]) analytical methods, which extended the holding time from 24 hours to 28 days (Water Board, 2007c). DTSC provided concurrence for the 28-day holding time for Cr(VI) analyses in an e-mail dated January 22, 2008 (DTSC, 2008a). The first quarter 2008 sampling event was the first event to incorporate the new 28-day holding time for analyzing Cr(VI).

PG&E proposed modifications to the CMP, including the sampling and reporting frequency and the field pH trigger range for the CMP contingency plan, to the Water Board and the DTSC on July 3, 2008. On August 28, 2008, the Water Board approved these modifications as Revision 1 to the MRP (Water Board, 2008). On December 12, 2008, the modification of the CMP contingency plan pH range to a field pH range of 6.2 to 9.2 was also approved by the DTSC (DTSC, 2008b). The remaining MRP modifications were approved by DTSC on September 3, 2009 (DTSC, 2009).

With the approval of the MRP modifications, quarterly sampling is no longer required.

As of April 2011, samples are collected from OWs and CWs (Figure 2) according to the following schedule:

- Three OWs (OW-1S, OW-2S, and OW5S) located near the IM No. 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 a 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 total dissolved solids (TDS), turbidity, specific conductance, and a reduced suite of metals. For annual events for select OWs, laboratory analyses include TDS, turbidity, specific conductance, and a reduced suite of metals. Annual and triennial sampling events for CWs and select OWs include dissolved 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, 2005a).

This report presents the results of the First Half 2011 CMP groundwater monitoring event.

2.0 First Half 2011 Activities

This section provides a summary of the monitoring and sampling activities completed during the first half of 2011. The First Half 2011 event was a semiannual event conducted from April 4 through April 5, 2011 and consisted of:

- Three observation and eight compliance monitoring wells were sampled for water quality analyses.
- Groundwater elevations and field water quality data were collected prior to sampling.
- Two duplicate samples were collected at wells CW-4M and OW-2S 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. Groundwater elevations were collected on June 13, 2011 for contouring.

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, 2005b) and addendums.

CMP groundwater samples were analyzed by Truesdail Laboratories, Inc. in Tustin, California and EMAX Laboratories, Inc. in Torrance, California, both California-certified analytical laboratories. 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, 2005b) and addendums. Data validation and management were conducted in accordance with the *Quality Assurance Project Plan [QAPP] Addendum to the PG&E Program Quality Assurance Project Plan for the Topock Groundwater Monitoring and Investigation Projects* (CH2M HILL, 2008).

3.0 First Half 2011 Results

This section is a summary of the results of the CMP groundwater sampling conducted during the first half of 2011.

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 First Half 2011 monitoring event are presented in Appendices A and B, respectively.

3.1 Analytical Results

Three observation wells and eight compliance wells were sampled during the First Half 2011 sampling event. Analytical results for Cr(VI), chromium, other metals, and general chemistry parameters are presented in Tables 3 and 4 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.

3.1.1 Hexavalent Chromium and Chromium

Table 3 presents the Cr(VI) and chromium analytical results for groundwater in the shallow, middle, and deep wells from the First Half 2011 CMP sampling event. For shallow wells, the maximum detected Cr(VI) concentration was 28.9 micrograms per liter ($\mu\text{g/L}$) in well OW-2S on April 5, 2011. For the middle wells, the maximum detected Cr(VI) concentration was 11.2 $\mu\text{g/L}$ in well CW-4M on April 5, 2011. For the deep wells, the maximum detected Cr(VI) concentration was 1.8 $\mu\text{g/L}$ in well CW-4D on April 4, 2011.

During the First Half 2011 sampling event, none of the results exceeded the WQO of 32.6 $\mu\text{g/L}$ for Cr(VI).

For shallow wells, the maximum detected chromium concentration was 31.2 $\mu\text{g/L}$ in well OW-2S on April 5, 2011. For the middle wells, the maximum detected chromium concentration was 11.8 $\mu\text{g/L}$ in well CW-4M on April 5, 2011. For the deep wells, the maximum detected chromium concentration was 1.90 $\mu\text{g/L}$ in well CW-1D on April 5, 2011.

During the First Half 2011 sampling event, a sample from OW-2S exceeded the WQO of 28 $\mu\text{g/L}$ for chromium. The April 5, 2011 sample and field duplicate from well OW-2S had chromium concentrations of 31.2 $\mu\text{g/L}$ and 29.8 $\mu\text{g/L}$. These exceedances are not considered to be the result of injection of treated groundwater since the average effluent concentration of chromium from the IM No. 3 treatment plant is normally non-detect with a reporting limit of 1 $\mu\text{g/L}$ (CH2M HILL, 2011a).

Chromium and Cr(VI) concentrations at OW-2S have been consistently above the WQOs since November 2005. The exceedance of chromium is thus considered reflective of the natural variance in background water quality. The contingency plan was not triggered due to the chromium concentrations detected in OW-2S during the first half of 2011.

3.1.2 Other Metals and General Chemistry

Table 4 presents the other metals and general chemistry results for the CMP groundwater wells sampled during the first half of 2011. Metals and ions detected in the First Half 2011 sampling event included chloride, fluoride, sulfate, nitrate/nitrite as nitrogen, dissolved sodium, and dissolved molybdenum. In general, concentrations of metals and ions detected during the First Half 2011 sampling event are similar to those detected in previous sampling events.

During the first half of 2011, the sampling results from all wells were within the WQOs for TDS (10,800 milligrams per liter [mg/L]) and pH (6.2 to 9.2). Sampling results for TDS varied from 950 mg/L in well OW-2S to 5,290 mg/L in well CW-3M. Field pH varied from 7.42 in well OW-1S to 8.31 in well CW-3D.

3.2 Analytical Data Quality Review

The laboratory analytical data generated from the First Half 2011 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 *PG&E Program QAPP (CH2M HILL, 2008), Addendum to the PG&E Program Quality Assurance Project Plan for the Topock Groundwater Monitoring and Investigation Projects*.

3.2.1 Matrix Interference

Matrix interference was encountered in two groundwater samples that affected the sensitivity for Cr(VI) when using Method E218.6. The Cr(VI) sample results from CW-2D and CW-3D reflect an adjusted reporting limit of 1 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.

3.2.2 Matrix Spike Samples

Matrix spike acceptance criteria were met.

3.2.3 Quantitation and Sensitivity

With the exception of the matrix interference issues discussed in Section 3.2.1, method and analyte combinations met the project reporting limit objectives.

3.2.4 Holding Time Data Qualification

For the First Half 2011 sampling event, method holding time requirements were met.

3.2.5 Field Duplicates

For the First Half 2011 sampling event, the turbidity results from one of the field duplicate pairs had relative percent difference greater than the upper control limit. The two detected results were qualified as estimated and “J” flagged. All other field duplicate acceptance criteria were met.

3.2.6 Method Blanks

For the First Half 2011 sampling event, method blank acceptance criteria were met.

3.2.7 Equipment Blanks

For the First Half 2011 sampling event, equipment blank acceptance criteria were met.

3.2.8 Laboratory Duplicates

For the First Half 2011 sampling event, laboratory duplicate acceptance criteria for the methods were met.

3.2.9 Calibration

For the First Half 2011 sampling event, initial and continuing calibrations were performed as required by the methods. Calibration criteria were met.

3.2.10 Conclusion

For the First Half 2011 sampling event, the completeness objectives were met for 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.

3.3 Influence of Treated Water

3.3.1 Post-injection Versus Pre-injection

Injection of treated water began on July 31, 2005. Under WDR No. R7-2006-0060 for the IM No. 3 groundwater treatment system, PG&E is required to submit WDR monitoring reports on the 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 No. 3 injection well field. Table 5 provides selected effluent water analytical results from three of the monthly reports: August 29, 2005, July 2, 2007, and April 5, 2011. While there are differences among some parameters in these samples, a number of parameters show relatively consistent concentrations in the effluent over time. 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 if a groundwater monitoring well is being affected by injection. In general terms, treated water has the following characteristics (based on review of August 2005 through April 2011 effluent characteristics):

- Cr(VI): typically non-detect (or below 1.0 µg/L)
- Chromium: typically non-detect (1.0 µg/L)
- Fluoride: approximately 2 mg/L
- Molybdenum: approximately 15 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 sampling of the treated water quality over time.

Table 5 also 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 6 presents a comparison between the treated water quality and the results from the most recent sampling event (the First Half 2011 sampling event). These samples were collected after approximately 68 months of injection. While the pre-injection OW and CW sample results were significantly different from the treated water quality, a number of the First Half 2011 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 observations 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.

3.3.2 Water Quality Hydrographs

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 No. 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 First Half 2011 within the IM No. 3 injection well field are presented in Figures 3A through 3E.

Observation well water quality hydrographs are presented in Figures 3A through 3C. 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 non-uniform 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. OW shallow-depth wells (OW-2S and OW-5S) show little water quality variation over time. Sodium, chloride, vanadium, and molybdenum are 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 3D and 3E. Wells CW-1M, CW-1D, CW-2M, 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-2M and CW-4M show decreasing trends in Cr(VI) and chromium. These changes are early indications of the arrival of treated injection water.

3.4 Water Level Measurements

Table 7 presents the manual water level measurements and groundwater elevations for the first and second quarter 2011 per the approved modifications by the Water Board (Water Board, 2008). In compliance with Condition No. Two of DTSC's 2009 conditional approval letter (DTSC, 2009), confirmation was obtained from the IM No. 3 Plant Manager on either the morning before or of manual water level collection at the CMP wells that the IM No. 3 plant was operating normally on both the day before and the day of sample collection, with no backwash or unplanned shutdowns.

As a requirement of the conditional approval by DTSC (DTSC, 2005) and subsequent modifications (DTSC, 2009), water level measurements were collected continuously (measurements collected every half hour) with pressure transducers to produce hydrographs for select wells. Figures 4A through 4C present hydrographs that illustrate groundwater elevation trends and vertical hydraulic gradients observed over the First Half 2011 reporting period at select observation monitoring wells.

Groundwater elevation maps for shallow, middle, and deep wells are provided as Figures 5A through 5C. A snapshot of water level elevations was used to produce the groundwater elevation contour plots. The date is noted on each figure.

3.4.1 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 relationships of 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 5B and 5C should be viewed as approximate.

The injection well field is located in the East Mesa area of the Topock site (Figure 2). Overall sitewide water level contour maps for shallow wells are prepared annually, with flow consistently being shown to move to the east, northeast across the uplands portions of the site (CH2M HILL, 2011b).

The effects of injection in the IM No. 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 well IW-3. The potentiometric surfaces in prior CMP reports mapped the growth of the groundwater mound over time and show that, after 68 months of injection, the mound increased and then stabilized in height at several tenths of a foot in elevation above the surrounding water level elevations. Figures 5B and 5C present groundwater elevation contours for the average groundwater elevation of the mound within the middle and deep wells using June 13, 2011 groundwater elevations. As expected with a mound, the potentiometric surface of the deep wells is slightly broader, while the potentiometric surface of the middle wells is more localized to the vicinity of the injection wells. The mound is elliptical in shape, with the major axis running in a southwest to northeast direction. The lower gradients (broader 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.

The vertical gradient in the IM No. 3 injection well field area is directed upward at all of the CW and OW well clusters and also upward between each of the depth intervals in those same well clusters. Table 8 presents the vertical gradient data calculated using the June 13, 2011 groundwater elevations. The magnitude of the vertical gradients is generally 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. A component of the vertical gradients calculated in the vicinity of the IM No. 3 injection well field is undoubtedly related to the injection of treated water in the lower portions of the aquifer. The observed groundwater gradients in the IM No. 3 injection well field are consistent with expected regional groundwater flow within the southern Mohave Valley.

3.5 Field Parameter Data

A field water quality instrument and flow-through cell were used to measure water quality parameters during well purging and groundwater sampling. The measured field parameters included specific conductance, temperature, pH, oxidation-reduction potential, dissolved oxygen, turbidity, salinity, and water level elevations before sampling. Table 9 presents a summary of the field water quality data measured during the First Half 2011 monitoring event. Field data sheets for the First Half 2011 event are presented in Appendix B.

3.6 WDR Monitoring Requirements

Table 10 identifies the laboratory that performed each analysis and lists the following information as required by the WDR for the First Half 2011 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

4.0 Status of Monitoring Activities

4.1 Semiannual Monitoring

The next semiannual monitoring event will occur in October during the second half of 2011. This CMP monitoring event will include the sampling and analysis scope presented in the Compliance Monitoring Plan (CH2M HILL, 2005a, c) and subsequent approved scope revisions (DTSC, 2007, 2008a-b, 2009; Water Board, 2007a-b, 2008). The groundwater monitoring report for this CMP monitoring event will be submitted by January 13, 2012.

4.2 Annual Monitoring

The next annual monitoring event will occur in October during the second half of 2011. The groundwater monitoring report for this annual CMP monitoring event will be submitted by January 13, 2012.

5.0 References

- California Environmental Protection Agency, Department of Toxic Substances Control (DTSC). 2005. Letter to PG&E. "Conditional Approval for the Start Up and Operation of the Interim Measures No. 3 Treatment System and Injection Wells, Pacific Gas & Electric Company, Topock Compressor Station." July 15.
- _____. 2006. Letter to PG&E. "Third and Fourth Quarter Groundwater Monitoring Reports, Compliance Monitoring Program for Interim Measures No. 3 Injection Well Field Area, Pacific Gas & Electric Company, Topock Compressor Station, Needles, California." June 9.
- _____. 2007. Letter to PG&E. "Conditional Approval of Request for Reduced Groundwater Sampling Frequency for Select Constituents at Pacific Gas & Electric Company, Topock Compressor Station, Needles, California." January 22.
- _____. 2008a. Letter to PG&E. "Re: Analytical Methods for WDR Monitoring Programs." January 22.
- _____. 2008b. Letter to PG&E. "PG&E Topock: pH Modification to the CMP" December 12.
- _____. 2009. Letter to PG&E. "Conditional Approval of Modifications to the Compliance Monitoring Program, Pacific Gas and Electric Company (PG&E), Topock Compressor Station, Needles California (EPA ID No. CAT080011729)" September 3.
- California Regional Water Quality Control Board, Colorado River Basin Region (Water Board). 2007a. Letter to PG&E. "Conditional Approval of Limited Sampling Frequency for Selected Metals/General, PG&E, Topock Compressor Station, Needles, California." January 23.
- _____. 2007b. Letter to PG&E. "Clarification of Monitoring and Reporting Program (MRP) Requirements, Board Orders Nos. R7-2006-0060 and R7-2004-0080, Topock Compressor Station, San Bernardino County." October 16.
- _____. 2007c. Letter to PG&E. "Clarification of Monitoring and Reporting Program (MRP) Requirements, Board Orders Nos. R7-2006-0060, R7-2006-0008, R7-2004-0080, and R7-2007-0015, Topock Compressor Station, San Bernardino County." November 13.
- _____. 2008. Letter to PG&E. "Revision of Monitoring and Reporting Program (MRP), Board Order No. R7-2006-0060 Revision 1, Topock Compressor Station, San Bernardino County." August 28.
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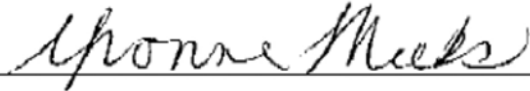
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- _____. 2006. *Request for Approval to Implement Limited Sampling Frequency for Selected Metals/General Minerals for PG&E Topock Compressor Station, Needles, California*. December 1.
- _____. 2008. *PG&E Program Quality Assurance Project Plan, Addendum to the PG&E Program Quality Assurance Project Plan for the Topock Groundwater Monitoring and Investigation Projects*. December.
- _____. 2011a. *First Quarter 2011 Monitoring Report, Interim Measure No. 3 Groundwater Treatment System, Document ID: PGE20110415A, Waste Discharge Requirements Board Order No. R7-2006-0060, PG&E Topock Compressor Station Needles, California*. April 15.
- _____. 2011b. *Fourth Quarter 2010 and Annual Interim Measures Performance Monitoring and Site-Wide Groundwater and Surface Water Monitoring Report, PG&E Topock Compressor Station, Needles, California*. March 15.

6.0 Certification

PG&E submitted a signature delegation letter to the Water Board on September 20, 2006. The letter delegated PG&E signature authority to Mr. Curt Russell and Ms. Yvonne Meeks for correspondence regarding Board Order R7-2006-0060.

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: July 15, 2011

TABLE 1

Operational Status of Interim Measures No. 3 Injection Wells From Inception of Injection Through First Half 2011
PG&E Topock Compliance Monitoring Program

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.

TABLE 1

Operational Status of Interim Measures No. 3 Injection Wells From Inception of Injection Through First Half 2011
PG&E Topock Compliance Monitoring Program

Time Period	Injection Status
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 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.

TABLE 2

Well Construction and Sampling Summary for Groundwater Samples, First Half 2011
PG&E Topock Compliance Monitoring Program

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)	192.7	108.1	Temp Redi-Flo AR	2	42	165		
CW-01D	East Mesa	566.46	250 - 300	2 (PVC)	322.7	108.3	Temp Redi-Flo AR	3	98	180		
CW-02M	East Mesa	549.45	152 - 202	2 (PVC)	208.3	91.7	Temp Redi-Flo AR	2	56	195		
CW-02D	East Mesa	549.43	285 - 335	2 (PVC)	357.7	91.3	Temp Redi-Flo AR	3	135	159		
CW-03M	East Mesa	534.10	172 - 222	2 (PVC)	224.6	76.6	Temp Redi-Flo AR	2	74	180		
CW-03D	East Mesa	534.14	270 - 320	2 (PVC)	342.6	76.0	Temp Redi-Flo AR	3	135	143		
CW-04M	East Mesa	518.55	119.5 - 169.8	2 (PVC)	172.5	60.5	Temp Redi-Flo AR	2	56	160		
CW-04D	East Mesa	518.55	233 - 283	2 (PVC)	305.6	60.4	Temp Redi-Flo AR	3	124	134		
IM Observation Wells												
OW-01S	East Mesa	550.21	83.5 - 113.5	2 (PVC)	116.1	92.6	Temp Redi-Flo AR	1	11	100	Active	
OW-01M	East Mesa	550.36	165 - 185	2 (PVC)	188.4	92.4	Temp Redi-Flo AR	3	50	109.6		
OW-01D	East Mesa	550.36	257 - 277	2 (PVC)	279.6	92.2	Temp Redi-Flo AR	3	102	111.4		
OW-02S	East Mesa	548.88	71 - 101	2 (PVC)	103.6	91.2	Temp Redi-Flo AR	1	6	100	Active	
OW-02M	East Mesa	548.52	190 - 210	2 (PVC)	212.9	90.6	Temp Redi-Flo AR	2	60	111.4		
OW-02D	East Mesa	549.01	310 - 330	2 (PVC)	342.3	90.6	Temp Redi-Flo AR	3	120	110.3		
OW-05S	East Mesa	551.83	70 - 110	2 (PVC)	112.9	94.1	Temp Redi-Flo AR	1	9	100	Active	
OW-05M	East Mesa	551.81	210 - 250	2 (PVC)	253.0	93.4	Temp Redi-Flo AR	3	80	112.5	Active	
OW-05D	East Mesa	552.41	300 - 320	2 (PVC)	352.8	93.8	Temp Redi-Flo AR	3	130	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 June 13, 2011.
All wells were purged and sampled using 3 well-volume method.

TABLE 3
Chromium Results for Groundwater Samples, First Half 2011
PG&E Topock Compliance Monitoring Program

Method:		E218.6	E200.8
Location ID	Sample Date	Hexavalent Chromium (µg/L)	Chromium (µg/L)
CW-01M	4/5/2011	3.80	3.40
CW-01D	4/5/2011	1.60	1.90
CW-02M	4/4/2011	3.60	3.50
CW-02D	4/4/2011	ND (1.0)	ND (1.0)
CW-03M	4/4/2011	9.70	10.5
CW-03D	4/4/2011	ND (1.0)	ND (1.0)
CW-04M	4/5/2011	11.2	11.8
CW-04M	4/5/2011 (FD)	11.2	11.7
CW-04D	4/4/2011	1.80	1.80
OW-01S	4/5/2011	10.6	12.3
OW-02S	4/5/2011	28.9	31.2
OW-02S	4/5/2011 (FD)	28.6	29.8
OW-05S	4/5/2011	20.6	22.3

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 4

Metals and General Chemistry Results for Groundwater Samples, First Half 2011

PG&E Topock Compliance Monitoring Program

Method:		E120.1	Field	SM2540C	SM2130B	E300.0	E300.0	E300.0	SM4500NO3	E200.7	E200.7
Location ID	Sample Date	Specific Conductance (µmhos/cm)	Field pH	Total Dissolved Solids (mg/L)	Turbidity (NTU)	Chloride (mg/L)	Fluoride (mg/L)	Sulfate (mg/L)	Nitrate/Nitrite as Nitrogen (mg/L)	Dissolved Sodium (mg/L)	Dissolved Molybdenum (µg/L)
CW-01M	4/5/2011	7280	7.70	4210	0.138	2400	1.83	495	2.82	---	---
CW-01D	4/5/2011	7350	7.67	4110	0.142	2020	1.90	496	3.12	---	---
CW-02M	4/4/2011	7160	8.15	4190	0.131	2110	2.89	465	2.23	---	---
CW-02D	4/4/2011	7330	8.27	4340	0.121	2140	3.90	496	2.75	---	---
CW-03M	4/4/2011	8680	8.01	5290	0.248	2770	2.79	434	1.22	---	---
CW-03D	4/4/2011	7070	8.31	4000	0.285	2100	5.49	488	2.69	---	---
CW-04M	4/5/2011	6630	7.75	3850	ND (0.1)	2170	1.87	376	1.97	---	---
CW-04M	4/5/2011 (FD)	6630	FD	3740	0.197	1950	1.92	376	2.01	---	---
CW-04D	4/4/2011	7850	8.14	4450	ND (0.1)	2300	4.00	499	2.58	---	---
OW-01S	4/5/2011	5190	7.42	2850	1.980	1550	1.64	302	2.32	636	ND (10)
OW-02S	4/5/2011	1710	7.97	950	14.100	402	5.48	112	3.74	315	42.3
OW-02S	4/5/2011 (FD)	1720	FD	950	9.310	401	5.49	113	4.27	317	39.2
OW-05S	4/5/2011	2570	7.68	1480	3.600	699	2.19	130	2.89	383	22.5

Notes:

FD field duplicate
 µmhos/cm micro-mhos per centimeter
 NTU Nephelometric Turbidity Unit
 mg/L milligrams per liter
 µg/L micrograms per liter
 ND parameter not detected at the listed reporting limit
 --- not sampled or required for this event

TABLE 5

Treated Water Quality Compared to OW and CW Pre-injection Water Quality
PG&E Topock Compliance Monitoring Program

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	3.7	450	3620
Treated Water	7/2/2007	ND(0.2)	ND (1.0)	2.18	17.5	2.60	477	3980
Treated Water	4/5/2011	ND (0.2)	ND (1.0)	2.01	17.3	2.88	518	4150
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 6

Treated Water Quality Compared to First Half 2011 Sampling Event Water Quality
PG&E Topock Compliance Monitoring Program

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	4/1/2009	ND (0.2)	ND (1.0)	2.01	19.6	2.48	500	3850
Treated Water	4/7/2010	0.29	ND (1.0)	1.82	18.6	2.87	512	4270
Treated Water	4/5/2011	ND (0.2)	ND (1.0)	2.01	17.3	2.88	518	4150
CW-01M	4/5/2011	3.80	3.40	1.83	---	2.82	495	4210
CW-01D	4/5/2011	1.60	1.90	1.90	---	3.12	496	4110
CW-02M	4/4/2011	3.60	3.50	2.89	---	2.23	465	4190
CW-02D	4/4/2011	ND (1.0)	ND (1.0)	3.90	---	2.75	496	4340
CW-03M	4/4/2011	9.70	10.5	2.79	---	1.22	434	5290
CW-03D	4/4/2011	ND (1.0)	ND (1.0)	5.49	---	2.69	488	4000
CW-04M	4/5/2011	11.2	11.8	1.87	---	1.97	376	3850
CW-04M	4/5/2011 (FD)	11.2	11.7	1.92	---	2.01	376	3740
CW-04D	4/4/2011	1.80	1.80	4.00	---	2.58	499	4450
OW-01S	4/5/2011	10.6	12.3	1.64	ND (10)	2.32	302	2850
OW-02S	4/5/2011 (FD)	28.6	29.8	5.49	39.2	4.27	113	950
OW-02S	4/5/2011	28.9	31.2	5.48	42.3	3.74	112	950
OW-05S	4/5/2011	20.6	22.3	2.19	22.5	2.89	130	1480

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 SM4500NO3E, except for treated water which used method E300.

All total dissolved solid samples were analyzed with method SM2540C.

TABLE 7
Manual Water Level Measurements and Elevations, First Half 2011
PG&E Topock Compliance Monitoring Program

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	192.7	566.07	28-Mar-11	11:39 AM	109.08	0.48	456.92
			13-Jun-11	6:36 PM	108.14	0.48	457.86
CW-01D	322.7	566.46	28-Mar-11	11:41 AM	109.10	0.50	457.21
			13-Jun-11	6:38 PM	108.26	0.50	458.05
CW-02M	208.3	549.45	28-Mar-11	11:28 AM	92.55	0.49	456.82
			13-Jun-11	7:30 PM	91.71	0.49	457.66
CW-02D	357.7	549.43	28-Mar-11	11:31 AM	92.10	0.49	457.10
			13-Jun-11	7:31 PM	91.30	0.49	457.89
CW-03M	224.6	534.10	28-Mar-11	11:37 AM	77.39	0.60	456.73
			13-Jun-11	7:35 PM	76.60	0.60	457.52
CW-03D	342.6	534.14	28-Mar-11	11:35 AM	76.77	0.53	457.20
			13-Jun-11	7:33 PM	76.00	0.53	457.96
CW-04M	172.5	518.55	28-Mar-11	11:49 AM	61.35	0.43	457.09
			13-Jun-11	7:23 PM	60.50	0.43	457.94
CW-04D	305.6	518.55	28-Mar-11	11:47 AM	61.20	0.51	457.17
			13-Jun-11	7:21 PM	60.40	0.51	457.97
OW-01S	116.1	550.21	13-Jun-11	6:46 PM	92.58	0.21	457.56
OW-01M	188.4	550.36	13-Jun-11	6:45 PM	92.43	0.46	457.82
OW-01D	279.6	550.36	13-Jun-11	6:43 PM	92.15	0.48	458.03
OW-02S	103.6	548.88	13-Jun-11	6:58 PM	91.24	0.09	457.59
OW-02M	212.9	548.52	13-Jun-11	7:01 PM	90.58	0.49	457.82
OW-02D	342.3	549.01	13-Jun-11	6:57 PM	90.55	0.49	458.20
OW-05S	112.9	551.83	13-Jun-11	7:06 PM	94.05	0.17	457.72
OW-05M	253.0	551.81	13-Jun-11	7:10 PM	93.38	0.46	458.26
OW-05D	352.8	552.41	13-Jun-11	7:13 PM	93.79	0.52	458.44

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 8

Vertical Gradients within the OW and CW Clusters

PG&E Topock Compliance Monitoring Program

Well Pairs	Vertical Gradient (ft/ft) ^a
CW-01D to CW-01M	0.0017
CW-02D to CW-02M	0.0017
CW-03D to CW-03M	0.0045
CW-04D to CW-04M	0.0003
OW-01M to OW-01S	0.0034
OW-01D to OW-01M	0.0023
OW-02M to OW-02S	0.0020
OW-02D to OW-02M	0.0032
OW-05M to OW-05S	0.0039
OW-05D to OW-05M	0.0023

^a Positive value signifies an upward gradient.

Gradients calculated using June 13, 2011 groundwater levels.

TABLE 9

Field Parameter Measurements for Groundwater Samples, First Half 2011

PG&E Topock Compliance Monitoring Program

Location ID	Sampling Date	Specific Conductance (µmhos/cm)	Temperature (°C)	pH	ORP (mV)	Dissolved Oxygen (mg/L)	Turbidity (NTU)	Salinity (%)
CW-01M	4/5/2011	7488	29.85	7.7	57.7	6.18	1	0.48
CW-01D	4/5/2011	7484	29.35	7.67	66.8	5.96	1	0.48
CW-02M	4/4/2011	7252	29.85	8.15	13.3	---	2	0.47
CW-02D	4/4/2011	7453	30.87	8.27	26.9	---	2	0.48
CW-03M	4/4/2011	8941	29.86	8.01	5.2	---	2	0.58
CW-03D	4/4/2011	7339	30.92	8.31	4.4	---	2	0.47
CW-04M	4/5/2011	6790	29.55	7.75	81.6	2.18	1	0.44
CW-04D	4/4/2011	7898	30.62	8.14	9.3	---	2	0.51
OW-01S	4/5/2011	5381	29.78	7.42	46.1	3.53	3	0.35
OW-02S	4/5/2011	1741	29.04	7.97	47.5	4.79	24	0.11
OW-05S	4/5/2011	2642	29.31	7.68	42.5	3.69	5	0.17

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
 --- data rejected due to equipment malfunction

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

TABLE 10

Board Order No. R7-2006-0060 WDR Monitoring Information for Groundwater Samples, First Half 2011
PG&E Topock Compliance Monitoring Program

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-025	Barry Collom	4/5/2011	10:54:00 AM	TLI	EPA 120.1	SC	4/7/2011	Iordan Stavrev	µmhos/cm	7350	2.0	0.038
					TLI	EPA 200.8	CRTD	4/23/2011	Maksim Gorbunov/Hope Trinida	µg/L	1.90	1.0	0.095
					TLI	EPA 218.6	CR6	4/13/2011	Sonya Bersudsky	µg/L	1.60	1.0	0.11
					TLI	EPA 300.0	CL	4/6/2011	Giawad Ghenniwa	mg/L	2020	100	15.0
					TLI	EPA 300.0	FL	4/6/2011	Giawad Ghenniwa	mg/L	1.90	0.5	0.025
					TLI	EPA 300.0	SO4	4/7/2011	Giawad Ghenniwa	mg/L	496	12.5	0.50
					TLI	SM2130B	TRB	4/6/2011	Gautam Savani	NTU	0.142	0.1	0.014
					TLI	SM2540C	TDS	4/8/2011	Jenny Tankunakorn	mg/L	4110	250	0.434
					EMXT	SM4500NO3-E	NO3NO2N	4/13/2011	Peter Phan	mg/L	3.12	1.0	0.20
CW-01M	CW-01M-025	Barry Collom	4/5/2011	11:29:48 AM	TLI	EPA 120.1	SC	4/7/2011	Iordan Stavrev	µmhos/cm	7280	2.0	0.038
					TLI	EPA 200.8	CRTD	4/23/2011	Maksim Gorbunov/Hope Trinida	µg/L	3.40	1.0	0.095
					TLI	EPA 218.6	CR6	4/13/2011	Sonya Bersudsky	µg/L	3.80	1.0	0.11
					TLI	EPA 300.0	CL	4/6/2011	Giawad Ghenniwa	mg/L	2400	100	15.0
					TLI	EPA 300.0	FL	4/6/2011	Giawad Ghenniwa	mg/L	1.83	0.5	0.025
					TLI	EPA 300.0	SO4	4/7/2011	Giawad Ghenniwa	mg/L	495	12.5	0.50
					TLI	SM2130B	TRB	4/6/2011	Gautam Savani	NTU	0.138	0.1	0.014
					TLI	SM2540C	TDS	4/8/2011	Jenny Tankunakorn	mg/L	4210	250	0.434
					EMXT	SM4500NO3-E	NO3NO2N	4/13/2011	Peter Phan	mg/L	2.82	1.0	0.20
CW-02D	CW-02D-025	Barry Collom	4/4/2011	1:10:00 PM	TLI	EPA 120.1	SC	4/7/2011	Iordan Stavrev	µmhos/cm	7330	2.0	0.038
					TLI	EPA 200.8	CRTD	4/23/2011	Maksim Gorbunov/Hope Trinida	µg/L	ND (1.0)	1.0	0.095
					TLI	EPA 218.6	CR6	4/13/2011	Sonya Bersudsky	µg/L	ND (1.0)	1.0	0.11
					TLI	EPA 300.0	CL	4/6/2011	Giawad Ghenniwa	mg/L	2140	100	15.0
					TLI	EPA 300.0	FL	4/6/2011	Giawad Ghenniwa	mg/L	3.90	0.5	0.025
					TLI	EPA 300.0	SO4	4/7/2011	Giawad Ghenniwa	mg/L	496	12.5	0.50
					TLI	SM2130B	TRB	4/6/2011	Gautam Savani	NTU	0.121	0.1	0.014
					TLI	SM2540C	TDS	4/8/2011	Jenny Tankunakorn	mg/L	4340	250	0.434
					EMXT	SM4500NO3-E	NO3NO2N	4/13/2011	Peter Phan	mg/L	2.75	1.0	0.20

TABLE 10

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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
CW-02M	CW-02M-025	Barry Collom	4/4/2011	2:12:00 PM	TLI	EPA 120.1	SC	4/7/2011	Iordan Stavrev	µmhos/cm	7160	2.0	0.038
					TLI	EPA 200.8	CRTD	4/23/2011	Maksim Gorbunov/Hope Trinida	µg/L	3.50	1.0	0.095
					TLI	EPA 218.6	CR6	4/13/2011	Sonya Bersudsky	µg/L	3.60	1.0	0.11
					TLI	EPA 300.0	CL	4/6/2011	Giawad Ghenniwa	mg/L	2110	100	15.0
					TLI	EPA 300.0	FL	4/6/2011	Giawad Ghenniwa	mg/L	2.89	0.5	0.025
					TLI	EPA 300.0	SO4	4/7/2011	Giawad Ghenniwa	mg/L	465	12.5	0.50
					TLI	SM2130B	TRB	4/6/2011	Gautam Savani	NTU	0.131	0.1	0.014
					TLI	SM2540C	TDS	4/8/2011	Jenny Tankunakorn	mg/L	4190	250	0.434
					EMXT	SM4500NO3-E	NO3NO2N	4/13/2011	Peter Phan	mg/L	2.23	1.0	0.20
CW-03D	CW-03D-025	Barry Collom	4/4/2011	4:40:00 PM	TLI	EPA 120.1	SC	4/7/2011	Iordan Stavrev	µmhos/cm	7070	2.0	0.038
					TLI	EPA 200.8	CRTD	4/23/2011	Maksim Gorbunov/Hope Trinida	µg/L	ND (1.0)	1.0	0.095
					TLI	EPA 218.6	CR6	4/13/2011	Sonya Bersudsky	µg/L	ND (1.0)	1.0	0.11
					TLI	EPA 300.0	CL	4/6/2011	Giawad Ghenniwa	mg/L	2100	100	15.0
					TLI	EPA 300.0	FL	4/6/2011	Giawad Ghenniwa	mg/L	5.49	0.5	0.025
					TLI	EPA 300.0	SO4	4/7/2011	Giawad Ghenniwa	mg/L	488	12.5	0.50
					TLI	SM2130B	TRB	4/6/2011	Gautam Savani	NTU	0.285	0.1	0.014
					TLI	SM2540C	TDS	4/8/2011	Jenny Tankunakorn	mg/L	4000	250	0.434
					EMXT	SM4500NO3-E	NO3NO2N	4/13/2011	Peter Phan	mg/L	2.69	1.0	0.20
CW-03M	CW-03M-025	Barry Collom	4/4/2011	3:26:00 PM	TLI	EPA 120.1	SC	4/7/2011	Iordan Stavrev	µmhos/cm	8680	2.0	0.038
					TLI	EPA 200.8	CRTD	4/23/2011	Maksim Gorbunov/Hope Trinida	µg/L	10.5	1.0	0.095
					TLI	EPA 218.6	CR6	4/13/2011	Sonya Bersudsky	µg/L	9.70	1.0	0.11
					TLI	EPA 300.0	CL	4/6/2011	Giawad Ghenniwa	mg/L	2770	100	15.0
					TLI	EPA 300.0	FL	4/6/2011	Giawad Ghenniwa	mg/L	2.79	0.5	0.025
					TLI	EPA 300.0	SO4	4/7/2011	Giawad Ghenniwa	mg/L	434	12.5	0.50
					TLI	SM2130B	TRB	4/6/2011	Gautam Savani	NTU	0.248	0.1	0.014
					TLI	SM2540C	TDS	4/8/2011	Jenny Tankunakorn	mg/L	5290	250	0.434
					EMXT	SM4500NO3-E	NO3NO2N	4/13/2011	Peter Phan	mg/L	1.22	0.5	0.10

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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
CW-04D	CW-04D-025	Barry Collom	4/4/2011	6:04:50 PM	TLI	EPA 120.1	SC	4/7/2011	Iordan Stavrev	µmhos/cm	7850	2.0	0.038
					TLI	EPA 200.8	CRTD	4/23/2011	Maksim Gorbunov/Hope Trinida	µg/L	1.80	1.0	0.095
					TLI	EPA 218.6	CR6	4/13/2011	Sonya Bersudsky	µg/L	1.80	1.0	0.11
					TLI	EPA 300.0	CL	4/6/2011	Giawad Ghenniwa	mg/L	2300	100	15.0
					TLI	EPA 300.0	FL	4/6/2011	Giawad Ghenniwa	mg/L	4.00	0.5	0.025
					TLI	EPA 300.0	SO4	4/7/2011	Giawad Ghenniwa	mg/L	499	12.5	0.50
					TLI	SM2130B	TRB	4/6/2011	Gautam Savani	NTU	ND (0.1)	0.1	0.014
					TLI	SM2540C	TDS	4/8/2011	Jenny Tankunakorn	mg/L	4450	250	0.434
					EMXT	SM4500NO3-E	NO3NO2N	4/13/2011	Peter Phan	mg/L	2.58	1.0	0.20
CW-04M	CW-04M-025	Barry Collom	4/5/2011	9:05:00 AM	TLI	EPA 120.1	SC	4/7/2011	Iordan Stavrev	µmhos/cm	6630	2.0	0.038
					TLI	EPA 200.8	CRTD	4/23/2011	Maksim Gorbunov/Hope Trinida	µg/L	11.8	1.0	0.095
					TLI	EPA 218.6	CR6	4/14/2011	Sonya Bersudsky	µg/L	11.2	1.0	0.11
					TLI	EPA 300.0	CL	4/6/2011	Giawad Ghenniwa	mg/L	2170	100	15.0
					TLI	EPA 300.0	FL	4/6/2011	Giawad Ghenniwa	mg/L	1.87	0.5	0.025
					TLI	EPA 300.0	SO4	4/7/2011	Giawad Ghenniwa	mg/L	376	12.5	0.50
					TLI	SM2130B	TRB	4/6/2011	Gautam Savani	NTU	ND (0.1)	0.1	0.014
					TLI	SM2540C	TDS	4/8/2011	Jenny Tankunakorn	mg/L	3850	125	0.434
					EMXT	SM4500NO3-E	NO3NO2N	4/13/2011	Peter Phan	mg/L	1.97	0.5	0.10
CW-04M	OW-90-025	Barry Collom	4/5/2011	9:07:00 AM	TLI	EPA 120.1	SC	4/7/2011	Iordan Stavrev	µmhos/cm	6630	2.0	0.038
					TLI	EPA 200.8	CRTD	4/23/2011	Maksim Gorbunov/Hope Trinida	µg/L	11.7	1.0	0.095
					TLI	EPA 218.6	CR6	4/14/2011	Sonya Bersudsky	µg/L	11.2	1.0	0.11
					TLI	EPA 300.0	CL	4/7/2011	Giawad Ghenniwa	mg/L	1950	100	15.0
					TLI	EPA 300.0	FL	4/6/2011	Giawad Ghenniwa	mg/L	1.92	0.5	0.025
					TLI	EPA 300.0	SO4	4/7/2011	Giawad Ghenniwa	mg/L	376	12.5	0.50
					TLI	SM2130B	TRB	4/6/2011	Gautam Savani	NTU	0.197	0.1	0.014
					TLI	SM2540C	TDS	4/8/2011	Jenny Tankunakorn	mg/L	3740	125	0.434
					EMXT	SM4500NO3-E	NO3NO2N	4/13/2011	Peter Phan	mg/L	2.01	0.5	0.10

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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-01S	OW-01S-025	Barry Collom	4/5/2011	12:00:18 PM	TLI	EPA 120.1	SC	4/7/2011	Iordan Stavrev	µmhos/cm	5190	2.0	0.038
					TLI	EPA 200.7	MOD	4/27/2011	Ethel Suico	µg/L	ND (10)	10.0	4.00
					TLI	EPA 200.7	NAD	4/19/2011	Ethel Suico	mg/L	0.636	0.025	0.00293
					TLI	EPA 200.8	CRTD	4/23/2011	Maksim Gorbunov/Hope Trinida	µg/L	12.3	1.0	0.095
					TLI	EPA 218.6	CR6	4/14/2011	Sonya Bersudsky	µg/L	10.6	1.0	0.11
					TLI	EPA 300.0	CL	4/6/2011	Giawad Ghenniwa	mg/L	1550	100	15.0
					TLI	EPA 300.0	FL	4/6/2011	Giawad Ghenniwa	mg/L	1.64	0.5	0.025
					TLI	EPA 300.0	SO4	4/7/2011	Giawad Ghenniwa	mg/L	302	12.5	0.50
					TLI	SM2130B	TRB	4/6/2011	Gautam Savani	NTU	1.98	0.1	0.014
					TLI	SM2540C	TDS	4/8/2011	Jenny Tankunakorn	mg/L	2850	125	0.434
					EMXT	SM4500NO3-E	NO3NO2N	4/13/2011	Peter Phan	mg/L	2.32	0.5	0.10
OW-02S	OW-02S-025	Barry Collom	4/5/2011	12:58:00 PM	TLI	EPA 120.1	SC	4/7/2011	Iordan Stavrev	µmhos/cm	1710	2.0	0.038
					TLI	EPA 200.7	MOD	4/27/2011	Ethel Suico	µg/L	42.3	10.0	4.00
					TLI	EPA 200.7	NAD	4/19/2011	Ethel Suico	mg/L	0.315	0.025	0.00293
					TLI	EPA 200.8	CRTD	4/23/2011	Maksim Gorbunov/Hope Trinida	µg/L	31.2	1.0	0.095
					TLI	EPA 218.6	CR6	4/14/2011	Sonya Bersudsky	µg/L	28.9	1.0	0.11
					TLI	EPA 300.0	CL	4/6/2011	Giawad Ghenniwa	mg/L	402	20.0	3.00
					TLI	EPA 300.0	FL	4/6/2011	Giawad Ghenniwa	mg/L	5.48	0.5	0.025
					TLI	EPA 300.0	SO4	4/7/2011	Giawad Ghenniwa	mg/L	112	5.0	0.20
					TLI	SM2130B	TRB	4/6/2011	Gautam Savani	NTU	14.1 J	0.1	0.014
					TLI	SM2540C	TDS	4/8/2011	Jenny Tankunakorn	mg/L	950	50.0	0.434
					EMXT	SM4500NO3-E	NO3NO2N	4/13/2011	Peter Phan	mg/L	3.74	1.0	0.20
OW-02S	OW-91-025	Barry Collom	4/5/2011	1:00:00 PM	TLI	EPA 120.1	SC	4/7/2011	Iordan Stavrev	µmhos/cm	1720	2.0	0.038
					TLI	EPA 200.7	MOD	4/27/2011	Ethel Suico	µg/L	39.2	10.0	4.00
					TLI	EPA 200.7	NAD	4/19/2011	Ethel Suico	mg/L	0.317	0.025	0.00293
					TLI	EPA 200.8	CRTD	4/23/2011	Maksim Gorbunov/Hope Trinida	µg/L	29.8	1.0	0.095
					TLI	EPA 218.6	CR6	4/14/2011	Sonya Bersudsky	µg/L	28.6	1.0	0.11

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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-02S	OW-91-025	Barry Collom	4/5/2011	1:00:00 PM	TLI	EPA 300.0	CL	4/6/2011	Giawad Ghenniwa	mg/L	401	20.0	3.00
					TLI	EPA 300.0	FL	4/6/2011	Giawad Ghenniwa	mg/L	5.49	0.5	0.025
					TLI	EPA 300.0	SO4	4/7/2011	Giawad Ghenniwa	mg/L	113	5.0	0.20
					TLI	SM2130B	TRB	4/6/2011	Gautam Savani	NTU	9.31 J	0.1	0.014
					TLI	SM2540C	TDS	4/8/2011	Jenny Tankunakorn	mg/L	950	50.0	0.434
					EMXT	SM4500NO3-E	NO3NO2N	4/13/2011	Peter Phan	mg/L	4.27	2.0	0.40
OW-05S	OW-05S-025	Barry Collom	4/5/2011	12:28:12 PM	TLI	EPA 120.1	SC	4/7/2011	Iordan Stavrev	µmhos/cm	2570	2.0	0.038
					TLI	EPA 200.7	MOD	4/27/2011	Ethel Suico	µg/L	22.5	10.0	4.00
					TLI	EPA 200.7	NAD	4/19/2011	Ethel Suico	mg/L	0.383	0.025	0.00293
					TLI	EPA 200.8	CRTD	4/23/2011	Maksim Gorbunov/Hope Trinida	µg/L	22.3	1.0	0.095
					TLI	EPA 218.6	CR6	4/14/2011	Sonya Bersudsky	µg/L	20.6	0.2	0.022
					TLI	EPA 300.0	CL	4/6/2011	Giawad Ghenniwa	mg/L	699	40.0	6.00
					TLI	EPA 300.0	FL	4/6/2011	Giawad Ghenniwa	mg/L	2.19	0.5	0.025
					TLI	EPA 300.0	SO4	4/7/2011	Giawad Ghenniwa	mg/L	130	5.0	0.20
					TLI	SM2130B	TRB	4/6/2011	Gautam Savani	NTU	3.60	0.1	0.014
					TLI	SM2540C	TDS	4/8/2011	Jenny Tankunakorn	mg/L	1480	50.0	0.434
					EMXT	SM4500NO3-E	NO3NO2N	4/13/2011	Peter Phan	mg/L	2.89	1.0	0.20

TABLE 10

Board Order No. R7-2006-0060 WDR Monitoring Information for Groundwater Samples, First Half 2011

PG&E Topock Compliance Monitoring Program

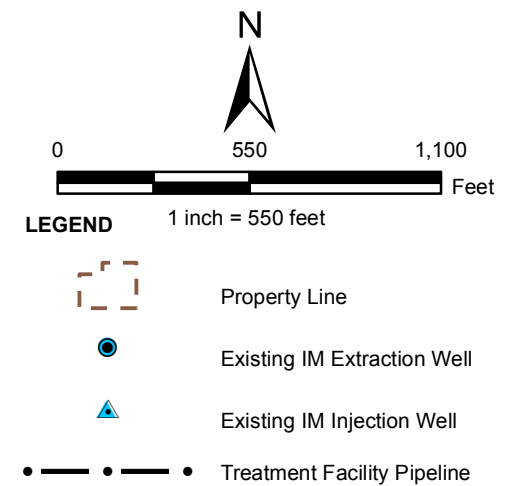
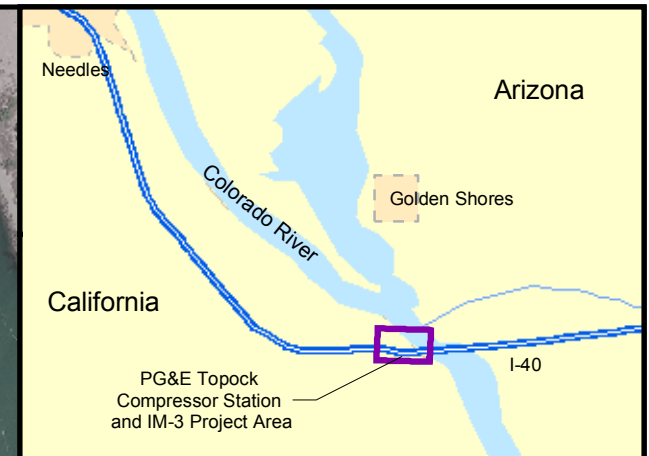
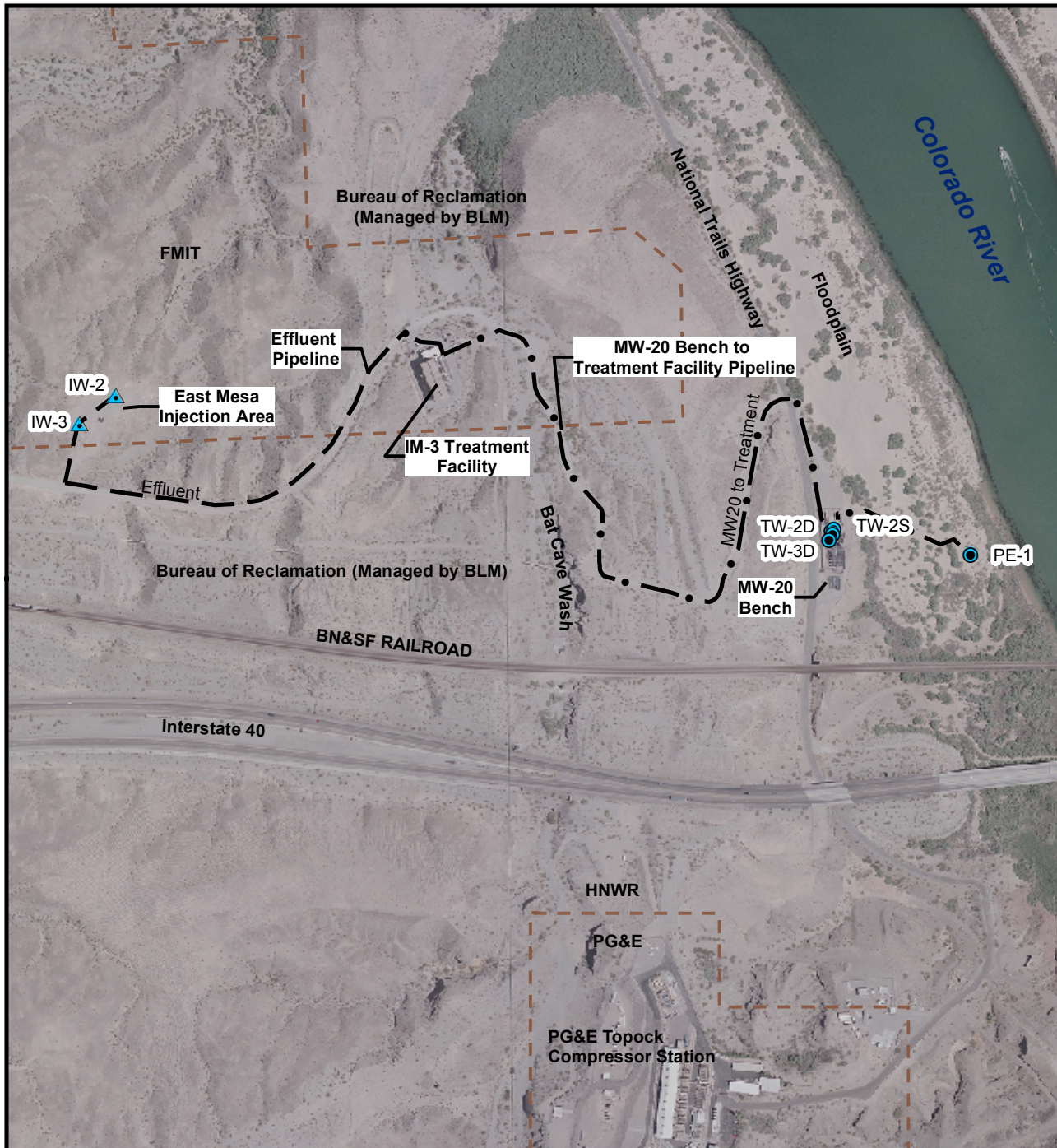
NOTES:

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

TLI	Truesdail Laboratories, Inc.
EMXT	Emax Laboratories
WDR	Waste Discharge Requirements

SC	specific conductance
CRTD	chromium, dissolved
CR6	hexavalent chromium
CL	chloride
FL	fluoride
SO4	sulfate
TDS	total dissolved solids
TRB	turbidity
NO3NO2N	nitrate/nitrite (as N)
MOD	molybdenum, dissolved
NAD	sodium, dissolved

Figures



Notes: Location map shows Interim Measures No.3 (IM-3) facilities as of the current report. Aerial photography taken October 2008.

FIGURE 1 SITE LOCATION AND LAYOUT

IM-3 COMPLIANCE MONITORING PROGRAM
PG&E TOPOCK COMPRESSOR STATION
NEEDLES, CALIFORNIA

CH2MHILL

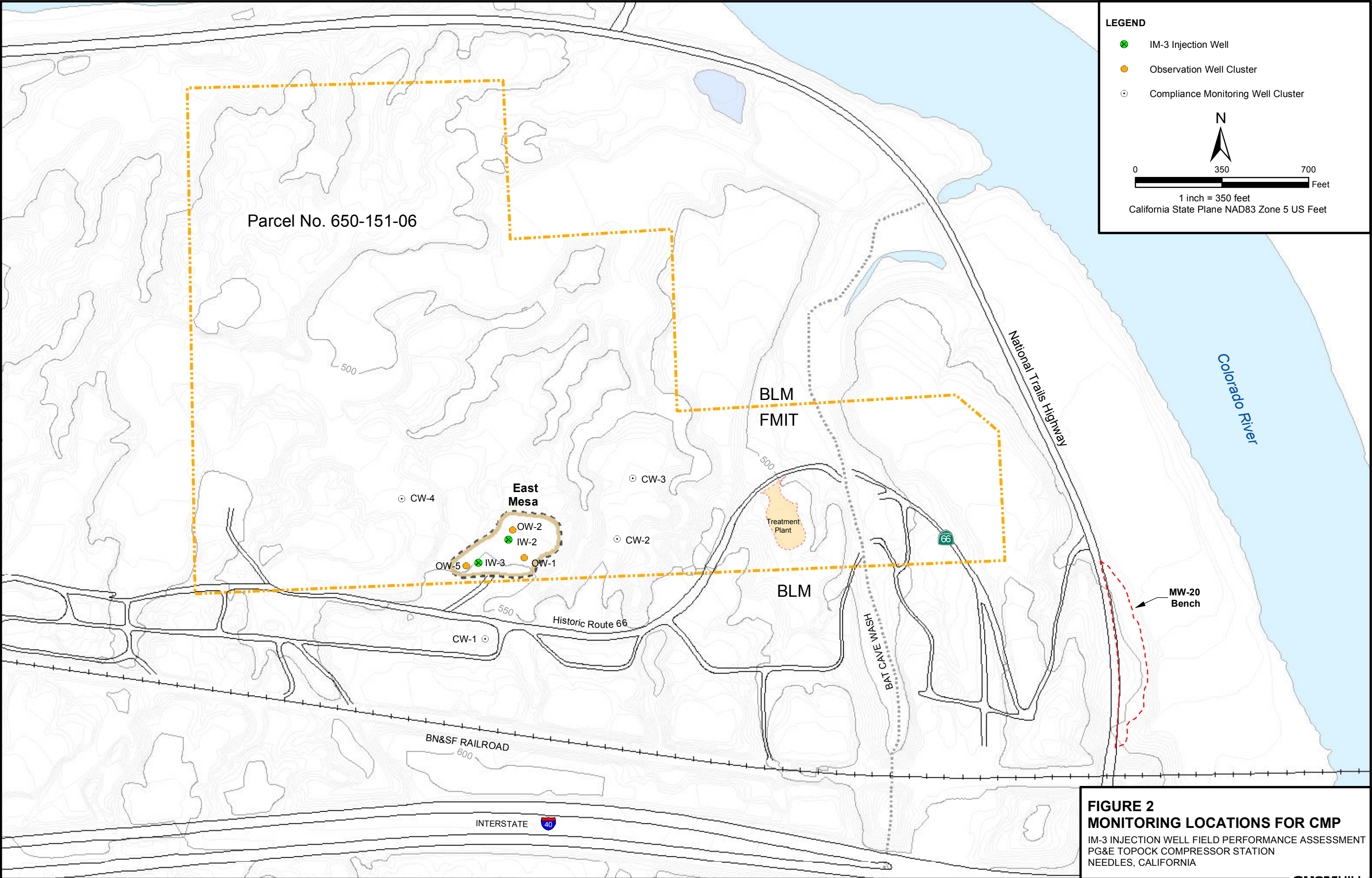
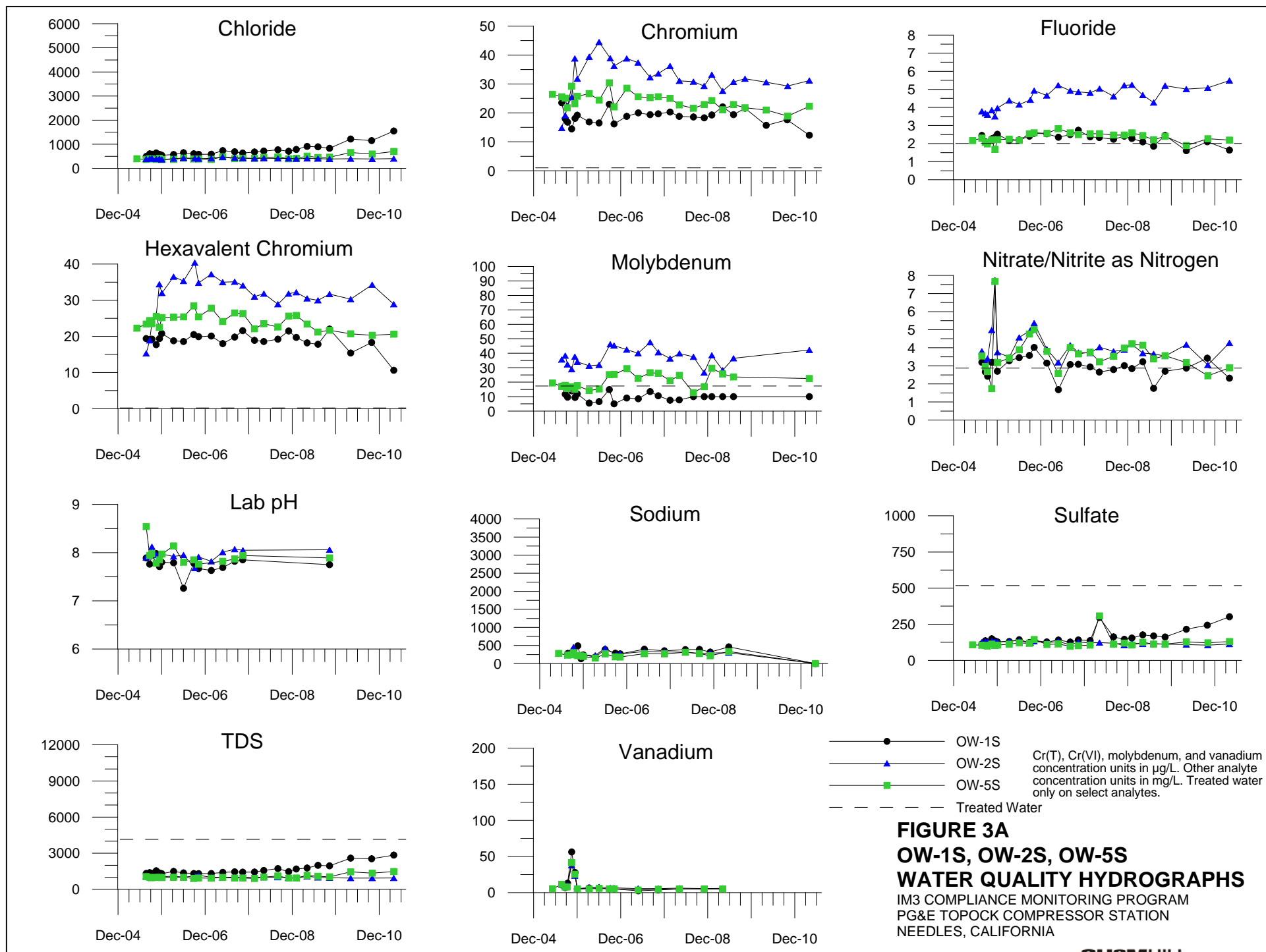


FIGURE 2
MONITORING LOCATIONS FOR CMP
IM-3 INJECTION WELL FIELD PERFORMANCE ASSESSMENT
PG&E TOPOCK COMPRESSOR STATION
NEEDLES, CALIFORNIA



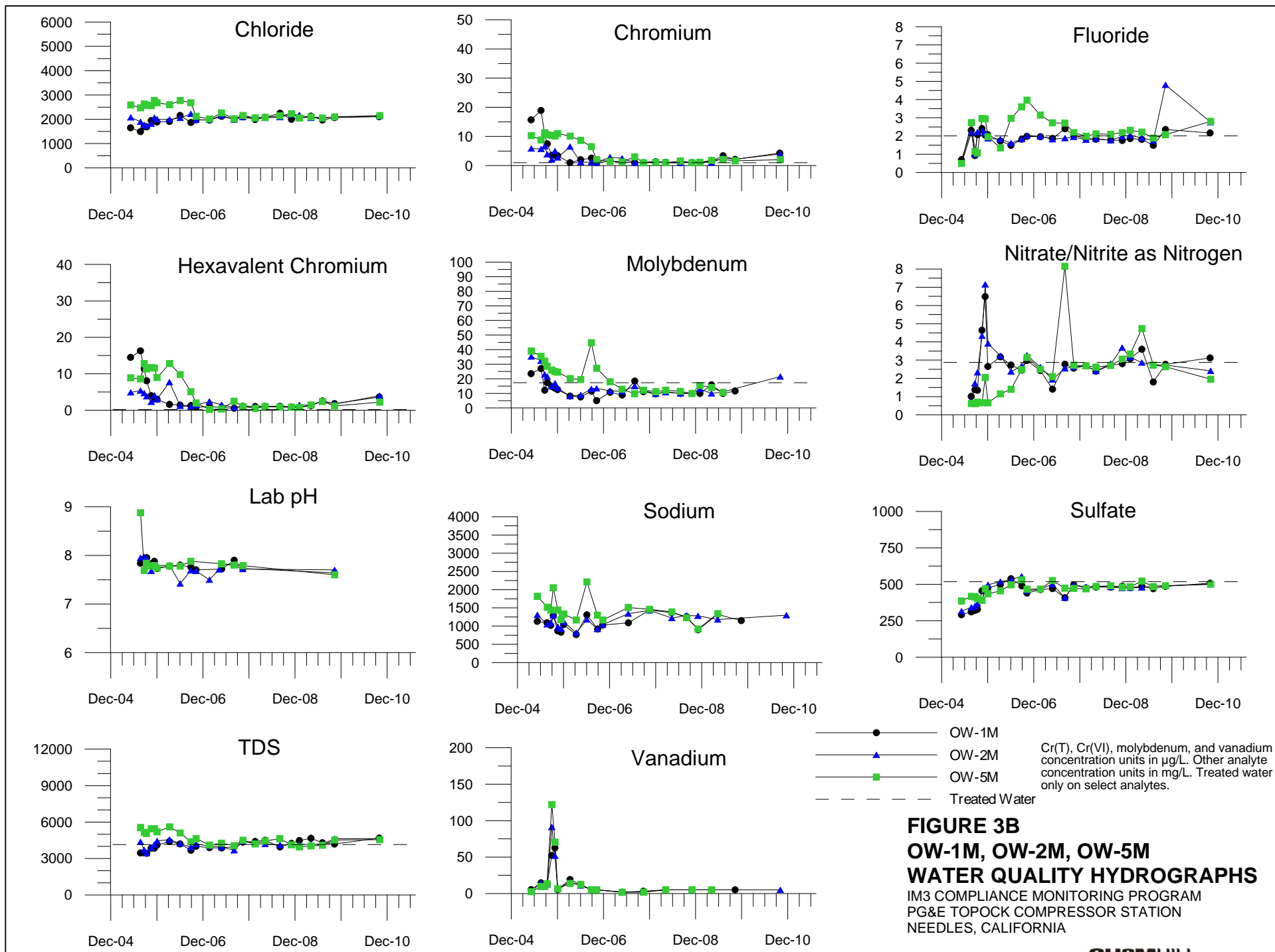
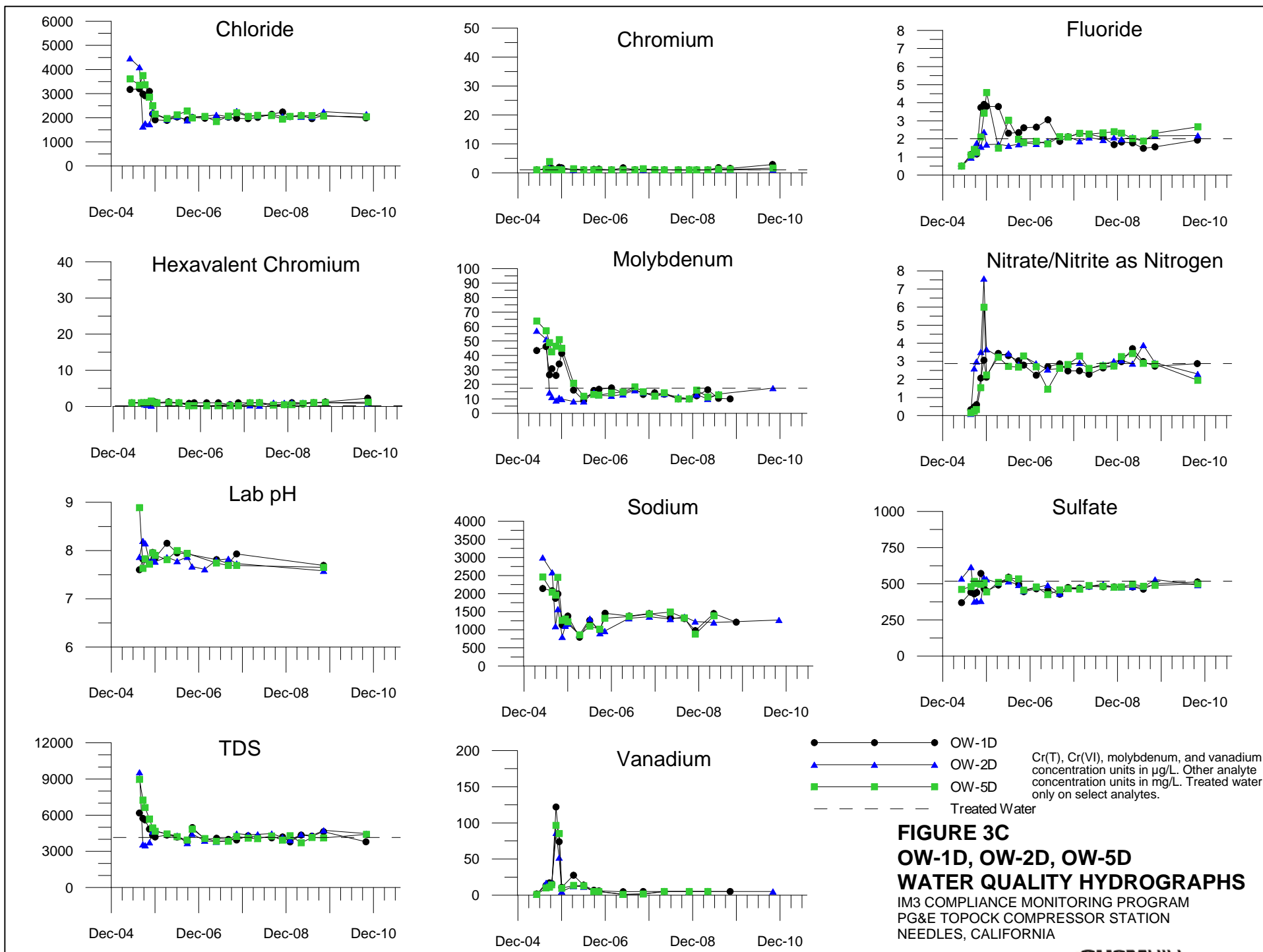


FIGURE 3B
OW-1M, OW-2M, OW-5M
WATER QUALITY HYDROGRAPHS
 IM3 COMPLIANCE MONITORING PROGRAM
 PG&E TOPOCK COMPRESSOR STATION
 NEEDLES, CALIFORNIA



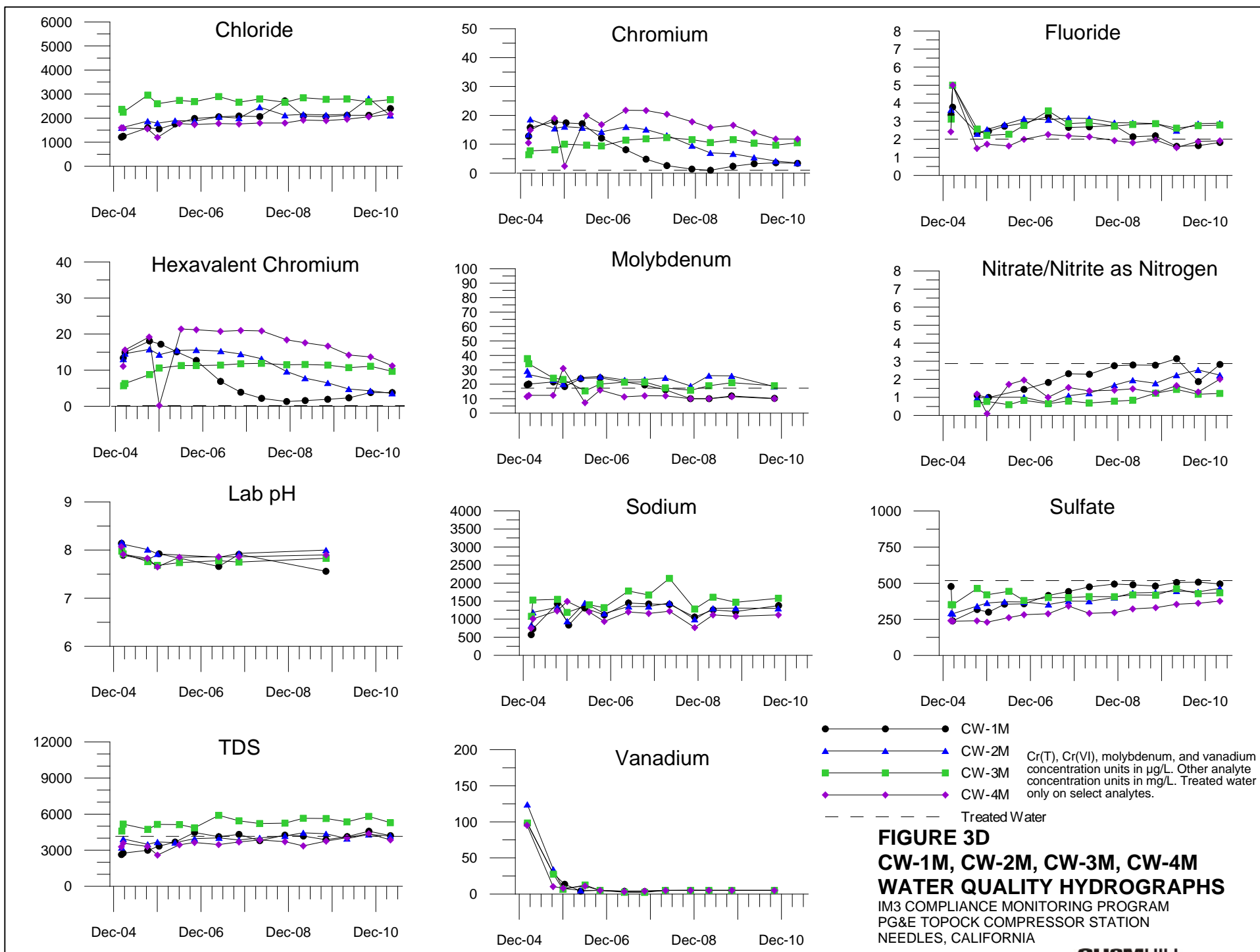
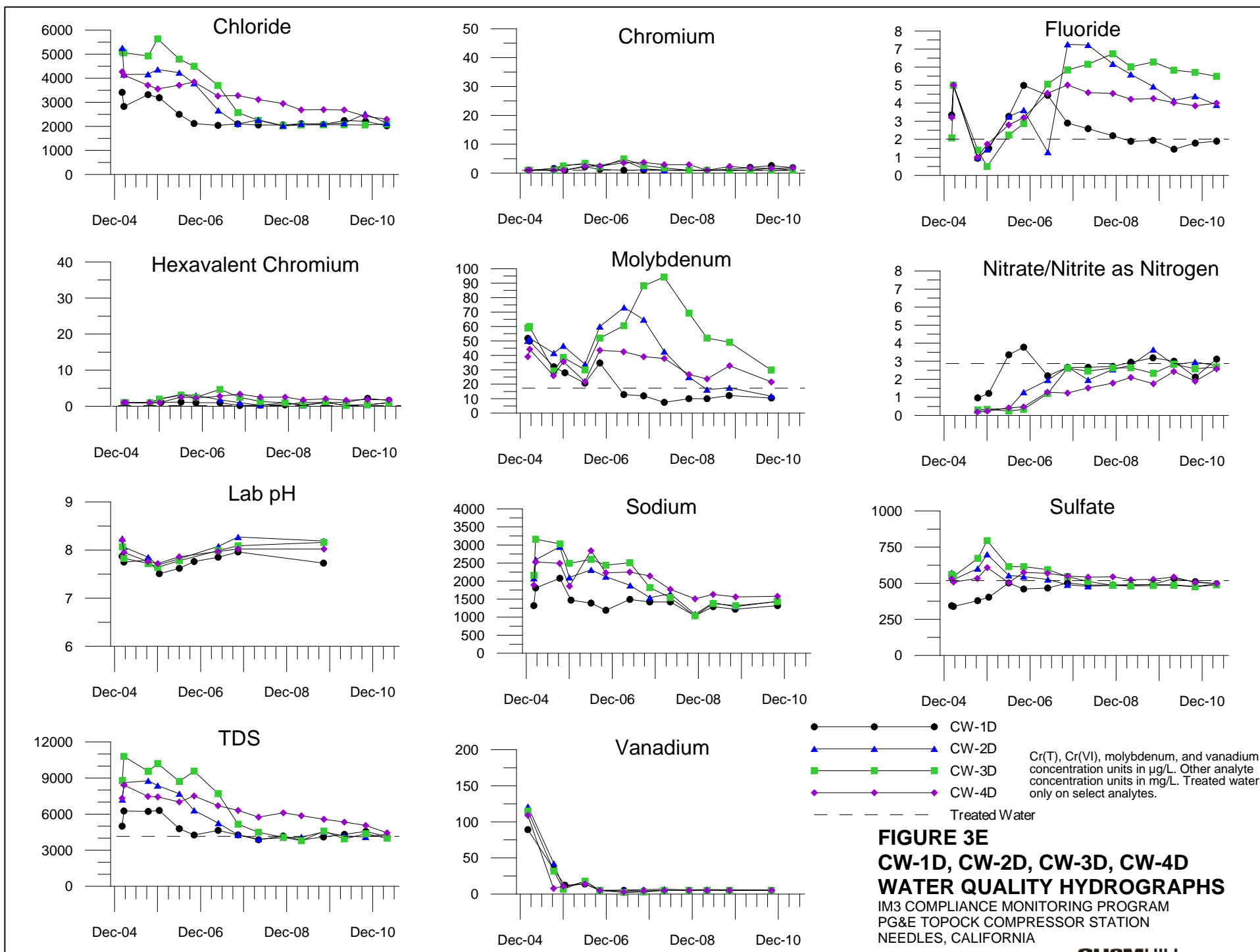
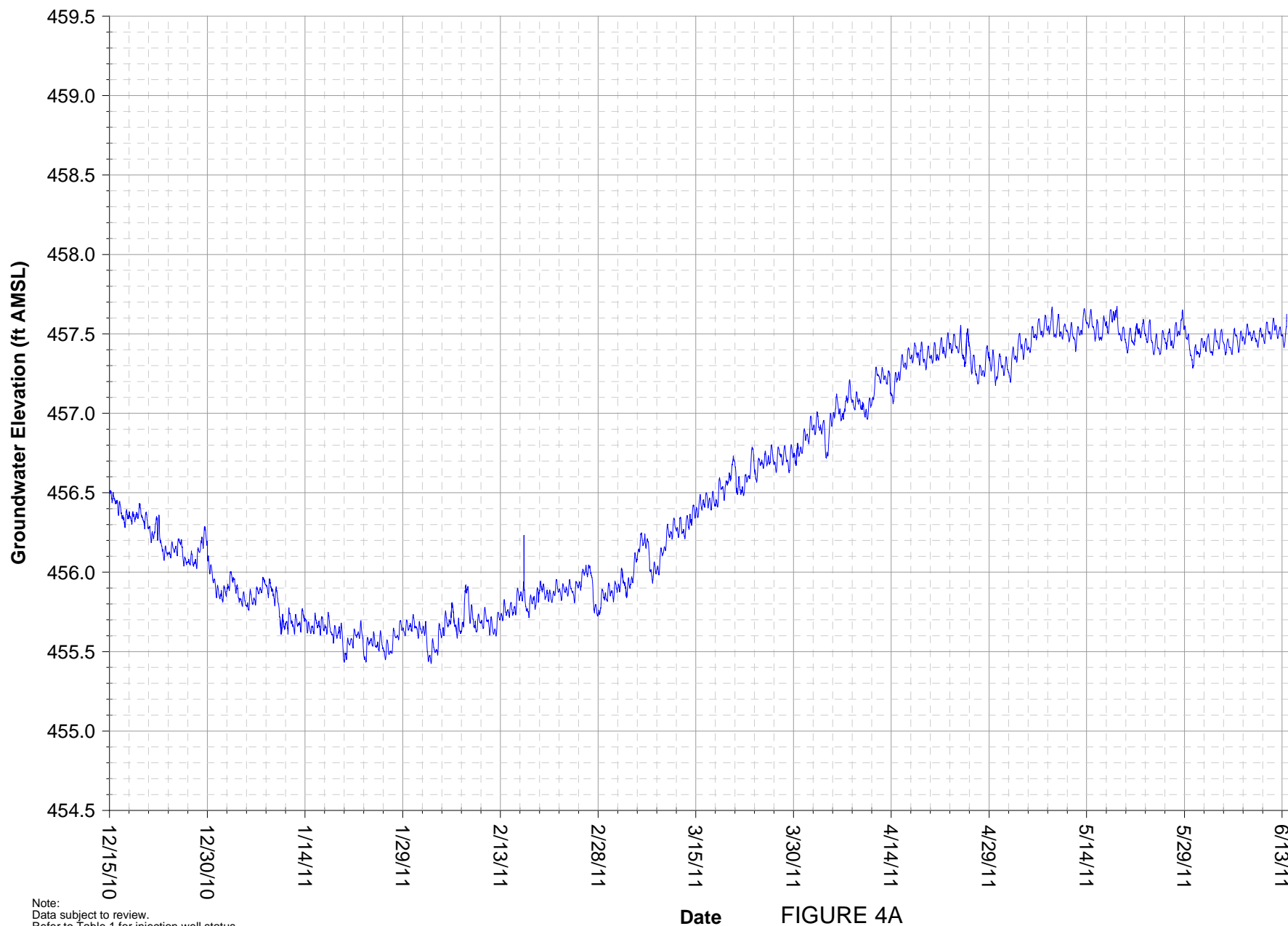


FIGURE 3D
CW-1M, CW-2M, CW-3M, CW-4M
WATER QUALITY HYDROGRAPHS
 IM3 COMPLIANCE MONITORING PROGRAM
 PG&E TOPOCK COMPRESSOR STATION
 NEEDLES, CALIFORNIA

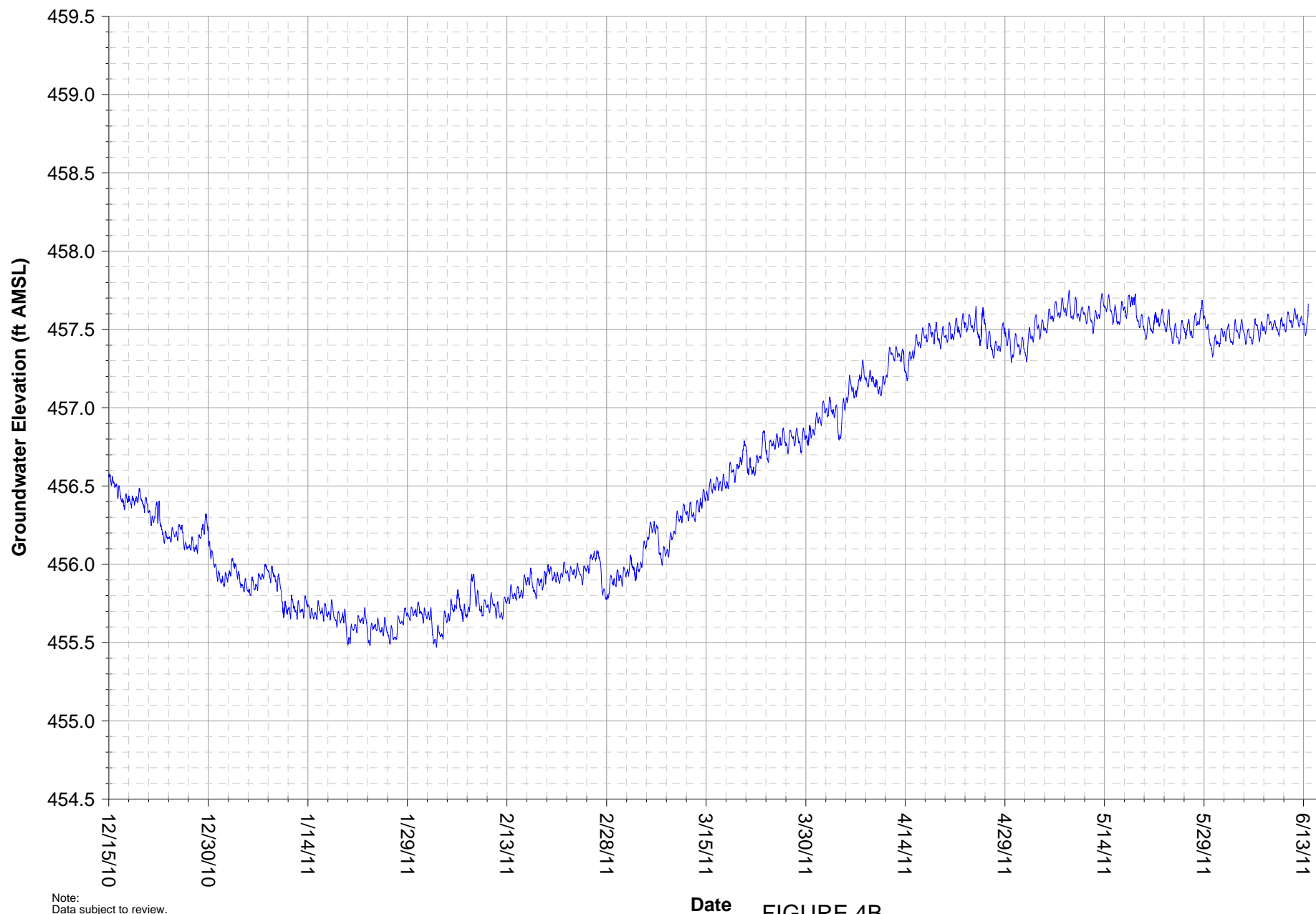




Note:
Data subject to review.
Refer to Table 1 for injection well status.

Date

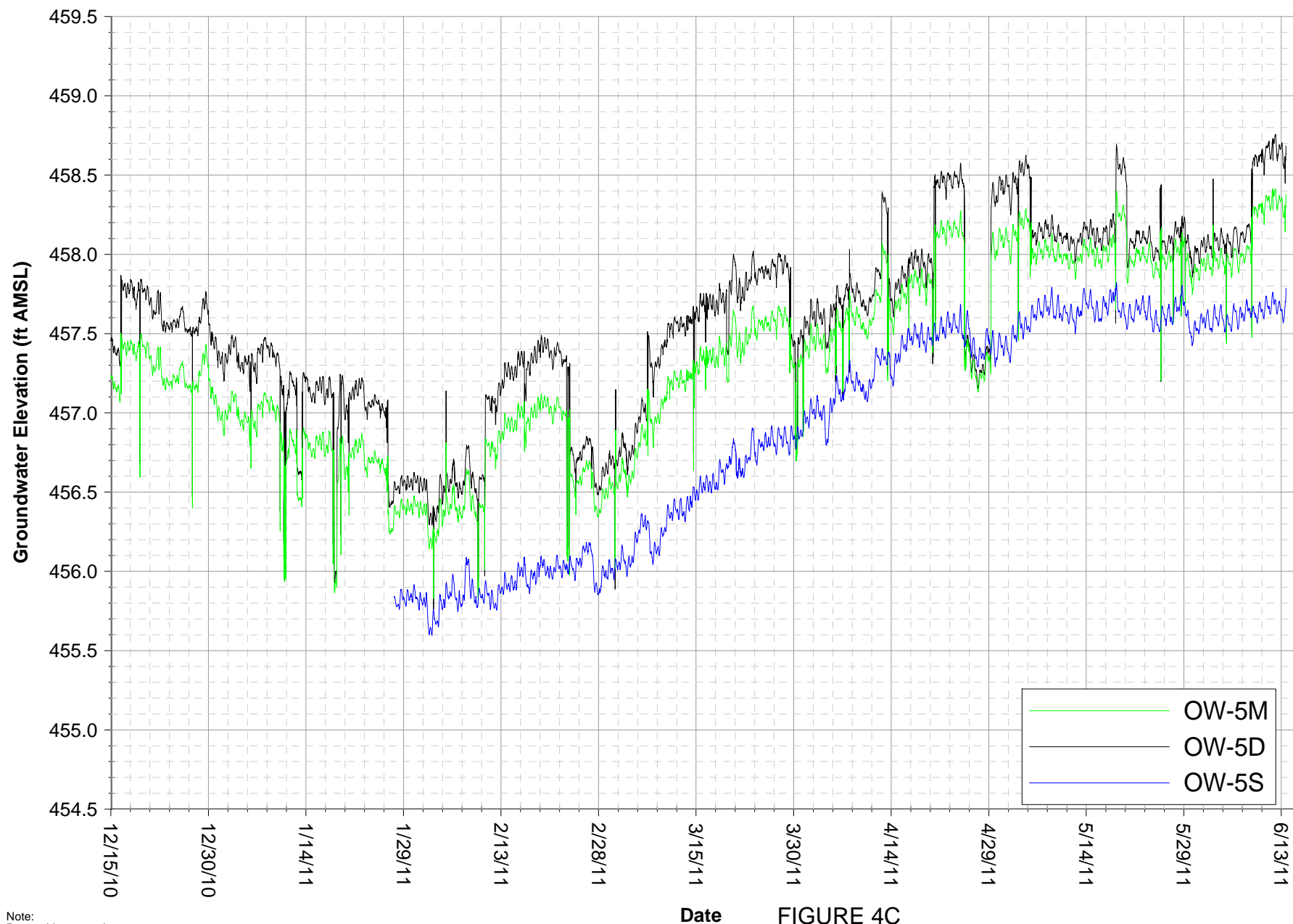
FIGURE 4A
OW-1S GROUNDWATER ELEVATION HYDROGRAPH
 IM-3 COMPLIANCE MONITORING PROGRAM
 PG&E TOPOCK COMPRESSOR STATION
 NEEDLES, CALIFORNIA



Note:
Data subject to review.
Refer to Table 1 for injection well status.

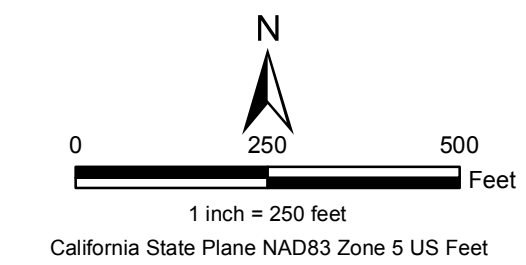
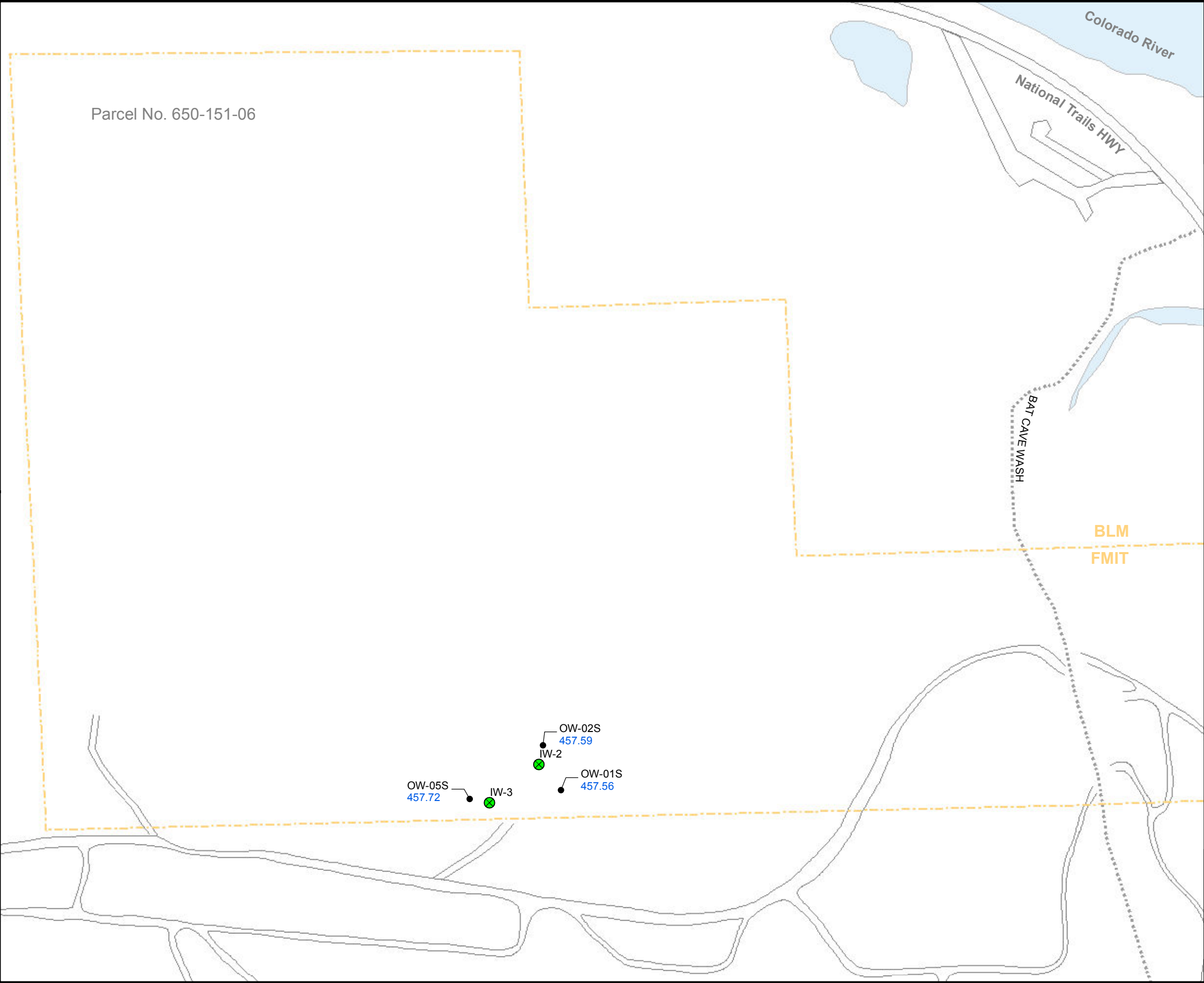
Date

FIGURE 4B
OW-2S GROUNDWATER ELEVATION HYDROGRAPH
 IM-3 COMPLIANCE MONITORING PROGRAM
 PG&E TOPOCK COMPRESSOR STATION
 NEEDLES, CALIFORNIA



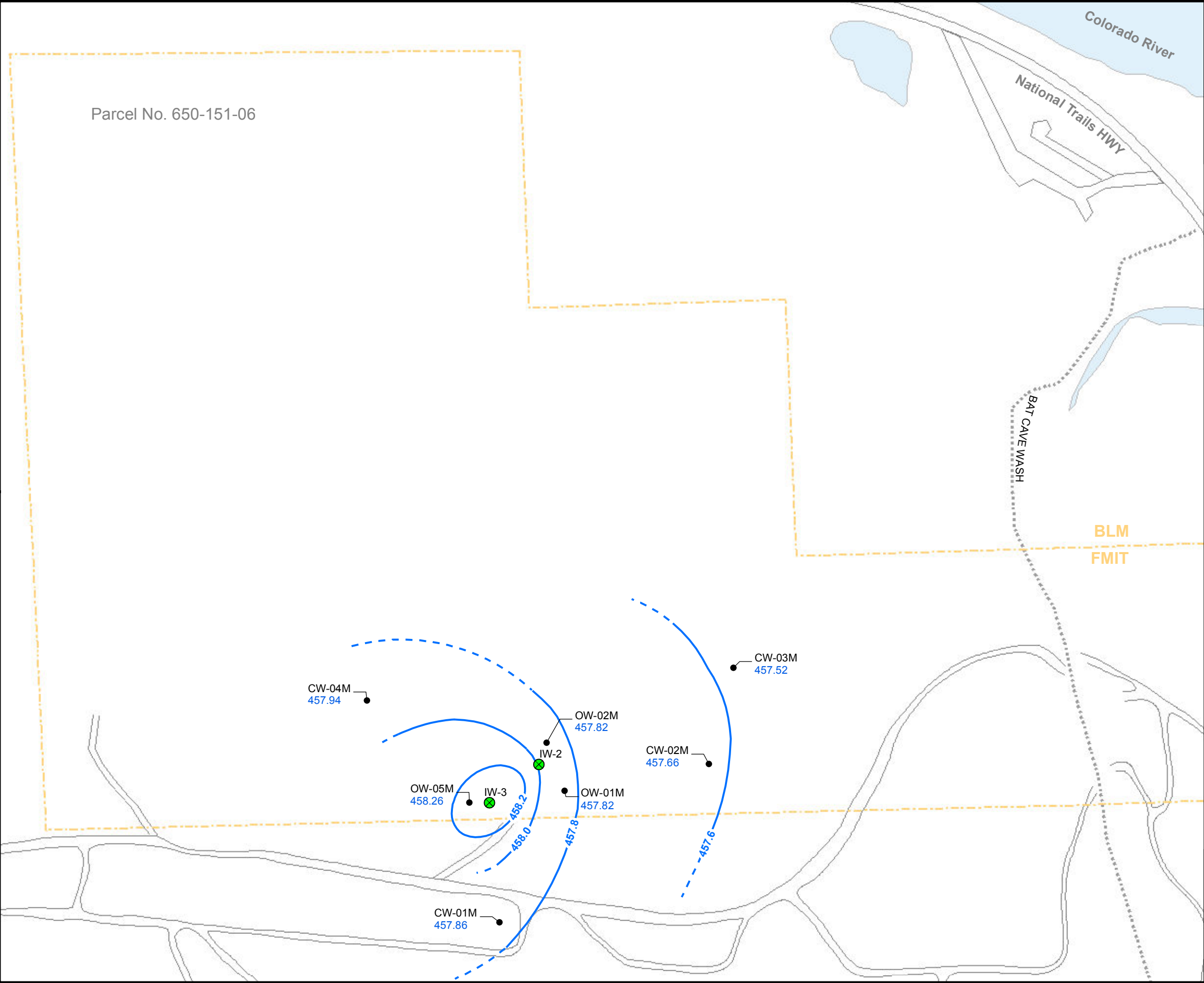
Note:
 Data subject to review.
 Refer to Table 1 for injection well status.
 OW-5S data unavailable from December 15, 2010 until January 27, 2011 due to transducer failure.

FIGURE 4C
OW-5 GROUNDWATER ELEVATION HYDROGRAPHS
 IM-3 COMPLIANCE MONITORING PROGRAM
 PG&E TOPOCK COMPRESSOR STATION
 NEEDLES, CALIFORNIA



- LEGEND**
- Groundwater Monitoring, Compliance, and Observation Well
 - IM-3 Injection Well
- Groundwater Elevation for Shallow Wells in IM-3 Injection Area**
- OW-05S Salinity and temperature adjusted groundwater head elevation in feet above mean sea level (MSL)
 - 457.72

FIGURE 5A
AVERAGE GROUNDWATER ELEVATIONS
FOR SHALLOW WELLS
JUNE 13, 2011
IM3 COMPLIANCE MONITORING PROGRAM
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

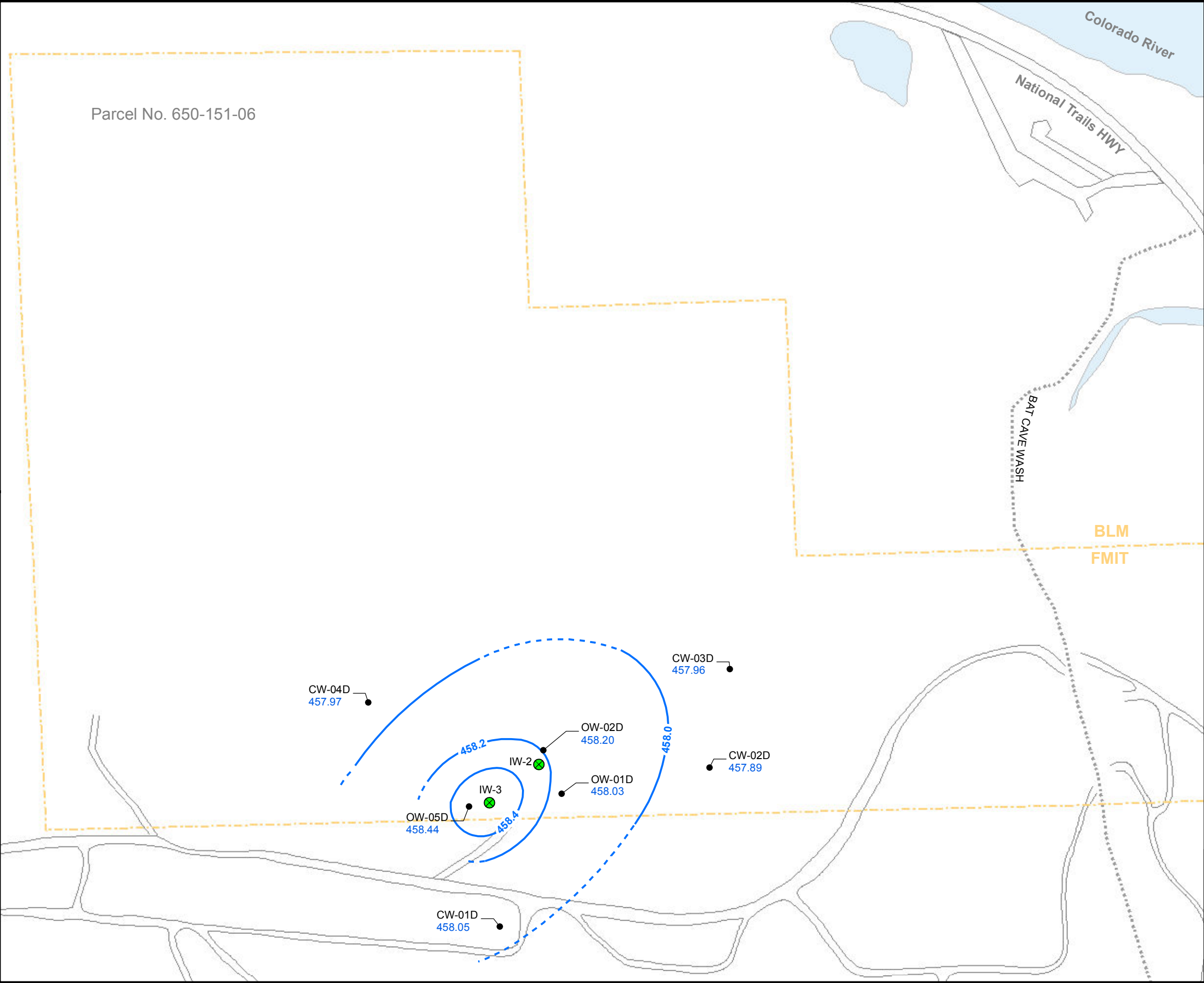
- Groundwater Monitoring, Compliance, and Observation Well
- IM-3 Injection Well

Groundwater Elevation 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)
458.26
- Groundwater elevation contour in feet above MSL (0.2 foot interval), dashed where inferred

FIGURE 5B
AVERAGE GROUNDWATER ELEVATION CONTOURS FOR MID DEPTH WELLS
June 13, 2011
IM3 COMPLIANCE MONITORING PROGRAM
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

●

Groundwater Monitoring, Compliance, and Observation Well

⊗

IM-3 Injection Well

Groundwater Elevation for Deep Wells in IM-3 Injection Area

●

OW-05D

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

●

457.44

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

FIGURE 5C

AVERAGE GROUNDWATER ELEVATION CONTOURS FOR DEEP WELLS

JUNE 13, 2011

IM3 COMPLIANCE MONITORING PROGRAM
PG&E TOPOCK COMPRESSOR STATION
NEEDLES, CALIFORNIA

CH2MHILL

D:\GIS\Projects\Topock\MapFiles\2011\CMP\CMP_20110613_LA

Appendix A
Laboratory Reports, First Half 2011



LABORATORIES, INC.
1835 W. 205th Street
Torrance, CA 90501
Tel: (310) 618-8889
Fax: (310) 618-0818

Date: 04-19-2011
EMAX Batch No.: 11D033

Attn: Priya Kumar

CH2M HILL
155 Grand, Suite 1000
Oakland CA 94612

Subject: Laboratory Report
Project: PG&E's Topock Gas Compressor Stat

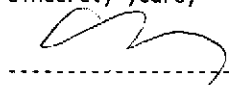
Enclosed is the Laboratory report for samples received on 04/06/11.
The data reported relate only to samples listed below :

Sample ID	Control #	Col Date	Matrix	Analysis
-----	-----	-----	-----	-----
CW-02D-025	D033-01	04/04/11	WATER	NITRATE/NITRITE AS N
CW-02M-025	D033-02	04/04/11	WATER	NITRATE/NITRITE AS N
CW-03D-025	D033-03	04/04/11	WATER	NITRATE/NITRITE AS N
CW-03M-025	D033-04	04/04/11	WATER	NITRATE/NITRITE AS N
CW-04D-025	D033-05	04/04/11	WATER	NITRATE/NITRITE AS N
CW-01D-025	D033-06	04/05/11	WATER	NITRATE/NITRITE AS N
CW-01M-025	D033-07	04/05/11	WATER	NITRATE/NITRITE AS N
CW-04M-025	D033-08	04/05/11	WATER	NITRATE/NITRITE AS N
OW-01S-025	D033-09	04/05/11	WATER	NITRATE/NITRITE AS N
OW-02S-025	D033-10	04/05/11	WATER	NITRATE/NITRITE AS N
OW-05S-025	D033-11	04/05/11	WATER	NITRATE/NITRITE AS N
OW-90-025	D033-12	04/05/11	WATER	NITRATE/NITRITE AS N
OW-91-025	D033-13	04/05/11	WATER	NITRATE/NITRITE AS N

The results are summarized on the following pages.

Please feel free to call if you have any questions concerning these results.

Sincerely yours,



Caspar J. Pang
Laboratory Director

This report is confidential and intended solely for the use of the individual or entity to whom it is addressed. This report shall not be reproduced except in full or without the written approval of EMAX.

EMAX certifies that the results included in this report meets all NELAC & DOD requirements unless noted in the Case Narrative.

NELAC Accredited Certificate Number 02116CA
L-A-B Accredited Certificate Number L2278 Testing

CH2MHILL

CHAIN OF CUSTODY RECORD

4/5/2011 1:40:03 PM

Page 1 OF 1

11D033

Project Name PG&E Topock		Container: 1 Liter Poly				
Location Topock		Preservatives: H2SO4, pH<2, 4°C				
Project Number 390378.MP.02.CM.01		Filtered: NA				
Project Manager Jay Piper		Holding Time: 28				
Sample Manager Matt Ringier		Nitrate/Nitrite (SM4500NO3-E)				
Task Order						
Project 2011-CMP-025						
Turnaround Time 12 Days						
Shipping Date: 4/5/2011						
COC Number: 1						
DATE	TIME	Matrix			Number of Containers	COMMENTS
1 CW-02D-025	4/4/2011	13:10	Water	X	1	
2 CW-02M-025	4/4/2011	14:12	Water	X	1	
3 CW-03D-025	4/4/2011	16:40	Water	X	1	
4 CW-03M-025	4/4/2011	15:26	Water	X	1	
5 CW-04D-025	4/4/2011	18:04	Water	X	1	
6 CW-01D-025	4/5/2011	10:54	Water	X	1	
7 CW-01M-025	4/5/2011	11:29	Water	X	1	
8 CW-04M-025	4/5/2011	9:05	Water	X	1	
9 OW-01S-025	4/5/2011	12:00	Water	X	1	
10 OW-02S-025	4/5/2011	12:58	Water	X	1	
11 OW-05S-025	4/5/2011	12:28	Water	X	1	
12 OW-90-025	4/5/2011	9:07	Water	X	1	
13 OW-91-025	4/5/2011	13:00	Water	X	1	
TOTAL NUMBER OF CONTAINERS					13	

Signatures		Date/Time	Shipping Details		ATTN:	Special Instructions:
Approved by	<i>[Signature]</i>	4-5-11	Method of Shipment: courier			April 4-5, 2011
Sampled by	<i>[Signature]</i>		On Ice: yes / no		Sample Custody	
Relinquished by	<i>[Signature]</i>		Airbill No:			Report Copy to
Received by	<i>Rafael Davila</i>	4-5-11	Lab Name: TLE			Shawn Duffy
Relinquished by	<i>Rafael Davila</i>	4-5-11	Lab Phone: 22:00			(530) 229-3303
Received by	<i>[Signature]</i>	22:00				

T = 2.3°C



SAMPLE RECEIPT FORM 2

SAMPLES RECEIVED FOR ECN:

11D033

ECN (*)	SAMPLE CONTAINER ID	COOLER#	CONTAINER TYPE								CHEMICAL PRESERVATIVE												Filtered	
			Jar	Amber	HDPE	Encore	Vial	Tube	Bag	Other	NONE	HCl (pH<2)	HNO ₃ (pH<2)	H ₂ SO ₄ (pH<2)	ZnAc +NaOH (pH>12)	NaOH (pH>12)	Na ₂ S ₂ O ₃	Methanol	NaHSO ₄	Other	Other	Yes	No	
01	* 1				/								/											
02	* 2				/								/											
03	* 3				/								/											
04	* 4				/								/											
05	* 5				/								/											
06	* 6				/								/											
07	* 7				/								/											
08	* 8				/								/											
09	* 9				/								/											
10	* 10				/								/											
11	* 1				/								/											
12	* 2				/								/											
13	* 3				/								/											
	* 4																							
	* 5																							
	* 6																							
	* 7																							
	* 8																							
	* 9																							
	* 0																							
	* 1																							
	* 2																							
	* 3																							
	* 4																							
	* 5																							
	* 6																							
	* 7																							
	* 8																							
	* 9																							
	* 0																							

04/06/11
RDM

CLIENT: CH2M HILL TOPOCK

SDG: 11D033

Analyst names:

1. SM4500NO3: Peter Phan

CASE NARRATIVE

Client : CH2M HILL

Project : PG&E'S TOPOCK GAS COMPRESSOR STAT

SDG : 11D033

METHOD SM4500NO3
NITRATE/NITRITE-N

A total of thirteen (13) water samples were received on 04/06/11 for Nitrate/Nitrite as N analysis, Method SM4500NO3 in accordance with Standard Methods for the Examination of Water and Wastewater, 20th Edition.

Holding Time

Samples were analyzed within the prescribed holding time.

Calibration

Multi-calibration points were generated to establish initial calibration (ICAL). ICAL was verified using a secondary source. Continuing calibration verifications were carried out at the frequency specified by the project. All calibration requirements were within acceptance criteria.

Method Blank

Method blank was analyzed at the frequency required by the project. For this SDG, one method blank was analyzed with the samples. Result was compliant to project requirement.

Lab Control Sample

A set of LCS/LCD was analyzed with the samples in this SDG. Percent recoveries for NAD003WL/C were all within QC limits.

Matrix QC Sample

Matrix QC sample was analyzed at the frequency prescribed by the project. Percent recovery for D033-13M was within project QC limits. Sample duplicate was also analyzed with the samples. RPD was within project limit.

Sample Analysis

Samples were analyzed according to prescribed analytical procedures. All project requirements were met otherwise anomalies were discussed within the associated QC parameter.

METHOD SM4500NO3
NITRATE/NITRITE-N

Client : CH2M HILL
Project : PG&E'S TOPOCK GAS COMPRESSOR STAT
Batch No. : 110033

Matrix : WATER
Instrument ID : 170

SAMPLE ID	EMAX SAMPLE ID	RESULTS (mg/L)	DLF MOIST	RL (mg/L)	MOL (mg/L)	Analysis DATETIME	Extraction DATETIME	LFID	CAL REF	PREP BATCH	Collection DATETIME	Received DATETIME
MBLK1W	NAD003WB	ND	1 NA	0.100	0.0200	04/13/1118:02	NA	NAD00310	NAD00307	NAD003W	NA	NA
LCS1W	NAD003WL	0.546	1 NA	0.100	0.0200	04/13/1118:02	NA	NAD00311	NAD00307	NAD003W	NA	NA
LCD1W	NAD003WC	0.546	1 NA	0.100	0.0200	04/13/1118:03	NA	NAD00312	NAD00307	NAD003W	NA	NA
CW-020-025	D033-01T	2.75	10 NA	1.00	0.200	04/13/1118:03	NA	NAD00314	NAD00307	NAD003W	04/04/1113:10	04/06/11
CW-02M-025	D033-02T	2.23	10 NA	1.00	0.200	04/13/1118:04	NA	NAD00316	NAD00307	NAD003W	04/04/1114:12	04/06/11
CW-03D-025	D033-03T	2.69	10 NA	1.00	0.200	04/13/1118:05	NA	NAD00320	NAD00318	NAD003W	04/04/1116:40	04/06/11
CW-03M-025	D033-04T	1.22	5 NA	0.500	0.100	04/13/1118:05	NA	NAD00322	NAD00318	NAD003W	04/04/1115:26	04/06/11
CW-04D-025	D033-05T	2.58	10 NA	1.00	0.200	04/13/1118:06	NA	NAD00324	NAD00318	NAD003W	04/04/1118:04	04/06/11
CW-01D-025	D033-06T	3.12	10 NA	1.00	0.200	04/13/1118:06	NA	NAD00326	NAD00318	NAD003W	04/05/1110:54	04/06/11
CW-01M-025	D033-07T	2.82	10 NA	1.00	0.200	04/13/1118:07	NA	NAD00328	NAD00318	NAD003W	04/05/1111:29	04/06/11
CW-04M-025	D033-08T	1.97	5 NA	0.500	0.100	04/13/1118:08	NA	NAD00332	NAD00330	NAD003W	04/05/1109:05	04/06/11
OW-01S-025	D033-09T	2.32	5 NA	0.500	0.100	04/13/1118:08	NA	NAD00324	NAD00330	NAD003W	04/05/1112:00	04/06/11
OW-02S-025	D033-10T	3.74	10 NA	1.00	0.200	04/13/1118:09	NA	NAD00336	NAD00330	NAD003W	04/05/1112:58	04/06/11
OW-05S-025	D033-11T	2.89	10 NA	1.00	0.200	04/13/1118:09	NA	NAD00338	NAD00330	NAD003W	04/05/1112:28	04/06/11
OW-90-025	D033-12T	2.01	5 NA	0.500	0.100	04/13/1118:10	NA	NAD00340	NAD00330	NAD003W	04/05/1109:07	04/06/11
OW-91-025	D033-13T	4.27	20 NA	2.00	0.400	04/13/1118:11	NA	NAD00344	NAD00342	NAD003W	04/05/1113:00	04/06/11
OW-91-025DUP	D033-13D	4.19	20 NA	2.00	0.400	04/13/1118:12	NA	NAD00345	NAD00342	NAD003W	04/05/1113:00	04/06/11
OW-91-025MS	D033-13M	13.5	20 NA	2.00	0.400	04/13/1118:12	NA	NAD00346	NAD00342	NAD003W	04/05/1113:00	04/06/11

EMAX QUALITY CONTROL DATA
LCS/LCD ANALYSIS

CLIENT: CH2M HILL
PROJECT: PG&E'S TOPOCK GAS COMPRESSOR STAT
METHOD: METHOD SM4500NO3
MATRIX: WATER
% MOISTURE: NA

BATCH NO.: 11D033
SAMPLE ID: LCS1W/LCD1W
CONTROL NO.: NAD003WL/C

DATE RECEIVED: NA
DATE EXTRACTED: NA
DATE ANALYZED: 04/13/11 18:02:18:03

ACCESSION:

PARAMETER	BLNK RSLT (mg/L)	SPIKE AMT (mg/L)	BS RSLT (mg/L)	BS % REC	SPIKE AMT (mg/L)	BSD RSLT (mg/L)	BSD % REC	RPD %	QC LIMIT %	RPD LIMIT %
NITRATE + NITRITE-N	ND	0.500	0.546	109	0.500	0.546	109	0	85-115	20

EMAX QUALITY CONTROL DATA
MS ANALYSIS

CLIENT: CH2M HILL
PROJECT: PG&E'S TOPOCK GAS COMPRESSOR STAT
METHOD: METHOD SM4500NO3
MATRIX: WATER
% MOISTURE: NA

BATCH NO.: 11D033
SAMPLE ID: OW-91-025MS
CONTROL NO.: D033-13M

DATE RECEIVED: 04/06/11
DATE EXTRACTED: NA
DATE ANALYZED: 04/13/11 18:12

ACCESSION:

PARAMETER	SMPL RSLT (mg/L)	SPIKE AMT (mg/L)	MS RSLT (mg/L)	MS % REC	QC LIMIT (%)
NITRATE + NITRITE-N	13.5	10.0	4.27	92	75-125

1009

EMAX QUALITY CONTROL DATA
DUPLICATE ANALYSIS

CLIENT: CH2M HILL
PROJECT: PG&E'S TOPOCK GAS COMPRESSOR STAT
METHOD: METHOD SM4500NO3
MATRIX: WATER
% MOISTURE: NA

=====

BATCH NO.:	11D033	DATE RECEIVED:	04/06/11
SAMPLE ID:	DW-91-025DUP	DATE EXTRACTED:	NA
CONTROL NO.:	D033-130	DATE ANALYZED:	04/13/11 18:12

ACCESSION:

PARAMETER	SAMPLE (mg/L)	DUP. SAMPLE (mg/L)	RPD (%)	RPD LIMIT (%)
NITRATE + NITRITE-N	4.27	4.19	2	20

TRUESDAIL LABORATORIES, INC.

EXCELLENCE IN INDEPENDENT TESTING



Established 1931

May 4, 2011

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

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

Dear Mr. Duffy:

SUBJECT: CASE NARRATIVE PG&E TOPOCK 2011-CMP-025, GROUNDWATER MONITORING
PROJECT, TLI NO.: 994446

Truesdail Laboratories, Inc. is pleased to submit this report summarizing the Topock 2011-CMP-025 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 on April 5, 2011, intact and in chilled condition. The samples will be kept in a locked refrigerator for 30 days; thereafter it will be kept in warm storage for an additional 2 months before disposal.

No 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
Mona Nassimi
Manager, Analytical Services

K.R.P. Iyer

K.R.P. Iyer
Quality Assurance/Quality Control Officer

TRUESDAIL LABORATORIES, INC.

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Attention: Shawn Duffy

Laboratory No.: 994446

Sample: Fifteen (15) Groundwater Samples

Date: May 4, 2011

Project Name: PG&E Topock Project

Collected: April 4 - 5, 2011

Project No.: 390378.MP.02.CM.01

Received: April 5, 2011

ANALYST LIST

METHOD	PARAMETER	ANALYST
EPA 120.1	Specific Conductivity	Iordan Stavrev
SM 2540C	Total Dissolved Solids	Jenny Tankunakorn
SM 2130B	Turbidity	Gautam Savani
EPA 300.0	Anions	Giawad Ghenniwa
EPA 200.7	Metals by ICP	Ethel Suico
EPA 200.8	Metals by ICP/MS	Maksim Gorbunov / Hope Trinidad
EPA 218.6	Hexavalent Chromium	Sonya Bersudsky

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

Attention: Shawn Duffy

Laboratory No.: 994446

Date Received: April 5, 2011

Project Name: PG&E Topock Project

Project No.: 390378.MP.02.CM.01

P.O. No.: 390378.MP.02.CM.01

Analytical Results Summary

Lab Sample ID	Field ID	Analysis Method	Extraction Method	Sample Date	Sample Time	Parameter	Result	Units	RL
994446-001	CW-02D-025	E120.1	NONE	4/4/2011	13:10	EC	7330	umhos/cm	2.00
994446-001	CW-02D-025	E200.8	FLDFLT	4/4/2011	13:10	Chromium	ND	ug/L	1.0
994446-001	CW-02D-025	E218.6	FLDFLT	4/4/2011	13:10	Chromium, hexavalent	ND	ug/L	1.0
994446-001	CW-02D-025	E300	NONE	4/4/2011	13:10	Chloride	2140	mg/L	100
994446-001	CW-02D-025	E300	NONE	4/4/2011	13:10	Fluoride	3.90	mg/L	0.500
994446-001	CW-02D-025	E300	NONE	4/4/2011	13:10	Sulfate	496	mg/L	12.5
994446-001	CW-02D-025	SM2130B	NONE	4/4/2011	13:10	Turbidity	0.121	NTU	0.100
994446-001	CW-02D-025	SM2540C	NONE	4/4/2011	13:10	Total Dissolved Solids	4340	mg/L	250
994446-002	CW-02M-025	E120.1	NONE	4/4/2011	14:12	EC	7160	umhos/cm	2.00
994446-002	CW-02M-025	E200.8	FLDFLT	4/4/2011	14:12	Chromium	3.5	ug/L	1.0
994446-002	CW-02M-025	E218.6	FLDFLT	4/4/2011	14:12	Chromium, hexavalent	3.6	ug/L	1.0
994446-002	CW-02M-025	E300	NONE	4/4/2011	14:12	Chloride	2110	mg/L	100
994446-002	CW-02M-025	E300	NONE	4/4/2011	14:12	Fluoride	2.89	mg/L	0.500
994446-002	CW-02M-025	E300	NONE	4/4/2011	14:12	Sulfate	465	mg/L	12.5
994446-002	CW-02M-025	SM2130B	NONE	4/4/2011	14:12	Turbidity	0.131	NTU	0.100
994446-002	CW-02M-025	SM2540C	NONE	4/4/2011	14:12	Total Dissolved Solids	4190	mg/L	250

005

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Lab Sample ID	Field ID	Analysis Method	Extraction Method	Sample Date	Sample Time	Parameter	Result	Units	RL
994446-003	CW-03D-025	E120.1	NONE	4/4/2011	16:40	EC	7070	umhos/cm	2.00
994446-003	CW-03D-025	E200.8	FLDFLT	4/4/2011	16:40	Chromium	ND	ug/L	1.0
994446-003	CW-03D-025	E218.6	FLDFLT	4/4/2011	16:40	Chromium, hexavalent	ND	ug/L	1.0
994446-003	CW-03D-025	E300	NONE	4/4/2011	16:40	Chloride	2100	mg/L	100
994446-003	CW-03D-025	E300	NONE	4/4/2011	16:40	Fluoride	5.49	mg/L	0.500
994446-003	CW-03D-025	E300	NONE	4/4/2011	16:40	Sulfate	488	mg/L	12.5
994446-003	CW-03D-025	SM2130B	NONE	4/4/2011	16:40	Turbidity	0.285	NTU	0.100
994446-003	CW-03D-025	SM2540C	NONE	4/4/2011	16:40	Total Dissolved Solids	4000	mg/L	250
994446-004	CW-03M-025	E120.1	NONE	4/4/2011	15:26	EC	8680	umhos/cm	2.00
994446-004	CW-03M-025	E200.8	FLDFLT	4/4/2011	15:26	Chromium	10.5	ug/L	1.0
994446-004	CW-03M-025	E218.6	FLDFLT	4/4/2011	15:26	Chromium, hexavalent	9.7	ug/L	1.0
994446-004	CW-03M-025	E300	NONE	4/4/2011	15:26	Chloride	2770	mg/L	100
994446-004	CW-03M-025	E300	NONE	4/4/2011	15:26	Fluoride	2.79	mg/L	0.500
994446-004	CW-03M-025	E300	NONE	4/4/2011	15:26	Sulfate	434	mg/L	12.5
994446-004	CW-03M-025	SM2130B	NONE	4/4/2011	15:26	Turbidity	0.248	NTU	0.100
994446-004	CW-03M-025	SM2540C	NONE	4/4/2011	15:26	Total Dissolved Solids	5290	mg/L	250
994446-005	CW-04D-025	E120.1	NONE	4/4/2011	18:04	EC	7850	umhos/cm	2.00
994446-005	CW-04D-025	E200.8	FLDFLT	4/4/2011	18:04	Chromium	1.8	ug/L	1.0
994446-005	CW-04D-025	E218.6	FLDFLT	4/4/2011	18:04	Chromium, hexavalent	1.8	ug/L	1.0
994446-005	CW-04D-025	E300	NONE	4/4/2011	18:04	Chloride	2300	mg/L	100
994446-005	CW-04D-025	E300	NONE	4/4/2011	18:04	Fluoride	4.00	mg/L	0.500
994446-005	CW-04D-025	E300	NONE	4/4/2011	18:04	Sulfate	499	mg/L	12.5
994446-005	CW-04D-025	SM2130B	NONE	4/4/2011	18:04	Turbidity	ND	NTU	0.100
994446-005	CW-04D-025	SM2540C	NONE	4/4/2011	18:04	Total Dissolved Solids	4450	mg/L	250
994446-006	OW-87-025	E218.6	FLDFLT	4/4/2011	18:10	Chromium, hexavalent	ND	ug/L	0.20
994446-007	CW-01D-025	E120.1	NONE	4/5/2011	10:54	EC	7350	umhos/cm	2.00
994446-007	CW-01D-025	E200.8	FLDFLT	4/5/2011	10:54	Chromium	1.9	ug/L	1.0
994446-007	CW-01D-025	E218.6	FLDFLT	4/5/2011	10:54	Chromium, hexavalent	1.6	ug/L	1.0
994446-007	CW-01D-025	E300	NONE	4/5/2011	10:54	Chloride	2020	mg/L	100
994446-007	CW-01D-025	E300	NONE	4/5/2011	10:54	Fluoride	1.90	mg/L	0.500
994446-007	CW-01D-025	E300	NONE	4/5/2011	10:54	Sulfate	496	mg/L	12.5
994446-007	CW-01D-025	SM2130B	NONE	4/5/2011	10:54	Turbidity	0.142	NTU	0.100
994446-007	CW-01D-025	SM2540C	NONE	4/5/2011	10:54	Total Dissolved Solids	4110	mg/L	250



Lab Sample ID	Field ID	Analysis Method	Extraction Method	Sample Date	Sample Time	Parameter	Result	Units	RL
994446-008	CW-01M-025	E120.1	NONE	4/5/2011	11:29	EC	7280	umhos/cm	2.00
994446-008	CW-01M-025	E200.8	FLDFLT	4/5/2011	11:29	Chromium	3.4	ug/L	1.0
994446-008	CW-01M-025	E218.6	FLDFLT	4/5/2011	11:29	Chromium, hexavalent	3.8	ug/L	1.0
994446-008	CW-01M-025	E300	NONE	4/5/2011	11:29	Chloride	2400	mg/L	100
994446-008	CW-01M-025	E300	NONE	4/5/2011	11:29	Fluoride	1.83	mg/L	0.500
994446-008	CW-01M-025	E300	NONE	4/5/2011	11:29	Sulfate	495	mg/L	12.5
994446-008	CW-01M-025	SM2130B	NONE	4/5/2011	11:29	Turbidity	0.138	NTU	0.100
994446-008	CW-01M-025	SM2540C	NONE	4/5/2011	11:29	Total Dissolved Solids	4210	mg/L	250
994446-009	CW-04M-025	E120.1	NONE	4/5/2011	9:05	EC	6630	umhos/cm	2.00
994446-009	CW-04M-025	E200.8	FLDFLT	4/5/2011	9:05	Chromium	11.8	ug/L	1.0
994446-009	CW-04M-025	E218.6	FLDFLT	4/5/2011	9:05	Chromium, hexavalent	11.2	ug/L	1.0
994446-009	CW-04M-025	E300	NONE	4/5/2011	9:05	Chloride	2170	mg/L	100
994446-009	CW-04M-025	E300	NONE	4/5/2011	9:05	Fluoride	1.87	mg/L	0.500
994446-009	CW-04M-025	E300	NONE	4/5/2011	9:05	Sulfate	376	mg/L	12.5
994446-009	CW-04M-025	SM2130B	NONE	4/5/2011	9:05	Turbidity	ND	NTU	0.100
994446-009	CW-04M-025	SM2540C	NONE	4/5/2011	9:05	Total Dissolved Solids	3850	mg/L	125
994446-010	OW-01S-025	E120.1	NONE	4/5/2011	12:00	EC	5190	umhos/cm	2.00
994446-010	OW-01S-025	E200.7	FLDFLT	4/5/2011	12:00	Molybdenum	ND	ug/L	10.0
994446-010	OW-01S-025	E200.7	FLDFLT	4/5/2011	12:00	Sodium	636	mg/L	25.0
994446-010	OW-01S-025	E200.8	FLDFLT	4/5/2011	12:00	Chromium	12.3	ug/L	1.0
994446-010	OW-01S-025	E218.6	FLDFLT	4/5/2011	12:00	Chromium, hexavalent	10.6	ug/L	1.0
994446-010	OW-01S-025	E300	NONE	4/5/2011	12:00	Chloride	1550	mg/L	100
994446-010	OW-01S-025	E300	NONE	4/5/2011	12:00	Fluoride	1.64	mg/L	0.500
994446-010	OW-01S-025	E300	NONE	4/5/2011	12:00	Sulfate	302	mg/L	12.5
994446-010	OW-01S-025	SM2130B	NONE	4/5/2011	12:00	Turbidity	1.98	NTU	0.100
994446-010	OW-01S-025	SM2540C	NONE	4/5/2011	12:00	Total Dissolved Solids	2850	mg/L	125
994446-011	OW-02S-025	E120.1	NONE	4/5/2011	12:58	EC	1710	umhos/cm	2.00
994446-011	OW-02S-025	E200.7	FLDFLT	4/5/2011	12:58	Molybdenum	42.3	ug/L	10.0
994446-011	OW-02S-025	E200.7	FLDFLT	4/5/2011	12:58	Sodium	315	mg/L	25.0
994446-011	OW-02S-025	E200.8	FLDFLT	4/5/2011	12:58	Chromium	31.2	ug/L	1.0
994446-011	OW-02S-025	E218.6	FLDFLT	4/5/2011	12:58	Chromium, hexavalent	28.9	ug/L	1.0
994446-011	OW-02S-025	E300	NONE	4/5/2011	12:58	Chloride	402	mg/L	20.0
994446-011	OW-02S-025	E300	NONE	4/5/2011	12:58	Fluoride	5.48	mg/L	0.500
994446-011	OW-02S-025	E300	NONE	4/5/2011	12:58	Sulfate	112	mg/L	5.00
994446-011	OW-02S-025	SM2130B	NONE	4/5/2011	12:58	Turbidity	14.1	NTU	0.100
994446-011	OW-02S-025	SM2540C	NONE	4/5/2011	12:58	Total Dissolved Solids	950	mg/L	50.0

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Lab Sample ID	Field ID	Analysis Method	Extraction Method	Sample Date	Sample Time	Parameter	Result	Units	RL
994446-012	OW-05S-025	E120.1	NONE	4/5/2011	12:28	EC	2570	umhos/cm	2.00
994446-012	OW-05S-025	E200.7	FLDFLT	4/5/2011	12:28	Molybdenum	22.5	ug/L	10.0
994446-012	OW-05S-025	E200.7	FLDFLT	4/5/2011	12:28	Sodium	383	mg/L	25.0
994446-012	OW-05S-025	E200.8	FLDFLT	4/5/2011	12:28	Chromium	22.3	ug/L	1.0
994446-012	OW-05S-025	E218.6	FLDFLT	4/5/2011	12:28	Chromium, hexavalent	20.6	ug/L	0.20
994446-012	OW-05S-025	E300	NONE	4/5/2011	12:28	Chloride	699	mg/L	40.0
994446-012	OW-05S-025	E300	NONE	4/5/2011	12:28	Fluoride	2.19	mg/L	0.500
994446-012	OW-05S-025	E300	NONE	4/5/2011	12:28	Sulfate	130	mg/L	5.00
994446-012	OW-05S-025	SM2130B	NONE	4/5/2011	12:28	Turbidity	3.60	NTU	0.100
994446-012	OW-05S-025	SM2540C	NONE	4/5/2011	12:28	Total Dissolved Solids	1480	mg/L	50.0
994446-013	OW-86-025	E218.6	FLDFLT	4/5/2011	13:13	Chromium, hexavalent	ND	ug/L	0.20
994446-014	OW-90-025	E120.1	NONE	4/5/2011	9:07	EC	6630	umhos/cm	2.00
994446-014	OW-90-025	E200.8	FLDFLT	4/5/2011	9:07	Chromium	11.7	ug/L	1.0
994446-014	OW-90-025	E218.6	FLDFLT	4/5/2011	9:07	Chromium, hexavalent	11.2	ug/L	1.0
994446-014	OW-90-025	E300	NONE	4/5/2011	9:07	Chloride	1950	mg/L	100
994446-014	OW-90-025	E300	NONE	4/5/2011	9:07	Fluoride	1.92	mg/L	0.500
994446-014	OW-90-025	E300	NONE	4/5/2011	9:07	Sulfate	376	mg/L	12.5
994446-014	OW-90-025	SM2130B	NONE	4/5/2011	9:07	Turbidity	0.197	NTU	0.100
994446-014	OW-90-025	SM2540C	NONE	4/5/2011	9:07	Total Dissolved Solids	3740	mg/L	125
994446-015	OW-91-025	E120.1	NONE	4/5/2011	13:00	EC	1720	umhos/cm	2.00
994446-015	OW-91-025	E200.7	FLDFLT	4/5/2011	13:00	Molybdenum	39.2	ug/L	10.0
994446-015	OW-91-025	E200.7	FLDFLT	4/5/2011	13:00	Sodium	317	mg/L	25.0
994446-015	OW-91-025	E200.8	FLDFLT	4/5/2011	13:00	Chromium	29.8	ug/L	1.0
994446-015	OW-91-025	E218.6	FLDFLT	4/5/2011	13:00	Chromium, hexavalent	28.6	ug/L	1.0
994446-015	OW-91-025	E300	NONE	4/5/2011	13:00	Chloride	401	mg/L	20.0
994446-015	OW-91-025	E300	NONE	4/5/2011	13:00	Fluoride	5.49	mg/L	0.500
994446-015	OW-91-025	E300	NONE	4/5/2011	13:00	Sulfate	113	mg/L	5.00
994446-015	OW-91-025	SM2130B	NONE	4/5/2011	13:00	Turbidity	9.31	NTU	0.100
994446-015	OW-91-025	SM2540C	NONE	4/5/2011	13:00	Total Dissolved Solids	950	mg/L	50.0

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.

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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

P.O. Number: 390378.MP.02.CM.01

Project Number: 390378.MP.02.CM.01

Laboratory No. 994446

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Printed 5/4/2011

Samples Received on 4/5/2011 10:00:00 PM

Field ID	Lab ID	Collected	Matrix
CW-02D-025	994446-001	04/04/2011 13:10	Water
CW-02M-025	994446-002	04/04/2011 14:12	Water
CW-03D-025	994446-003	04/04/2011 16:40	Water
CW-03M-025	994446-004	04/04/2011 15:26	Water
CW-04D-025	994446-005	04/04/2011 18:04	Water
OW-87-025	994446-006	04/04/2011 18:10	Water
CW-01D-025	994446-007	04/05/2011 10:54	Water
CW-01M-025	994446-008	04/05/2011 11:29	Water
CW-04M-025	994446-009	04/05/2011 09:05	Water
OW-01S-025	994446-010	04/05/2011 12:00	Water
OW-02S-025	994446-011	04/05/2011 12:58	Water
OW-05S-025	994446-012	04/05/2011 12:28	Water
OW-86-025	994446-013	04/05/2011 13:13	Water
OW-90-025	994446-014	04/05/2011 09:07	Water
OW-91-025	994446-015	04/05/2011 13:00	Water

Anions By I.C. - EPA 300.0

Batch 04AN11D

Parameter	Unit	Analyzed	DF	MDL	RL	Result
994446-001 Chloride	mg/L	04/06/2011 17:02	500	15.0	100.	2140
Fluoride	mg/L	04/06/2011 12:17	5.00	0.0250	0.500	3.90
994446-002 Chloride	mg/L	04/06/2011 17:15	500	15.0	100.	2110
Fluoride	mg/L	04/06/2011 12:29	5.00	0.0250	0.500	2.89
994446-003 Chloride	mg/L	04/06/2011 17:27	500	15.0	100.	2100
Fluoride	mg/L	04/06/2011 12:42	5.00	0.0250	0.500	5.49
994446-004 Chloride	mg/L	04/06/2011 17:39	500	15.0	100.	2770
Fluoride	mg/L	04/06/2011 13:19	5.00	0.0250	0.500	2.79
994446-005 Chloride	mg/L	04/06/2011 18:17	500	15.0	100.	2300
Fluoride	mg/L	04/06/2011 13:31	5.00	0.0250	0.500	4.00

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TRUESDAIL LABORATORIES, INC.

Report Continued

Client: E2 Consulting Engineers, Inc.

Project Name: PG&E Topock Project

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Project Number: 390378.MP.02.CM.01

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994446-007 Chloride	mg/L	04/06/2011 18:29	500	15.0	100.	2020
Fluoride	mg/L	04/06/2011 13:44	5.00	0.0250	0.500	1.90
994446-008 Chloride	mg/L	04/06/2011 18:41	500	15.0	100.	2400
Fluoride	mg/L	04/06/2011 13:56	5.00	0.0250	0.500	1.83
994446-009 Chloride	mg/L	04/06/2011 18:54	500	15.0	100.	2170
Fluoride	mg/L	04/06/2011 14:08	5.00	0.0250	0.500	1.87
994446-010 Chloride	mg/L	04/06/2011 19:06	500	15.0	100.	1550
Fluoride	mg/L	04/06/2011 14:21	5.00	0.0250	0.500	1.64
994446-011 Chloride	mg/L	04/06/2011 19:19	100	3.00	20.0	402.
Fluoride	mg/L	04/06/2011 14:33	5.00	0.0250	0.500	5.48
994446-012 Chloride	mg/L	04/06/2011 19:31	200	6.00	40.0	699.
Fluoride	mg/L	04/06/2011 14:46	5.00	0.0250	0.500	2.19
994446-014 Fluoride	mg/L	04/06/2011 14:58	5.00	0.0250	0.500	1.92
994446-015 Chloride	mg/L	04/06/2011 19:56	100	3.00	20.0	401.
Fluoride	mg/L	04/06/2011 15:10	5.00	0.0250	0.500	5.49

Method Blank

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

Duplicate

Lab ID = 994445-002

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Fluoride	mg/L	5.00	2.42	2.49	2.98	0 - 20

Duplicate

Lab ID = 994458-001

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Chloride	mg/L	1.00	ND	0.00	0	0 - 20

Lab Control Sample

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chloride	mg/L	1.00	3.98	4.00	99.5	90 - 110
Fluoride	mg/L	1.00	4.14	4.00	103.	90 - 110

Matrix Spike

Lab ID = 994445-002

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Fluoride	mg/L	5.00	23.0	22.5(20.0)	102.	85 - 115

Matrix Spike

Lab ID = 994458-001

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chloride	mg/L	1.00	2.04	2.00(2.00)	102.	85 - 115

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Anions By I.C. - EPA 300.0

Batch 04AN11E

Parameter	Unit	Analyzed	DF	MDL	RL	Result
994446-001 Sulfate	mg/L	04/07/2011 14:18	25.0	0.500	12.5	496.
994446-002 Sulfate	mg/L	04/07/2011 14:30	25.0	0.500	12.5	465.
994446-003 Sulfate	mg/L	04/07/2011 14:42	25.0	0.500	12.5	488.
994446-004 Sulfate	mg/L	04/07/2011 14:55	25.0	0.500	12.5	434.
994446-005 Sulfate	mg/L	04/07/2011 15:32	25.0	0.500	12.5	499.
994446-007 Sulfate	mg/L	04/07/2011 15:44	25.0	0.500	12.5	496.
994446-008 Sulfate	mg/L	04/07/2011 15:57	25.0	0.500	12.5	495.
994446-009 Sulfate	mg/L	04/07/2011 16:09	25.0	0.500	12.5	376.
994446-010 Sulfate	mg/L	04/07/2011 16:22	25.0	0.500	12.5	302.
994446-011 Sulfate	mg/L	04/07/2011 16:34	10.0	0.200	5.00	112.
994446-012 Sulfate	mg/L	04/07/2011 16:46	10.0	0.200	5.00	130.
994446-014 Chloride	mg/L	04/07/2011 17:24	500	15.0	100.	1950
Sulfate	mg/L	04/07/2011 16:59	25.0	0.500	12.5	376.
994446-015 Sulfate	mg/L	04/07/2011 17:11	10.0	0.200	5.00	113.

Method Blank

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

Duplicate

Lab ID = 994445-001

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Sulfate	mg/L	100	516.	518	0.342	0 - 20

Duplicate

Lab ID = 994467-008

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Chloride	mg/L	25.0	79.2	78.0	1.50	0 - 20

Lab Control Sample

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chloride	mg/L	1.00	3.98	4.00	99.5	90 - 110
Sulfate	mg/L	1.00	20.0	20.0	100.	90 - 110

Matrix Spike

Lab ID = 994445-001

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Sulfate	mg/L	100	1520	1520(1000)	100.	85 - 115

Matrix Spike

Lab ID = 994467-008

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chloride	mg/L	25.0	184.	178(100.)	106.	85 - 115

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Client: E2 Consulting Engineers, Inc.

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Printed 5/4/2011

Specific Conductivity - EPA 120.1

Batch 04EC11C

4/7/2011

Parameter	Unit	Analyzed	DF	MDL	RL	Result
994446-001 Specific Conductivity	umhos/cm	04/07/2011	1.00	0.0380	2.00	7330
994446-002 Specific Conductivity	umhos/cm	04/07/2011	1.00	0.0380	2.00	7160
994446-003 Specific Conductivity	umhos/cm	04/07/2011	1.00	0.0380	2.00	7070
994446-004 Specific Conductivity	umhos/cm	04/07/2011	1.00	0.0380	2.00	8680
994446-005 Specific Conductivity	umhos/cm	04/07/2011	1.00	0.0380	2.00	7850
994446-007 Specific Conductivity	umhos/cm	04/07/2011	1.00	0.0380	2.00	7350
994446-008 Specific Conductivity	umhos/cm	04/07/2011	1.00	0.0380	2.00	7280
994446-009 Specific Conductivity	umhos/cm	04/07/2011	1.00	0.0380	2.00	6630
994446-010 Specific Conductivity	umhos/cm	04/07/2011	1.00	0.0380	2.00	5190
994446-011 Specific Conductivity	umhos/cm	04/07/2011	1.00	0.0380	2.00	1710
994446-012 Specific Conductivity	umhos/cm	04/07/2011	1.00	0.0380	2.00	2570
994446-014 Specific Conductivity	umhos/cm	04/07/2011	1.00	0.0380	2.00	6630
994446-015 Specific Conductivity	umhos/cm	04/07/2011	1.00	0.0380	2.00	1720

Method Blank

Parameter	Unit	DF	Result
Specific Conductivity	umhos	1.00	ND

Duplicate

Lab ID = 994446-005

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Specific Conductivity	umhos	1.00	7860	7850	0.127	0 - 10

Lab Control Sample

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Specific Conductivity	umhos	1.00	707	706	100.	90 - 110

Lab Control Sample Duplicate

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Specific Conductivity	umhos	1.00	701	706	99.3	90 - 110

MRCCS - Secondary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Specific Conductivity	umhos	1.00	704	706	99.7	90 - 110

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Specific Conductivity	umhos	1.00	998	996	100.	90 - 110

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Chrome VI by EPA 218.6

Batch 04CrH11G

Parameter	Unit	Analyzed	DF	MDL	RL	Result
994446-001 Chromium, Hexavalent	ug/L	04/13/2011 12:45	5.25	0.110	1.0	ND
994446-002 Chromium, Hexavalent	ug/L	04/13/2011 12:56	5.25	0.110	1.0	3.6
994446-003 Chromium, Hexavalent	ug/L	04/13/2011 13:48	5.25	0.110	1.0	ND
994446-004 Chromium, Hexavalent	ug/L	04/13/2011 15:32	5.25	0.110	1.0	9.7
994446-005 Chromium, Hexavalent	ug/L	04/13/2011 16:04	5.25	0.110	1.0	1.8
994446-006 Chromium, Hexavalent	ug/L	04/13/2011 15:22	1.05	0.0210	0.20	ND
994446-007 Chromium, Hexavalent	ug/L	04/13/2011 17:06	5.25	0.110	1.0	1.6
994446-008 Chromium, Hexavalent	ug/L	04/13/2011 17:27	5.25	0.110	1.0	3.8

Method Blank

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

Duplicate

Lab ID = 994446-002

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Chromium, Hexavalent	ug/L	5.25	3.76	3.65	3.10	0 - 20

Lab Control Sample

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	5.03	5.00	100.	90 - 110

Matrix Spike

Lab ID = 994446-001

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	5.25	6.04	5.97(5.25)	101.	90 - 110

Matrix Spike

Lab ID = 994446-002

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	5.25	8.83	8.90(5.25)	98.7	90 - 110

Matrix Spike

Lab ID = 994446-003

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	5.25	5.82	5.96(5.25)	97.2	90 - 110

Matrix Spike

Lab ID = 994446-004

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	5.25	34.5	35.9(26.2)	94.6	90 - 110

Matrix Spike

Lab ID = 994446-005

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	5.25	6.80	7.01(5.25)	96.0	90 - 110



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Matrix Spike

Lab ID = 994446-006

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.06	1.20	1.21(1.06)	99.5	90 - 110

Matrix Spike

Lab ID = 994446-007

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	5.25	6.66	6.90(5.25)	95.4	90 - 110

Matrix Spike

Lab ID = 994446-008

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	5.25	8.86	9.03(5.25)	96.8	90 - 110

Matrix Spike

Lab ID = 994600-001

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	5.25	5.55	5.62(5.25)	98.6	90 - 110

Matrix Spike

Lab ID = 994600-001

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.06	1.23	1.22(1.06)	100.	90 - 110

MRCCS - Secondary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	4.99	5.00	99.9	90 - 110

MRCVS - Primary

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

MRCVS - Primary

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

MRCVS - Primary

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


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Chrome VI by EPA 218.6

Batch 04CrH11H

Parameter	Unit	Analyzed	DF	MDL	RL	Result
994446-009 Chromium, Hexavalent	ug/L	04/14/2011 12:14	5.25	0.110	1.0	11.2
994446-010 Chromium, Hexavalent	ug/L	04/14/2011 12:25	5.25	0.110	1.0	10.6
994446-011 Chromium, Hexavalent	ug/L	04/14/2011 11:54	5.25	0.110	1.0	28.9
994446-012 Chromium, Hexavalent	ug/L	04/14/2011 13:27	1.05	0.0210	0.20	20.6
994446-013 Chromium, Hexavalent	ug/L	04/14/2011 13:38	1.05	0.0210	0.20	ND
994446-014 Chromium, Hexavalent	ug/L	04/14/2011 14:14	5.25	0.110	1.0	11.2
994446-015 Chromium, Hexavalent	ug/L	04/14/2011 14:25	5.25	0.110	1.0	28.6

Method Blank

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

Duplicate

Lab ID = 994446-011

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Chromium, Hexavalent	ug/L	5.25	28.8	28.9	0.225	0 - 20

Lab Control Sample

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	4.95	5.00	99.1	90 - 110

Matrix Spike

Lab ID = 994446-009

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	5.25	36.5	37.4(26.2)	96.5	90 - 110

Matrix Spike

Lab ID = 994446-010

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	5.25	36.2	36.8(26.2)	97.7	90 - 110

Matrix Spike

Lab ID = 994446-011

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	5.25	80.3	81.4(52.5)	97.9	90 - 110

Matrix Spike

Lab ID = 994446-012

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.11	48.0	48.4(27.8)	98.6	90 - 110

Matrix Spike

Lab ID = 994446-013

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.06	1.14	1.21(1.06)	94.0	90 - 110



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Matrix Spike

Lab ID = 994446-014

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	5.25	36.8	37.4(26.2)	97.8	90 - 110

Matrix Spike

Lab ID = 994446-015

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	5.25	78.9	81.1(52.5)	95.9	90 - 110

MRCCS - Secondary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium, Hexavalent	ug/L	1.00	4.94	5.00	98.7	90 - 110

MRCVS - Primary

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

MRCVS - Primary

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

MRCVS - Primary

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

MRCVS - Primary

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



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Total Dissolved Solids by SM 2540 C		Batch 04TDS11B	4/8/2011			
Parameter	Unit	Analyzed	DF	MDL	RL	Result
994446-001 Total Dissolved Solids	mg/L	04/08/2011	1.00	0.434	250.	4340
994446-002 Total Dissolved Solids	mg/L	04/08/2011	1.00	0.434	250.	4190
994446-003 Total Dissolved Solids	mg/L	04/08/2011	1.00	0.434	250.	4000
994446-004 Total Dissolved Solids	mg/L	04/08/2011	1.00	0.434	250.	5290
994446-005 Total Dissolved Solids	mg/L	04/08/2011	1.00	0.434	250.	4450
994446-007 Total Dissolved Solids	mg/L	04/08/2011	1.00	0.434	250.	4110
994446-008 Total Dissolved Solids	mg/L	04/08/2011	1.00	0.434	250.	4210
994446-009 Total Dissolved Solids	mg/L	04/08/2011	1.00	0.434	125	3850
994446-010 Total Dissolved Solids	mg/L	04/08/2011	1.00	0.434	125	2850
994446-011 Total Dissolved Solids	mg/L	04/08/2011	1.00	0.434	50.0	950.
994446-012 Total Dissolved Solids	mg/L	04/08/2011	1.00	0.434	50.0	1480
994446-014 Total Dissolved Solids	mg/L	04/08/2011	1.00	0.434	125	3740
994446-015 Total Dissolved Solids	mg/L	04/08/2011	1.00	0.434	50.0	950.

Method Blank

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

Duplicate

Lab ID = 994445-003

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Total Dissolved Solids	mg/L	1.00	26700	27600	3.24	0 - 5

Lab Control Sample

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Total Dissolved Solids	mg/L	1.00	479	500.	95.8	90 - 110



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Metals by EPA 200.8, Dissolved

Batch 042211C

Parameter	Unit	Analyzed	DF	MDL	RL	Result
994446-001 Chromium	ug/L	04/23/2011 06:03	5.00	0.0950	1.0	ND
994446-002 Chromium	ug/L	04/23/2011 06:30	5.00	0.0950	1.0	3.5
994446-003 Chromium	ug/L	04/23/2011 06:37	5.00	0.0950	1.0	ND
994446-004 Chromium	ug/L	04/23/2011 07:04	5.00	0.0950	1.0	10.5
994446-005 Chromium	ug/L	04/23/2011 07:11	5.00	0.0950	1.0	1.8
994446-007 Chromium	ug/L	04/23/2011 07:17	5.00	0.0950	1.0	1.9
994446-008 Chromium	ug/L	04/23/2011 07:24	5.00	0.0950	1.0	3.4
994446-009 Chromium	ug/L	04/23/2011 07:31	5.00	0.0950	1.0	11.8
994446-010 Chromium	ug/L	04/23/2011 07:44	5.00	0.0950	1.0	12.3
994446-011 Chromium	ug/L	04/23/2011 07:51	5.00	0.0950	1.0	31.2
994446-012 Chromium	ug/L	04/23/2011 07:58	5.00	0.0950	1.0	22.3
994446-014 Chromium	ug/L	04/23/2011 07:38	5.00	0.0950	1.0	11.7
994446-015 Chromium	ug/L	04/23/2011 08:05	5.00	0.0950	1.0	29.8

Method Blank

Parameter	Unit	DF	Result
Chromium	ug/L	1.00	ND

Duplicate

Lab ID = 994446-001

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

Lab Control Sample

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium	ug/L	1.00	52.1	50.0	104.	90 - 110

Matrix Spike

Lab ID = 994446-001

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium	ug/L	5.00	265.	250.(250.)	106.	75 - 125

Matrix Spike Duplicate

Lab ID = 994446-001

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Chromium	ug/L	5.00	262.	250.(250.)	105	75 - 125

MRCCS - Secondary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium	ug/L	1.00	51.4	50.0	103.	90 - 110

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MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium	ug/L	1.00	51.6	50.0	103.	90 - 110

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium	ug/L	1.00	51.2	50.0	102.	90 - 110

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium	ug/L	1.00	52.2	50.0	104.	90 - 110

Interference Check Standard A

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium	ug/L	1.00	ND	0.00		

Interference Check Standard A

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium	ug/L	1.00	ND	0.00		

Interference Check Standard AB

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium	ug/L	1.00	49.6	50.0	99.2	80 - 120

Interference Check Standard AB

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Chromium	ug/L	1.00	49.5	50.0	98.9	80 - 120

Serial Dilution

Lab ID = 994446-015

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Chromium	ug/L	25.0	28.5	29.8	4.49	0 - 10



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Metals by 200.7, Dissolved

Batch 041911A-Th

Parameter	Unit	Analyzed	DF	MDL	RL	Result
994446-010 Sodium	mg/L	04/19/2011 11:40	50.0	2.93	25.0	636.
994446-011 Sodium	mg/L	04/19/2011 12:04	50.0	2.93	25.0	315.
994446-012 Sodium	mg/L	04/19/2011 12:10	50.0	2.93	25.0	383.
994446-015 Sodium	mg/L	04/19/2011 12:32	50.0	2.93	25.0	317.

Method Blank

Parameter	Unit	DF	Result
Sodium	mg/L	1.00	ND

Duplicate

Lab ID = 994446-010

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Sodium	mg/L	50.0	617.	636	3.03	0 - 20

Lab Control Sample

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Sodium	mg/L	1.00	5.02	5.00	100.	90 - 110

Matrix Spike

Lab ID = 994446-010

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Sodium	mg/L	50.0	729.	736(100.)	92.9	75 - 125

Matrix Spike Duplicate

Lab ID = 994446-010

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Sodium	mg/L	50.0	742.	736(100.)	106.	75 - 125

MRCCS - Secondary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Sodium	mg/L	1.00	5.09	5.00	102.	95 - 105

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Sodium	mg/L	1.00	5.18	5.00	104.	90 - 110

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Sodium	mg/L	1.00	5.01	5.00	100.	90 - 110

Interference Check Standard A

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Sodium	mg/L	1.00	2.07	2.00	104.	80 - 120

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



TRUESDAIL LABORATORIES, INC.

Report Continued

Client: E2 Consulting Engineers, Inc.

Project Name: PG&E Topock Project

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Project Number: 390378.MP.02.CM.01

Printed 5/4/2011

Metals by 200.7, Dissolved

Batch 042711A-Th

Parameter	Unit	Analyzed	DF	MDL	RL	Result
994446-010 Molybdenum	ug/L	04/27/2011 17:37	1.00	4.02	10.0	ND
994446-011 Molybdenum	ug/L	04/27/2011 18:02	1.00	4.02	10.0	42.3
994446-012 Molybdenum	ug/L	04/27/2011 18:08	1.00	4.02	10.0	22.5
994446-015 Molybdenum	ug/L	04/27/2011 18:31	1.00	4.02	10.0	39.2

Method Blank

Parameter	Unit	DF	Result
Molybdenum	ug/L	1.00	ND

Duplicate

Lab ID = 994446-010

Parameter	Unit	DF	Result	Expected	RPD	Acceptance Range
Molybdenum	ug/L	1.00	ND	0.00	0	0 - 20

Lab Control Sample

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Molybdenum	ug/L	1.00	5070	5000	101.	90 - 110

Matrix Spike

Lab ID = 994446-010

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Molybdenum	ug/L	1.00	1900	2000(2000)	95.1	75 - 125

Matrix Spike Duplicate

Lab ID = 994446-010

Parameter	Unit	DF	Result	Expected/Added	Recovery	Acceptance Range
Molybdenum	ug/L	1.00	1930	2000(2000)	96.6	75 - 125

MRCCS - Secondary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Molybdenum	ug/L	1.00	5020	5000	100.	95 - 105

MRCVS - Primary

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

MRCVS - Primary

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Molybdenum	ug/L	1.00	4870	5000	97.4	90 - 110

Interference Check Standard A

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Molybdenum	ug/L	1.00	40.1	40.0	100.	80 - 120

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TRUESDAIL LABORATORIES, INC.

Report Continued

Client: E2 Consulting Engineers, Inc.

Project Name: PG&E Topock Project

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Project Number: 390378.MP.02.CM.01

Printed 5/4/2011

Turbidity by SM 2130 B

Batch 04TUC11E

4/6/2011

Parameter	Unit	Analyzed	DF	MDL	RL	Result
994446-001 Turbidity	NTU	04/06/2011	1.00	0.0140	0.100	0.121
994446-002 Turbidity	NTU	04/06/2011	1.00	0.0140	0.100	0.131
994446-003 Turbidity	NTU	04/06/2011	1.00	0.0140	0.100	0.285
994446-004 Turbidity	NTU	04/06/2011	1.00	0.0140	0.100	0.248
994446-005 Turbidity	NTU	04/06/2011	1.00	0.0140	0.100	ND
994446-007 Turbidity	NTU	04/06/2011	1.00	0.0140	0.100	0.142
994446-008 Turbidity	NTU	04/06/2011	1.00	0.0140	0.100	0.138
994446-009 Turbidity	NTU	04/06/2011	1.00	0.0140	0.100	ND
994446-010 Turbidity	NTU	04/06/2011	1.00	0.0140	0.100	1.98
994446-011 Turbidity	NTU	04/06/2011	1.00	0.0140	0.100	14.1
994446-012 Turbidity	NTU	04/06/2011	1.00	0.0140	0.100	3.60
994446-014 Turbidity	NTU	04/06/2011	1.00	0.0140	0.100	0.197
994446-015 Turbidity	NTU	04/06/2011	1.00	0.0140	0.100	9.31

Method Blank

Parameter	Unit	DF	Result
Turbidity	NTU	1.00	ND

Duplicate

Lab ID = 994446-009

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

Lab Control Sample

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Turbidity	NTU	1.00	7.72	8.00	96.5	90 - 110

Lab Control Sample Duplicate

Parameter	Unit	DF	Result	Expected	Recovery	Acceptance Range
Turbidity	NTU	1.00	7.60	8.00	95.0	90 - 110

Respectfully submitted,

TRUESDAIL LABORATORIES, INC.


Mona Nassimi

Manager, Analytical Services

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031



EZ Condon

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

Batch: 04TDS11B

Date Calculated: 4/4/11

Laboratory Number	Sample volume, ml	Initial weight, g	1st Final weight, g	2nd Final weight, g	Weight Difference, g	Exceeds 0.5mg? Yes/No	Residue weight, g	Filterable residue, ppm	RL, ppm	Reported Value, ppm	DF
BLANK	100	110.3680	110.3690	110.3686	0.0004	No	0.0006	6.0	25.0	ND	1
994418-1	100	112.8375	112.8626	112.8626	0.0000	No	0.0251	251.0	25.0	251.0	1
994446	100	109.3972	109.4375	109.4373	0.0002	No	0.0401	401.0	25.0	401.0	1
994444-1	20	47.6380	47.6968	47.6965	0.0003	No	0.0585	2925.0	125.0	2925.0	1
994444-2	10	50.2154	50.2669	50.2666	0.0003	No	0.0512	5120.0	250.0	5120.0	1
994445-1	10	48.1855	48.2274	48.227	0.0004	No	0.0415	4150.0	250.0	4150.0	1
994445-2	10	49.7197	49.7675	49.7674	0.0001	No	0.0477	4770.0	250.0	4770.0	1
994445-3	5	51.2559	51.3941	51.394	0.0001	No	0.1381	27620.0	500.0	27620.0	1
994446-1	10	49.3275	49.3712	49.3709	0.0003	No	0.0434	4340.0	250.0	4340.0	1
994446-2	10	49.4167	49.4587	49.4586	0.0001	No	0.0419	4190.0	250.0	4190.0	1
994446-3	10	73.0052	73.0455	73.0452	0.0003	No	0.0400	4000.0	250.0	4000.0	1
994445-3D	5	51.1327	51.2663	51.2663	0.0000	No	0.1336	26720.0	500.0	26720.0	1
LCS	100	111.6515	111.6994	111.6994	0.0000	No	0.0479	479.0	25.0	479.0	1
994446-4	10	50.1290	50.182	50.1813	0.0001	No	0.0529	5290.0	250.0	5290.0	1
994446-5	10	49.3600	49.4047	49.4045	0.0002	No	0.0445	4450.0	250.0	4450.0	1
994446-7	10	50.6068	50.6483	50.6479	0.0004	No	0.0411	4110.0	250.0	4110.0	1
994446-8	10	49.4823	49.5245	49.5244	0.0001	No	0.0421	4210.0	250.0	4210.0	1
994446-9	20	76.5377	76.6147	76.6147	0.0000	No	0.0770	3850.0	125.0	3850.0	1
994446-10	20	75.1414	75.1985	75.1984	0.0001	No	0.0570	2850.0	125.0	2850.0	1
994446-11	50	65.6325	65.6803	65.68	0.0003	No	0.0475	950.0	50.0	950.0	1
994446-12	50	65.8011	65.875	65.8749	0.0001	No	0.0738	1476.0	50.0	1476.0	1
994446-14	20	75.7722	75.8469	75.8469	0.0000	No	0.0747	3735.0	125.0	3735.0	1
994446-15	50	69.5790	69.6265	69.6265	0.0000	No	0.0475	950.0	50.0	950.0	1
LCS D											1

Calculation as follows:

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

Where: A = weight of dish + residue in grams.

B = weight of dish in grams.

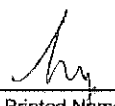
C = mL of sample filtered.


RL= reporting limit.

ND = not detected (below the reporting limit)


 Analyst Printed Name


 Analyst Signature


 Reviewer Printed Name


 Reviewer Signature

Total Dissolved Solids by SM 2540 C

TDS/EC CHECK

Batch: 04TDS11B

Date Calculated: 4/4/11

Laboratory Number	EC	TDS/EC Ratio: 0.55-.9	Calculated TDS (EC*0.65)	Measured TDS / Calc TDS <1.3
994418-1	423	0.59	274.95	0.91
994466	732	0.55	475.8	0.84
994444-1	5180	0.56	3367	0.87
994444-2	8710	0.59	5661.5	0.90
994445-1	7500	0.55	4875	0.85
994445-2	8080	0.59	5252	0.91
994445-3	41600	0.66	27040	1.02
994446-1	7330	0.59	4764.5	0.91
994446-2	7160	0.59	4654	0.90
994446-3	7070	0.57	4595.5	0.87
994445-3D	41600	0.64	27040	0.99
LCS				
994446-4	8680	0.61	5642	0.94
994446-5	7850	0.57	5102.5	0.87
994446-7	7350	0.56	4777.5	0.86
994446-8	7280	0.58	4732	0.89
994446-9	6630	0.58	4309.5	0.89
994446-10	5190	0.55	3373.5	0.84
994446-11	1710	0.56	1111.5	0.85
994446-12	2570	0.57	1670.5	0.88
994446-14	6630	0.56	4309.5	0.87
994446-15	1720	0.55	1118	0.85



994446

CH2MHILL

CHAIN OF CUSTODY RECORD

4/5/2011 1:38:14 PM

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Project Name PG&E Topock			Container:	250 ml Poly	500 ml Poly	500 ml Poly	1 Liter Poly	1 Liter Poly	1 Liter Poly	1 Liter Poly	<p>Rec'd 04/05/11 Lab#: 994446</p> <p>For Sample Conditions See Form Attached</p>	Number of Containers	COMMENTS
Location Topock			Preservatives:	(NH4)2SO4/NH4OH, 4°C	HNO3, 4°C	HNO3, 4°C	4°C	4°C	4°C	4°C			
Project Number 390378.MP.02.CM.01			Filtered:	Field	Field	Field	NA	NA	NA	NA			
Project Manager Jay Piper			Holding Time:	28	180	180	2	2	2	2			
Sample Manager Matt Ringier				C6 (E218.6) Field Filtered	Metals (E200.7-E200.8) Field Filtered Chromium	Metals (E200.7-E200.8) Field Filtered Cr, Mo, Na	Specific Conductance (E120.1)	Anions (E300.0) Cl, F, SO4	Turbidity (SM2130)	TDS (SM2540C)			
Task Order			DATE	TIME	Matrix								
1	CW-02D-025	4/4/2011	13:10	Water	X	X		X	X	X	X	4	
2	CW-02M-025	4/4/2011	14:12	Water	X	X		X	X	X	X	4	
3	CW-03D-025	4/4/2011	16:40	Water	X	X		X	X	X	X	4	<p>PLU=2</p> <p>200.7/</p> <p>200.8</p>
4	CW-03M-025	4/4/2011	15:26	Water	X	X		X	X	X	X	4	
5	CW-04D-025	4/4/2011	18:04	Water	X	X		X	X	X	X	4	
6	OW-87-025	4/4/2011	18:10	Water	X							1	
7	CW-01D-025	4/5/2011	10:54	Water	X	X		X	X	X	X	4	<p>PLU=2</p> <p>200.7/</p> <p>200.8</p>
8	CW-01M-025	4/5/2011	11:29	Water	X	X		X	X	X	X	4	
9	CW-04M-025	4/5/2011	9:05	Water	X	X		X	X	X	X	4	
10	OW-01S-025	4/5/2011	12:00	Water	X		X	X	X	X	X	4	
11	OW-02S-025	4/5/2011	12:58	Water	X		X	X	X	X	X	4	<p>PLU=2</p> <p>200.7/</p> <p>200.8</p>
12	OW-05S-025	4/5/2011	12:28	Water	X		X	X	X	X	X	4	
13	OW-86-025	4/5/2011	13:13	Water	X							1	
14	OW-90-025	4/5/2011	9:07	Water	X	X		X	X	X	X	4	
15	OW-91-025	4/5/2011	13:00	Water	X		X	X	X	X	X	4	PLU=2

Approved by	Signatures	Date/Time	Shipping Details	ATTN:	Special Instructions:
Sampled by		4-5-11	Method of Shipment: FedEx		April 4-5, 2011
Relinquished by			On Ice: yes / no	Sample Custody	
Received by	Rafael Davila	4-5-11 15:30	Airbill No: T.L.I		
Relinquished by	Rafael Davila	4-5-11 22:00	Lab Name: Truesdall Laboratories, Inc.		
Received by	Linda	4/5/11 22:00	Lab Phone: (714) 730-6239		
					Report Copy to Shawn Duffy (530) 229-3303

994446

CH2MHILL

CHAIN OF CUSTODY RECORD

4/5/2011 1:38:15 PM

Page 2 OF 2

Project Name PG&E Topock	Container:	250 ml Poly	500 ml Poly	500 ml Poly	1 Liter Poly	1 Liter Poly	1 Liter Poly	1 Liter Poly		Number of Containers	COMMENTS
Location Topock	Preservatives:	(NH ₄) ₂ SO ₄ 4/NH ₄ OH, 4°C	HNO ₃ , 4°C	HNO ₃ , 4°C	4°C	4°C	4°C	4°C			
Project Number 390378.MP.02.CM.01	Filtered:	Field	Field	Field	NA	NA	NA	NA			
Project Manager Jay Piper	Holding Time:	28	180	180	2	2	2	2			
Sample Manager Matt Ringier		C/6 (E218.8) Field Filtered	Metals (E200.7-E200.8) Field Filtered Chromium	Metals (E200.7-E200.8) Field Filtered Cr, Mo, Na	Specific Conductance (E120.1)	Anions (E300.0) Cl, F, SO ₄	Turbidity (SM2130)	TDS (SM2540C)			
Task Order											
Project 2011-CMP-025											
Turnaround Time 10 Days											
Shipping Date:											
COC Number: 999											
DATE TIME Matrix											
TOTAL NUMBER OF CONTAINERS										54	

ALERT !!
Level III QC

Approved by	Signatures	Date/Time	Shipping Details	ATTN:	Special Instructions:
Sampled by	<i>[Signature]</i>	4-5-11	Method of Shipment: FedEx		April 4-5, 2011
Relinquished by	<i>[Signature]</i>		On Ice: yes / no	Sample Custody	
Received by	<i>Rafael Davila</i>	4-5-11 15:30	Airbill No: T.H.I.		Report Copy to
Relinquished by	<i>Rafael Davila</i>	4-5-11 22:00	Lab Name: Truesdail Laboratories, Inc.		Shawn Duffy
Received by	<i>Linda</i>	4/5/11 22:00	Lab Phone: (714) 730-6239		(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
04/06/11	994445-1	7.0	5.00	9.5	9:10	SB
↓	↓ -2	↓	↓	↓	9:15	↓
↓	↓ -3	↓	↓	↓	9:20	↓
04/06/11	994446-1	7.5	5.00	9.5	10:57	SB
↓	↓ -2	↓	↓	↓	11:00	↓
↓	↓ -3	↓	↓	↓	11:05	↓
↓	↓ -4	↓	↓	↓	11:10	↓
↓	↓ -5	↓	↓	↓	11:07	↓
↓	↓ -6	9.5	N/A	N/A	N/A	↓
↓	↓ -7	7.5	5.00	9.5	10:40	↓
↓	↓ -8	↓	↓	↓	10:43	↓
↓	↓ -9	↓	↓	↓	10:45 10:50 SB	↓
↓	↓ -10	↓	↓	↓	10:50	↓
↓	↓ -11	↓	↓	↓	10:55 10:52 SB	↓
↓	↓ -12	↓	↓	↓	10:52 11:13 SB	↓
↓	↓ -13	↓	↓	↓	11:13 10:47 SB	↓
↓	↓ -14	↓	↓	↓	10:47	↓
↓	↓ -15	↓	↓	↓	11:15	↓
4/7/11	994476-1	9.5	N/A	N/A	N/A	MLK
↓	↓ -2	↓	↓	↓	↓	↓
↓	↓ -3	↓	↓	↓	↓	↓
↓	↓ -4	↓	↓	↓	↓	↓
↓	↓ -5	↓	↓	↓	↓	↓
↓	↓ -6	↓	↓	↓	↓	↓
↓	↓ -7	↓	↓	↓	↓	↓
↓	↓ -8	↓	↓	↓	↓	↓
4/7/11	994477-1	9.5	N/A	N/A	N/A	MLK
↓	↓ -2	↓	↓	↓	↓	↓
↓	↓ -3	↓	↓	↓	↓	↓
↓	↓ -4	↓	↓	↓	↓	↓
↓	↓ -5	↓	↓	↓	↓	↓

Turbidity/pH Check

Sample Number	Turbidity	pH	Date	Analyst	Need Digest	Adjusted to pH<2 (Y/N)
994476(4-8)	<1	<2	04/08/11	M.M	Yes	-
994477(1-79)	<1	<2				-
994478	<1	<2				-
994443	solid		04/11/11	M.M	Yes	TTLC
994466	↓				↓	
994556	↓					↓
710 994532(1-4)	<1	<2	4/13/11	ES	No (yes for G)	
994567(1-6)	<1	<2			No	
994600	<1	<2			No	yes w 2:00 pm
994601(1-2)	<1	<2			No	
994602(1-4)	<1	<2			No	
994596(1-3)	<1	<2	4/13/11	ES	Yes	30/10 A
994617(1-4)	<1	<2	4/14/11	ES	No	-
994630	71	<2			Yes	
994631	71	<2			↓	
994633	71	<2			↓	
634	71	↓			↓	
636(1-3)	<1	<2			No	yes w 2:5:00
637	71	<2			yes	
638	71				↓	
641	<1				No	
642(1-4)	71				Yes	
643	71	↓			↓	
994655(1-2)	<1	<2	4/15/11	ES	No	w 4:00 p.m
994670	71	<2			Yes	
671	71	<2			↓	
672	<1	<2			No	w 4:10 p.m
994676	<1	<2	4/18/11	ES	Yes	
994677(1-11)	<1	<2			Yes	
994446(1-572)	<1	<2			No	
994445(1-2)					No	
994708			4/20			
709						
711						
712						
718(1-3)	↓	71	↓	↓	↓	Yes w 11:30
994723	<1					
994776-1			04/22/11	M.M	Yes	TTLC
994776-2	<1	<2	04/22/11	M.M	Yes	30/10 A
994754	<1	<2			↓	
994774	<1	<2			↓	
994784(1-8)	<1	<2	4/26/11	ES	No	
994809	<1	<2	4/27/11	ES	No	
994820(1-3)	<1	<2			↓	Yes w 11:00
994822	<1	<2			↓	Yes w 11:00
994856(1-2)	<1	<2	4/28/11	ES	No	Yes w 11:00
994850(1-4)	<1	<2	4/28/11	M.M	Yes	30/10 A
994851(1-684)	<1	<2			↓	
994855(1-13)	<1	<2			↓	



TRUESDAIL LABORATORIES, INC.

Sample Integrity & Analysis Discrepancy Form

Client: E 2

Lab # 994446

Date Delivered: 04/05/11 Time: 22:00 By: ☐ Mail ☐ Field Service ☐ Client

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

Appendix B
Field Data Sheets, First Half 2011

Project Name PG&E Topock CMP

Sampling Event 2011-CMP-025

Job Number 390378.MP.02.CM.01

Date 4/5/11

Sampler TF Field Team 1 Field Conditions

Page 1 of 1

BEC

Well/Sample Number OW-01S-025

QC Sample ID NA

QC Sample Time

NA

Purge Start Time 11:46

Flow Cell Y / N

Purge Method temp pump

Ded. Pump

Min. Purge Volume (gal)/(L) 11

Purge Rate (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)
93.14	11:48	2	7.56	6622	13	5.38	28.66	3.8	4.207	58.9	
93.16	11:50	4	7.39	5788	8	3.96	29.01	3.1	3.753	47.5	
93.16	11:52	6	7.39	5584	6	3.60	29.60	2.99	3.631	42.3	
93.16	11:54	8	7.40	5482	5	3.50	29.69	2.94	3.521	41.7	
93.17	11:56	10	7.41	5431	4	3.39	29.75	2.70	3.533	45.0	
93.17	11:58	12	7.42	5381	3	3.53	29.78	2.88	3.489	46.1	
93.05	12:01	15	stop	pump							

Parameter Compliance Criteria

6.2 < pH < 9.2

1.0800

**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 (10/1/2010)

7.66

4008

3.3

7.02

29.71

0.26

68.6

Are measurements consistent with previous?

Y

higher

Y

lower

NA

higher

-

lower

Sample Time 12:00

Sample Location:

pump tubing

well port

spigot

bailer

other

Comments:

Initial Depth to Water (ft BTOC): 9304

Field measured confirmation of Well Depth (ft btoc):

Measure Point: Well TOC

Steel Casing

WQ METER MAKE and SERIAL NUMBER: USI 556 C-102407

WATER LEVEL METER SERIAL NUMBER: PGE 2005-03

WD (Well Depth - from database) ft btoc (113.5)

SWH (Standing Water Height) = WD-Initial Depth 20.46

D (Volume as per diameter) 2"= 0.17, 4"= 0.66, 1"=0.041 (2 in)

One Casing Volume = D*SWH 3.47

Three Casing Volumes = 10.43

Color: clear, grey, yellow, brown, black, cloudy, green

Odor: none, sulphur, organic, other

Solids: Trace, Small Qu, Med Qu, Large Qu, Particulate, Silt, Sand

Initial DTW / Before Removal		If Transducer	
Time	Initial DTW	Approx. 5 min After Reinstallation	Time of Removal
11:40	93.04	12:08	93.05
Comments:		Time of Reinstallation	12:03

Project Name PG&E Topock CMP				Sampling Event 2011-CMP-025				BEC			
Job Number 390378.MP.02.CM.01				Date 4/5/11							
Sampler TF Field Team 1 Field Conditions				Page 1 of 2							
Well/Sample Number OW-02S-025				QC Sample ID NA <u>ow-91-025</u>		QC Sample Time 1300					
Purge Start Time 12:48		Flow Cell (Y) N		Purge Method <u>jump pump</u>		Ded. Pump		Min. Purge Volume (gal)/(L) 156		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)
92.00	12:49	21	7.71	2580		4.30	27.33	1.32	1.667	53.0	
92.01	12:50	42	7.71	2556	3	5.20	26.75	1.06	1.311	42.3	
92.02	12:51	3	7.95	1785	91	4.95	27.94	0.89	1.151	39.4	
92.03	12:52	4	7.95	1748		4.91	28.52	0.88	1.138	40.3	
92.05	12:53	5	7.95	1743	50	4.81	28.75	0.87	1.135	41.9	
92.05	12:54	6	7.95	1746	33	4.85	28.81	0.88	1.135	43.0	
92.06	12:57	7	7.95	1745	30	4.87	28.91	0.87	1.135	44.2	
92.06	12:56	8	7.95	1745	25	4.87	28.99	0.87	1.134	44.1	
Parameter Compliance Criteria			6.2 < pH < 9.2						1.0800		

**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 (10/5/2010)	7.94	1780	1.5	5.86	29.35	0.12	Y	160.4
Are measurements consistent with previous?	Y	Y	higher	Y	NA	Y	-	lower

Sample Time 12:58 **Sample Location:** pump tubing X well port _____ spigot _____ bailer _____ other _____

Comments: _____

OW-86-025 EB 1313

Initial Depth to Water (ft BTOC): 91.64

Field measured confirmation of Well Depth (ft btoc):

WD (Well Depth - from database) ft btoc 124 102.45

SWH (Standing Water Height) = WD-Initial Depth 29.36 10.81

D (Volume as per diameter) 2" = 0.17, 4" = 0.66, 1" = 0.041 (2 in)

One Casing Volume = D*SWH 4.99 1.84

Three Casing Volumes = 14.97 5.52

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: 681

WATER LEVEL METER SERIAL NUMBER: PG&E 2005-03

Measure Point: Well TOC Steel Casing

Initial DTW / Before Removal		If Transducer	
		Approx. 5 min After Reinstallation	Time of Removal
Time	Initial DTW	Time	Final DTW
12:40	91.64	13:02	91.64
Time of Reinstallation		Time of Removal	
		12:41	

Comments:

Project Name PG&E Topock CMP				Sampling Event 2011-CMP-025							
Job Number 390378.MP.02.CM.01				Date 4/5/11				BEL			
Sampler TF Field Team 1 Field Conditions				Page 1 of 1							
Well/Sample Number OW-05S-025				QC Sample ID NA		QC Sample Time					
Purge Start Time 1216		Flow Cell Y/N		Purge Method temp pump		Ded. Pump		Min. Purge Volume (gal)/(L) 9		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)
94.62	1218	2	7.62	4.235	263	4.72	27.80	1.90	2.532	415	
94.66	1220	4	7.65	2787	13	3.66	28.74	1.43	1.810	33.8	
94.65	1222	6	7.67	2693	8	3.75	29.13	1.38	1.745	37.1	
94.66	1224	8	7.68	2665	6	3.70	29.25	1.36	1.731	38.4	
94.66	1226	10	7.68	2642	5	3.69	29.31	1.35	1.709	42.5	
	1230	14	pump off								
Parameter Compliance Criteria			6.2<pH<9.2						1.0800		

**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	Y	Y	Y	Y
Previous Field measurement (10/6/2010)	7.67	2510	3.2	7.78	29.44	0.16	Y	1043
Are measurements consistent with previous?	Y	Y	Y	low	NA	Y	Y	low

Sample Time 1226 **Sample Location:** pump tubing X well port spigot bailer other

Comments: IM3 truck @ location - pumping from wells

Initial Depth to Water (ft BTOC): 94.55

Field measured confirmation of Well Depth (ft btoc):

WD (Well Depth - from database) ft btoc (110.3)

SWH (Standing Water Height) = WD-Initial Depth 15.75

D (Volume as per diameter) 2"= 0.17, 4"= 0.66, 1"=0.041 (2 in)

One Casing Volume = D*SWH 2.6775

Three Casing Volumes = 8.03

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: US1 506 C-102407

WATER LEVEL METER SERIAL NUMBER: RGE 2005-03

Measure Point: Well TOC Steel Casing

Initial DTW / Before Removal		Approx. 5 min After Reinstallation		If Transducer	
Time	Initial DTW	Time	Final DTW	Time of Removal	Time of Reinstallation
12:12	94.55	12:32	99.54	12:13	12:32

Comments:

Project Name PG&E Topock CMP		Sampling Event 2011-CMP-025	
Job Number 390378.MP.02.CM.01		Date 4/5/11	
Sampler TF	Field Team 1	Field Conditions warm, clear, light wind	Page 1 of 1

Well/Sample Number CW-01D-025	QC Sample ID NA	QC Sample Time NA
Purge Start Time 10:17	Flow Cell Y N	Purge Method jump pump
	Ded. Pump	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)
108.97	10:25	21	7.54	7413	2	5.11	29.92	4.05	4.821	86.6	
109.03	10:32	42	7.66	7478	1	5.79	29.34	4.09	4.858	77.0	
109.01	10:39	63	7.66	7470	1	5.87	29.38	4.09	4.856	73.5	
109.00	10:46	84	7.66	7483	0	5.92	29.37	4.10	4.863	77.69.4	
109.00	10:53	102	7.67	7484	1	5.96	29.35	4.10	4.866	66.8	
	10:57	114	pump off								
Parameter Compliance Criteria			6.2 < pH < 9.2						1.0800 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	N	Y	N	NA	N	Y	N
Previous Field measurement (10/6/2010)	656	1070	0.8	13.71	29.46	05	Y	154.4
Are measurements consistent with previous?	Y	Y	N	low	NA	higher		low

Sample Time 10:54 **Sample Location:** pump tubing X well port spigot bailer other

Comments:

Initial Depth to Water (ft BTOW): 108.97

Field measured confirmation of Well Depth (ft btoc):

WD (Well Depth - from database) ft btoc (300.2)

SWH (Standing Water Height) = WD-Initial Depth 191.28

D (Volume as per diameter) 2"= 0.17, 4"= 0.66, 1"=0.041 (2 in)

One Casing Volume = D*SWH 32.52

Three Casing Volumes = 97.55

Color: clear grey, yellow, brown, black, cloudy, green

Measure Point: Well TOC Steel Casing

WQ METER MAKE and SERIAL NUMBER: YSI 556 C-102407

WATER LEVEL METER SERIAL NUMBER: PG 2002-03

If Transducer			
Initial DTW / Before Removal		Approx. 5 min After Reinstallation	
Time	Initial DTW	Time	Final DTW
1015	108.92	NA	NA

Comments:

Odor: none, sulphur, organic, other

Solids: Trace, Small Qu, Med Qu, Large Qu, Particulate, Silt, Sand

Project Name PG&E Topock CMP
Job Number 390378.MP.02.CM.01

Sampling Event 2011-CMP-025

Date 4/5/11

Sampler TP Field Team 1 Field Conditions warm, sunny, 11 breeze

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Well/Sample Number CW-01M-025

QC Sample ID NA

QC Sample Time NA

Purge Start Time 11:06 Flow Cell (Y) N Purge Method temp pump Ded. Pump 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)
108.90	11:10	8	7.70	7483	1	5.79	29.68	4.09	4862	53.0	
108.91	11:14	16	7.69	7487	0	6.09	29.81	4.10	4866	50.4	
108.91	11:18	24	7.68	7496	0	6.14	29.79	4.10	4870	52.8	
108.91	11:22	32	7.69	7495	0	6.18	29.78	4.10	4871	57.9	
108.91	11:27	40	7.70	7488	1.0	6.18	29.85	4.1	4870	57.7	
108.91	11:30	48	pump off								

Parameter Compliance Criteria

6.2 < pH < 9.2

1.0800

**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?	W	W	W	W	NA	W	W	W
Previous Field measurement (10/6/2010)	7.66	7790	0.3	11.8	29.54	0.5	W	105
Are measurements consistent with previous?	W	W	W	lower	NA	higher		lower

Sample Time 11:29 Sample Location: pump tubing ☒ well port ☐ spigot ☐ bailer ☐ other ☐

Comments:

Initial Depth to Water (ft BTOC): 81.1 108.81

Field measured confirmation of Well Depth (ft btoc):

WD (Well Depth - from database) ft btoc (190)

SWH (Standing Water Height) = WD-Initial Depth 108.9 81.19

D (Volume as per diameter) 2"= 0.17, 4"= 0.66, 1"=0.041 (2 in)

One Casing Volume = D*SWH 13.8

Three Casing Volumes = 41.4

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: YSI 556 C-102407

WATER LEVEL METER SERIAL NUMBER: P6E 2005-03

Initial DTW / Before Removal				If Transducer			
Time	Initial DTW	Time	Final DTW	Time of Removal	Time of Reinstallation		
1103	108.81	NA	NA	NA	NA		
Comments: 108.81							

Project Name PG&E Topock CMP				Sampling Event 2011-CMP-025			
Job Number 390378.MP.02.CM.01				Date 4/4/11			
Sampler TP		Field Team 1		Field Conditions Clear, warm, windy		Page 1 of 1	
Well/Sample Number CW-02D-025				QC Sample ID NA		QC Sample Time NA	
Purge Start Time 1223		Flow Cell (Y) N		Purge Method Jump pump		Ded. Pump NA	
				Min. Purge Volume (gal)/(L) 135 gal		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)
91.93	1232	27	8.21	7.398	3	12.23	29.91	4.05	4.81	53.4	295 Hz
92.15	1230	51	8.05	7.456	2	13.02	30.75	4.07	4.846	39.7	335
92.14	1239	81	8.06	7.455	2	13.03	30.80	4.07	4.846	34.2	
92.13	1248	100	8.06	7.464	2	13.05	30.85	4.07	4.845	29.9	
92.13	1257	135	8.27	7.453	2	13.05	30.87	4.07	4.844	26.9	
	1311	Pump off									
Parameter Compliance Criteria			6.2 < pH < 9.2						1.0800		

**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	NA	NA	
Previous Field measurement (10/4/2010)	7.97	7580	0.2	8.05	30.87	0.49		133.4
Are measurements consistent with previous?	y	y	y	higher	NA	higher		lower

Sample Time 1310 Sample Location: pump tubing ☒ well port ☐ spigot ☐ bailer ☐ other ☐

Comments: 1st controller bad. Switch controller

Initial Depth to Water (ft BTOC): 91.93

Field measured confirmation of Well Depth (ft btoC):

WD (Well Depth - from database) ft btoC (355)

SWH (Standing Water Height) = WD - Initial Depth 263.07

D (Volume as per diameter) 2"= 0.17, 4"= 0.66, 1"=0.041 (2 in)

One Casing Volume = D*SWH 44.72

Three Casing Volumes = 134.2

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 TOO Steel Casing

WQ METER MAKE and SERIAL NUMBER: YSI 556 #7705

WATER LEVEL METER SERIAL NUMBER: P&E 2005-03

Initial DTW / Before Removal		Approx. 5 min After Reinstallation		Time of Removal	
Time	Initial DTW	Time	Final DTW	Time of Reinstallation	
1220	91.93	NA	NA	NA	
Comments:					

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BE

Page 6 of 12

Initial Depth to Water (ft BTOC): 61.00

Field measured confirmation of Well Depth (ft btoc): 248

WD (Well Depth - from database) ft btoc (303)

SWH (Standing Water Height) = WD-Initial Depth 248

D (Volume as per diameter) 2"= 0.17, 4"= 0.66, 1"=0.041 (2 in)

One Casing Volume = D*SWH 41.14

Three Casing Volumes = 123

Color: clear, grey, yellow, brown, black, cloudy, green

Measure Point: Well TOC Steel Casing

WQ METER MAKE and SERIAL NUMBER: USI 556 10D 1004

WATER LEVEL METER SERIAL NUMBER: PGE 2003-03

Initial DTW / Before Removal		If Transducer	
		Approx. 5 min After Reinstallation	Time of Removal
Time	Initial DTW	Time	Final DTW
<u>1724</u>	<u>61.00</u>	<u>NA</u>	<u>NA</u>
Comments:		Time of Reinstallation <u>NA</u>	

Odor: none, sulphur, organic, other

Solids: Trace, Small Qu, Med Qu, Large Qu, Particulate, Silt, Sand

Project Name PG&E Topock CMP		Sampling Event 2011-CMP-025		BEC	
Job Number 390378.MP.02.CM.01		Date 4/5/11			
Sampler TH	Field Team 1	Field Conditions		Page 1 of 1	
Well/Sample Number CW-04M-025		QC Sample ID OW-90-025		QC Sample Time 0907	
Purge Start Time 8:27 8:33		Flow Cell Y / N	Purge Method temp pump	Ded. Pump NA	Min. Purge Volume (gal)/(L) 56
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)
61.43	8:3339	12	7.78	6.920	2	3.81	29.35	3.76	4.489	19.6	H2 150
61.43	8:3445	24	7.77	6.804	2	2.28	29.47	3.70	4.425	64.6	
61.43	8:4551	36	7.77	6.793	0	2.19	29.52	3.69	4.413	75.6	
61.43	8:5557	48	7.76	6.787	1	2.19	29.52	3.68	4.413	79.2	
61.43	8:5557 9:01	56	7.75	6.790	1	2.18	29.55	3.68	4.410	81.4	
9:10 24 Pump off											
Parameter Compliance Criteria			6.2<pH<9.2								

**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 (10/5/2010)	7.87	4380	0.4	2.4	29.59	0.28	Y	1252
Are measurements consistent with previous?	Y	higher	Y	Y	NA	higher		Y

Sample Time 0907 **Sample Location:** pump tubing X well port spigot bailer other

Comments: pump leaking air - tighten hose clamp @ pump - restart pump @ 8:33

Initial Depth to Water (ft BTOW): 61.14

Field measured confirmation of Well Depth (ft btoc):

WD (Well Depth - from database) ft btoc (169.8)

SWH (Standing Water Height) = WD-Initial Depth 108.66

D (Volume as per diameter) 2"= 0.17, 4"= 0.66, 1"=0.041 (2 in)

One Casing Volume = D*SWH 18.47

Three Casing Volumes = 55.42

Color: clear, grey, yellow, brown, black, cloudy, green

Measure Point: Well TOC **Steel Casing**

WQ METER MAKE and SERIAL NUMBER: YSI 09K100101

WATER LEVEL METER SERIAL NUMBER: PG12005-03

If Transducer			
Initial DTW / Before Removal		Approx. 5 min After Reinstallation	
Time	Initial DTW	Time	Final DTW
8:21	61.14	NA	NA
Time of Removal		Time of Reinstallation	
NA		NA	

Comments:

Odor: none, sulphur, organic, other

Solids: Trace, Small Qu, Med Qu, Large Qu, Particulate, Silt, Sand

Topock CMP Manual Water Level Snapshot

Personnel:

WLI serial number:

Loc ID	Depth to Water (ft BTOC)	Date	Time	Comments
CW-1M	108.74	6/13/11	1836	
CW-1D	108.26	6/13/11	1838	
CW-2M	91.71		1930	
CW-2D	91.30		1931	
CW-3M	76.60		1935	
CW-3D	72.00		1933	
CW-4M	60.50		1923	
CW-4D	60.40		1921	
* OW-1S	92.58		1846	
OW-1M	92.43		1845	
OW-1D	92.15		1843	
* OW-2S	91.24		1858	
OW-2M	90.58		1901	
OW-2D	90.55		1857	
* OW-5S	94.05		1906	
* OW-5M	93.38		1910	
* OW-5D	93.77	✓	1913	

Last backwash date: 6-8-11

Steady injection from the same well

Since: 6-8-11

408-784-6227